UNIARTS HELSINKI

SIBELIUS ACADEMY

ISME 36th WORLD CONFERENCE

HELSINKI 2024 28 JULY - 2 AUGUST

Proceedings of the International Society for Music Education

36th World Conference on Music Education

Helsinki, Finland

28 July – 2 August 2024

Proceedings of the International Society for Music Education
36th World Conference on Music Education
Helsinki, Finland

28 July – 2 August 2024

Editors:
David Forrest & Robin Bold

Proceedings of the International Society for Music Education
36th World Conference on Music Education
Helsinki, Finland
28 July – 2 August 2024

Editors:
David Forrest & Robin Bold

ISBN: 978-1-922303-17-2

Published in Australia in 2024
International Society for Music Education (ISME)

ISME Office
320 68th Street
Kenosha, WI 53143, USA

Design: Robin Bold

Copy requests:
isme@isme.org

National Library of Australia Cataloguing-in-Publication Data
A CIP record is available from the National Library of Australia
Dewey Number: 780.7

The full papers submitted to the 2024 International Conference were double blind refereed by a panel of international authorities before inclusion in the Conference Proceedings.

Acknowledgements
ISME is indebted to the work of the Chairs of the Commissions and Special Interest Groups of the International Society for Music Education. These people reviewed all of the submissions to their Commissions or SIG.

Commissions	Chairs
Research (co-chair)	Ruth Brittin
Research (co-chair)	Julia Brook
Community Music (co-chair)	Chrissie D'Alexander
Community Music (co-chair)	Alicia de Banffy-Hall
Early Childhood Commission	Lauren Kooistra
Education of the Professional Musician (co-chair)	Alejandra Garcia Trabucco
Education of the Professional Musician (co-chair)	Guadalupe López-Íñiguez
Policy (co-chair)	Lauren Kapalka Richerme
Policy (co-chair)	Anita Prest
Music in School & Teacher Education	Lily Chen-Hafteck
Special Education	Matthew Breaden
Instrumental & Vocal Music Teaching Commission	Yiannis Miralis

SIGs/Themes	Leaders
Leadership in Music Education	Peter McKenzie
Curriculum studies and pedagogies	Daniel Johnson
Community Music and Music and Leisure	Alicia de Banffy-Hall
Research Methodologies	Julia Brook
Musical development and learning across the lifecourse	Sylvain Jaccard
Historical, social and cultural music education contexts	Lauren Kapalka Richerme
Evaluation and assessment in schools	Marshall Haning
Education in Music Professions	Alejandra Garcia Trabucco
Music Teacher Education and Professional Development	Lily Chen-Hafteck
Music Education Policy and Social Justice Education	Lauren Kapalka Richerme
Early Childhood Music Education	Lauren Kooistra
Music in Therapeutic and Special Education Contexts	Matthew Breaden
Music, Health and Wellbeing	Carina Joly
Popular Music and Jazz in Education	Zack Moir
Music, Media and Technology	Matthew Thibeault
Spirituality of Music Education	Amira Ehrlich
Cross Curricular and Integrated Music Practices	Kaarina Marjanen
Decolonising and Indigenising Music Education (DIME)	Anita Prest

The work of the Chairs was supported by the team of reviewers of abstracts and papers including:

Vyvienne Abla, Elizabeth Andango, Maria Argiriou, Jose Arostegui, Mark Belfast, Cathy Benedict, Dawn Bennet, Catherine Birch, Pauline Black, Diana Blom, Judy Bond, Matthew Breaden, Melissa Bremmer, Ruth Brittin, Wendy Brooks, Timothy Brophy, Judith Brown, Lisa Burrell, Sabine Chatelain, Jason Chen, Lee Cheng, Lily Chen-Hafteck, Smaro Chrysostomou, Nicolas Coffman, Markus Cslovjecsek, Chrissie D'Alexander, Marci DeAmbrose, Leon de Bruin, Zoe Dionyssiou, Rachel Dwyer, Natassa Economidou Stavrou, Amira Ehrlich, Erik Esterbauer Heloisa Feichas, David Forrest, Claudia Gluschankof, Patricia González-Moreno, Hubert Gruber, Wilfried Gruhn, Gwen Moore, Meri Haami, Clare Hall, Pan Hang Tang, Daniel Hellman, Jill Holland, Laura Huhtinen-Hilden, Hala Jaber, Sylvain Jaccard, Neryl Jeanneret, David Johnson, Elissa Johnson-Green, Dawn Joseph, Alexis Kallio, Brian Kaufman, Jody Kerchner, Janice Killian, Fiona King, Karen Koner, Candace Kruger, Tuulikki Laes, Carlos Lage-Gomez, Sue Lane, Andreas Lehmann-Wermser, Jennifer Leu, Chi-hin Leung, Sharon Lierse, Ramiro Limongi, Emma Lines, Charulatha Mani, Andrea McAlister, Peter McKenzie, Bradley Merrick, Catherine Ming-Tu, Yiannis Miralis, Anni Mitchell, Hiromichi Mito, Graca Mota, Regina Murphy, Glenn Nierman, Amanda Niland, Naomi Norton, Aleksi Ojala, Evelyn Orman, Erin Parkes, Kelly Parkes, Phillip Payne, Elissavet Perakaki, Soili Perkiö, Jessica Pitt, Bryan Powell, Te Oti Rakena, Beth Rankin, Bridget Rennie-Salone, Jennifer Robinson, Jennifer Rowley, Gabriel Rusinek, Brian Russell, Alex Ruthmann, Joanne Rutkowski, Suvi Saarikallio, Patrick Schmidt, Euridiana Silva Souza, Wendy Sims, Lelouda Stamou, Pamela Stover, Bridget Sweet, Adam Switala, Pan Tang, Aggeliki Triantafyllaki, Kathleen Turner, Margre van Gestel, Hector Vazquez, Milton Wabyona, Jack Walton, Dennis Wang, Amanda Watson, Graham Welch, Janis Weller, Emily Wilson, Susan Young, Katie Zhukov.

The tireless and timely work of Ryan Zellner, ISME CEO; Shree Lakshmi Vaidyanathan, ISME Communications Officer and Riikka Louhivuori, Congress & Event Manager ensured that this work has been successfully finalised.

Table of Contents

Health Literacy for Musicians: Analysis of Books Written in Japanese Published in Japan

Miki Akaike, University of Yamanashi & Tomoko Tanaka, Keio University, Japan

Abstract

Japan has an estimated total population of 1.14 million musicians. Despite the size of the musician's population, health education for musicians (HEM) is only partially implemented. The Musicians' Health Literacy Questionnaire (MHL-Q19) was developed in 2022 to decrease musicians' physical and mental performance-related health issues. It is expected to be developed in multiple languages in the future. The Japanese team is now trying to develop a Japanese version of this Questionnaire and is faced with the translational difficulty of the term, e.g., "performance health". This is because the MHL-Q19 does not define those terms. The HEM in Japan is now under development. Because of this background, even if those words were directly translated into Japanese, Japanese respondents would not understand its meaning.

Since 2000, a series of books regarding MHL have been published in Japan. It is thought that a certain number of Japanese musicians who have not studied at university have read books. Therefore, this study aimed to derive a definition of MHL from Japanese books. Seventy-two books were collected which refer to the physical and mental condition of musicians in the Japanese book market. Their contents were analysed using a mixed-methods approach.

As a result, we defined the MHL that is useful for musicians, is to know and understand the optimal posture and movements during the music performance that considers the characteristics of the individual playing the instrument, as well as how to control one's mind and emotions and how to achieve the best possible or expected music performance. In addition, to cope with and prevent physical and mental conditions, students are required to understand disorders and their causes caused by music performance and to acquire knowledge of some aspects of clinical medicine, including appropriate methods of coping with and preventing such disorders.

Through textual analysis using Japanese books, this study has revealed how MHL is described in consideration of Japanese contexts. Moreover, presenting the results to Japanese respondents would facilitate the development of a Japanese version. The MHL-Q19 asks respondents about their literacy level on a five-point scale. It has not been considered to date at what point in the process the respondents should aim to reach a suitable level. The standard expected of freshmen and professional orchestra musicians would not be the same. Therefore, the next action is to redesign educational programs to link the study achievement goals to degrees of literacy is essential.

Keywords: health literacy, health education, musician, Japan, mhl-q19, developing multilingual scale

Background

According to Nutbeam (2008), health literacy (HL) is defined as an individual's ability to make health choices by accessing, understanding, and using health-related information. Sørensen et al. (2012) conducted a content analysis of 17 definitions and 12 conceptual models proposed for HL and

integrated the concepts. According to this model, HL is an individual's ability to access, understand, appraise, and apply health information. The utilization of health information includes decision-making and problem-solving behaviours.

Improving HL is important for music performers. Considering the high prevalence of performance-related disorders not only among professionals but also among students just entering music universities, educational initiatives aimed at improving the HL of music performers have been undertaken, especially since 2000 (Matei, 2019; Wei & Takenaka, 2021; Akaike, 2023). This education includes the provision and acquisition of knowledge on disorders and risks associated with music performance, such as musculoskeletal disorders, music anxiety, and noise-induced hearing loss. Moreover, it includes the provision and acquisition of methods to maintain better physical and mental health to prevent disorders in daily activities such as practice and rehearsals. The acquisition of knowledge is not limited to classroom learning but also includes practical education using the Alexander Technique and the Franklin Method; that is, physical activities to experience body awareness. Thus, the increase in case reports and epidemiological studies on music performers since the 1960s has resulted in the increase in recognition of education aimed at preventing disability, promoting physical and mental health, and improving music performance (NASM, 2020; Chesky et al., 2006; Wijsman & Ackermann, 2019; AG Lehre der DGfMM, 2012).

In this context, the Musicians' HL Questionnaire for Performers (MHL-Q19) was developed by Guptill et al. (2022). The MHL-Q19 comprises four levels of outcomes or competencies—obtaining information, understanding, interpreting and evaluating, and decision-making—across three domains: disease prevention, healthcare, and health promotion. This questionnaire helps clarify the extent of health-related behaviours of music performers.

Purpose

Although it is important for music performers to improve their HL as it is deeply related to their expected performance, the MHL-Q19 does not indicate what content is related to music performers' health or HL. Especially in Japan, where health education for music performers is still immature, it is important to identify the HL that students should acquire to develop educational programmes (Akaike, 2021).

Therefore, this study aims to clarify how HL for music performers has been described in the Japanese book market. The findings are expected to be applied to the development of educational programmes to enhance HL and give learners the opportunity to understand the content of HL related to their own performance, including objectively using the MHL-Q19.

The following research questions were raised: 1) What teaching materials in Japan focus on the music performer's body and mind? 2) How did these materials prevail in the Japanese market? 3) What do the books tell us about HL for music performers?

Methods

The data for the analysis were obtained from books on the mental and physical condition of music performers distributed in the Japanese book market. The books were collected by searching National Diet Library Search databases, using the search formula (music OR performance) AND (health OR

body OR mental). Books on playing techniques that were mainly intended to improve the performance skills of a specific instrument were excluded. Manual searches were also performed with reference to the information about the books on the back pages. The search was conducted from April 18–May 12, 2023. In analysing by the mixed methods the content of the books, the authors manually extracted and classified the stylised terms, nouns, and verbs that appeared in the books, and other parts of speech used in morphological analysis that were deemed useful for the analysis. The search process was performed in collaboration by two authors.

Results

An attempt was made to capture the characteristics of the books by analysing the 72 books from four perspectives (year of publication, attributes of the author, target performing instruments and theories relied upon).

Number of publication books by year

Totally, 72 books were collected. Figure 1 shows the number of published books and the differences between the translated books from other languages to Japanese and the original books written in Japanese. The earliest book focusing on the body and mind of the music performer written in Japanese was by Dr Hayashi (1958), who was a physician in otorhinolaryngology. Dr Hayashi visited Munich and Vienna in 1936 and made observations about speech and language disorder therapy. After the observation tour, he began to teach speech physiology at the Kunitachi College of Music in the 1950s (Akaike, 2023). From then until the year 2000, only one book was published by Frederick Husler (1987), who was a vocal music educator. However, since 2000, 70 books have been published. Of these, the number of books published increased rapidly, especially in the three years between 2017 and 2019. Until 2012, books in translation were mainstream, although some original Japanese books were available.

Contents classification of the books

To classify the contents of the books, we organised the theories or the points on which the written contents were based, referring to the attributes of the authors. The resulting overall picture is shown in Figures 2. There were six classifications in total. The five different classifications appeared early on, from 1958 to 2004. The last classification, Yoga, appeared later in 2017.

The contents classification based on theories

Alexander Technique/Body Mapping

The largest number of books (20 books, 27.8% of the total) were on teaching the theory of the Alexander Technique or Body Mapping. According to Ono (2011), Body Mapping was derived from the Alexander Technique, and although they have similarities, they are not identical. We distinguished between the two methods to the best of our abilities. However, it was difficult to separate them completely, so we classify them together in this analysis. All of the authors were certified Alexander Technique teachers or qualified Andover Educators who teach Body Mapping. The content included Body Mapping, inclusive awareness, inclusive attention, mindfulness, fluid gestalt, kinaesthesia, self-talk, anatomy (how to map joints such as arms and hands, muscles, and breathing), disorders including their mechanisms and treatments, and nutrition related to balanced posture.

Medicine

The second most common category was Medicine, which accounted for 26.4% (19 books) of the total. This category comprised 4 (21.1%) basic medicine books, 10 (52.6%) clinical medicine books, and 5 (26.3%) that were a mixture of both. The content covered in basic medicine was anatomy and physiology, which address the structure and function of the body, including the vocal organs, face, spinal column, diaphragm, and pelvis. The content of clinical medicine, which was more common than basic medicine, included definitions and classification of the disease, symptoms, characteristics, frequency and pain level by instrument, effects on performance and daily life, cases and mechanisms, diagnosis (criteria and methods), treatment methods, rehabilitation methods, prevention methods, and conditioning methods. The authors were health professionals such as medical doctors, physiotherapists, and speech therapists, as well as kinesiotaping trainers, music educators, and acousticians. Overall, 42.1% (eight books) aimed at all performers, while 52.6% (10 books) focused on vocal music and 5.3% (one book) on piano.

Sports training

Sports training accounted for 18.1% (13 books) of the total. The writers were sports trainers, coaches, physiotherapists, and chiropractors, who provided content aimed at conditioning related to physical conditions. Specifically, the methods of stretching, flexion-extension (bending, lifting, dorsiflexion, and plantar flexion), and rotation (internal and external rotation) of the body for each region—such as the hand and finger (e.g. MP joint), neck, chest, supraspinatus and rhomboids muscles around the shoulder joint (including the scapula and upper arm), and lower limbs (pelvis, hamstring, knee joint, and sole of foot). Warming-up and cooling-down methods were also shown. A 'fundamental position' was discussed in two books (Hirao, 2009; Ogiyama, 2011), and 'de-energisation' was discussed in three books (Hirao, 2009; Ogiyama, 2011; Ishibashi, 2013).

Performance psychology

Performance psychology accounted for 13.9% (10 books) of the total. Sports medicine is positioned as a superordinate concept of performance psychology—a sub-concept of medicine. Therefore, it should normally be considered a medical field. However, it was classified separately because the classification 'medicine' addresses the body, whereas 'performance psychology' addresses the mind and has a certain number of books. If both were classified as 'medicine', they would account for 40.3% (29 books) of the total, making 'medicine' the largest category. The authors comprised a medical doctor specialising in sports medicine, a Ph.D. holder in sports psychology, a coach, a certified Alexander Technique teacher, and two music educators. The study content included methods for creating a better state of mind (way of thinking) for oneself, such as imagery training (mental rehearsal), mental control and emotion management (dealing with fear, tension, and failure), affirmations, self-talk, focusing on the object, intensity and location, centring, and inner game.

Mixed contents

Mixed contents accounted for 11.1% (eight books) of the total. This refers to books that comprise multiple perspectives such as medicine, performance psychology, and sports training within a single book. The authors were three doctors specialising in otorhinolaryngology, orthopaedic surgery, and neurology, as well as five music educators. Contents based on the medical perspective included breathing and vocal mechanisms; muscle and joint movements; correct posture in standing, sitting, and

supine positions; and symptoms and mechanisms of diseases such as dysphonia, music anxiety, and metal allergies. From a performance psychology perspective, the content covered mental states such as image training and methods of coping with tension and agari. In other sports training areas, daily conditioning methods such as warming up, cooling down, and stretching were described. Finally, the focus was on the environment as a matter of occupational health. For music performers, environmental conditioning meant considering ways to reduce the load while moving the heavy instrument, using supports to help hold the instrument, adjusting lighting, and hearing protection.

Yoga

Lastly, yoga accounted for 2.8% (two books) of the total. The study content aimed at conditioning the body the same way sports training functions, through a variety of postures, breathing techniques, and meditation, such as relaxing (relaxing, softening), decreasing (relieving stiffness, fatigue), and maintaining (toning).

What was health literacy for music performers?

Our mixed-methods analysis of the content of 72 books yielded four characteristics: 1) an overview of the optimal posture and movement during music performance, 2) knowledge concerning anatomy and physiology to support optimal posture and movement, 3) the mental attitude (way of thinking) for optimal posture and movement, and 4) conditioning the body and mind. Finally, a definition of health literacy for music performers was developed based on the four characteristics.

Considering these four characteristics and the four levels of competence and three domains indicated in the MHL-Q19, we revealed the HL aspects that are useful for music performers: Health literacy, which is useful for the music performer's performance, is to know and understand the optimal posture and movements during the music performance that considers the characteristics of the individual playing the instrument, as well as how to control one's mind and emotions and how to achieve the best possible or expected music performance. To this end, performers are required to acquire basic medical knowledge of anatomy and physiology to learn the structure and functions of the body, as well as methods to condition the body through the Alexander Technique, yoga, sports, and other methods. In addition, to cope with and prevent physical and mental conditions, students are required to understand disorders and their causes caused by music performance, and to acquire knowledge of some aspects of clinical medicine, including appropriate methods of coping with and preventing such disorders. In addition to obtaining and understanding this information, interpreting the information and making further decisions means that the person is in the highest state of HL. Based on the knowledge mentioned above, such a person can consider remedial measures or solutions for individual conditions and one's current situation; thus, he or she can implement his or her own plans and provide specific advice to others.

Conclusions

One of the contents common to many of the 72 books was anatomy; however, the study content differed in perspective according to the instrument played. For example, in the case of the violin, the joints and muscles involved in bowing were touched upon; while in the case of the flute, the facial muscles involved in embouchure (e.g., the orbicularis oris muscle) and tongue movement involved in tonguing were touched upon. In vocal music, the mechanisms of breathing and vocalisation were also

touched upon. While there are body movements characteristic of the instruments played, common learning contents were also identified. For example, breathing mechanisms, which are always dealt with in vocal music, are also applicable to brass instruments. Strings share the repetitive arm movements in a certain direction necessary for bow movement, and the fingers of piano players and woodwind players, as well as the fingers of the left hand of string players, sometimes share fine and agile movements.

Therefore, when considering educational programmes to enhance HL for music performers, anatomy and physiology classes that address the structure and function of the body, not only for each instrument but also for each part of the body that is mainly used to produce sound, could be considered. Fundamental positions, body imagery, affirmations, and self-talk are also important learning topics that many books have dealt with.

To disseminate literacy education for preventing performance-related disorders to more music performers, regardless of the type of instrument they play, it will be necessary to develop general-purpose educational content (Wijsman, 2012; Matei et al., 2018; Matei, 2019). This idea is not new for universities and researchers who already provide health education for music performers. However, for universities and countries like Japan, where this education is not yet systematically provided, these points are significant. The number of courses on musician medicine offered at music universities in Japan is very small, making it difficult to ascertain the relevance of the learning content, such as what should be studied to enhance music performers' HL, and how such learning content can be systematically studied to deepen the learning process (Akaike, 2023).

In addition, the future challenge is that, the MHL-Q19 asks respondents about their literacy level on a five-point scale. It has not been considered to date at what point in the process the respondents should aim to reach a suitable level. The standard expected of freshmen and professional orchestra musicians would not be the same. Therefore, the next action is to redesign educational programs to link the study achievement goals to degrees of literacy is essential (Cox, 2007; ESG, 2015; European Union, 2017; AEC, 2017; Codefop, 2018; MusiQuE, 2019). It is expected that the results obtained in this study can be applied to the development of educational programmes according to the achievement goal stages of learners.

Although the analysis in this study covered all books published in Japan, the task of finding books in an exploratory method left open the possibility that the results could be author dependent.

References

AEC (2017). AEC Learning Outcomes 2017. Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen . https://aec-music.eu/publication/aec-learning-outcomes-2017-en/

AG Lehre der DGfMM. (2012). Empfehlungen für das Fach Musikphysiologie und Musikermedizin/Musikergesundheit an Musikhochschulen. (letzte Aktualisierung: 02.11.2012) Musikphysiologie und Musikermedizin, 20(1), 33-34.

Akaike, M. (2021). The Current Status of Health Literacy Education for Music Students in Japanese Universities: A Syllabi Analysis of 37. Universities. Journal of Information Studies, Interfaculty Initiative in Information Studies, The University of Tokyo, 101, 97-113. https://www.iii.u-

tokyo.ac.jp/manage/wp-content/uploads/2021/11/101_5.pdf
Akaike, M. (2023). Quality Assurance in the Musicians' Health Education. [Doctoral dissertation, The University of Tokyo, Graduate School of Interdisciplinary Information Studies].
Caplan, S. (2011). Oboemoshon: oboe sosha nara daredemo shitte okitai karada no koto. (Morimoto, Y., Trans.). (Ono, H., & Inada, Y., Ed.). Shunjusha.
Cedefop (2018). National qualifications framework developments in Europe 2017. Luxembourg: Publications Office. http://data.europa.eu/doi/10.2801/029873
Chesky, K. S., Dawson, W. J., & Manchester, R. (2006). Health Promotion in Schools of Music: Initial Recommendations for Schools of Music. Medical Problems of Performing Artists, 21(3), 142-144. https://doi.org/10.21091/mppa.2006.3027
Cox, J. (2007). Handbook Curriculum Design and Development in Higher Music Education. Utrecht: European Association of Conservatoires. https://www.aec-music.eu/userfiles/File/curriculum-design.pdf
European Union. (2017). Council Recommendation of 22 May 2017 on the European Qualifications Framework for Lifelong Learning and Repealing the Recommendation of the European Parliament and of the Council of 23 April 2008 on the Establishment of the European Qualifications Framework for Lifelong Learning. (2017/C 189/03). https://op.europa.eu/en/publication-detail/-/publication/ceead970-518f-11e7-a5ca-01aa75ed71a1
Guptill, C., Slade, T., Baadjou, V., Roduta Roberts, M., de Lisle, R., Ginsborg, J., Rennie-Salonen, B., Ackermann, B. J., Visentin, P. & Wijsman, S. (2022). Validity and reliability of the Musicians' Health Literacy Questionnaire, MHL-Q19. *Frontiers in Psychology,* 13, 886815. https://doi: 10.3389/fpsyg.2022.886815
Hayashi, Y. (1958). Science of the voice and language. Homeidou.
Hirao, H. (2009). Piano enso no tame no bodi chuningu: Karada ga kawareba neiro ga kawaru. (Ogiyama, S., Ed.). Toon.
Husler, H. (1987). *Utau koto.* (Sunaga, Y., & Okuma, F., Trans.). Ongaku no tomo sha corp. Ishibashi, H. (2013). *uisogaku motto umaku naru tame no shintai ekusasaizu.* Shinko Music
Matei, R., Broad, S., Goldbart, J., & Ginsborg, J. (2018). Health education for musicians. *Frontiers in psychology. 9*:1137.1-17. https://doi: 10.3389/fpsyg.2018.01137
Matei, R. (2019). *Better practice: health promotion in the music conservatoire.* [Doctoral dissertation, Manchester Metropolitan University and the Royal Northern College of Music]. E-space. http://e-space.mmu.ac.uk/622806/
MusiQuE. (2019). *Trend analysis 2019.* Music Quality Enhancement. http://www.musique-qe.eu/userfiles/File/trend_analysis/MusiQuE_2019_Trend_Analysis.pdf
NASM. (2022). *NASM Handbook 2022-23.* National Association of Schools of Music. https://nasm.arts-accredit.org/accreditation/standards-guidelines/handbook/
Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science & medicine. 67*(12), 2072-2078. https://doi: 10.1016/j.socscimed.2008.09.050.
Ogiyama, S. (2011). Ensosha no karada sutoretchi: Rikimi o toru ensoo ga kawaru. Yamaha Music Media.
Ono, H. (2011). Appendix B; About educational programme <Every musician should know about the body>. In Kimura, Y.(Trans.), Ono, H., & Takahashi, Y. (Ed.), *Violin sosha nara daredemo shitteokitai karada no koto.* (pp. 171-173). Shunjusha.
Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., Brand, H., & (HLS-

EU) Consortium Health Literacy Project European (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health, 12*, 80. https://doi.org/10.1186/1471-2458-12-80

Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). (2015). Brussels, Belgium. https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf

Wei Ling Ong, Koji Takenaka (2021). Review of health promotion programs for musicians to prevent music-playing related health problems. *Journal of Health Psychology Research, 34*(2), 67-78. https://doi.org/10.11560/jhpr.200917004

Wijsman, S. A. (2012). *Musicians' health national curriculum initiative. Final Report 2012.* The University of Western. https://ltr.edu.au/resources/PP9_1306_Wijsman_Report_2012.pdf

Wijsman, S., & Ackermann, B. (2019). Educating Australian musicians: are we playing it safe? *Health Promotion International, 34*(4), 869–876. https://doi.org/10.1093/heapro/day030

Figures

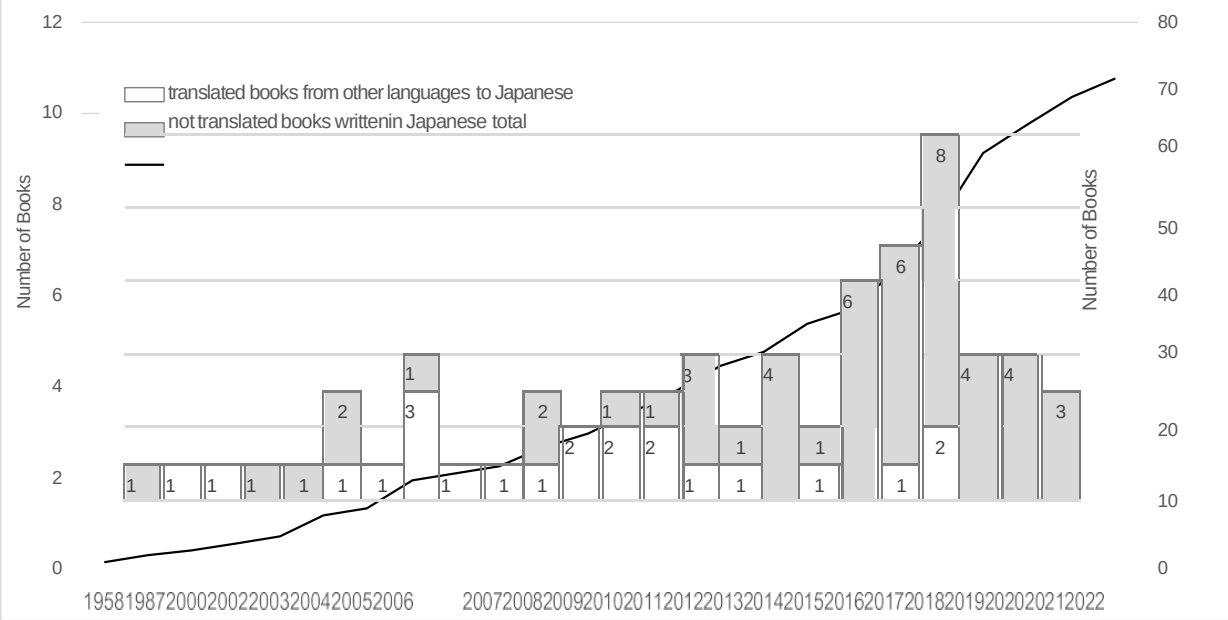


Figure 1. The total number of published books and the divisions of the translated or original books

Figure 2. Breakdown of book categories

Practical research on the effects of performing contemporary music on students' conception of Music

Akiko Asai, The Joint Graduate School (Ph.D. Program) in Science of School Education Hyogo University of Teacher Education, Japan and School of Teacher Education, College of Human and Social Sciences, Kanazawa University, Japan

Abstract

The projects introduced in Sound and Silence: Classroom Projects in Creative Music by John Paynter and Peter Aston in 1987 had a significant impact in Japan, and "Creative Music Making" became an essential part of elementary music education. However, in the years since the book was published, Japanese teachers have stopped using contemporary music as teaching material. The students whom the author taught during her teacher training program between 2014 and 2018 knew only two contemporary pieces, Toru Takemitsu's November Steps and John Cage's 4'33". Many music education majors currently studying in universities will become music teachers with little or no exposure to contemporary music.

The author developed a lesson plan for music majors to expand students' conception of "music" by exposing them to the wide range of musical expressions used in contemporary music. The author worries that, if current music majors are not exposed to a wider range of music, they will not be able to accept the free ideas of the children they will teach.

To help current music majors be more flexible and receptive to new ideas, the author created a project in which university students studied works written by contemporary composers in "solfège" classes. Later, these students performed these works at a local cultural event. The project was conducted over a five-year period from 2014 to 2018. Afterward, the author surveyed the participating alumni to determine how their perceptions of contemporary music changed.

According to text-mined feedback about the project (figure1.), participants used verbs such as "think," "expose," "enjoy," and "remember" to describe their experience of preforming contemporary music, and they used adjectives such as "able," "interesting," "enjoyable," and "meaningful." In comments, most students professed that they were bewildered by the unique expressions and characteristics of contemporary music at the beginning of the process. However, they noted that trial and error with peers reduced their confusion. Further, they stated that the experience broadened the scope of their musical thinking.

John Paynter referred to the act of creative listening as "the core of the musical experience" (Tsubonou, 1994, p. 256). This study reveals that music teachers need to have experiences with contemporary music to teach creative music learning to children. The author believes that exposing music teachers to challenging musical experiences makes sustainable music education possible.

Keywords: contemporary music, music teacher training, music education, Creative Music Making, performance

Research Background

The curriculum of teacher training programs is designed to enable students to obtain a teaching license stipulated by the university upon graduation in accordance with the Teaching Personnel License Law stipulated in the Constitution. At the university where the author works, the curriculum is designed so that students can take the subjects and receive the number of credits necessary to obtain an elementary school teacher's license, a junior high school, and high school music teacher's license, which are required for graduation. Although the names and number of hours of courses such as "solfège" and "music theory" are specified, the content of the courses is left to the teachers. Syllabi prepared by teachers are subject to review by the Ministry of Education, Culture, Sports, Science and Technology, but the content of individual classes is not always reviewed. Therefore, teachers involved in teacher training need to consider the skills that their students should acquire and the types of experiences they need to become effective music teachers.

What, then, are the solfège skills that elementary and junior high school music teachers should acquire? A vocal and instrumental music materials in textbooks can be understood and performed by children between the ages of 6 and 15, if they have the basic ability to read and express music. This means that teachers are not required to have advanced solfège skills. As for appreciation materials, since they range from world music to opera, it is necessary for teachers to have at least some experience with the quality of these works. To teach these materials, it is necessary to have the ability to listen to music and to express oneself verbally, so, strictly speaking, solfège skills may not be required.

However, what about creating and making music? Of course, since these two are designed to give children between the ages of 6 and 15 the joy of "creating," if they can play basic rhythms, melodies, and chords, teachers will be able to reproduce the music they create. However, the music created by children who have not received specialized musical training is sometimes far more free-spirited and original than teachers can imagine. To nurture children's creativity, teachers must accept and encourage students' ideas. In other words, regardless of their own knowledge and skills, teachers must be able to accept what children create as music.

It is difficult to cultivate this receptivity through conventional solfège training. Music history and music theory classes can be helpful in understanding that there is music other than traditional music, especially classical music from Gregorian chant to 20th century classical composers, and composition methods and practice classes can allow to experiment with their own creations. The ability to accept music outside the classical music range cannot be cultivated through a single educational program. It must be acquired through multifaceted knowledge and experience. However, many teacher training programs may not provide sufficient opportunities to learn a wide range of music and develop the necessary receptive skills.

At the university where the author works, students receive specialized instruction in vocal and instrumental music as practical skills courses, but most of the music they perform is "music of the period of common practice." In music history, students learn about ancient, medieval, and renaissance music as well as music from non-Western cultures, but knowledge alone does not foster the ability to accept music outside this range. In other words, they are not given enough opportunities to perform music written in a system other than classical, and they are not given opportunities to expand the

“frame of music” cultivated through their education.

Identification of the Problem

In a survey conducted by the author of textbooks published from 1980 to 2020, it was found that few works that are generally classified as “contemporary music” were included. However, Creative Music Making using contemporary music as material was gradually introduced into music education in Japan, starting with the Courses of Study announced in 1989, and was summarized under the name “music making” in the Courses of Study for Elementary Schools published in 2008 (Shimazaki, 2010, p.77).

During this time, various practices were implemented, and workshops organized by the Contemporary Music Society also provided great inspiration to the faculty (Tsubonou, 2019, p. 22; Tsubonou, 2020, p. 26). In the same year, further changes were made to the curriculum, adding to the list of requirements “to cultivate an attitude of attachment to the musical culture of Japan and respect for the musical culture of other countries based on an understanding of the traditional music of the Japan and one’s own country” (MEXT, 2008, p. 4). Subsequently, Japanese traditional music and popular music materials such as festival music began to be included in textbooks.

This means that music education in elementary and junior high schools deals not only with music of the common practice period but also with music rich in elements of contemporary music (Nakajima, 2005, p. 2). In other words, textbooks used for music education in elementary and junior high schools exclude contemporary music itself, but they do include creative materials using contemporary musical techniques, music from non-Western cultures, and music and creative materials that use new media developments such as electronic instruments. Despite this development, the author believes that teacher training programs provide only limited opportunities for students to have direct contact with this variety of musical expression.

Purpose of the study

This study examines the educational significance of contemporary music concerts held during the five-year period from 2014 to 2018 from the hypothetical perspective that for students studying in teacher training programs, the opportunity to perform contemporary music works can expand the level of acceptance of musical expressions other than the music of the common practice period. In addition, based on feedback from a survey of participating graduates, the author will reconsider the importance of, and the essential elements needed for solfège education in teacher training programs.

In the “solfège” class that the author teaches, there are students who have received specialized training before entering college, students who began their studies a few years before entering college, and beginning students who are learning solfège skills for the first time in a college class. The author’s classes focus on basic training (listening, rhythm, sight-reading, and sight-singing of new pieces) to improve reading skills using materials selected based on the author’s own solfege training experience. In 2014, The opportunity to participate in a concert of contemporary musical works at the “Kanazawa Night Museum” was added to the semester’s course content. Students worked on performing a variety of compositions, from duo pieces to ensemble pieces that could be performed by six or seven students.

The Kanazawa Night Museum is part of a cultural project organized in 2014 by the Kanazawa Arts

Creation Foundation and the Kanazawa Cultural Promotion Foundation, where students present their performances. This project was launched in conjunction with the opening of the Shinkansen bullet train line with the aim of creating cultural resources at night, and about 30 events are planned each year.

The events, which include dramatic readings, exhibitions of artists' works, installations, and mini concerts, are held in museums and art galleries after they close. Table 1. is a list of works performed in concerts in each year, and the following numbers indicate the works on the list.

About the Works Performed

The instruments used in the performances varied as follows: 1 is a piece performed with boards on a table; 7 and 13 are works using balloons; 19 and 27 use various household objects as instruments; 3, 8, and 25 are works performed with clapping hands; 4 is a floor piece added hand choreography; 5, 10, 15, and 29 are pieces performed with keyboard harmonicas; 17 and 26 are performances on toy pianos; 20 is an electronic organ piece; 6, 21, and 22 are ensemble works using spoken voices; 24 is a work expressed simply by shaking one's head; 18 is an installation work using a sound recording with percussion created by the artist; 28 is a work in which only the concept of the composition method is specified (Nomura, 2015, p. 87), and the students are asked to improvise; 30 is an improvisation work based on the information about the great people presented in the museum. The remaining works use ordinary percussion instruments.

These works also incorporated a wide variety of notation methods. Many works use standard stave notation, but others are written in original graphic notation. Playing styles are designed by noteheads (1), a series of numbers (6), and words embedded on a paper grid (21).

Therefore, none of the non-stave pieces can be played immediately after reading the score. They require the participants to practice reading the score, playing the notes, and getting a general idea of the piece. In addition, all these works are ensemble pieces to be performed by two or more players.

Questionnaire survey of the performers

A total of thirty alumni who had performed in five concerts were asked to participate in a survey using a multiple-choice format, and responses were received from 25 of them. The questions asked the respondents to provide answers about their exposure to contemporary music before the performance, what puzzled them when they began practicing the contemporary music pieces, and their impressions of contemporary music after the performance.

They were also asked to rate on a scale of 1-5 the degree to which they became familiar with each characteristic of contemporary music during their practice: score, time signature, acoustics, technique, ensemble, and expression. Finally, the participants were asked to write freely about their impressions of performing contemporary music works in this concert format.

Results and Discussion

All respondents recognized that performing contemporary music had expanded the scope of their "idea of music." The following section examines, item by item, the specific points to which they have become less resistant.

First, as many as 56% of the respondents said that when they first started playing, they were confused by the unfamiliar sound and beat of the music. For instrumental works with pitches, many of them could not imagine dissonant sounds. For works that used percussion or other non-instrumental sounds, they could not imagine a sound image that was completely different from the sound of "music" as they understood it. However, all respondents said that they had become more accustomed to dissonant or overlapping sounds to some extent during the performance. The highest score in this regard was 4 out of 5, indicating that none of the respondents were able to fully adjust to the unique sounds of contemporary music.

Regarding the beat, some of the respondents gave a score of 1 out of 5 when asked if they had gotten used to it while practicing, while 48% gave a score of only 2 or 3 out of 5. This indicates that many of them were aware that they still had problems with this aspect of the music, even though they had received rhythm training in my solfège class. Since, as C. Small says, musical works can only exist in performance (Nishijima, 2011, p. 219), they may not be able to simulate performance during training.

Other aspects of contemporary music that confused the respondents when they first started playing were ensemble formation and the resulting expression that the music demanded. In this regard, 32-44% of the respondents gave a score of 2 or 3 out of 5 as an assessment of their familiarity with these concepts during the performance, although some 20% gave a score of 5 out of 5 score. This indicates that there was a vague sense of discomfort about expressing themselves in an ensemble. However, 56% said that working in a group helped them approach the topic in a positive way.

In the free response column, there were comments such as "I enjoyed practicing," "I enjoyed sharing the process," and "I enjoyed the process of creating this and that with everyone." This shows that working in an ensemble helped the participants to pursue performance expression despite their anxiety. In other words, they were able to accomplish in relation to others what they did not think they could do. This is exactly what L. S. Vygotsky believed: "the activity of becoming something more than what one is now" (Otsuka & Ishida, 2009, p. 26).

Finally, when they first began to play, many of them were puzzled by the unfamiliar notation that was used and the playing techniques that they had never practiced before. Of those who were puzzled by unfamiliar music notation, not a single person gave up on reading the music, and almost all of them were able to read the score gradually. More than 70% of the respondents said that they had become more receptive to the variety of musical notation, showing that their resistance to musical styles had been greatly reduced. Almost all the respondents also recognized that they had gradually become more comfortable with playing techniques that they had never experienced before.

Prior to the performance, the respondents previously had only limited exposure to contemporary music. The number of pieces of contemporary music they had studied in music history or music education classes was limited to two pieces, Toru Takemitsu's *November Steps* and John Cage's *4'33"*. This is probably because these two pieces are sometimes used as teaching materials for music in junior high schools; for instance, the practice of active listening to *4'33"* has significantly changed the concept of music held by junior high school students (Morishita, 2007, p. 91). However, one student recalled

hearing a piece that used soundscapes, and another student had experienced a modern dance performance that had used contemporary music.

Many of the respondents noted that performing in this concert provided them with an opportunity to learn more about contemporary music. One wrote, “I don’t think I would have performed contemporary music if it weren’t for this project,” while another noted, “I am now able to tell others in my own words what is attractive and interesting about contemporary music.” In addition, one commenter wrote, “The experience of performing will enhance my understanding when I encounter such music in the future,” demonstrating the vast difference between what one learns through coursework and what one learns through performance.

Conclusion and Future Issues

The author believes that the data indicate that the performance and presentation of contemporary music as part of solfège education, which occurred in the period from 2014 to 2018, expanded the conception of music that had been cultivated for students in the teacher training program. Survey respondents who graduated and became teachers said that they associated such studies with the acquisition of new perspectives on what “music” means. While acknowledging that they still did not understand all the complexities of contemporary music after the few performance opportunities in which they had participated in, the participants’ responses indicated that they were able to achieve a certain level of expression through collaboration with their classmates. It was also clear that each student recognized that, above all, the breadth of his or her own idea of “music” had expanded.

In the future, the author would like to create opportunities for students to expand their experience in “improvisational expression.” Students learned “the importance of place” from guest composer Makoto Nomura’s conducting at the 2018 concert, as evidenced by the following comments: “I was afraid to improvise, but he accepted me. So, I was able to learn about the diversity of musical expression.” Through the experience of improvisation, the author would like students to learn not only the improvisation method, but also how to create a place where children feel safe to express themselves and improvise freely.

In addition, the author would like to collect more detailed data to pursue more practical solfège teaching techniques to produce more experienced teachers. Furthermore, the author would like to transcend the boundaries of specialized fields and strive to create an environment in which teacher training programs can be examined in terms of the nature of teaching.

Acknowledgements

I would like to express my appreciation to Professor Noriko Tokie for her continuous support and her encouragement. I am also especially grateful to the alumni who shared their experiences with me, and to Makoto Nomura for sharing his memories of John Paynter.

References

Holzman. L., (2019) Lev Vygotsky, Beloved Revolutionary. [Lev・Vygotsky itoshiki kakumeika]. (S. Otsuka, and K. Ishida, Trans.).

Kagawa S., Arimoto N., & Moro Y. *Introductin to Performance* Psychology -The Art of Symbiosis and Development Tokyo: Shinyosha.

Matsunaga, Y., Kogure T., & Matsushita I. (2002). Teaching and Learning Contemporary Music. *School Music Education Research, 6*, 33-39.

Ministry of Education, Culture, Sports, Science and Technology (MEXT). (2008). Explanation of Courses of Study for Elementary Schools Music

Morishita S., Yoshimura T., Wada A., & Kikuchi M. (2007). Teaching John Cage's works: some perspectives on a class music education by Contemporary music in a junior high school. *Bulletin of Center for Educational Research and Practice Faculty of Education and Human Sciences Niigata University, 6*(6), 83-92.

Nakajima T., Ishida K., Sato S., Masuda Y., & Mori O. (2005) Theory and practice of music education with music generation at its core (Curriculum development for music class in the 21st century - Part 4: How to position contemporary and regional music in the curriculum). *School Music Education Research, 9*, 1-11

Paynter, J.(1994). Sound and Structure (The Resources of Music Series). [ongaku wo tsukuru kanouse — *ongaku no kataru mono II].* (Y. Tsubonou, Trans.). Tokyo: Ongaku no tomo sha Shimazaki, A. (2010). Introduction of Creative Music Making to Music Education in Japan and its development. Bulletin of Faculty of Education of Bunkyo University, 4, 77-91

Small, C. (1998). Musicking: The Meanings of Performing and Listening. [Musicking ongaku wa〈koui〉de aru]. (T. Nozawa & C. Nishijima, Trans.). Tokyo: Suiseisha

Tsubonou, K. (2019). Contemporary Music Education Program: A short History I –DOGAKU (Children's Music) I. *NEW COMPOSER*, *14*, 20-25.2024Sum!

Tsubonou, K. (2020). Contemporary Music Education Program: A short History II –DOGAKU (Children's Music) II, *NEW COMPOSER*, *15*, 26-27.

Figure 1. The result of text mining of students' feedback

Table 1. The list of works performed by students each year

In 2014	
1	Thierry De Mey *"Musique de Tables"* (1987)
2	John Cage *"Story"* from *"Living Room Music"* (1940)
3	Steve Reich *"Clapping music"* (1972)
4	Casey Cangelosi *"Plato's Cave"* (2011)
5	Yoshifumi Tanaka *"uncertain melody and choral in fading memory"* (2007)
6	Tom Johnson *"II, III, and IV"* from *"Counting Duets"* (1982)
In 2015	
7	Francesco Filidei *"Esercizio di Pazzia I"* (2012)
8	Norio Fukushi *"CLAPPING RHYTHM"* (2000)
9	Chikako Shimizume *"Rythme etude"* (2015) *commissioned work
10	Yoshifumi Tanaka *"Keyboard Khoomii"* (2015) *commissioned work
11	Tatsuhiro Watanabe *"Casnet"* (2008)
12	Tatsuhiro Watanabe *"Hang in There for seven randomly selected handbells"* (2011)
13	Chris Crockarell *"Balloonology"* (2000)
In 2016	
14	Thierry De Mey *"Musique de Tables"* (1987)
15	Kohei Kondo *"Unreliable Soldiers for keyboard-harmonica trio, Op. 93"* (2007)
16	Steve Reich *"Clapping music"* (1972)
17	Rica Narimoto *"987 Plates V(b) for four toy-pianos"* (2016) *commissioned work
18	Jonas Baes *"INAYTA" Sculptured Weeping: And Audience-Interactive Sound Installation* (2010)
In 2017	
19	John Cage *"Living Room Music"* (1940)
20	Steve Reich *"Four Organs"* (1971)
21	Tomoko Fukui *"Otona no Rhythm"* (1980)
22	Tomomi Adachi *"Namahage Minto"* (1980)
23	Phillip Glass *"1+1"* (1968)
24	Tomomi Adachi *"Oscillating Heads"* (2011)
In 2018	
25	Makoto Nomura *"Rondo de la clapha (Rondo of hand clapping)"*
26	Makoto Nomura *"Sweets for Toy Piano -dedicated to John Cage-"* from *"Cheap Imitations"* (2017)
27	Makoto Nomura *"No Notes I and II"* (2009)
28	Works by Shogi Composition
29	Makoto Nomura *"HOCKET FOR KOBE for 8 Melodions"* (1996)
30	Improvisation by students and participants *"The Suite of the Greats in Kanazawa"*
31	Makoto Nomura *"Slapping Music -dedicated to Steve Reich-"* from *"Cheap Imitations"* (2017)

Online Exchanges: a Sustainable Option Favouring Interculturality During Music Teachers' Initial Training

Marina Buj-Corral, University of Girona, Spain & Miquel Alsina Tarrés, University of Girona, Spain

Abstract

Among the complex challenges currently faced by higher education, a prominent place is occupied by the development of intercultural competencies, understood as "the skills, attitudes and behaviours needed to improve the interactions that occur across difference" (Deardorff, 2019, p. 1). In the context of initial teacher training, music education can play a key role in introducing the work of interculturality in all its aspects. The main goal of this study was to analyse the benefits and contributions obtained by students pursuing a teaching degree in favour of the intercultural competency, on completing an international program of online academic exchanges where music took centre stage. First of all, we focus on the assessment of the online medium and the role of music in this type of activity, and then we go on to describe and assess the data obtained on the participants' intercultural development. This study used the case study methodology of qualitative research. Two online academic exchange activities involving student teachers specialising in music and generalist student teachers from the University of Havana (Cuba) and La Plata National University (Argentina) were analysed. Data collection was carried out by means of focus groups, questionnaires and interviews with the participating students. From an academic standpoint, the work was planned as a series of projects that took shape as collaborative final products. The results show that the students made progress in achieving a sense of interculturality, understood as an active agent when dealing with the multiple diversities present in contemporary society. Joint assessment of the products by the different agents involved was positive, and they served to activate intercultural communication on the basis of the understanding of the other and the acquisition of foreign cultural goods. The results show that musical education contributes to the development of interculturality, with the cultural and interpersonal subfields being the most favoured, and the social aspects to a lesser extent. Thanks to these online academic exchanges it was possible to respond to a technological challenge, establish institutional partnerships and enrich the professional growth of the teaching staff involved. They also turned out to be sustainable, enduring activities, which means they could be linked to sustainable development goals such as actions to stop climate change.

Keywords: Interculturality, academic exchanges, music education

Theoretical and pedagogical background of the paper

Interculturality and the intercultural competency of future teachers have been tackled in various ways during teacher training. In general, teachers' professional horizons are determined by the demographics of the schools they work at. Podestá et al. (2022) explored the development of interculturality in the context of the practicum of future primary teachers, and validated–in line with Denson et al. (2017)–four dimensions within the assessment of the development of intercultural competency in trainee teachers, namely:

1. receptivity towards inclusive and intercultural education,
2. openness to diversity,
3. reflexivity, and

4. adaptability or flexibility.

In this world of interconnectivity and multiculturalism, we agree with Cabedo (2011) that "music is one of the phenomena in our plural society through which the phenomenon of globalization becomes more apparent" (p. 172). It should not be overlooked that musical genres classified as popular or traditional – such as the Catalan sardana and the Argentinian tango – are themselves the diversely influenced and very much hybridised product of a long historical and evolutionary journey, as pointed out by Fernández (2021) when discussing the bolero.

Kang (2022), in a review of the literature, analyses the paradigm of intercultural competency in contexts of music education and finds enough evidence to affirm that students and teachers working in culturally diverse environments experience a real improvement in their intercultural competency, in other words, the ability to identify and understand different cultures that share the same space, establish communication and exchange, and influence each other. Kang's review describes how the observed experiences encompass the two key concepts of intercultural development, namely intercultural competency and sensitivity. Similarly, the compendium of experiences presented by Westerlund et al. (2020) highlights the widespread attention–starting in initial training–devoted to fostering intercultural understanding in future music teachers. Indeed, the aspects linked to knowledge and sensitivity are interrelated–and also explained separately–with activities that foster values such as self-awareness, flexibility, patience, tolerance and openness (Kang & Yoo, 2019; Walling, 2020). At the same time, these intercultural approaches have an impact on future teachers' musical and pedagogical comprehension (Cain et al., 2013), and promote a critical awareness of the power dynamics of dominant and subjugated cultures.

Aim/focus of the work/research reported

The study focused on the analysis of two online exchange activities, with music and dance acting as mediators of interculturality in a context of academic exchange between higher education institutions in Spain, Cuba and Argentina.

We wanted to identify those benefits and training contributions of the exchanges that favoured the future teachers' intercultural competency. First of all, we focused on the evaluation of the online medium and the role of music in this type of activity, and then we went on to describe and interpret the data obtained on the participants' intercultural development. Finally, it was necessary to take into consideration the role of music and dance as the protagonists of the productions that were created (performed and danced) and shared.

Method/approach/modes of inquiry

This research, of a qualitative nature, was oriented by the case study methodology. It began with an activity focused on educational innovation in the field of university music education, during which data was collected for processing and interpretation. Conclusions were proposed and these were then evaluated with a view to their possible generalization (Silverman, 2014). As stated by Yin (2018), a case study explores "a current reality in depth (the case) in the real context of application" (p. 15), thus constituting an empirical methodology that is especially useful when "the boundaries between the fact under study and its surroundings are not clear or obvious". Conceptually, with regard to the areas of

interculturality and inclusion, the study was inspired by the socio-critical paradigm, which is a model based on social criticism of a personal and self-reflective nature, with a course of action whose goal is to improve the subjects' training by inviting them to participate and engender social transformation (Alvarado & García, 2008).

The proposal also drew on the idea of cultural appropriation, with a positive and pedagogical sense applied to the term. However, this is a poorly defined construct, as yet unexplored from a sustainable, creative and diversity-respecting perspective (González, 2020). Last but not least, from the standpoint of musical praxis, the project was inspired by the concept of "informed musical practice" (Peres, 2021) in reference to the aesthetic activity (creative, performative, etc.) derived from the study of the context of works of art, in the fields of music and dance in this case. This "advanced" knowledge allowed the interpretation and reworking of the artistic languages and genres in play, taking a broad, personal and creative approach.

Results and/or summary of the main ideas

The results showed that the online academic exchanges were positively valued by all the parties involved, and they also perceived improved intercultural competency in its different facets.

In the case of the exchange between students from the University of Girona and the National University of La Plata, the activity was based on the concept of cultural appreciation as a strategy with a creative focus where the students had to assimilate and rework aspects of foreign cultural heritage. The Argentinian students made a vocal and instrumental transcription of an excerpt from a sardana by the composer Eduard Toldrà, while the Catalans developed didactic proposals around the tango. With regard to the four sub-competencies of (macro)cultural competency defined by Kuehlmann and Stahl (1989), this first exchange mainly developed the cultural, interpersonal and social domains and, to a lesser extent, the linguistic one.

As regards the exchange between the students from the University of Girona and the University of Havana, traditional Catalan music was the driving force. The Cuban students were able to deepen their knowledge of the Catalan language and culture through the vocal performance of two traditional songs, danced by the students from the University of Girona and instrumentally accompanied by students of traditional music from the Can Ponsic Municipal School of Music (Barcelona). In particular, this second exchange led to improvements in the linguistic, cultural and social domains among the Cuban students. On the other hand, for the Catalan students the fact of working on pieces from the Catalan musical tradition in conjunction with students from abroad promoted a greater awareness of their identity and better appreciation of their own musical heritage, with the social and interpersonal aspects being the most favoured. Furthermore, the production of a final video that brought together the sung, danced and instrumental performances also led to improvements in their computer skills.

Both academic exchange programmes broadened the participants' intercultural horizons. The experience encouraged the development of values such as empathy between members of the different groups involved, understanding, sensitivity and respect for the creations and performances of others, as well as knowledge-building based on constructive criticism. Both projects had a positive impact on student motivation, prompted by the fact of participating in international projects in cooperation with

external institutions. The online, non-face-to-face nature of the exchanges, despite requiring a certain amount of specific organization, did not hinder the acquisition of the different aspects of (macro) intercultural competency. It proved itself to be an effective medium for the development of this competency.

Conclusions and implications for music education

The results confirm that music education is a privileged field for intercultural work, by virtue of the universality of musical language, which makes it possible to share a repertoire that crosses the boundaries of each region's own language. Beyond the linguistic fact, "music, on being such a rich language, enables experiential learning because it reaches everywhere and invades the senses, pushing attitudes and beliefs into the background, where they no longer have their usual force or disappear momentarily" (Bonal et al., 2005, p. 11). On the other hand, experiences such as the online academic exchanges carried out show how music leads to the expansion of horizons and cultural references, which results in a better understanding of the other and enrichment based on the mutual permeability of cultures. These activities can be of great help to future teachers when it comes to addressing the diversity and multiculturalism now present in classrooms and society in general, and as a way of working on equity, inclusion and a sense of belonging.

The development of intercultural competency in university teaching contexts by means of online exchanges was an organizational challenge that also led to significant academic, professional and personal enrichment for teachers and students. Given all this, it is an activity that deserves to be repeated and developed within the framework of higher education.

Finally, it is important to emphasize that music education activities based on online academic exchanges offer sustainable access to the knowledge of other cultures, without the need to physically travel, and through resources such as work on the foreign repertoire, among others. Online academic exchanges, with music education as the mediating subject, prove to be a successful way of defending and promoting sustainability.

References

Alvarado, L., & García, M. (2008). Características más relevantes del paradigma socio-crítico: su aplicación en investigación de educación ambiental y la enseñanza de las ciencias realizadas en el Doctorado de Educación del Instituto Pedagógico de Caracas.xc7u7u777 *Sapiens: Revista Universitaria de Investigación, 9*(2), 187-201. http://dx.doi.org/10.19137/praxiseducativa-2017-210105

Bonal, E., Casas, M. & Casas, N. (2005). *Diversita't. Cançons, danses, … activitats i recursos per a la convivència en la diversitat*. Barcelona, Fundació Jaume Bofill, Generalitat de Catalunya

Cabedo, A. (2011). Desarrollo humano, música y educación en la era global. *Recerca: revista de pensament i anàlisi*, 11, 161-178. https://raco.cat/index.php/RecercaPensamentAnalisi/article/view/256255.

Cabedo, A., & Díaz, M. (2012). Music making: A bridge joint of students' cultural and musical diversity. *Procedia - Social and Behavioral Sciences, 46*, 2215 – 2219. https://doi.org/10.1016/j.sbspro.2012.05.457

Cain, M., Lindblom, S., & Walden, J. (2013). Initiate, create, activate: Practical solutions for making culturally diverse music education a reality. *Australian Journal of Music Education, 2*, 79-97. https://files.eric.ed.gov/fulltext/EJ1061811.pdf

Deardorff, D.K. (2019). Manual for developing intercultural competencies: story circles. UNESCO Publishing.

Denson, N., Ovendena, G., Wright, L., Paradiesc, Y., & Priest, N. (2017). The development and validation of intercultural understanding (ICU) instruments for teachers and students in primary and secondary schools. *Intercultural Education, 28*(3), 231-249. https://doi.org/10.1080/14675986.2017.1333346

Fernández, M. J. (2021). Apuntes teóricos sobre el bolero como paradigma cultural. *Revista de educación y pensamiento, 28*, 42-51. https://dialnet.unirioja.es/servlet/articulo?codigo=8117335

González, F. J. (2020). Sobre el dilema de la apropiación cultural arte, diseño y sociedad. *Estudios sobre Arte Actual, 8*, 311-320. https://tuit.cat/rk8dt

Kang, S. (2022). Intercultural development among music students and teachers: A literature review. *Update: Applications of Research in Music Education*, *41*(1), 45–53. https://doi.org/10.1177/87551233211061483

Kang, S., & Yoo, H. (2019). American preservice classroom teachers' self-reported learning outcomes from participating in Korean percussion lessons in a music-methods course. *Research Studies in Music Education, 41*(3), 327–342. https://doi.org/10.1177/1321103X18806084

Kuehlmann, T. & Stahl, D. (1989). Diagnose interkultureller Kompetenz:Entwicklung und Evaluierung eines Assesment Center. Wissenschaft und Praxis.

Peres, N. (2021). Life informed practice. Contemporary considerations for music education. En A. Reid, N. Peres, y J. Carrigan (Ed.), *Creative research in music. Informed practice, innovation and transcendence* (pp. 3-7). Routledge.

Pérez-Aldeguer, S. (2014). La música como herramienta para desarrollar la competencia intercultural en el aula. *Perfiles Educativos, 36*(145), 175-187. https://doi.org/10.1016/S0185- 2698(14)70644-0

Podestá, S. P., Álvarez, I. M., & Morón, M. (2022). Formación docente en competencia intercultural ¿Cómo se desarrolla? Evidencias desde un prácticum orientado a fomentarla. *Psicoperspectivas, 21*(1), 111-123. https://dx.doi.org/10.5027/psicoperspectivas-vol21-issue1-fulltext-2543

Silverman, D. (2014). *Interpreting qualitative data* (4a ed.). Sage.

Walling, C. B. (2020). Intercultural exchanges in South Africa: Exploring music teacher experiences, understandings, and practices. *International Journal of Music Education, 38*(2), 252–266. https://doi.org/10.1177/0255761419877574

Westerlund, H., Karlesen, S., & Partti, H. (Eds.) (2020). *Visions for Intercultural Music Teacher Education*. Springer. https://doi.org/10.1007/978-3-030-21029-8

Yin, R. K. (2018). Case study research and applications. Design and methods (6th Editon). Sage.

Voices from two different eras of the secondary classroom music education environment in New South Wales, Australia

Jennifer Carter, Sydney Conservatorium of Music, University of Sydney, Australia

Abstract

Reid (2004) observes that "ours is a forgetful era, often oblivious to ways in which past cultural practices have shaped the foundations of much that we think and do" (p. ix). There is an ongoing argument in the curriculum field for increased attention to curriculum history, and Sawyer (2002) has called for attention in particular for syllabus documents to be examined more closely. The main purpose of this study was to investigate curricular and policy changes, and outcomes for pedagogy, through the experienced voices of music practitioners in New South Wales (NSW) secondary schools in the period 1979-2021. For the purposes of this paper, a sample group of music teachers at different career stages were interviewed, experienced music teachers (EMTs, *n*=7), and current music teachers (CMTs, *n*=7). All have different tertiary education experiences and backgrounds, a variety of teaching experiences, and diverse views on music teaching in the classroom and the future of music education in schools. Alongside the data gathered through the participants' narratives, the development of the syllabi of the day were examined and linked to the participants' information about their classroom practices. This also included a history of the changes in music syllabus documents in NSW since 1979, and an examination of the possible effects each iteration may have had on classroom practice.

Keywords: syllabus and changing classrooms, secondary music teachers, tertiary education

Introduction

The subject music has undergone many cyclic changes in the past forty years, in New South Wales, Australia, and these changes have both affected, informed and transformed practice in the classroom. Reid (2004) observes that "ours is a forgetful era, often oblivious to ways in which past cultural practices have shaped the foundations of much that we think and do" (p. ix). Similarly, Morgan (1990) speaks of a "formidable ignorance of our history" (p. 231). There is an ongoing argument in the curriculum field for increased attention to curriculum history, particularly subject-specific history, and particularly for the history of written curriculum in forms such as syllabus documents (Sawyer, 2002). Sawyer's call for "attention … to subject specific history, and particularly for the history of written curriculum in forms such as Syllabus documents" (p. 5), forms part of the impetus for the larger inquiry. Research affords us the opportunity to record past practices and experiences in order to inform future music teaching.

New South Wales (NSW) context

In the state of NSW, education is administered by the state government. There is an Australia wide curriculum, the Australian Curriculum, and NSW, while keeping its own syllabi, incorporate some Australian Curriculum content (https://educationstandards.nsw.edu.au). In NSW there is one music syllabus document for years 7-10, (called the junior years), typically ages 12-16, and divided into mandatory music (years 7 and 8), and elective music (years 9 and 10). In this syllabus students study music through the components of Performance, Listening, and Composition. The senior secondary years currently have three music syllabi for the years 11 and 12 (typically aged 17 and 18), and

students study music through the syllabus components of Performance, Composition, Aural Skills, and Musicology. These documents are: one with a traditional focus on art music of the past, and of music of the past 25 years, which requires competent music reading and writing skills; the second syllabus is an extension of that study for those wishing to specialise in either performance, composition, or musicology for their final year of study. The third syllabus has a more 'popular music' slant which requires no prior music learning, still incorporating performance, composition, aural skills and musicology, and has over the past forty years, become the most popular choice as an elective subject for senior secondary music students. For the purposes of this paper, two groups of participants and their experiences in their tertiary education and later careers will be presented using the lens of Wenger's 'modes of belonging' – imagination, engagement, and alignment (Wenger, 1998, p. 173) to make a comparison of the different eras.

Why investigate the changes in music syllabus history?

Although music in the school curriculum has always had a presence, it has been "somehow conditional", and the diversity of justifications provided for the subject have ranged from "the severely practical to the high-flown" (Cox & Stevens, 2017, p. 18). Pitts (2001) wrote that "music is a subject that has always had to fight for its place in the school timetable, competing with those more 'useful' subjects that have an obvious relevance for future employment or social survival" (p. 54). Furthermore, as Pitts wrote in 2001, "in all the debate that surrounds music in education, the voice heard most rarely is that of the practising classroom teacher" (p. 56).

The Literature

The literature review included current literature on the preparation of music teachers in their tertiary education, the importance placed on curriculum knowledge for teachers, teacher identity and its development through early career years to experienced teaching years, and pedagogy and professional learning. Through an historical exploration of the previous and current syllabi in NSW, syllabus documents, themes were explored through available literature on changes as they occurred through the 1950s to 2011 and concluded with literature on the possible future of music education in schools.

For a NSW context, this research has built on the previous work of researchers on music teaching in primary, secondary, government and private schools across Australian States and Territories (Bartle, 1968; Stevens, 1978; Cox & Stevens, 2017). Stevens wrote that considerable research in music education had been undertaken since a 1984 review of the state of Australian music education by Lett (p. 62). Lett was building on work of Bridges (1970), who stated that the role of research is "crucial in finding solutions to the problems which confront teachers, to discover better ways of doing things, and to achieve better understanding of the teacher-learning process" (p. 25). Also importantly, changes in the NSW curriculum over two decades (Dunbar-Hall, 1993, 1999; Jeanneret, 1993; Jeanneret, McPherson, Dunbar-Hall & Forrest, 2003; McPherson & Jeanneret, 2005; Carroll, 2017, 2019) are tied to the participants' voices.

Document Study

When beginning the research of past NSW music syllabus documents, it became clear that preserving the history of the syllabus may not have been a priority of the government departments who were responsible for the production of documents. This was due in part to the continual change in the

structure of the overseeing educational organisation over the years, and the concentration of each 'new broom' on implementing organisational change soon after each iteration, rather than accurate record keeping. This has been a pattern across all Australian states and territories, where current documents and policies are readily accessible online, but no comprehensive archives have been kept of previous documents (Yates, 2011). For NSW education, this has resulted in an incomplete archive of material, missing syllabus documents, missing pages from documents, handwritten title pages with incorrect dates on photocopied documents, as some examples of what was discovered.

Conceptual Framework

The framework used in this study was Wenger's 'Communities of Practice' (1998; 2000). Borrowing from Wenger's theory regarding the concept of practice, the participants 'shared enterprise' shown in each stage of their careers as music teachers naturally forms 'communities of practice', and their pedagogical practice as revealed through interviews, serves to "reflect both the pursuit of (their) enterprises and the attendant social relations" (p. 45). Wenger (1998) describes information necessary for people to carry out their roles in the workforce as 'boundary objects', which in this investigation, are syllabus documents and memoranda sent to schools and music teachers over the period of investigation. In the 21st century information and documents that teachers rely on to inform their subject content are communicated electronically and provided online by access to the NESA website (https:///www.education.standards.nsw.edu.au). Wenger describes the "reader as having jurisdiction over (what those boundary objects) mean to them" (p. 108). Wenger (1998) argues that within the communities of practice three different 'modes of belonging' exist: engagement, imagination, and alignment (p. 173). The participants have explored reflections, thoughts, practices and philosophies of teaching through Wenger's framework and modes of belonging. Each participant within the three groups has "distinct experience, knowledge, and perspective not interchangeable with anyone else" (Rubin & Rubin, 2011, p. 7). These viewpoints are recorded through the interviews, gathering of reflections and firsthand accounts of delivering the many changes that were made to the music syllabus content in their classrooms over the forty years the research covers. The participants demographics (pseudonym, final year of school, music tertiary years, first year teaching, are as described below in Tables 1 and 2. The participants were asked the following question:

How significant has your teacher education been in guiding you in your formation of a teaching style and specific classroom practice, and your understanding of the requirements of the syllabus?

Findings

The significance of Tertiary Education – the imagination stage

The EMTs of the 1960s, and 1970s, had not experienced a classroom teacher as a role model, having qualified for the tertiary course through the Australian Music Examinations Board (AMEB) courses. They experienced their tertiary education through a Teachers' College and Conservatorium, considered their teacher education was lacking, and reported being 'well-drilled' in musical history, with lectures on composition, orchestration, aural and so on, but they did not feel equipped to make connections between their musical knowledge and the syllabi of the day for schools. Nola confided, "In the first week of teaching, I had used up all the teaching ideas I had learnt at teachers College". By the 1980s, classroom music teachers were well established in NSW secondary schools, and the 1980s EMT interviewees had experienced a classroom role model during their secondary music years. Their tertiary education delivered both music tuition and the education component by a college of advanced

education exclusively. None reported experience of specific syllabus instruction during this period either. The comments regarding the 1980s EMTs' experiences included the following:
"There was a lack of mention of specific syllabus content" (Sarah)
"The teachers' college course was very rich, but I felt no connection at all to the music syllabus" (Ulani)
"The syllabi were never unpacked in class and no programming was ever mentioned. No pedagogical discussions were held in relation to the classroom" (Ruby)
EMT Bonnie (1960s) reported, "most of my learning about how to be a music teacher came from practicum experiences and the classroom teachers' suggestions". The participants who had negative experiences during this time could also see a positive side of this experience. As one EMT had reflected: "professional experience taught me what not to do and to search for my own teaching method".

Jeanneret (1993) citing Turney (1977) argued that teacher education must reflect and stimulate change. "It must change not only in response to changes in the nature and purpose of schooling but also promote changes in schools through the new attitudes, ideas and approaches it introduces to teachers" (p. 51). Universities were, by the 2000s, cognisant that for music teacher education to produce successful graduates, they had to offer a "balance between performing, composing and listening and greater integration of the three in teaching" (p. 52). The nature of music education degrees began to change.

There has been a marked rise in Governments' awareness of the importance of tertiary teacher training since the 1970s and over the years there have been many reviews and reports prepared by bureaucracies. Some of the more recent reports have shown an ever-increasing awareness of the core issue that had been a problem throughout the 1960s to 1980s. A report issued in 2013 by the NSW Government (Centre for Education Statistics and Evaluation) on effective teaching, cites Ingvarson and Rowe (2008) who found that:
Teaching quality can only be attained by ensuring that teachers are equipped with subject matter knowledge and an evidence-and standards-based repertoire of pedagogical skills that are demonstrably effective in meeting the developmental and learning needs of all students for whom they have responsibility. (p. 10)
Improvements in the quality of tertiary education courses for music teachers can be seen in the responses provided by the current music teacher (CMT) participants. They are representative of the changes that were taking place in graduate degrees reported as a worldwide trend (Hewitt, 2009), "where the range and the variety of focus and content have become linked to graduate employability" (p. 330).

The CMTs since 2000: one CMT who had done a contemporary music degree, studied the education component in his Diploma of Education year at a different university, where he was taught about the

NSW music syllabi. The two older CMT graduates, after learning about early 1990s syllabi, had to teach new syllabus documents once they began teaching, as did the two university graduates. The latter reported being told about the changes being made in their final year. The two youngest CMTs had attended a conservatorium of music, graduating ten years after the others and spoke very enthusiastically of their preparation in how to interpret the syllabi in the classroom. The two CMTs who had studied by correspondence and the one who had completed a degree in another arts field did not refer to the syllabi as being part of their tertiary preparation. Overall, the CMTs reported a much more positive tertiary experience than the previous generations (the EMTs) had, and therefore, a much clearer idea of what their teacher identity could look like for the engagement stage of developing as a teacher.

Putting the requirements of the syllabus into practice – engagement and alignment

None of the EMT participants appreciated their conservatorium music education until they went teaching, when they realised they had a valuable resource in their deep musical knowledge. The data suggest that EMTs philosophy is such that all components - Performance, Listening, and Composition (as per the junior syllabus), and Performance, Composition, Aural Skills, and Musicology (as per the senior syllabi), should be evenly balanced in the classroom. They are of the opinion that students will not 'grow' musically without the development of notation skills, which are the building blocks for composition skill development, musicological understanding, and aural skill development. In discussing their early years of developing their 'teacher selves', the EMTs described their teaching as more focused on whole class performances in singing, always following syllabus instructions and using listening and composition activities led by the teacher within the one lesson. Eventually, as syllabi changed and more popular music was introduced, they progressed to giving their classes more freedom to explore their own musical interests and to follow the philosophy best summed up by Dina, who explained:

If a kid can get out of school and say "I've written some music, people have played my music, I've been able to get up and perform in front of people, I've had a great time playing with other people, I can listen to a piece of music and tell you what's going on in the music"– that's a win!

The finding that the CMTs commonly choose performance as the focus of their lessons, to the exclusion of the other components, supports research by Wilson (2022) who reasoned, "the connections between student engagement and classroom music teaching are complex, fluid and situational" (p. 465). She proceeded to argue that the connections are not simple to identify or explain, summarising the student sentiment as "It's music and we came to play instruments" (p. 465). "Can we just play instruments today?" was also reported by the participants in this research as being a common question from students heard each day as they entered the music room. By making this choice, the CMTs are privileging a student-centred approach in "incorporating student interests with the voices of students central to the learning process" (Wilson, 2022, p. 456). The data indicate that CMTs are prioritising performance over the teaching of improving musical notation and literacy skills and other related activities involving listening to a variety of styles of music, experimenting with sounds, improvising and composing.

Conclusion

The constant changes in syllabi, (14 documents), assessment practice and technology over the forty years of teaching the EMTs have experienced, and the current technology revolution that is ongoing in a 21st Century world being pertinent especially for the CMTs, have highlighted the need for more support systems and organisations to assist music teachers to keep abreast of current trends and practices, to ensure classrooms are suitably equipped with up-to-date technology access, and to keep teachers informed in a meaningful way about syllabus changes and requirements as they occur. The call for more professional learning pertinent to the subject music was loud and clear. Regarding content being taught, the CMTs opined that music teaching and learning must keep pace in a changing world, and that the Classics, or WAM, are no longer as relevant in the 21st century classroom. The data also exposed the ongoing issue of music's struggle to remain relevant in the school curriculum as an important subject.

The syllabus can only come alive in the hands of the teacher, equipped with the power and the knowledge, provided them by their tertiary education experiences and pedagogical experiences of what works and what does not, to interpret and deliver the content in as creative, interesting and engaging a way as they can to inspire all the young potential musicians and music lovers of the future. Sparking *imagination* in their students, so that they may discover their sense of identity in experiencing music, participating in a social atmosphere in a music classroom which *engages* them through creative activities, and though *alignment*, "become part of something big because we do what it takes to play our part" (Wenger, 1998, p. 179), all providing them with a sense of belonging.

Table 1. Experienced Music Teachers completing their tertiary education in the 1960s, 1970s and 1980s

EMT pseudonym	**Final year school LC/HSC**	**Music tertiary years**	**First-year teaching**
Ingrid	LC 1961	1962–1965	1966
Bonnie	LC 1964	1965-1968	1969
Emma	1969	1970–1973	1974
Nola	1972	1973–1976 University	1977
Sarah	1979	1980–1983	1984
Dina	1980	1981–1984	1985
Rhiannon	1984	1985-1988	1989

Note: LC = Leaving Certificate, examined for the last time in 1968 when replaced by the Higher School Certificate (HSC)

Table 2. Current Music Teachers completing their tertiary education from 2000 – 2020

CMT pseudonym	Final year school HSC	Music Tertiary years	First-year teaching
Pauline	1990	1998–2000 (correspondence)	2000
Lesley	1997	1998–2001	2002
Cynthia	1997	1998–2001	2002
Justine	1987	2002–2005 (correspondence)	2006
Barrett	2005	2006–2009 Contemporary music	2010
Dakota	2015	2016–2019	2020
Cora	2015	2016–2019	2020

References

Australian Music Examinations Branch (AMEB). https://www.ameb.nsw.edu.au. Bartle, G. (1968). *Music in Australian Schools*. ACER.

Board of Studies NSW (2009). *Music 2 and Music Extension Stage 6 Syllabuses*, http://www.boardofstudies.nsw.edu.au.

Board of Studies NSW (2009). *Music 1 Stage 6 Syllabus*. http://www.boardofstudies.nsw.edu.au Board of Studies NSW (June 2003). *Music Years 7–10 Syllabus*, https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/creative- arts/music-7-10.

Bridges, D. M. (1970). *The Role of the universities in the development of music education in Australia,* 1885–1970, PhD thesis, The University of Sydney.

Carroll, C. (2017). Playing the field: An Australian case study of student popular musicians' informal learning in senior secondary classroom music education, PhD Thesis, The University of Sydney, Sydney Digital Theses (Open Access). retrieved from https://ses.library.usyd.edu.au/handle/2123/17232.

Carroll, C. (2019). 'Illiterate' musicians: An historic review of curriculum and practice for student popular musicians in Australian senior secondary classrooms, *British Journal of Music Education*, *36*, 155–71.

Cox, G. & Stevens, R. (2017). The origins and foundations of music education. International perspectives. Bloomsbury Academic.

Dunbar-Hall, P. (1993). Composition and the NSW HSC examination: A position paper, *ASME Newsletter*, June 1993, 16–17.

Dunbar-Hall, P. (1999). Composition as the site of music teaching: Pre-service students' attitudes to teaching through creative activities, *Australian Journal of Music Education*, *1*, 44–62.

Hewitt, A. (2009). Musical Styles as Communities of Practice Challenges for learning, teaching and assessment of music in higher education. *Arts and Humanities in Higher Education*, *8*(3), 329–337. https://doi.org/10.1177/1474022209339956

Ingvarson, L., & Rowe, K. (2008). Conceptualising and evaluating teacher quality: Substantive and methodological issues. *Australian journal of education*, *52*(1), 5-35.

Jeanneret, N. (1993). The preparation of secondary music teachers in New South Wales: Is it out of step? *British Journal of Music Education, 10*(1), 47–55, https://doi.org/10.1017/S026505170000142X.

Jeanneret, N., McPherson, J., Dunbar-Hall, P. & Forrest, D. (2003). Beyond Manhattanville, Paynter and cultural identity: The evolution of the NSW music curriculum, in L. C. R. Yip, C. C. Leung and W. T. Lau (Eds.), *Curriculum innovations in music – Asia Pacific symposium of music education research (APSMER), pp. 137–41, Hong Kong Institute of Education.*

Lett, W. R. (1988). Research in Australian music education: A review and analysis, *British Journal of Music Education 5*, 2, 141–56.

Macpherson, J. & Jeanneret, N. (2005). Connections and curriculum development: Foundations of the New South Wales K – 12 Music Curriculum, *Celebrations of Voices: XV National Conference Proceedings*. *A. Parkville, Vic. Australian Society for Music Education*, 2005, pp. 190-96, Print.

Morgan, R. (1990). The 'Englishness' of English Teaching, in I. Goodson and Medway (Eds.), *Bringing English to Order: The History and Politics of a School Subject*, pp. 197–241, London: The Falmer Press.

New South Wales Education Standards Authority, https://educationstandards.nsw.edu.au

Pitts, S. (2001). Whose aesthetics? Public, professional and pupil perceptions of music education. *Research Studies in Music Education*. https://doi.org/10.1177/1321103X010170010601

Reid, I. (2004). Memory loss and retrieval, *Changing English*, *23*(2), 98–111, https://doi.org/10.1080/1358684X.2016.1162965.

Rubin, H. J., & Rubin, I. S. (2011). Qualitative interviewing: The art of hearing data. sage. Sawyer, W. (2002a). Simply growth? A study of selected episodes in the history of Years 7–10 English in New South Wales, Unpublished PhD Thesis, University of Western Sydney.

Stevens, R. (1978). *Music in state-supported education in New South Wales and Victoria, 1848–1920* [Unpublished doctoral dissertation]. University of Melbourne.

Turney, C. (1977). *Innovation in Teacher Education*, Sydney University Press. Wenger, E. (1998). *Communities of Practice*. Cambridge University Press. https://doi.org/10.1017/CBO9780511803932

Wenger, E. (2000). Communities of Practice and Social Learning Systems, *Organization (London, England)*, 7(2), 225–46, https://doi.org/10.1177/135050840072002.

Wilson, E. (2022). "It's music and we came to play instruments": Teaching for engagement in classroom music. *Music Education Research*, *24*(4), 455–466. https://doi.org/10.1080/14613808.2022.2080811

Yates, L. (2011). Re-thinking knowledge, re-thinking work, in *Australia's curriculum dilemmas: state cultures and the big issues*. Melbourne University Press

A Study on the Application of Constructivism-Based technology-supported self-regulated Learning in Music Appreciation Curriculum

Sen-Hsiung Chuang, PhD student /Department of Education, National Kaohsiung Normal University, Taiwan

Abstract

In 2022, Taiwan initiated an enhancement plan for digital learning in elementary and middle schools. The researcher utilized the provided devices to investigate the potential of integrating technology-supported self-regulated learning in music courses at the junior high school. The researcher integrated constructivist learning theory with technology-supported self-regulated strategies, which encompassed processes such as annotation, reflection, questioning, interflow, and improvising, for the music appreciation curriculum. This study primarily emphasized the cognitive processes of students and the significance of collaborative interactions, allowing them to construct musical understanding through active participation and cultivate higher-order analytical and creative abilities.

The research methodology comprised teaching practice research involving instructional design, implementation, and assessment of learning outcomes. Throughout the teaching process, the researcher guided students in exploration, discussion, and collaboration, utilizing technology for information retrieval, data organization, and creative presentation. The teacher played the role of a facilitator, guiding students in critical thinking, problem-solving, and offering necessary guidance and support. Finally, the study assessed learning outcomes through observation, analysis of learning artifacts, interviews, and other methods to comprehend students' learning processes, knowledge construction, and their perspectives on technology- supported self- regulated learning.

The primary objective of this study was to cultivate students' abilities for self- regulated learning, collaboration, critical thinking, and problem-solving by integrating constructivist principles and technology-supported learning. Additionally, the study aimed to present viable teaching models and methods, providing insights for music educators engaging in junior high school music curriculum implementation in the technological era.

Integrated research findings demonstrated that the fusion of constructivism and technology supported learning presented new opportunities for music education. This integration progressively guided students towards achieving self- regulated learning objectives, universally igniting motivation for learning within the classroom. Through appropriate instructional design and technological integration, utilizing a spiral learning task approach, students achieved a more comprehensive understanding of musical concepts in the music appreciation curriculum, empowering them to analyze, evaluate, and create.

Furthermore, under the design of self- regulated learning and collaborative learning within and beyond small groups, the study reduced the constraints of student heterogeneity, enhancing effective teaching in music courses and optimizing learning performance. Ultimately, collaborative efforts within the teacher community and team teaching contributed to the successful implementation of this curriculum. In summary, this study provided concrete and feasible teaching examples for the field of music education, aspiring to promote comprehensive development in students' music learning in the technological era.

Keywords: constructivism-Based, technology-supported, self-regulated, Music Appreciation

Introduction

In 2019, the Ministry of Education in Taiwan initiated the Technology-supported self regulated learning project, defining autonomous learning based on the concept of "Self Regulated Learning" proposed by scholars in cognitive psychology. Self-regulated learning emphasizes students consciously setting learning goals, selecting learning methods, monitoring the learning process, evaluating learning outcomes, and adjusting learning methods and self-awareness to achieve proficiency. The "Technology-Supported Self Regulated Learning Model" is defined as effectively utilizing digital technology tools and e learning platforms to assist students in achieving their learning goals (Kao & Chang, 2023).

Taiwan implemented a policy in 2022 for students to use an ipad, enabling students in elementary and junior high schools to have access to mobile devices. Doud (2016) pointed out the tools and features of mobile devices on school campuses and how they can enhance academic learning through the application of self-regulated learning and the theory of multiple intelligences. Students can use mobile devices freely to enhance their learning experiences by discovering and leveraging tools and features on these devices, driven by natural multiple intelligences and self-regulation (Doud, 2016).

In music curriculum, music appreciation is an integral part of music education. From a cognitive psychology perspective of constructivism, learning music appreciation focuses on several key aspects. First is the appreciation of musical structure. Second, research investigates self-directed responses to music, including autobiographical memory awakened by music, reinforcement of self-awareness, and the benefits to personal health and well-being. Third, efforts are made to explain how music listeners become sensitive to the causality and background sources of music composition, including the biomechanics of performance, knowledge of musicians and their intentions, and the cultural and historical background of music composition (Thompson et al., 2023).

In line with these main learning emphases in music appreciation, and the constructivist teaching emphasizing linking new knowledge with existing knowledge to help students acquire new knowledge and develop cognition, the concept and strategies of the Technology supported self-regulated learning model integrate the "setting goals, making choices, monitoring, and adjusting" four self-regulation steps developed from the individual-oriented self-regulated learning theory, as well as the "self-learning, peer learning, collaborative learning, and guided learning" four learning modes developed from the social-oriented self regulated learning theory. It emphasizes the technological advantages that digital tools and e learning platforms can bring in each self-regulation step and learning mode (Chang, 2023).

In the rapidly advancing digital era, it is crucial for educators contributing to the organization of learning and teaching environments to keep pace with technological advancements and possess appropriate teaching methods and technological pedagogical skills. Similarly, integrating technological expertise within the curriculum structure is imperative in music education. Therefore, the objective of this study was to utilize the tools of integrated constructivism and technology- supported self-regulated learning to contribute to music appreciation teaching. Feasible teaching models and approaches were provided to serve as a reference for educational practitioners.

Hence, the research posed the following questions regarding the effectiveness of implementing technology- supported self-regulated learning in music curriculum and its contribution to music appreciation courses:

1. What discoveries were made regarding the learning performance of junior high school students in music appreciation through technology- supported self-regulated learning?
2. How did technology- supported self-regulated learning benefit and provide recommendations for music instruction?

Methodology

This study employed a practice-based research approach. According to Felten (2013), a sound "practice-based research" entails rigorous research methods and tools, delving into the core issues of teaching practices and students' learning. Shulman (2011) emphasized that interventions in "practice-based research" should profoundly stimulate learning events within the teaching context. This includes implementing teaching interventions and adopting specific teaching models as the primary strategies for the researcher. The researcher should first conduct a literature review, analyze and describe the content of the adopted teaching strategies or teaching models, and explore the feasibility of adopting these teaching methods in a specific course context. Additionally, the researcher should adopt, adapt, or propose modified teaching models based on empirical research results. Therefore, the researcher believes that in composing research papers, graphical representations of teaching models and how students learn can be employed.

Engagement in innovative teaching practices in teaching research is not limited to adopting innovative teaching strategies; it may encompass innovations or improvements and their effectiveness evaluations in various aspects of the overall learning environment, including curriculum content, instructional material design, technology application, assessment methods, and more (Brown & Campione, 1996).

In summary, this study utilized teaching design, implementation, and learning effectiveness assessment as methods. The researchers formed a teacher community with educators and targeted ninth-grade students from schools served by the teacher community for practice based research. Firstly, a constructivism-based music appreciation teaching activity was designed. Figure 1 illustrating, a technology-assisted self-regulated learning module was chosen, guiding students through self-study, group learning, peer learning, and teacher-guided learning using the process of annotation, reflection, questioning, interflow, and improvising.

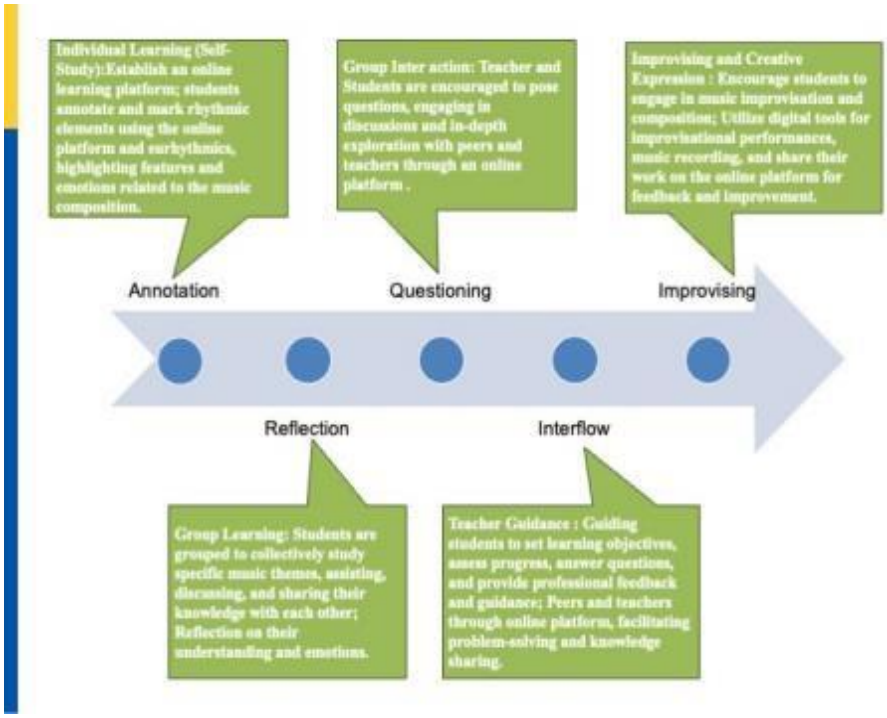


Figure 1 Curriculum Plan Flowchart

Digital tools were used for setting goals, making choices, monitoring, and adjusting. Throughout the teaching process, the researcher guided students in exploration, discussion, and collaboration and utilized technology tools for information retrieval, data organization, and presentation. The role of the teacher was that of a facilitator, guiding students in thinking, problem-solving, and providing necessary guidance and support. Finally, the study assessed learning effectiveness through observation, analysis of learning outputs, interviews, etc., to understand the students' learning processes, learning performance, and discoveries and recommendations regarding technology- supported self-regulated learning in the music classroom.

Results

In the aspect of students' learning performance in music appreciation, the utilization of the "loilonote app" as a tool for student annotation, reflection, questioning, interflow, and improvisation during music appreciation teaching was considered an ideal tool. The teaching process involved guiding students to feel and recognize the musical elements of the artwork by using eurhythmics during music appreciation. During self-study, online teaching resources and online assessment were utilized to enable teachers to understand students' music cognition. In the group learning stage, the teacher's questions and task assignments prompted groups to mark the characteristics and emotions of the musical piece, reflecting on their understanding and feelings. Through teaching software, groups shared and recorded reflections. In the peer learning stage, both teachers and students jointly researched specific musical themes, assisting, discussing, and sharing what they had learned. Students could also raise their own questions, promoting interactive discussions, facilitating problem-solving, knowledge sharing, and in-depth exploration through discussions and dialogues. In the improvisation and creation stage, groups used digital tools to create multimedia compositions based on the appreciated musical piece, presenting their understanding of the music through digital audio-visual works, fostering sharing and exchange of insights with others.

From the students' learning process files, it was observed that under this approach's guidance, students were better able to grasp the musical structure and had a self-directed response to music. Students attempted to interpret the music and became more sensitive to the motivation and background sources of the music composition, resulting in more detailed expressions and feelings during interpretation. Furthermore, the setup of questions and post-appreciation tasks, as well as the interactions and collaboration within the groups, demonstrated that students attempted to listen to each other's opinions, accepting or adjusting their knowledge about the musicians and their intentions, as well as the cultural and historical background of the music composition. Together, they created improvised works expressing their interpretations of the musical piece.

In terms of the impact on music teaching in technology- supported self-regulated learning, throughout the process, the immediate interactivity of digital teaching tools allowed teachers to provide immediate feedback. When students collaborated within or between groups, the progress could be immediately tracked, and suggestions could be provided. Additionally, students had their own digital recording tools during goal setting, decision-making, monitoring, and adjusting, where every detail of the process was recorded digitally. Students could pace their learning according to their own learning progress within this spiral data construction. Moreover, in the music appreciation course, besides some knowledge-based questions and learning sheets, this approach allowed students to use multimedia digital creation to re-present their understanding and feelings about the music piece in a concrete way, enabling creativity in music appreciation. However, in implementing this approach, teachers faced challenges and inevitable difficulties in efficiently using digital tools and mastering the design and implementation of educational technology software, besides investing in course design. Understanding the hardware and software of digital technology during the implementation of the approach increased the pressure and time commitment for teachers.

Conclusions and implications for music education

Based on the comprehensive research findings, it is demonstrated that integrating constructivist curriculum perspectives and technology-supported self- regulated learning into the music appreciation curriculum through the utilization of online digital platforms and digital resources effectively enhances students' learning motivation. Furthermore, students can engage in reflection based on recorded data throughout the process and improvise with a more informed approach. Additionally, the versatility of digital tools enables students to continuously self-adjust and practice, enabling them to accumulate successful learning experiences through multiple creative endeavors (Chang, 2023; Hsia & Hwang, 2020).

Music appreciation goes beyond cognitive input; it necessitates the output of cognitive understanding of musical compositions. Through the processes of annotation, reflection, questioning, interflow, and improvising, the strategies of self-study, group collaboration, intergroup learning, and teacher guidance, coupled with the strategic use of digital tools for tagging, selecting strategies, monitoring, and adjusting, allow for music appreciation to impart students with structured and self-directed learning experiences. These experiences exhibit subtle differences in perceptions of musical compositions among peers, fostering unique experiences, expressions, and improvisational creativity concerning musical compositions (Rice, 2018; Thompson et al., 2023).

This progressive approach systematically guides students towards achieving the goal of self directed learning, universally stimulating their learning motivation and injecting fresh energy into the classroom. Through appropriate instructional design and technological integration within a spiral learning task design, students can grasp abstract concepts within the music appreciation curriculum, enabling a comprehensive understanding of musical concepts within compositions and the ability to articulate analysis, evaluation, and creativity. Furthermore, under the design of self-directed learning and collaborative learning within and outside groups, students' heterogeneity constraints are reduced, enhancing the effectiveness of the music curriculum and optimizing learning performance.

Collaboration within the teacher community and synchronous coordination in the classroom significantly contribute to the implementation of this curriculum plan. Furthermore, teachers should continually grasp educational technology trends and adopt teaching strategies aligned with the music discipline. Technology should act as a supportive role rather than overpowering the progression of the music curriculum. Therefore, this study provides a specific and feasible teaching example within the field of music education, aiming to propel students towards a comprehensive development of music learning in the era of technology. It also emphasizes the need for continuous professional development for teachers, enhancing their individual Technological Pedagogical Content Knowledge (TPACK), enabling them to fully understand technological changes and advancements. Teachers can then proactively and systematically integrate technology into curriculum design, effectively harnessing the benefits of technology assistance.

References

Brown, A. L., & Campione, J. C. (1996). Psychological theory and the design of innovative learning environments: On procedures, principles, and systems. In *Innovations in learning: New environments for education.* (pp. 289-325). Lawrence Erlbaum Associates, Inc.

Chang, T.-C., & K. W.-S. (2023). A study on developing teaching strategy indicators for promoting technology-enhanced self-regulated learning. *Contemporary Issues in Education, 26*(3). https://doi.org/10.6384/ciq.202307_26(3).0001

Doud, J. M. (2016). *A phenomenological study of middle school students' self-regulated learning with mobile devices*. United States -- Kansas ： Southwestern College (Kansas)Academic Department.

Hsia, L.-H., & Hwang, G.-J. (2020). From reflective thinking to learning engagement awareness: A reflective thinking promoting approach to improve students' dance performance, self-efficacy and task load in flipped learning. *British Journal of Educational Technology*, *51*(6), 2461-2477. https://doi.org/https://doi.org/10.1111/bjet.12911

Rice, R. L. (2018). *The influence of connectivist learning networks on self-regulation in middle school* (Publication No. 10835940) [Doctoral dissertation, Grand Canyon University]. ProQuest Dissertations Publishing.

Shulman, L. (2011). Feature essays: The scholarship of teaching and learning: A personal account and reflection. *International Journal for the Scholarship of Teaching and Learning*, *5*(1), 30.

Thompson, W. F., Bullot, N. J., & Margulis, E. H. (2023). The psychological basis of music appreciation: Structure, self, source. *Psychological Review*, *130*(1), 260.

The effect of music education and music listening on preschool children's cognitive executive functions

Sofia Douklia & Irini Skopeliti, University of Patras, Greece

Abstract

Research in the field of music education and music listening, especially listening to Mozart's music, leads to conflicting conclusions regarding their effect on the development of cognitive executive functions. The aim of the present paper is to present the results of two empirical studies which investigated the effects of listening to the Mozart's sonata K. 448 and attending a music educational program based either on the basic music score or on a graphic music score, on the cognitive executive functions of preschool children. For the purpose of the study, we designed two music educational interventions during which the students received initial instruction on music (notes, pitch, rhythm, etc.) based on notation; the instruction in the one study was based on the use of graphic music scores and in the second on the use of basic music scores. Also, the participants before and after attending the music educational interventions, were assigned to executive function tasks which tested working memory and inhibition. Totally, 62 preschool children participated in the two studies, who were randomly assigned in one of the two studies, 28 in the first one and 34 in the second. In the first part of both studies the participants had to respond to a set of questions, to make sure that none of them had received any kind of music training before. Following that, they completed the executive function tasks. Randomly, half of the students were selected to participate in the executive function tasks while listening to the K. 448 sonata and the remaining half were selected to participate without listening to any music. In the second part of each study, the participants received one of the two music educational trainings. Finally, in the last part all participants completed once again the executive function tasks, following the manipulation for the music listening of the first part of the studies. The results showed that music listening, and music education interacted positively on preschool children's executive functions in the basic music score condition. These findings add to the hypothesis that music education can positively influence the performance of cognitive executive functions, particularly when music notation is introduced early in children's music education.

Keywords: music education, music listening, Mozart Effect, executive functions, music score

Introduction

Music is a form of expression related to the development of cognitive functions and to the association of knowledge with emotion. Years of music education may show remarkable effects on cognitive functions especially when it begins in early childhood (Bowmer et al., 2018). Additionally, research indicates a relationship between music listening and successful performance on cognitive tasks (Rauscher et al., 1993). The question that arises is whether there is an inter-effect of music education and music listening on young students' executive functions, such as working memory and inhibition, and whether this effect is explicit in the case where participants have received some kind of music training based on music notation, considering research results that suggest a correlation between learning symbolic systems and improved executive functions (Carlsonet al., 2005).

Executive functions

Executive functions are defined as a group of higher cognitive functions responsible for adaptive and flexible human behaviour in novel, complex, cognitive situations that require goal-directed planning, impulse control, and flexibility in the use of strategies (Miyake et al., 2000). Typical examples of executive functions are working memory and inhibition. Working memory refers to the ability to monitor and encode task-relevant incoming information and to update the content of working memory by replacing old with new, more task-relevant information (Morris et al.,1990). Inhibition refers to the ability to intentionally inhibit automatic irrelevant or competing responses (Miyake et al., 2000).

Music listening and executive functions

Several researchers have associated music with executive functions (Holochwost et al., 2017). Schellenberg (2012) emphasizes on the effect of music listening on children's cognitive performance. Kämpfe (2011) highlighted the positive effect of listening to classical music on the phonological working memory of participants who have been listening to classical music while learning new vocabulary. In general, the benefits that can result from listening to classical music are acknowledged and therefore educational strategies are suggested based on the use of classical music during educational or leisure activities for children, especially preschool children (Hallam et al., 2021).

One type of classical music that has been used in research to investigate the effect of music listening on adults and children is Mozart's music, which has led to the definition of the "Mozart Effect". The Mozart Effect is suggested as a therapeutic medical tool and research findings indicate that Mozart's music improves the spatial-temporal performance of patients with Alzheimer or with partial brain damage (Rauscher et al., 1993). However, other researchers have characterized the Mozart Effect as an artifact, a "scientific myth" (Gasenzer et al., 2017). Acknowledging the benefits of classical music in human brain, the question that arises is whether listening to the sonata K.448 can enhance the performance of the preschool children's executive functions.

Music education and executive functions

In addition, research has supported a high correlation between music education and students' performance on tasks that require the activation of executive functions (Bowmer et al., 2018). For example, in a music education study, preschool children (3−4 years old) attended classical piano lessons for six months. In these lessons they read music pieces based on music scores and performed pieces from memory. At the end of the music training the children's performance on spatial-temporal tests of executive control was 30% better compared to the other group of children who received computer lessons or no training (Grandin et al., 1998). In contrast, in another study, preschool children who attended music lessons did not perform better in executive function tests compared to children who attended painting lessons or who did not attend any lessons (Mehr et al., 2013).

Finally, research shows that the improvement of working memory can be achieved either through musical education or through music listening (Jenkins, 2001). It is likely that each factor could work independently but it is also possible that any improvement could be the result of an interaction between the two factors. Thus, the question that arises is whether the type of music education, and specifically a music education based on teaching the basic or graphic music score, can interact with listening to Mozart's Sonata K.448 and contribute to the improvement of executive function.

Research questions

The current study aims to answer the following research questions:
Can listening to Mozart's sonata K. 448 improve preschool children's performance on working memory and inhibition tasks?
Can an introduction of music education based on the use of music notation with basic or graphic music score, improve preschool children's performance on working memory and inhibition tasks?
Can an introduction of music education based on the basic or graphic music score interact with music listening to the Mozart's sonata K. 448 and improve preschool children's performance on working memory and inhibition tasks?

Methodology

Two studies were designed which included different groups of participants. Both studies were designed according to the case study method and the sampling was "of our convenience". The independent variables were music education and music listening, while the dependent was preschool children's performance on executive function tasks.

Participants

First study

Twenty-eight preschool children (16 girls and 12 boys) participated in the 1st study, all attending two kindergartens in Patras, Greece. The mean age of the children was 5 years and 4 months (4 years and 8 months to 5 years and 8 months). All these children received musical training based on a graphic music score. The children were randomly divided into two groups and half completed the executive function tasks without any music listening while the other half while listening to the K.448 sonata.

Second study

Thirty-four preschool children attended the 2nd study (19 girls and 15 boys) from one kindergarten in Patras, Greece. Their mean age was 5 years and 3 months (from 4 years and 8 months to 5 years and 6 months). All of them received musical training in notation using basic music score. Seventeen of them listened to the K.448 sonata while completing the executive function tasks, while the remaining 17 children completed the executive function tasks without music listening.

Materials

Questionnaire on music experience

A set of three questions were used to make sure than no one of the participants in the study had received in the past any kind of music training, especially based on music notation. We asked them if they had attended any course to a conservatory and if so for how long and what they have learned. We also asked them if they play any musical instrument and if so, for how long.

Executive function tasks

To assess executive functions, we used working memory and inhibition tasks. For the working memory assessment, we used the Forward Digit Span Test (Gardner, 1981), the Backward Digit Span Test (Isaacs et al., 1989) and the Backward Notes Span Test, a task created by the researchers based on the logic of Span Tests, while the stimuli given were musical notes.

The Nepsy II (Frischen et al., 2019) was used to assess inhibition. The instruction given to children was to remain in place, close their eyes and keep them closed for 75s. During that time, they listened to an 85-second audio recording, in which multiple sounds were captured that could distract the participants and prompt them to open their eyes or get up from their seat (e.g., sound of pencil falling). At the 75-second, the song "Twinkle twinkle little star" started to play, which indicated the end of the process.

Recorded piece of music

The music piece used for the music listening condition was Mozart's Sonata K. 448 for 2 pianos in D Major, retrieved from the following link https://www.youtube.com/watch?v=_KUVWwtOCsk. The piece was played from a mobile phone during the research process, and it was replayed if needed.

Music Educational Interventions

Two music educational interventions were designed, which included activities of similar content. However, in the 1st study the activities were based on the use of graphic music scores while in the 2nd on the use of basic music scores. Each intervention included 4 visits to kindergartens during which the children were taught basic elements of music (categories of musical instruments, rhythm, pitch, introduction to music notation-graphic or basic).

For example, in one of the music notation activities, the researcher placed the graphic music score of the song "Twinkle twinkle little star" and the rhythm music sheet on a board and sang the song acapella pointing at the musical notes, so that they could match the rhythm with the symbols. The researcher asked children to do the same using percussion of their choice. Then she asked the children to design the graphic music score on a piece of paper, as they perceive it, pointing at the symbols and sing together following the score they created.

Accordingly, in the case of the basic music score, the researcher placed the music score of the same song on a board and taught them the lyrics and the rhythm clapping and pointing at the musical notes. The researcher asked each child to do the same using percussion of his/her choice. Then the children were given blank sheets of paper and a picture of a staff, and the researcher asked them to draw what they see on the music sheet as best as they could and sing along.

Procedure

The procedure of research was the same for both studies. Firstly, the children responded to the open-ended questions, which investigated their music experience. Then the executive function tasks were given. In the next phase, the interventions of music education were conducted and finally the students were given once again the open-ended questionnaire and the executive function tasks. The children, who completed the executive function tasks while listening to the K. 448 sonata before the music intervention, they listened the same piece while completing the executive function tasks and after the music intervention. Similarly, the rest of the students again participated without listening to music.

Results

Pre-test: First & Second Study

Questionnaire on Music experience

The results from the open-ended questionnaire showed that the participants in both studies had not received any systematic music training. As a result, all of them were included in the study.

Executive Functions Tasks

Table 1 shows participants performance (mean rank) in the executive function tasks (working memory and inhibition) in pre-test and post-test of the 1st study as a function of the music listening factor, while Table 2 shows the same kind of results for the 2nd study. Regarding the pre-test, the results show that participants in both studies performed roughly the same regardless of whether they belonged to the music listening group or not (Tables 1 & 2). Statistical analysis using non-parametric tests compared the performance between the two groups and showed no significant differences, suggesting that listening to the Mozart's K.448 sonata did not influence participants to perform better on the executive function tasks.

Post-test: First study

Executive Functions Tasks: pre-test vs. post-test comparison

We compared participants' performance on executive function tasks and the results showed no significant improvement in the post-test (Table 1). In fact, though in the case of inhibition there was a slight improvement on participants' performance (pre-test: 11,60 – post-test: 11,87), in the case of working memory participants had lower performance in the post-test (17,63) compared to the pre-test (11,87). The non-parametric tests used to compare performances between pre-test and post-test showed no statistically significant differences.

Executive Functions Tasks: music listening factor

As in the pretest, in the post-test half of the children completed the executive function tasks while listening to the K.448 sonata and the other half without listening to music. The participants' performance in the inhibition task was approximately the same in both groups; there was a small improvement for the participants in the music listening condition. Contrary, in the memory tasks the performance was lower for both groups of music listening. This finding was even stronger in the case of participants in the music listening group compared to the other group (Table 1). Statistical analysis using non-parametric tests showed no significant differences in the performance of the participants in the inhibition task. However, the result was statistically significant in the memory task ($Z=-2.178$, $p<0.5$) in favour of the group that did not listen to music during the execution of the tasks.

Table 1. Performance scores (Mean Rank) on Executive function tasks at pre-test and post-test of 1st study (graphic music intervention) as a function of music listening

First study (graphic music score intervention)			
		Pre-test	Post-test
Working memory tasks	Not-Listening to music (N=14)	17,29	19,21
	Listening to music (N=16)	13,94	13,45
	Total (N=28)	17,87	17,63
Inhibition task	Not-Listening to music (N=14)	18,50	15,43
	Listening to music (N=16)	13,88	15,56
	Total (N=28)	11,60	11,87

Post-test: Second study

Executive Functions Tasks: pre-test vs. post-test comparison

Firstly, we compared children's performance on executive function tasks within the two phases of the study. In this study there was a small improvement on participants performance in the case of working memory (pre-test: 17,51 & post-test: 17,66) as well as in the case of inhibition (pre-test: 11,57 & post-test: 11,59). Statistical analysis with non-parametric tests comparing the performance at pre-test and post-test showed that this improvement was not statistically significant.

Executive Functions Tasks: music listening factor

Finally, in this study as well, half of the children completed the executive function tasks while listening to the K.448 sonata and the other half without listening to music, just as they did in the pre-test. The children of the music listening group performed better in the post-test than in the pre-test, compared to the children of the no music listening group —who performed lower in the post-test than in the pre-test— on both inhibition and memory tasks (Table 2). Statistical analysis using non-parametric tests did not show statistically significant differences in the performance of the participants in the inhibition task but showed for their performance in the memory task ($Z=-2.1258$, $p<0.5$) in favour of the group that listened to the Sonata K.448 during the task performance.

Table 2. Performance scores (Mean Rank) on Executive function tasks at pre-test and post-test of 2nd study (basic music intervention) as a function of music listening

Second study (basic music score intervention)			
		Pre-test	Post-test
Working memory tasks	Not-Listening to music (N=14)	17,97	15,76
	Listening to music (N=16)	18,03	20,11
	Total (N=34)	17,51	17,66
Inhibition task	Not-Listening to music (N=14)	17,91	17,18
	Listening to music (N=16)	18,08	18,78
	Total (N=34)	11,57	11,59

Discussion

In this research we aimed to answer three research questions. The first concerned the effect of music listening (specifically on the Mozart's Sonata K. 448) on the executive functions of preschool children, the second on the effect of music education based on music notation on the executive functions of preschool children, and the third on the interaction of these two factors — music listening and music education — on the executive functions of preschool children.

Regarding the first question, the results showed that there is no direct effect of listening to music on the executive functions' performance of preschool children. The students' performance in the memory tasks and the inhibition task during the pre-test does not differ whether the tasks are performed while listening to Mozart's sonata K. 448 or not. This finding was noted in the pre-test of both studies and is compatible with other findings that argue that the effect of Mozart's music is not that strong on people's cognitive functions and that the Mozart Effect could be considered as a "scientific myth" (Gasenzer et al., 2017).

In fact, it seems that children's performance in several cases in the memory tasks are affected in a negative way when listening to music. It is possible that children of this age are disoriented by the background music, an assumption that is supported in the literature by research that argues that listening to music with a different tempo or style can cause obstacles in the ability and willingness of students to memorize and learn new information (Lehmann et al., 2017).

Focusing on the second research question, the aim was to investigate whether music education based on the use of music notation can positively affect the performance of preschool children's executive functions. We found that in the inhibition task there was a positive effect of improvement from pre-test to post-test in both studies, however the effect was not statistically significant. At the same time, in the case of the basic score music educational intervention, there was an improvement on students' performance in the memory tasks from pre-test to post-test, but once again this finding was not statistically significant. Contrary in the case of the graphic score music educational intervention participants in the memory tasks performed lower in the post-test compared to the pre-test. This finding

agrees with previous research results suggesting that attending a music education program may not affect preschool children to perform better in executive functions tests (Mehr et al., 2013).

Finally, regarding the third research question, it seems that there is an interaction between music listening and music education in the executive functions of preschool students, since music listening had positive effects only if the students had attended a music education program that was based particularly on the use of music notation in basic music score. The effect was negative when participants attended the music educational intervention based on basic music score but did not listen to the Sonata K. 448 or when they attended the music educational intervention based on graphic music score, regardless of whether they listened to the Sonata K. 448 or not. Following other research findings, we hypothesized that the improvement of cognitive functions, such as working memory and inhibition, can occur not solely through music listening but in relation to the provision of music education (Jenkins, 2001), especially when the music education program is based on the instruction of music notation. It appears that, when preschool children study and learn to read music using basic music notation, can improve their performance of executive functions of working memory and inhibition, possibly because learning a new symbolic system may contribute to the improvement of cognitive functions (Grandin et al., 1998).

Limitations

The present study is a pilot research study, and the findings cannot be conclusive as the research sample is too small to allow us to generalize the results. It is suggested that similar research should be applied to a larger sample of participants. Also, the children are only from the preschool age group. It is recommended to examine children from other age groups to evaluate more broadly the influence of Mozart's sonata K. 448 and the influence of music educational interventions based on music notation on the participants performance of executive functions.

Acknowledgements

The authors thank the students of the 18th, 53rd, and 68th public kindergartens of Patras, their teachers, and parents, who gave their consent to this research.

References

Bowmer, A., Mason, K., Knight, J., & Welch, G. (2018). Investigating the Impact of Musical Intervention on Preschool Children's Executive Function. *Frontiers in Psychology, 9,* 2389.

Carlson, S. M., Davis, A. C., & Leach, J. G. (2005). Less is more: Executive function and symbolic representation in preschool children. *Psychological Science, 16*(8), 609-616. https://doi.org/10.1111/j.1467-9280.2005.01583.x

Davis, H. L., & Pratt, C. (1995), The development of children's theory of mind: The working memory explanation. *Australian Journal of Psychology*, *47*, 25-31. https://doi.org/10.1080/00049539508258765

Frischen, U., Schwarzer, G., & Degé, F. (2019). Comparing the Effects of Rhythm-Based Music Training and Pitch-Based Music Training on Executive Functions in Preschoolers. *Frontiers in integrative neuroscience*, *13*, 41. https://doi.org/10.3389/fnint.2019.00041

Gardner, R. A. (1981). Digits forward and digits backward as two separate tests: Normative data on 1567 school children. *Journal of Clinical Child Psychology, 10*(2), 131–135.

https://doi.org/10.1080/15374418109533032
Gasenzer, E. R., Kanat, A., & Neugebauer, E. (2017). Neurosurgery and Music; Effect of Wolfgang Amadeus Mozart. *World neurosurgery*, *102*, 313–319. https://doi.org/10.1016/j.wneu.2017.02.081
Grandin, T., Peterson, M., & Shaw, G. L. (1998). Spatial-Temporal versus Language-Analytic Reasoning: The Role of Music Training, *Arts Education Policy Review, 99,* 6, 11-14, DOI:10.1080/10632919809599481
Hallam, S., & Himonides, E. (2021). The Power of Music: an exploration of the evidence [PREPRINT]. https://doi.org/10.31219/osf.io/7tzj
Holochwost, S. J., Propper, C. B., Wolf, D. P., Willoughby, M. T., Fisher, K. R., & Kolacz, J. (2017). Music education, academic achievement, and executive functions. *Psychology of Aesthetics, Creativity, and the Arts, 11*, 147–166. doi:10.1037/aca0000112
Isaacs, E. B., & Vargha-Khadem, F. (1989). Differential Course of Development of Spatial and Verbal Memory Span: A Normative Study. *British Journal of Developmental Psychology, 7*, 377-380. http://dx.doi.org/10.1111/j.2044-835X.1989.tb00814.x
Jenkins, J.S. (2001). The Mozart Effect. *Journal of the Royal Society of Medicine, 94*(4), 170-172. doi:10.1177/014107680109400404
Kämpfe, J., Sedlmeier, P., & Renkewitz, F. (2011). The impact of background music on adult listeners: A meta-analysis. *Psychology of Music, 39*(4), 424–448. https://doi.org/10.1177/0305735610376261
Lehmann, J. A. M., & Seufert, T. (2017). The Influence of Background Music on Learning in the Light of Different Theoretical Perspectives and the Role of Working Memory Capacity. *Frontiers in psychology*, *8*,1902. https://doi.org/10.3389/fpsyg.2017.01902
Miyake, A., Friedman N.P., Emerson M.J., Witzki A.H. & Howerter A. (2000). The Unity and Diversity of Executive Functions and Their Contributions to Complex "Frontal Lobe" Tasks: A Latent Variable Analysis. *Cognitive Psychology*, 41, 49–100
Morris, N., & Jones, D.M. (1990). Memory updating in working memory: The role of the central executive. *British Journal of Psychology, 81*(2), 111–121. https://doi.org/10.1111/j.2044-8295.1990.tb02349.x
Rauscher, F., Shaw, G. & Ky, C. (1993). Music, and spatial task performance. *Nature,* 365, 611. https://doi.org/10.1038/365611a0
Schellenberg, E. G. (2012). Cognitive Performance After Listening to Music: A Review of the Mozart Effect, in Macdonald, R., Kreutz, G., Mitcell, L. (ed.), *Music, Health and Wellbeing*. Oxford University Press, 324-338.

When digital music examinations converge with social justice: a review of Trinity College London qualifications

Urvi Drummond, North-West University, South Africa

Abstract

This paper explores the relationship between Trinity College London's (TCL) extended pathway in instrumental examinations and social justice. Two recent changes have taken place in their portfolio reflecting a response to the changing needs of musicians. The first was a swift response in 2020 to the Covid-19 pandemic in the form of introducing digital examinations. The second iteration to digital assessments appeared in the form of repertoire-only or technical pathways which replaced the original 2020 model offered to examinees. The digital product line is a significant departure from the concurrently existing traditional live, face-to-face music examination option. The addition of digital formal assessments highlights the intentions by TCL policy makers to advance themes of widened access, inclusion, and diversity, representing three central tenets of social justice in education. The flexible framework suggests that TCL is responding to public opinion to increase the widened accessibility, inclusivity, and diversity of their instrumental examinations. The central question investigated was to what extent the changes implemented by TCL in 2020 and 2023 converge with social justice concerns? To provide answers, the traditional content of live, face-to-face piano examinations is compared with online digital examinations. My interpretive research has revealed that the extended portfolio of TCL music qualifications provides varied schema for diverse learners to acquire proficiency. Stages of mastery are central to TCL product design. As such, the entry level Initial examination and eight grades are manifestations of a journey that reflect five stages of development: novice, advanced beginner, competence, proficient, and expert. As a piano teacher with four decades of experience, I applaud TCL's radical overhauling of its suite of examinations. These efforts should be celebrated as a desirable outcome of sustainable music education.

Keywords: accessibility, inclusivity, diversity

Introduction

Recent developments in the Trinity College London (TCL) suite of instrumental examinations evidence ongoing policy concerns to modernise the curriculum in line with social justice aims. The intention of this paper is to highlight accelerated progress towards transforming the music examination system to reflect three social justice aims of *widened accessibility*, *inclusivity*, *and diversity* in music education. My positionality is that of a Sri Lankan piano teacher, with four decades of experience, privileged to teach students from Europe, the Middle East and Africa. Data was harvested from TCL policy statements, curricula and fee structures in the public domain. The central question investigated was to what extent the changes implemented by TCL in 2020 and 2023 converge with social justice concerns? Answering the research question involved an interpretive research approach to compare recently revised digital music curricula. The purpose of the comparisons was to discover the extent of the changes to the status quo of live, face-to-face examinations. Additionally, a comparison of fees shows how a global client-base is best served.

According to their website, TCL, commonly referred to as Trinity, annually delivers over 500,000 practical music examinations in over 60 countries (Trinity College London, 2023g). The entry level called an Initial examination, is followed by eight grades, in increasing levels of difficulty, to "represent a system of progressive mastery" (Trinity College London, 2017).

Within the context of maintaining learner progression throughout the pandemic, two significant changes have taken place in the TCL portfolio. The first was a swift response in 2020 to the Covid-19 pandemic in the form of introducing digital examinations. The second, in 2023, can be viewed as a push for social justice by widening access to candidates through repertoire-only and technical work pathway modules. These manifestations are a significant departure from the traditional model of live examinations. Live and digital examination formats are scrutinised for differences and similarities in a bid to place the changes within the context of music education policies that endorse social justice aspirations. Additionally, the fee structures from the United Kingdom, the United Arab Emirates, South Africa, and Sri Lanka are provided as evidence of a broader concern to address issues of affordability. The geographical choices reflect my own experience of teaching students in these areas.

An Overview

TCL attracts a significant portion of the world's music examination candidates and remains one of the leading boards providing internationally accredited examinations. Trinity's main competitor is The Associated Board of the Royal Schools of Music (ABRSM); the two are commonly referred to as Trinity and Royal Schools. They both provide the same University and College Admission Service (UCAS) points from Grades 6-8 (Link). It is my belief that a modern outlook is necessary to ensure sustainable development in music education. On balance, it seems beneficial to offer candidates the opportunity to develop their skill in a way, at a pace, and at a price best suited to their needs. I have posited the *five stages of mastery* (Huitt, 2009) into the Trinity system in the following way: *Novice*, Initial-Grade 1; *Beginner*, Grade 2-3; *Competence*, Grades 4-5; *Proficient*, Grade 6-7; and *Expert*, Grade 8.

The overhaul suggests that TCL has taken action to make the examinations more accessible, inclusive, and diverse. The opportunity to present four pieces with no supporting tests appeared in the July 2023 revisions to the digital music examinations through the launch of repertoire-only or technical work pathway examinations. These options suggest a response to demand with the design of more relevant content. The repertoire-only pathway allows candidates to focus only on performance, offering four pieces only for assessment. The technical work pathway incorporates one technical element to showcase this skill (Trinity College London, n.d.-a). This is a significant departure from the concurrently existing traditional live, in-person music examination model that comprises three contrasting pieces of music, technical work, sight-reading and aural tests. The provision of a flexible framework makes the examinations attractive to a diverse portfolio of students. An extended pathway in the digital models allows students to choose an examination that fits their needs.

Design of Face-to-Face and Digital Examinations

Trinity examinations are almost 150 years old and have laid a long-lasting and influential global footprint on how students acquire skills in Western classical repertoire. Readers should note that the use of the word Western in this paper indicates European classical music. The examinations are structured from the Initial entry level to Grade 8 in a suite of nine formal practical assessments. The intention is to

scaffold the learner's competencies through a series of carefully designed steps. In addition to motivating students with a choice of live or virtual assessments, contemporary changes include the choice of performing a diverse genre of pieces as well as original candidate-compositions. The information that follows provides the reader with a roadmap of examiner expectations in face-to-face and digital examinations as well as an indication of some of the resources available to teachers and candidates.

It should be noted that the format for live examinations has remained virtually unchanged over many decades with candidates preparing three contrasting pieces, aural and sightreading tests, as well as a selection of scales, arpeggios. Modifications to this formula are the addition of two technical exercises (Test 1) designed to increase musical relevance of the technical content. The scope of scales and arpeggios has been reduced to compensate for the extra content. In Grades 1–5, candidates are also given a choice to replace the aural tests with musical knowledge questions (Test 2), applicable to the pieces they played. This option is to "test knowledge of notation and their instrument" (Trinity College London, 2023c). Publications contain a minimum of 12 pieces plus six technical exercises to choose from, with 21 pieces offered in the extended version. They are contained within a single book per grade. Separate scale and arpeggio requirements, sample aural tests and sight-reading exercises are provided in separate books (Trinity College London, n.d.-b). Supplementary material includes demo CD recordings of all pieces and technical exercises which are also available for purchase. To assist teachers and students to understand the context of their pieces, Trinity has included performance notes. These pertain to historical, musical, and cultural references to enhance interpretation (Trinity College London, 2023e). Assessments are executed by a panel of TCL trained, accredited, and appointed Examiners, who provide written feedback in the form of reports. The report contains a breakdown of marks. The certificate indicates the overall band, awarded out of a maximum total of 100 marks, as follows: Distinction (87–100), Merit (75–86), Pass (60–74), Below Pass 1 and Below Pass 2 (59–0) (Trinity College London, 2014).

Attainment bands apply consistently to both face-to-face examinations and digital examinations. However, there are significant differences in the marking scheme. Table 1 illustrates the different ways marks are allocated for live face-to-face examinations, online repertoire-only examinations, and online technical pathway digital examinations. Further details on the supplementary tests appears in the discussion section below. In the repertoire-only pathway, four pieces are assessed with a maximum of 25 marks per piece to give a possible maximum total of 100 marks. In the face-to-face and technical work pathways, only three pieces are assessed, each with a maximum of 22 marks to give a total maximum of 66 marks with the remaining 34 marks allocated across supplementary tests. This approach widens access to candidates wishing to demonstrate their skills in preferred areas.

Examination Fees

A survey of TCL fees in the UK, Sri Lanka, South Africa, and the United Arab Emirates revealed the adjustments made to accommodate local market considerations. The chosen areas reflect the countries I have taught in. The grades represent *Novice*, *Competence*, and *Expert* levels as identified in the *five stages of mastery* referred to in The Overview section of this article. Personal experience indicates that students from lower incomes opt to take three examinations at Grade 1, Grade 5, and Grade 8 as milestones for *Novice*, *Competence and Expert* level attainments. The 2023 figures in Table 2 reveal

that South Africa and Sri Lanka on average pay approximately 30% less than the UK fees, whereas the United Arab Emirates pays 250% more than the UK fees for the same three examinations. The variation could be explained as a combination of the following factors: local cost of living and local considerations linked to administrative costs such as venues, support staff and marketing resources (EduRev, n.d.). My appraisal of the differences interprets the fee structure as another opportunity to contribute to an agenda of social justice in music education.

Discussion

Aside from the fee variation, there are other significant differences to be noted between face-to-face examinations and digital examinations. Firstly, digital examinations require no interaction between examinee and examiner. Secondly, candidates can make multiple single take recordings to select the best version for assessment. My experience with the recording process is that it is strenuous and time-consuming with candidates striving for perfection. Often, candidates' parents insist on multiple takes to present their child with the best opportunity to get a good result. Teaching colleagues mistakenly view digital examinations as an easier option due to the lack of human interaction in the examination room and the omission of sight-reading, aural or music knowledge tests. To compensate for this shortfall, the performance and delivery, and musical awareness components are given more weight. Scrutiny of the overall flow of the examination assesses all the sections as one continuous presentation. As such, the onus is on the candidate to perfect their performances and display confidence. The making of multiple recordings presents a chance to remove traces of hesitancy and note errors as well as to improve stage presence by projecting assurance and good pacing of the items. What is particularly inviting is that the only recording equipment needed is a smart phone possessed by 89% of the world's population (Laricchia, 2023).

In the performance section of the face-to-face examination, the weighting of 66 marks for the three pieces, recognises that candidates spend a larger portion of their practice time perfecting their pieces. Transparency for all instrumental examinations is provided through detailed explanation of the marking criteria (Trinity College London, 2014). For each of the three pieces, examiners can award up to seven marks for notational accuracy, seven marks for fluency and eight marks for communication and interpretation. Examiners are trained to match their comments to their marks to instil confidence in their feedback and to reassure teachers and their pupils, that their observations are relevant, robust and without prejudice. To avoid subjective opinion, the examiners' comments reflect the performance offered on the day with hints offered for continued development (Trinity College London, 2023d).

The inclusion of non-Western piano repertoire in all the grades reflects the ongoing strategy to have a broader representation of genres. Furthermore, each grade features the compositions of nine international young composers drawn from winners of Trinity's Young Composer's Competition. The complete piano repertoire lists published by TCL demonstrate efforts to redesign a Eurocentric curriculum (Trinity College London, 2023, September). The piano syllabus illustrates the diversification strategy. The list below gives credence to the diversification strategy by naming composers and their countries of origin.

Initial: Yumi Kimura (Japan)
Grade One: Akira Miyoshi (Japan), Zenhan Li (China)
Grade Two: Mark Choi (Korea/Japan), Koji Kondo (Japan)
Grade Three: Miles Davies (America/Africa), Osvaldo Farrés (Cuba)
Grade Four: Madan Mohan (India), Florence Price (America/Africa)
Grade Five: Tong Shang (China), Shankar-Jaikishan (India)
Grade Six: Joe Hisaishi (Japan), Ignacio C. Kawanagh (Cuba)
Grade Seven: Nobuo Uematsu (Japan)
Grade Eight: Satoshi Fujihara (Japan)

Readers should note that the above list is indicative rather than exhaustive. Non-European composer contributions represent up to three pieces per grade. Grades 1–5 average about 50 pieces per grade, and Grades 7–8 offer choices up to 17 pieces in each grade. This demonstrates a diverse representation of non-Western pieces between 6% and 18% of the total depending on the grade. Although in the minority, the examples provide evidence of attending to social justice objectives in the form of increasing the choice of genres. Diversity manifests itself in a repertoire collection that includes content from stage, screen, and video games so that "candidates at all stages can now be assessed through playing more of the music they love" (Trinity College London, 2023e).

Summary of Social Justice Implications

The three tenets of social justice investigated in this paper are *widened access*, *inclusivity*, *and diversity.* This section summarises the convergence of TCL curriculum design with social justice. The expanded framework of graded digital instrumental examinations is indicative of how the policies are implemented in practice through *widened access.* The promotion of *inclusivity* can be understood as a form of engaged pedagogy that places control within the reach of examinees. For instance, candidates wishing to showcase their performances are invited to do so in the digital repertoire-only pathway and those wanting acknowledgement of their technical abilities are invited to proceed with the technical work pathway. These digital options, available throughout the year, permit students to organise their musical preparations in accordance with their other commitments, which by extension, reduces the strain on their schedules. *Diversity* is identified in a flexible digital syllabus that provides students with an opportunity to personalise their needs by showcasing different genres within an internationally recognised qualification framework. The fee structure advocates sustainable music education by improving affordability. Throughout, the rigour of assessment remains high with learning outcomes that address the development of musical knowledge and skills with integrity. The representation of non-Western genres and popular culture appears within an expanded repertoire that includes popular music, film music and video games. These strategies, in my long and varied piano teaching career, have proved to have positive effects on motivation, understanding, and attainment.

Concluding Remarks

There are thousands of music students around the globe who prepare for TCL examinations. I hope to have demonstrated that TCL's changes profoundly reflect social justice aims. The design of their products has made a positive impact on improving *widened access, inclusion, and diversity.* This in turn ensures sustainable development in music education. On balance, it seems beneficial to offer candidates the opportunity to develop their skill in a way best suited to their needs. The radical overhaul

of the traditional examination format should be celebrated as a desirable outcome of sustainable music education.

Table 1. Marking Scheme for Face-to-Face and Digital Examinations

Content	Face-to-Face (Live)	Technical Pathway (Digital)	Repertoire Only Pathway (Digital)
Piece 1	22	22	25
Piece 2	22	22	25
Piece 3	22	22	25
Piece 4			25
Technical Work	14	14	
Test 1	10		
Test 2	10		
Performance & Delivery		10	
Musical Awareness		10	
TOTAL	*100*	*100*	*100*

(Adapted from Trinity College London, n.d.-a)

Table 2. Fees

Country	Grade 1		Grade 5		Grade 8		Fees Relative to UK
United Kingdom	GBP	51,00	GBP	73,00	GBP	100,00	100%
South Africa	R	700,00	R	1 160,00	R	1 620,00	
GBP Equivalent	GBP	30,33	GBP	50,26	GBP	70,19	67%
Sri Lanka	LKR	12 650,00	LKR	20 400,00	LKR	29 900,00	
GBP Equivalent	GBP	32,11	GBP	51,78	GBP	75,89	71%
United Arab Emirates	AED	540,75	AED	773,85	AED	1 092,00	
GBP Equivalent	GBP	120,70	GBP	172,73	GBP	243,75	356%

(Adapted from Trinity College London, 2023a, 2023b, 2023f, n.d.-c)

References

EduRev. (n.d.). EmSAT Achieve Questions. https://edurev.in/question/4034148/Is-the-exam-fee-the-same-for-all-locations-where-the-exam-is-conducted

Huitt, W. (2009, September). Stages of mastery. Educational Psychology Interactive. Valdosta, GA: Valdosta State University. http://www.edpsycinteractive.org/edpsyc/stgmstry.html

Laricchia, F. (2023, September 28). Global smartphone penetration 2016-2022. Statista. https://www.statista.com/statistics/203734/global-smartphone-penetration-per-capita-since-2005/#:~:text=The%20global%20smartphone%20penetration%20rate,population%20of%20around%207.4%20billion

Trinity College London. (n.d.-a). Digital graded exams: Classical & Jazz Syllabus - Qualification specifications from July 2023. https://www.trinitycollege.com/resource/?id=9166

Trinity College London. (n.d.-b). Piano sample booklet: A selection of pieces plus exercises for Trinity College London exams 2021-2023. https://www.trinitycollege.com/resource/?id=9080

Trinity College London. (n.d.-c). Fees and exam sessions, 2023-2024, Sri Lanka. Trinity College London. (2014, September). Assessment criteria - Classical & Jazz. https://www.trinitycollege.com/resource/?id=4767

Trinity College London. (2017, March). Specification supplement. https://www.trinitycollege.com/resource/?id=7700

Trinity College London. (2023a). Digital exam fees. https://www.trinitycollege.com/local-trinity/UK/music/book-exam/exam-fees

Trinity College London. (2023b). Fees for graded and certificate exams in Music - Digital: South Africa 1 January 2023 to 31 December 2023. https://files.helpdocs.io/w5ylkpdpfr/other/1675421003620/south-africa-digital-music-grade-exam-fees.pdf

Trinity College London. (2023c). Musical knowledge test parameters. https://www.trinitycollege.com/qualifications/music/resources/general-resources/resources-for-music-knowledge/musical-knowledge-test-parameters

Trinity College London. (2023d). Overall performance criteria. https://www.trinitycollege.com/qualifications/digital/digital-grades-diplomas/overall-performance-criteria

Trinity College London. (2023e). Piano. https://www.trinitycollege.com/qualifications/music/grade-exams/piano

Trinity College London. (2023f). UAE exam dates and fees. https://www.trinitycollege.com/local-trinity/UAE/exam-dates-and-fees

Trinity College London. (2023g). Your local Trinity. https://www.trinitycollege.com/local-trinity

Trinity College London. (2023, September). Piano repertoire list: Face-to-face and digital graded exams from September 2023. https://www.trinitycollege.com/resource/?id=10125

Train Whacks and Musical Tracks: Exploring Art-Music Integration Among Musicians and Non-Musicians

Rivka Elkoshi, Levinsky College for Education, Israel

Abstract

In the 20th-century industrial revolution, trains emerged as a symbol of a new artistic aesthetic, influencing painters and composers. This study delves into how music students and non-musicians interpret train noise in art music, using both graphical and verbal responses.
The study had two main objectives: (1) to explore the similarities and differences in how musicians and non-musicians respond to contemporary train-themed music, and (2) to investigate how two different genres of train music (orchestral and electro-acoustic) impact listeners' verbal and graphical reactions. The study involved 14 participants, consisting of 7 graduate music majors and 7 individuals without formal musical training. Each participant underwent two individual sessions, during which they listened to two distinct musical pieces: Villa-Lobos's orchestral *The Little Train of the Caipira* and Reich's electro-acoustic *Europe during the War*. These compositions belong to contrasting genres, with Lobos's orchestral piece evoking a steam train journey through Brazilian rural areas and Reich's work experimenting with electro-acoustic Musique concrète techniques, featuring environmental train sounds and passenger voices during World War II.

The findings were categorized into four groups:
Train and free associations evoked by the music.
Musical features related to sound (e.g., tempo, rhythm, pitch, orchestration).
Affective responses of preference and personal valence.
Graphic representations of the music.

Qualitative analyses revealed both shared patterns and distinctions between musicians and non-musicians across these categories. While statistical analyses indicated marginal significance in the musical features category when comparing the two groups. Overall, the study underscores the advantages of incorporating environmental noise as music into music education. The study highlights the benefits of seamlessly integrating music-art programs into educational curricula through audio-graphic experiences that may promote autonomous listening and notational creativity among both musicians and non-musicians.

Keywords: Environmental noise as music, Graphic responses to classical music, Integrated music-art education

In the 20th-century industrial revolution, trains became a symbol of a new artistic aesthetic, influencing painters (e.g., Lerro, 2012) and composers (Buja, 2014; Leero, 2012; Scowcroft 2019; Spalding & Fraser, 2012). This study explores the meaning that music students and non-musicians associate with train noise in art music through responses obtained both graphically and verbally.

The following review focuses on two topics: Studies on noise and dissonant music, and Graphic representation of art music.

Noise and dissonant music

Studies exploring listeners' preferences for noise and dissonant sounds (Bradley, 1972; Mateos-Moreno, 2014; Terhardt, 1984) often indicate a preference for consonance over dissonant sonorities (Droe, 2006; Gurgen, 2015; Sakin, 2016). Neuroscientists studying noise reactions, including noise within musical contexts (Baumgartner et al., 2006; Blumstein et al., 2012; Koelsch et al., 2006; Passynkova et al., 2007), generally find that concrete environmental noise and/or dissonance are perceived negatively as unpleasant, while consonant tones are perceived as pleasant and positively valenced (Harrison & Pearce, 2020; Passynkova et al., 2007).

Regarding the preferences of musicians and non-musicians, some experts suggest that non-musicians and highly trained musicians tend to have similar preferences (Madsen & Geringer, 2001; Bigand, 2003; Bigand & Poulin-Charronnat, 2005). However, neuroscientists have found differences in brain structure and function between these two groups (Gaser & Schlaug, 2003; Hyde et al., 2009). Studies also indicate that individuals with musical training tend to show a stronger preference for consonance compared to those without such training (Bumgarner, 2015; Dellacherie et al., 2011).

The current study explores how music students and non-musicians interpret two contemporary train noise compositions: one replicating relatively consonant sonorities, while the other incorporates dissonant environmental train sounds.

Graphic representation of art music

Several studies have explored how listeners visually represent contemporary music, shedding light on their perceptions of such compositions (Elkoshi, 2015, 2019, 2020; Rainer, 1925; Vanechkina, 1994). For instance, in Rainer's (1925) *Musical Graphics* study, listeners were asked to create paintings inspired by contemporary works, following analysis sessions that directed their attention to the musical aspects they were depicting (Galeyev, 1999, 2000; Jewanski & Düchting, 2009; Vanechkina, 1994). This guided listening approach inevitably influenced the graphical outcomes. In contrast, Elkoshi (2015, 2019, 2020) adopted an unguided listening approach to explore how listeners spontaneously represented the music of contemporary compositions by Debussy, Bartók, and Schönberg. Elkoshi (2015) identified three types of representations: extra-musical associations, references to musical elements, and compound responses, which incorporated a combination of both.

Train music has been infrequently explored in audio-graphic studies. In a notable exception, Mantie & Ilari (2019) examined children's graphic reactions to Schaeffer's electro-acoustic composition *Study of the Railroad*. In their study, Brazilian schoolchildren represented Schaeffer's music through drawings, comments, and onomatopoeias.

Based on unguided listening, the current study explores for the first time the meaning that music students and non-musicians attach to orchestral and electro-acoustic train compositions.

Objectives

The purpose of the study was twofold: (1) to examine similarities and differences between musicians and non-musicians in their responses to contemporary train music; (2) to explore the effect of two genres of train music: orchestral and electro-acoustic, on listeners' verbal and graphic responses.

Method

Participants

The study comprised 14 participants: 7 graduate music majors (4 males; average age: 44.8) and 7 individuals without formal musical training (2 males; average age: 45.2).

Procedure

Participants engaged in two 50-60 min sessions that occurred one week apart and were held in a private studio. The musical repertoire presented comprised two train-themed compositions:
Heitor Villa-Lobos The Little Train of the Caipira (1930), Toccata movement from the orchestral suite Bachianas Brasileiras No. 2. (4:34). (Brasileira Orquestra Sinfônica https://www.youtube.com/watch?v=wIG4h7lvj4Y).

Steve Reich, Europe during the War (1988) from Different Trains, movement II, for string quartet and tape (7:31). (Reich: Kronos quartet https://www.youtube.com/watch?v=sq5jmTx_gO0).

The chosen repertoire encompasses two distinct genres: Lobos's orchestral composition evoking a Brazilian steam train journeying through rural areas, connecting small communities ('Caipira') (Predota, 2018) and Reich's experimental *Musique concrète* piece, featuring manipulated train noises and passenger voices via electro-acoustic methods. Reich's piece portrays the harrowing experiences of Jews during the Nazi era, as they were crowded into European cattle wagons en route to concentration camps.

During each session, participants randomly listened to one of two train-themed compositions on YouTube with the screen off. They were then instructed to verbally reflect on the music, create a drawing representing the music, and consider the connections between their drawing and the music.

Findings

Three types of responses emerged:
Associations: including train associations or free associations unrelated to trains;
Musical features related to sounds (e.g., tempo, rhythm, pitch, instrumentation), and
Affect: personal preference and valence regarding the music.

Often, two or three categories combined in one response, as demonstrated by Tami (a female musician aged 50.6). Tami explained her audio-graphic response to Reich's work (Figure 1): I envisioned an orchestra aboard a train [symbolizing the train association]. The musicians rehearsed amidst an atmosphere of ongoing tension. As the train accelerated, so did the tempo [emphasizing the connection between the train and tempo]. Additionally, I notated two recurring rhythms [as rhythmic units].

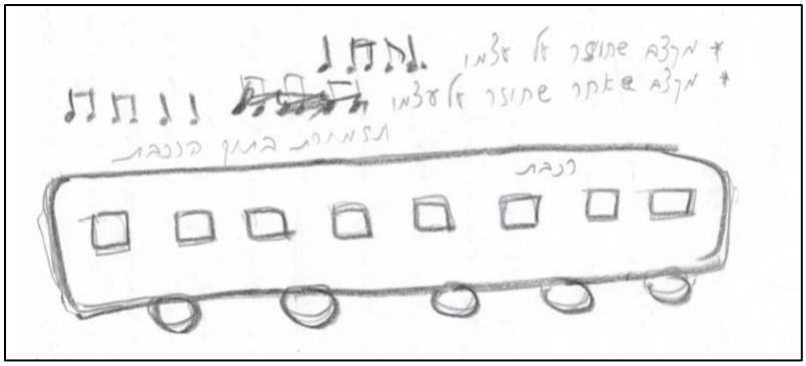


Figure 1. Response to Riech's music

Participants occasionally compared the two compositions and expressed their personal preferences, as seen in Niv's response to Lobos's work. Niv describes a progression of events in his map-like top-to-bottom illustration (Figure 2). Niv, a 34-year-old male non-musician, explained:
I portrayed a train journey through mountain scenery [emphasizing the train association]. The composition begins with a mechanical intro, represented by a rotating gear at the top, featuring wind instruments, violins, and drums [for instrumentation]. A melody unfolds [forming the melodic unit]. A brief pause, resembling a brake, is noted with 'Change, Stop.' The music resumes with arrows pointing to 'Normal' [signifying both the train association and tempo]. The journey concludes at an endpoint signpost labelled 'the end,' with a grand finale performed by wind instruments and drums [represented by a drumhead and sticks]. The piece [Lobos] provided a more enjoyable experience than the previous [Reich] piece [reflecting a positive affective valence] .

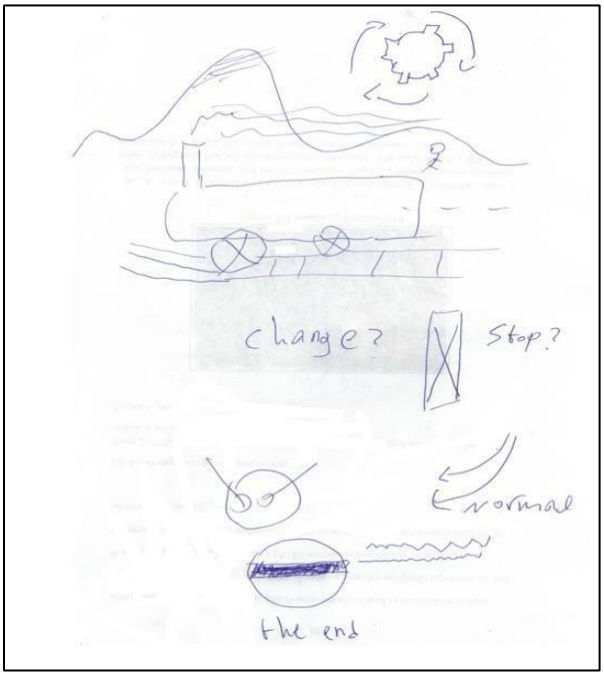


Figure 2. Response to Lobos's music

Types of drawings

Three types of drawings emerged:

Figurative drawings, namely pictures of recognizable objects (trains, views, etc.), typically representing associations, as demonstrated in figures 1 and 2.

Musical maps, created in synchronization with the music, are characterized by temporal progressions in a horizontal/vertical design, typically representing unfolding events along a time-axis, as demonstrated by Niv's illustration (figure 2).

Abstract scribbles drawn across the page represent a harsh mood as demonstrated by Yaffi's response to Reich (figure 3). Yaffi, a 41-year-old female musician, said: "The drawing conveys a sense of demonic threat" [harsh mood].

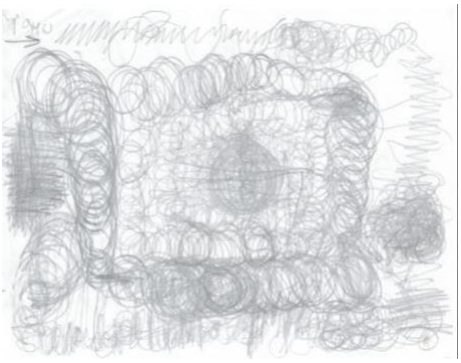


Figure 3. Abstract scribbles

Associations

Train associations frequently featured descriptions of typical train noises like rattling, whistling, sirens, screeching, and onomatopoeias. These associations were often either harsh, as in "The music reminded me of the Chernobyl disaster" [Reich] or tranquil, as exemplified by "A field trip, blue sky, sunshine" [Lobos].

Musical features

Listeners mentioned tempo, noise, style/genre, instruments, dynamics (Reich/Lobos), vocal speech (Reich), melody, and texture (Lobos). These musical elements were frequently intertwined with extra-musical associations. Respondents also identified musical unites, such as rhythmic ostinato, melodic repetition (Lobos/Reich) and speech patterns (Reich)." Musicians categorized Reich's style/genre as "modern, minimalistic, atonal, electronic, and concrete music."

Affect

Responses include emotions (positive/negative); assessments of musical quality (positive/negative); and preference. For example, "I felt awful listening to sirens" [Reich] (negative emotion); "the composer created order out of disorder" [Reich] (positive assessment).

Statistical analyses

The study comprised a small sample size of 14 participants, 7 musicians, and 7 non- musicians. Fisher exact analysis indicated no significant differences between musicians and non-musicians in gender distribution $p = .592$.

Due to the small sample size, we examined the differences between musicians and non-musicians in their verbal and audio-graphic responses to orchestral and electro-acoustic train-noise compositions by conducting non-parametric analyses. The verbal responses were measured by the association, musical features, and affect measures. The audio-graphic responses were measured by the audio-graphic types measures.

To analyze differences between musicians and non-musicians in associations, musical features, affect, and audio-graphic types for both compositions, Mann-Whitney tests were employed. Table 1 presents the Mean, Standard Deviation (SD), Median (Mdn), and U values of the association, affect, musical features, and audio-graphic types measures on both compositions by group.

Table 1. Mean, SD, Mdn, and U values of the association, affect, musical features, and audio-graphic types measures on both compositions by group

Non-musicians				Musicians				
Variables (range 0-2)	M	SD	Mdn	M	SD	Mdn	*U*	*p*
Associations								
Train	1.29	0.76	1.00	1.14	0.69	1.00	21.50	.674
Free	0.71	0.76	1.00	0.71	0.76	1.00	24.50	1.00
Harsh	1.00	0.00	1.00	1.29	0.49	1.00	17.50	.141
Tranquil	0.86	0.38	1.00	0.57	0.53	1.00	17.50	.254
Affect								
Positive emotion	0.71	0.49	1.00	0.29	0.49	0.00	14.00	.122
Negative emotion	0.71	0.49	1.00	1.00	0.00	1.00	17.50	.141
Positive assessment	0.43	0.53	0.00	0.29	0.49	0.00	21.00	.591
Negative assessment	0.29	0.49	0.00	0.43	0.79	0.00	23.50	.872
Like	0.57	0.53	1.00	0.43	0.53	0.00	21.00	.606
Dislike	0.29	0.49	0.00	0.29	0.49	0.00	24.50	1.00
Musical features								
Tempo	1.00	0.82	1.00	1.29	0.49	1.00	19.50	.473
Style	0.43	0.53	0.00	1.14	0.69	1.00	11.00#	.058
Instruments	0.71	0.76	1.00	0.57	0.53	1.00	22.50	.775
Dynamic	0.29	0.49	0.00	0.86	0.69	1.00	13.00	.100
Units	0.29	0.49	0.00	0.86	0.90	1.00	15.50	.196
Voice	0.57	0.53	1.00	0.43	0.53	0.00	21.00	.606
Melody	0.29	0.49	0.00	0.29	0.49	0.00	24.50	1.00
Texture	0.29	0.49	0.00	0.14	0.38	0.00	21.00	.530
Noise	1.29	0.49	1.00	0.71	0.49	1.00	12.50#	.054
Audio-graphic types								
Train drawing	0.86	0.90	1.00	0.71	0.49	1.00	23.00	.833
Figurative	1.57	0.79	2.00	1.14	0.90	1.00	17.50	.317
Abstract	0.14	0.38	0.00	0.43	0.53	0.00	17.50	.254
Map	0.71	0.76	1.00	0.43	0.53	0.00	19.50	.475

Marginally significant

As Table 1 shows, no significant differences were found between musicians and non-musicians in their verbal and audio-graphic responses to orchestral and electro-acoustic compositions. Notably, the differences between the two groups were marginally significant in the two musical features: style and noise perception. The mean score on style was higher among musicians; the mean score on noise was higher among non-musicians compared to musicians.

To examine the differences between musicians and non-musicians in the frequency of reactions to the orchestral (Lobos) and electro-acoustic (Reich) compositions in the association, musical features, affect, and audio-graphic types measures, Fisher exact tests were conducted. Table 2 presents the frequency of the participant's reactions to Reich's composition in the association, affect, musical features, and audio-graphic types measures and Table 3 presents the frequency of the participants' reactions to Lobos's composition in the association, affect, musical features, and audio-graphic types measures.

Table 2. Frequency of the participants' reactions to Reich's composition in the association, affect, musical features, and audio-graphic types measures

	Non-musicians		Musicians		
Variables	n	%	n	%	*p (Fisher's exact)*
Associations					
Train	5	71.4%	3	42.9%	.592
Free	2	28.6%	4	57.1%	.592
Harsh	7	100%	7	100%	---
Tranquil	0	0.0%	0	0.0%	---
Affect					
Positive emotion	0	0.0%	0	0.0%	---
Negative emotion	5	71.4%	6	85.7%	1.000
Positive assessment	0	0.0%	1	14.3%	1.000
Negative assessment	2	28.6%	2	28.6%	1.000
Like	0	0.0%	0	0.0%	---
Dislike	2	28.6%	2	28.6%	1.000
Musical features					
Tempo	3	42.9%	5	71.4%	.592
Style	1	14.3%	5	71.4%	.103

Instruments	2	28.6%	3	42.9%	1.000
Dynamic	0	0.0%	4	57.1%	.070
Units	2	28.6%	3	42.9%	1.000
Voice	4	57.1%	3	42.9%	1.000
Melody	0	0.0%	0	0.0%	---
Texture	0	0.0%	0	0.0%	---
Noise	6	85.7%	3	42.9%	.266
Audio-graphic types					
Train drawing	4	57.1%	2	28.6%	.592
Figurative	6	85.7%	4	57.1%	.559
Abstract	1	14.3%	3	42.9%	.559
Map	1	14.3%	0	0.0%	1.000

Table 3. Frequency of the participants' reactions to Lobos's composition in the association, affect, musical features, and audio-graphic types measures

	Non-musicians		Musicians		
Variables	n	%	n	%	*p (Fisher's exact)*
Associations					
Train	4	57.1%	5	71.4%	1.000
Free	3	42.9%	1	14.3%	.559
Harsh	0	0.0%	2	28.6%	.462
Tranquil	6	85.7%	4	57.1%	.559
Affect					
Positive emotion	5	71.4%	2	28.6%	.286
Negative emotion	0	0.0%	1	14.3%	1.000
Positive assessment	3	42.9%	1	14.3%	.559
Negative assessment	0	0.0%	1	14.3%	1.000

Like	4	57.1%	3	42.9%	1.000
Dislike	0	0.0%	0	0.0%	---
Musical features					
Tempo	4	57.1%	4	57.1%	1.000
Style	2	28.6%	3	42.9%	1.000
Instruments	3	42.9%	1	14.3%	.559
Dynamic	2	28.6%	2	28.6%	1.000
Units	0	0.0%	3	42.9%	.192
Voice	0	0.0%	0	0.0%	---
Melody	2	28.6%	2	28.6%	1.000
Texture	2	28.6%	1	14.3%	1.000
Noise	3	42.9%	2	28.6%	1.000
Audio-graphic types					
Train drawing	2	28.6%	3	42.9%	1.000
Figurative	5	71.4%	4	57.1%	1.000
Abstract	0	0.0%	0	0.0%	---
Map	4	57.1%	3	42.9%	1.000

As tables 2 and 3 show, no significant differences were found between musicians and non-musicians in their verbal and audio-graphic responses to each of the two compositions. No significant differences were found in all the study measures (association, musical features, affect, and audio-graphic types measures).

Conclusion

The statistical analyses showed a marginal significance between musicians and non-musicians in two musical features: style - higher among musicians ($p = .058$.(; and noise - higher among non-musicians ($p = .054$(. No significant differences were found between musicians and non-musicians in the other measures. Although statistically insignificant, the qualitative results indicated similarities and differences between musicians and non-musicians in their responses to Lobos and Reich in the four categories: associations, musical features, affect, and audio-graphic types.

The ability to recognize the selected works as train-noise music was emphasized in the listeners' verbal accounts and was well illustrated in the visual productions conveyed by both musicians and non-musicians. Harsh (train and free) associations were more common than tranquil associations.

Both musicians and non-musicians were aware of a large number of musical features: tempo, noise, style, instrumentation, dynamics, musical units, melody, and texture. Tempo changes and noise perception were the most prominent elements. Reich elicited more references to noise compared to Lobos. Musicians used formal theoretical terms while non-musicians used both theoretical terms and everyday language. Nonetheless, different nomenclature expressed similar notions.

Both musicians and non-musicians preferred Lobos over Reich; Reich's more dissonant sounds were perceived mostly as repulsive, arising negative emotions, assessments, and 'dislikes', whereas Lobos's more traditional music elicited no 'dislikes' and was much more acceptable as 'concert music'. Non-musicians were much more elaborate and detailed in their emotional responses compared to musicians. Reich and Lobos elicited figurative drawings and musical maps, but abstract scribbles that expressed mainly chaotic feelings were found only in the Reich-drawing collection.

Discussion

Lobos's and Reich's train-themed music rendered associations mostly akin to the composers' explicit intentions. Lobos's rural steam-driven train was more connected with peaceful train voyages through beautiful landscapes, being Lobos's original intent (Appleby, 2002; Predota, 2018). As intended by Reich, his work was abundantly connected with harsh descriptions: war, Holocaust, chaos, alarm, destruction (Edridge-Waks, 2018; Enghelberg, 2010; Hoek, 2001; Miklaszewska, 2013; Reich, 2002; Rozell, 2016).

Auditory features were often intertwined with associations, a phenomenon observed in former studies (Elkoshi, 2015, 2019, 2024). Train associations occasionally included onomatopoeia as in Mantie and Ilari's (2019) study.

A type of musical expertise was present in non-musicians. Not only did non-musicians use formal terms, but they also displayed considerable awareness of musical elements. This is in line with studies

showing that listening capacities are acquired without the help of explicit training (e.g., Bigand & Poulin-Charronnat, 2005).

Participants preferred Lobos's orchestral work over Reich's electro-acoustic piece, which was often considered unsuitable for the concert hall. This is in accord with former studies showing that concrete environmental noise tends to be perceived as negatively valenced (Harrison & Pearce, 2020), and that listeners prefer music rooted in the classical tradition over experimental music (Sakin, 2016). As in former studies, (Hannon & Trainor, 2007; Harrison & Pearce, 2020; Passynkova et al., 2007), this study suggests a connection between relative consonance and pleasantness; harsh noise and unpleasantness.

Implications

Train-themes music is an illustrative example of the constantly evolving sound conditions in our environment, frequently serving as a wellspring of inspiration for composers (Schaeffer, 1952). This study underscores the advantages of incorporating environmental noise music into music education programs. Exploring the aesthetics of noise (Cassidy & Einbond, 2013; Feisst, 2016; Hegarty, 2007; Sangild, 2002) helps students become attuned to the ever-changing audio-sphere of the surroundings and broaden their spectrum of musical resources. Noise/music activates a flow of associations and auditory insights among musicians and non-musicians alike.

Incorporating the *Musical graphics* method in music education assumes the general validity of cross-modal connections of the auditory with the visual modality (Galeyev, 2000). Unguided audio-graphic experiences allow for autonomous listening, diverse notational inventions, and integrated music-art programs in the curriculum.

Orchestral music imitating environmental noise might arise more positive responses than works that consist of ecological sounds recorded directly from the surroundings. However, this possibility is questionable since the concepts of consonance and dissonance have changed over time (Nechvatal, 2012); what is harsh dissonance today may not be in the future.

References

Appleby, D. P. (2002). *Heitor Villa-Lobos: A Bio-Bibliography* (Bio-Bibliographies in music, Book 9). Greenwood Press.

Baumgartner, T., Esslen, M., & Jancke, L. (2006). From emotion perception to emotion experience: Emotions evoked by pictures and classical music. *International Journal of Psychophysiology* (60), 34-43. https://doi.org/10.1016/j.ijpsycho.2005.04.007

Bigand, E. (2003). More about the musical expertise of musically untrained listeners. *Annals of the New York Academy of Sciences,* 999(1), 304-12. https://doi.org/10.1196/annals.1284.041

Bigand, E., & Poulin-Charronnat, B. (2005). Are we "experienced listeners"? A review of the musical capacities that do not depend on formal musical training. *Cognition* 100(1), 100-130. DOI: 10.1016/j.cognition.2005.11.007

Blumstein, D.T., Bryant, G. A., & Kaye, P. (2012). The sound of arousal in music is context- dependent. *Biology Letters*, 8(5), 744-747. doi: 10.1098/rsbl.2012.0374

Bradley, I. (1972). Effect on student musical preference of a listening program in contemporary art

music. *Journal of Research in Music Education*, 20(3), 344-353. DOI:10.2307/3343887
Buja, M. (2014). Trains in a classical mode. *Interlude*. http://www.interlude.hk/front/trains-in-a-classical-mode/ [Accessed: January 20, 2020].
Bumgarner, R. J. (2015). Emotional responses to musical dissonance in musicians and nonmusicians. *ScholarWorks at WMU*. https://scholarworks.wmich.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1568&context=masters_theses [Accessed: June 1, 2019].
Cassidy, **A**., & Einbond, A. (2013). *Noise in and as Music*. University of Huddersfield Press.
Dellacherie, D., Roy, M., Hugueville, L., Peretz, I., & Samson, S. (2011). The effect of musical experience on emotional self-reports and psychophysiological responses to dissonance. *Psychophysiology*, 48(3), 337-49. DOI: 10.1111/j.1469-8986.2010.01075.x
Droe, K. (2006). Music preference and music education: A review of literature. *Update: Applications of Research in Music Education,* 24(2), 23-32. DOI:10.1177/87551233060240020103
Edridge-Waks, R. (2018). On Steve Reich's Different Trains. *YouTube* https://www.youtube.com/watch?v=1r-kxJqjrws [Accessed: May 10, 2019].
Elkoshi, R. (2015). Children's invented notations and verbal responses to a piano work by Claude Debussy. *Music Education Research*, 17(2), 179–200. doi:10.1080/14613808.2014.930116
Elkoshi, R. (2019). Tone painting and painting tones: A follow-up study of listeners' audiovisual responses to Beethoven's Thunder Storm. *International Journal of Music Education (IJME): Research and Practice*, 37(3), 476-492. https://journals.sagepub.com/eprint/TTCBWSGYBFVQGVNP6YCI/full
Elkoshi, R. (2020). Perception of the ternary arch-form in Western concert music: evidence from college music education. *Music Education Research*, 22(4), 388- 407, DOI: 10.1080/14613808.2020.1792866
Elkoshi, R. (2024). A study of rhythmic emergent literacy within an Orff-based program implemented in Israel. *International Journal of Music Education.* Volume 42, Issue 1. https//doi.org/10.1177/02557614221144685
Enghelberg, H. (2010). The trains of the Holocaust. *ENG Publishing Kindle Edition* https://www.goodreads.com/book/show/21270442-the-trains-of-the-holocaust-a-look-at-how-the-european-railway-transp [Accessed: May 2, 2020].
Feisst, S. (2016). Music and ecology. *Contemporary Music Review*, 35(3), 293-295. DOI: 10.1080/07494467.2016.1239383
Galeyev, B. M. (1999). What is synaesthesia: myths and reality. *Leonardo Electronic Almanac*, 7(6), 1-16.
Galeyev, B. M. (2000). Children draw music by I. Vanechkina, I. Trofimova: Reviewed by B. Galeyev. *Leonardo Reviews on-line* https://www.leonardo.info/reviews_archive/aug2000/bk_CHIL_galeyev.html. [Accessed: February 10, 2019].
Gaser, C., & Schlaug, G. (2003). Brain structures differ between musicians and non-musicians. *Journal of Neuroscience* 23(27), 9240-9245. DOI: 10.1523/JNEUROSCI.23-27-09240.2003
Gurgen, E. T. (2015). Musical preference and music education: Musical preferences of Turkish university students and their levels in genre identification. *International Journal of Music Education* 34(4), 459-471. DOI:10.1177/0255761415619390
Hannon, E., & Trainor, L. (2007). Music acquisition: Effects of enculturation and formal training on

development. *Trends in Cognitive Sciences,* (11), 466-472. doi: 10.1016/j.tics.2007.08.008.
Harrison, P. M. C., & Pearce, M. T. (2020). Simultaneous consonance in music perception and composition. *Psychological Review,* 127(2), 216-244. https://doi.org/10.1037/rev0000169
Hegarty, P. (2007). *Noise/Music: A History*. Continuum.
Hoek, D. J. (2001). *Steve Reich: A Bio-Bibliography* (Bio-Bibliographies in music). Greenwood Press.
Hyde, K. L., Lerch, J., Norton, A., Forgeard, M., Winner, E., Evans, A. C., & Schlaug, G. (2009). Musical training shapes structural brain development. *Journal of Neuroscience*, 29(10), 3019–3025. doi:10.1523/jneurosci.5118-08.2009
Jewanski, J. & Düchting, H. (2009). Musik und Bildende Kunst im 20. Jahrhundert. Begegnungen - Berührungen - Beeinflussungen. University Press.
Koelsch, S., Fritz, T., Cramon, Y. D., Müller, K., & Friederici, A. D. (2006). Investigating emotion with music: An fMRI study. *Human Brain Mapping* (27), 239-250. DOI: 10.1002/hbm.20180
Leero, A. (2012). Futurist trains: Aesthetic and subjectivity in the Italian avant-garde. In Steven D. Spalding, & B. Fraser (Eds.), *Trains, literature, and culture: reading and writing the rail* (pp. 77-97). Lexington Books.
Madsen, C. K., & Geringer, M. J. (2001). A focus of attention model for meaningful listening. *Bulletin of the Council for Research in Music Education,* (147), 103-108.
Mantie, R. A., & Ilari, B. (2019). He sings with rhythm; He is from India: Children's drawings and the music classroom. In David J. Elliott, Marissa Silverman, & Gary E. McPherson (Eds.) The Oxford handbook of philosophical and qualitative assessment in music education, (pp. 364- 396). Oxford University Press. https://digitalcommons.montclair.edu/all_books/375
Mateos-Moreno, D. (2014). Latent dimensions of attitudes towards contemporary music: A structural model. *Psychology of Music,* 43(4), 545-562. http://doi.org/1177/0305735613513486
Miklaszewska, J. (2013). Contemporary music documenting the Nazi terror: Steve Reich's Different Trains. *The Polish Journal of the Arts and Culture*, 8(5), 125-137. Nr 8 (5/2013) /
Nechvatal, J. (2012). *Immersion into Noise*. Open Humanities Press.
Passynkova, N., Neubauer, H., & Scheich, H. (2007). Spatial organization of EEG coherence during listening to consonant and dissonant chords. *Neuroscience Letters* 421(1), 6-11.doi:10.1016j.neulet.2006.09.029.
Predota, G. (2018). Full steam ahead musical train journeys II. *Interlude http://www.interlude.hk/front/full-steam-ahead-musical-train-journeys-ii/ [Accessed: June 11, 2019].*
Rainer, O. (1925). Musikalische Graphik: Studien und Versuche über die Wechselbeziehungen zwischen Ton und Farbharmonien. Deutscher Verlag für Jugend und Volk.
Reich, S. (2002). *Writings on Music, 1965-2000*. Oxford University Press. Rozell, M. (2016). *A Train Near Magdeburg*. Woodchuck Hollow Press.
Sakin, A. S. (2016). The opinions of music education students about 20th and 21st centuries classical music: Uludag University exemplification. *Journal of Education and Practice*, 7(35), 117-123. ISSN 2222-288X
Sangild, T. (2002). *The Aesthetics of Noise*. DataNom.
Schaeffer, P. (1952). *In Search of Concrete Music*. University of California Press.
Scowcroft, P. (2019). Railway in music (Part 2). *Classical music on the Web* http://www.musicweb-international.com/railways_in_music2.htm [accessed: January 4, 2020].
Spalding, S. D., & Fraser, B. (Eds). (2012). *Trains, Literature, and Culture: Reading and Writing the*

Rails. Lexington Books.
Terhardt, E. (1984). The concept of musical consonance: A link between music and psychoacoustics. *Music Perception* (1), 276–295. https://doi.org/10.2307/40285261
Vanechkina, I. L. (1994). "Musical Graphics" as an instrument for musicologists and Educators. Leonardo, 27(5), 437-439.

Service learning in music teacher education: challenges and opportunities of fostering intergenerational collaboration

Ivet Farrés Cullell, University of Girona, Spain & Miquel Alsina Tarrés, University of Girona, Spain

Abstract

In the educational field, we conceive of active methodologies as the ones, focused on students, which contemplate learning as a constructive rather than a receptive process. This study presents the application in music education of an active learning modality, the so-called service-learning approach, where the goal is to carry out solidarity action that responds to real needs while also learning.

The set goals were as follows:

(1) To study the potential of music as an intergenerational mediator in the development of service-learning activities during initial teacher training; and
(2) to analyse the roles and types of interaction established among the students and the other participants; and
(3) to define the competencies that service-learning activities help to develop in participating students.

This research used a qualitative methodology based on the socio-critical paradigm, given that we were interested in the intergenerational relations of different social groups and their transformation through the mediation of music. The data was collected and analysed by the participating university students' teachers, who assumed the role of participant observers.
An ad hoc questionnaire was prepared and validated to collect the data, and focal interviews were conducted with each group of students (n=80). Fieldwork was also carried out. It consisted of observing the interventions and taking notes in order to enrich the group discussions of the results.

The results of this research underscore the potential of music as an intergenerational mediator, which becomes the starting point and main driver for transferable learning. Musical language is integrated as a form of expression, as an object of study that serves to understand societies and as a pretext to endow learning with functionality. This contributed to their emotional well-being in their everyday lives and enabled them to self-regulate their own training needs and the process required. Furthermore, there was an improvement in self-assessment and the competencies need to reflect on the practice.

The study provided a very forceful demonstration of the power of music as a tool for intergenerational cohesion and connection. Being part of and experiencing a service-learning activity first-hand in the musical field provides a bridge between knowledge and action, cultivating both dimensions and transforming reality. The time devoted to reflecting, expressing, formulating doubts and questions among professionals is of great value, serving to value one's own practice and at the same time reappraise and rebuild the learning and professional competencies of future teachers.

Keywords: Service-learning, teacher training, music didactics, intergenerational collaboration

Theoretical background of the paper

Music education as a mediator in service-learning activities

The use of active methodologies is becoming increasingly common in teaching; they offer teachers tools and perspectives for the development of more global proposals, which involve the students' social and environmental contexts. In this sense, the use of these methodologies in educational institutions "is an educational requirement from the standpoint of the implementation of learning by competencies, since it boosts the connection of knowledge from different areas in order to achieve a complex goal, which must be approached from different perspectives" (Durfeld et al., 2018, p. 36).

Society needs people capable of adapting to continual changes, and so the training offered in schools and/or universities demands a functional approach, which qualifies professionals for intervention in context and prepares competent individuals. There is a need for resources and methods that bring training closer to reality from an inclusive standpoint. Among these resources, we consider service-learning activities to be an instrument that favours contextualized learning and socio-educational inclusion. "Student teaching must not only promote learning to know and learning to do, but also learning to live together, learning to live with others and learning to be" (Delors, 1996, as cited in Moliner et al., 2022, p. 2).

Service-learning takes real conflicts, shortcomings and challenges as its starting point, from within the social and environmental context of the student, and works towards their resolution. These are favourable scenarios for interrelating theory with practice: "which makes the actual work a powerful mechanism of interaction, help and return of knowledge" (Zorrilla et al., 2016, p. 81). Service-learning has a twofold purpose: it is both pedagogical and supportive.

In this respect, music can become a means of cohesion, exchange and communication: a bridge between the social context and practice in the classroom because it is assumed that the latter is not a closed space and limited to four walls, but a place open to the world and its reality (Burton & Reynolds, 2009). Nonetheless, new perspectives and approaches to music education must encourage experiential and active learning. "Including music in the overall scheme of education implies returning to the concept of education for art" (Espinosa, 2007, p. 109).

Real situations can generate cognitive conflicts that stimulate the students' initiative and creativity, inviting them to observe their environment, detect problems and develop relevant solutions by putting all their musical skills and knowledge to work. Thus, music becomes a means and an end in learning. "Intergenerational programmes favour experiences that promote relationships, with the will to build a society for all ages, in which neither being together or simple interaction is enough: it is necessary to act and act together" (Newman & Sánchez, 2007).

In this sense, the initial training received by teachers—and therefore the knowledge and skills they obtain from it—is crucial to encouraging their involvement and professional commitment. "Hence the need to create spaces that facilitate dialogue, cooperation and social harmony among different age groups" (Bagnasco et al., 2020; Kaplan, 2001).

Aim/focus of the work/research reported

This research analysed service-learning activities that were organised during teachers' initial training, thereby placing value on the role of music in student learning. For this reason, this research was undertaken with the desire to open the way for new musical experiences for students, based on the multiple dimensions that music encompasses and the value it gives to group work. Thus, we opted for a global view of music education, where all learning areas and contexts have a place. Music becomes an element of cohesion and exchange that responds to real needs and aims to achieve learning outcomes at the same time.

The research goals were as follows:

- To study the potential of music as an intergenerational mediator for the development of service-learning activities during teachers' initial training.
- To analyse the roles and types of interaction established among the students and other participants.
- To define the competencies that service-learning activities develop in participating students.

Method/approach/modes of inquiry

This research was based on the socio-critical paradigm (also referred to as the critical paradigm). This entails an approach to social research opposed to the purely objective positivist paradigm, which proposes an exploration of social phenomena from the standpoint of the subjectivity of the social actors. Therefore, we were particularly interested in the intergenerational relationship existing between different social groups and its transformation through the mediation of music, in a work plan that brought together the pedagogical perspectives of music education and social work.

As regards the socio-critical paradigm we were also interested in the fact that, in general, researchers build their knowledge while transforming the reality that surrounds them. In our case, the data was collected and analysed by participant observers, these being the university teachers of the students involved.

The study was based on three service-learning activities organised around the music subject matter on the syllabus of a teaching degree offered by the university. An ad hoc questionnaire was prepared and validated to collect the data, and focal interviews were conducted with each group of students (n=80). Fieldwork was also carried out. It consisted of observing the interventions and taking notes in order to enrich the group discussions.

Results and/or summary of the main ideas

Roles and type of interaction established among the participants

The use of service-learning as an active learning methodology made it possible to respond to real needs detected by the specific analysis of the activity context. On the other hand, the proper use of this methodology consists not only of detecting needs but also of characterizing and adopting the derived actions in order to offer a service to the other, i.e. a disadvantaged community that does not have access to a certain kind of knowledge and that students can offer. Specifically, the types of interactions that were planned and guided the course of the service-learning activities—and which were developed progressively as the project unfolded—were as follows:

Students: they obtained extra training outside the university faculty, which went beyond disciplinary (musical) learning to incorporate the development of transversal competencies that are equally vital to professional dedication to teaching, with examples being empathy, communication and resource management.

Teaching staff: the interactions challenged the role of specialist university teaching staff as being solely responsible for proposals related to music. Co-teaching and curriculum co-design were advocated as a methodology to be used by teachers and students to generate new learning scenarios. An approach in which the teaching staff developed joint activities. Moreover, opening them up to the students meant that the learning content and procedures could be tackled more confidently.

The institution: it was enriched by the introduction of sessions that broke up the monotony of the timetables and routine activities. The musical activities had a notable positive impact on the participants at an emotional, social and communicative level.

The university community: the development of these service-learning activities involved implementing a model of emotional culture at the university, with the mainstays being participatory diagnosis (detection of needs in vulnerable groups), transfer (actions that were carried out), and assessment (contribution to learning processes, social harmony and well-being).

Areas of knowledge developed through service to the community

This research reaffirmed the idea that music can form the backbone of the projects currently being carried out in educational institutions, and that it can foster transversal competencies, as we have already reported in other research on the teaching of musical expression. According to Gustems et al. (2018) “the art of pedagogy and the pedagogy of art must be combined to design scenarios where disciplines and areas of knowledge acquire meaning by responding to the different realities and experiences of the subjects in different contexts” (p. 54).

The didactics of music teaching (regardless of the goals pursued) must take into account that “music is learned by making music” (Casals et al., 2014, p. 587). Only in this way can a broad musical training be guaranteed, both from the standpoint of individual and group practice and as regards developing critical capacity and awakening a liking for and interest in music.

To obtain information about the activity under study, four areas were taken into account, with the intention of evaluating global learning outcomes that are transferable to multiple scenarios.

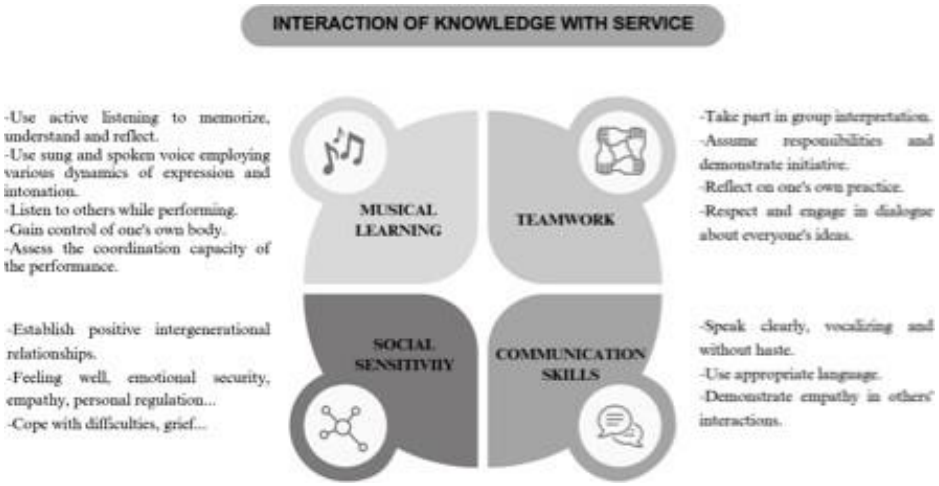


Figure 1. Areas of learning developed through service to the community

At the level of learning music, students valued the singing voice as a starting point and a stimulus for developing other musical skills. We focused on the voice as a democratic instrument inherent to each individual, which permits unique and special spontaneous expression and production in groups.

The fact of developing the service-learning activity in a group meant that the students felt accompanied, confident, and also valued by others. The students shared experiences and needs were identified. And on the basis of joint reflection, progress was made in improving musical educational practices aimed at the inclusion of disadvantaged communities. Furthermore, singing in a group, which characterized all the evaluated activities, is a way of making music, of understanding it and enjoying it.

In terms of communication skills, collective dialogue between the participants was encouraged, with the spotlight on teachers' leadership skills when conducting the activity. Music became the main language of expression, which facilitated affective bonding among the participants. Sharing the activity with other people and institutions resulted in learning new strategic, suggestive approaches to communication, socializing knowledge and making it available to everyone, and making the students feel they were the instigators of the activities and not just mere performers or spectators.

Finally, as regards the link with the users in the participating associations and entities, it is worth mentioning that positive intergenerational relationships were established that went beyond the meetings organized between university and entity. Some students involved in the activity made new contacts outside the activity under study. The students generated deep and meaningful learning that has endured over time. Without forgetting that their emotional well-being was crucial for the successful development of the activity.

Given the above, it becomes clear that there is a need to contemplate this framework as a process of connections between the four areas of learning, thereby enabling future teachers to develop perceptive and expressive competencies and thus acquire their own tools to communicate and live in society.

Conclusions and implications for music education

The learning service activities described here mobilised commitment, empathy, reflection and a sense of learning among the trainee teachers, while working for a common good (Moliner et al., 2022). We believe that this methodology, if applied over time, can produce very positive results because it equips the participants with the values and competencies needed to satisfactorily carry out their teaching work.

Music served as the cornerstone for sharing with others what may be described as a universal intergenerational communication system with therapeutic power, which helps take care of people.

In this sense, thanks to the introduction of the dynamics of active methodologies such as service-learning, cooperative learning and project-based learning (among others), it was possible to cover certain aspects of musical training while also linking them to other disciplines. The aim was to promote motivational, meaningful activities and connect them with past and future everyday university practices, in a continuous reworking of each participant's own knowledge (Siebenaler, 2005).

Lastly, we want to highlight that the sustainable approach of the project was fundamental to guaranteeing its impact, which is why those future actions needed to maintain and guarantee the continuity of the expected results were always kept in mind. The viability of the project is undeniable: In view of the close relationships formed with the collaborating entities and the enduring interest of those involved, it has the capacity to generate long-term changes. We understand, like Yob (2000), that if a project is truly sustainable, this implies that the emotional benefits derived from it will last even beyond its conclusion.

References

Bagnasco, A., Hayter, M., Rossi, S., Zanini, M.P., Pellegrini, R., Aleo, G., Catania, G., & Sasso, L. (2020). Experiences of participating in intergenerational interventions in older people's care settings: A systematic review and meta-synthesis of qualitative literature. *Journal of Advanced Nursing, 76*(1), 22-33.

Burton, S., & Reynolds, A. (2009). Transforming music teacher education through service-learning. *Journal of Music Teachers Education, 18*(2), 18-33. https://doi.org/10.1177/105708370832787

Casals, A., Carrillo, C., & González-Martín, C. (2014). La música también cuenta: combinando matemáticas y música en el aula. *LEEME Revista Electrónica Europea de Música en la Educación, 34*, 1-17.

Espinosa, S. (2007). Creación y pedagogia: los compositores van al aula. In M. Díaz & A. Giráldez (Eds.), *Aportaciones teóricas y metodológicas a la educación musical, Una selección de autores relevantes* (pp. 95-112), Barcelona: Graó.

Dürfeld, M., Shultz, A., Stein, C., Thomack, B., & Zeissig, N. (2018). ID+Lab – Analyzing, Modeling and Designing Interdisciplinarity. *Artnodes,* 22, 24-47.

Gustems, J., Burset, S., & Martín, C. (2018). Educación artística y musical para la educación del s.XXI. In Lleixà, T., Gros, B., Mauri, T. & Medina, J. L. (Eds.), *Educación 2018-2020. Retos, tendencias y compromisos.* Barcelona: IRE-UB.

Kaplan, M. S. (2001). *School-Based Intergenerational Programs*. Hamburg: IE-UNESCO.

Moliner, L., Cabedo, A., & Gómez, E. (2022). Aprendizaje servicio y educación musical: nuevos horizontes formativos para una ciudadanía comprometida. *Utopía y praxis latinoamericana: revista internacional de filosofía iberoamericana y teoría social, 27*(96). http://doi.org/10.5281/zenodo.5790347

Newman, S., & Sánchez, M. (2007). Los programas intergeneracionales: concepto, historia y modelos. In M. Sánchez (Eds.), *Programas intergeneracionales: hacia una sociedad para todas las edades* (pp. 37-69). Madrid: Fundación La Caixa.

Siebenaler, D. (2005). Music and Service-learning: A Case Study. *Journal of Music Teachers Educators, 14*(1), 23-30. https://doi.org/10.1177/1057083705015001010

Yob, I. M. (2000). A feeling for others: Music education and service-learning. *Philosophy of Music Education Review*, *8*(2), 67-78. https://www.jstor.org/stable/40495436

Zorrilla, L., Capella, C., & Gil, J. (2016). Aprendizaje-servicio. In Chiva. O. & Martí, M. (Eds.), *Métodos pedagógicos activos y globalizadores. Conceptualización y propuestas de aplicación* (pp. 67-83). Barcelona: Graó.

Exploring Music Teacher Well-Being

Rita Gigliotti & Tina Beveridge, George Mason University, USA

Abstract

This collective case study explored the well-being practices of public school, grade K-12 music educators in Virginia. Six music educators from different stages of their careers each participated in an in-depth interview that included their own definitions of well-being, sources and effects of stress, and wellness practices used inside and outside the classroom. The interviews also included their perceptions of how wellness and well-being practices affect their teaching and their overall lives.

Keywords: music teacher well-being, music education, value of music teachers

Introduction

A national teacher shortage in the United States, exacerbated by the COVID-19 pandemic, has brought attention to job stress, burnout, and concerns of teacher recruitment and retention, which are issues that have been researched over the past 62 years (Sandene, 1995). Authors of emerging research have suggested that perhaps well-being practices might be one solution to solve the shortage (Varona, 2018). Research, practices, and applications in music education and well-being have existed for twenty years; however, applications of this work in music education have not been part of mainstream educational practices until recently, and mostly in association with social emotional learning. Psychologists have developed theories to understand what contributes to a fulfilling life and conducted research to examine those theories in the area of educators' well-being. Their efforts have led to a rapid increase of new definitions, models, and measures of well-being (Goodman et al, 2018).

As veteran, public-school music educators, we have experienced many challenges of job-related stress, as well as the direct benefits from including daily well-being practices in our lives at work and home. Our identities as public-school teachers for a combined forty years over twenty years positioned us to identify, understand, and empathize with perspectives related to our participants who were all in-service K-12 teachers. The purpose of this study was to explore both well-being practices and causes of stress for music teachers using a qualitative collective-case study method.

Review of Literature

The majority of literature related to well-being focuses on well-being inventories and analysis of stressors. Sandene's (1995) study concluded that each specialty area in music education (instrumental, vocal, general music) has unique and shared job aspects that can be stressful. It is important to recognize the signs and types of stress (p. 25). Sandene includes Calamides' (1982) signs of stress, listed as: 1. physical (i.e. chronic fatigue, pain, headaches, ulcers, high blood pressure), 2. intellectual (impairment in decision-making skills, lack of focus, work overload, procrastination, unable to rest the mind from work related tasks), 3. social (irritable, rude, depression, anxiety, cynical attitude), 4. psychological and emotional (missing deadlines, nervous, anger, frustration, depression), 5. spiritual (dramatic changes in one's value system, lower work quality, frequent absences) (p. 26). There are many causes of stress for music educators, but the most reported by Sandene is poor relationships with administration. He attributes this to perceptions of the teaching role, importance of the music program,

self-expectations of the music teacher, and expectations of the school administration and community. Sandene states that in order to prevent stress, school administrators should be offering well-being related development programs that include information on healthy lifestyle, sleep, diet, nutrition, rest, relaxation techniques, exercise, time management, etc. (p. 30).

A 2015 longitudinal study reported on the use of Ecological Momentary Assessment model (EMA) to measure stress in teachers (McIntyre et al., 2016). They noted a limitation in survey-based research that investigated stressors related to the work environment, which was the accuracy of respondents' stress levels related to the non-immediate nature of surveys. To account for this limitation, the researchers developed a more robust system of electronic diaries to allow for immediate reporting. The electronic diary method also gave the researchers the ability to collect data three times per year, over two years, for a total of twelve days. Results of this assessment tool were promising for refining the use of EMA in future studies because self-reporting by teachers provided more detail that may help with creating meaningful interventions for teacher stress. This is important because we know from previous research that teacher stress impacts efficacy and in turn this impacts student achievement (2016).

A study by Miksza, Parkes, Russell, and Bauer (2022) in *Psychology of Music* described elementary, secondary, and collegiate music teachers' perceptions of COVID-19 and its impact and influence on their instructional practice and well-being during the Spring of 2020. Positive Emotion Relationships, Meaning, and Accomplishments known as the PERMA model was used in this study to measure well-being. This model required each element of the study to contribute to well-being, to be something that individuals pursue for its own sake, to be able to be defined and measured independently and relatively. This study provided further evidence that music teachers would have benefited from support in maintaining their well-being during COVID. Varona (2018) suggests mindful strategies for music teachers to cope with the demands of the job on a daily basis. Much work remains to be done before the full extent of the effects of the pandemic can be ascertained. Further research examining the well-being of this population and efforts to identify potential strategies for providing relief and support for teachers is necessary (p. 1165).

The well-being of teachers is an important facet of their lives that may affect their work with students. It is logical to assume that teachers' well-being was affected during the pandemic- imposed disruptions. Few systematic empirical studies examining the nature of this impact and how music teachers have responded to these events have yet to be reported, thus creating a gap in the literature (p. 1155). A systematic review of literature on Teacher Well-Being (TWB) by Hascher and Waber (2021) indicated that the definition of TWB has been predominantly based on general concepts of well-being, without addressing the specific challenges, demands, and tasks of the teaching profession (p. 7). The study showed gaps in the research and offered suggestions to future researchers stating that a consensus needs to be found on the core elements of TWB that represent the multidimensionality of well-being: affective and cognitive dimensions (e.g., enjoyment and satisfaction), positive and negative dimensions (e.g., satisfaction and worries), and psychological and physiological dimensions (mental and physical health) need to be integrated. The authors also note that future research should include the impact of TWB on student well-being. Another 2021 study (Wang et. all) states that teachers use coping strategies on a daily basis to manage their work-related stress. They have grouped the coping strategies into three categories: adaptive copers (high problem-solving and seeking social support, low

disengagement) represented the most adaptive profile, whereas problem-avoidant copers (low problem-solving and support seeking, high problem avoidance) and social-withdrawal copers (high disengagement and social withdrawal) demonstrated poorer outcomes (p. 10).
Future studies and teacher professional development initiatives should focus on teachers' coping styles and their implications on teachers' psychological, motivational, and emotional outcomes, as well as quitting intentions.

The prior research outlined above indicates that teacher stress or lack of well-being impacts work effectiveness and desire to stay in the profession, and that these factors appear to have worsened post-pandemic. However, there has been very little research that looks at well-being from a status perspective rather than a deficit perspective. That is, what has not been explored are the teachers' perspectives and lived experiences and how they define and maintain their own well-being. In addition, almost no research has explored how the unique stresses of teaching music impact their well-being. Therefore, the research questions that guided this study were (1) What stressors do music teachers describe inside and outside of the classroom that affect their well-being? (2) What are the well-being practices that music teachers report using inside and outside of the classroom?

Participant Selection

We used a framework of collective case study and in-depth interviews for this investigation to provide an understanding of individual teacher practices around well-being. Convenience and purposive sampling procedures were used to conduct hour-long interviews of six Kindergarten through 12 grade music teachers. Participants were recruited through social media and personal contacts in three Virginia counties. The interested group of teacher candidate participants were from each of the following categories 1) Early career < 5-10 years, 2) Mid-career 10-20 years, and 3) Late career 20+ years. To maximize variation in sampling, we also chose participants who differed from one another by 2 or more of the following categories: race, ethnicity, gender, and socioeconomic status of the school. Participants each received a gift card for their participation through an email address of their choice. A round of follow-up interviews was conducted with three of the participants approximately nine months later. Only three participants of the original six were able to participate in the follow up due to life and work events that affected availability.

Procedures

The ontological assumption was that each participant in this study created their own reality through individual circumstances related to their practices of well-being. Though each had their own reality, we defined this study as a single collective case as the bounds were defined through their descriptions of well-being practices. We defined the bounds in this way to help align interview questions with prior research on issues of well-being and burnout (Napoles et al., 2022). Interview questions were created using three main categories of identity, belonging, and agency–as defined by Edgar and McConkey (2023).

- *Identity* is to identify and recognize emotions and use emotional vocabulary.
- *Agency* is to analyze situations.
- *Belonging* is to recognize diverse thoughts, feelings, and perspectives.

We used the categories to help interpret stories, situations, emotions, and perspectives shared with us and aid with coding and analysis.

The interview questions are listed below.

Identity

- How do you define well-being?
- What parts of your life and daily routines do you think contribute to your well-being?
- Describe well-being practices that you use with your students or in your teaching practices?
- What types of effect have you noticed through using these practices?
- How do you feel like your identity plays into your well-being practice?

Belonging

- How often do you participate in external well-being practices?
- Tell me about a time when you engaged in any of the following practice (Give examples: yoga, meditation, breathing exercises (warm up), movement, mindfulness, etc.)
- In what way is your well-being affected positively or negatively by your work community, including social media job alike groups or accounts (i.e. VMEA, ACDA, I'm a Choir Director, etc)?

Agency

- Describe how your work environment impacts your well-being (school demographic, colleagues, students, administrators)?
- What other external pressures in your life impact your well-being at your job?
- How might your well-being practices impact your ability to manage work related stress?
- Tell me about how COVID has impacted students and your well-being
- How has the impact of COVID effected recruitment and retention in music education from your view?

Following Institutional Review Board (IRB) approval, data was collected through in-depth, semi-structured interviews conducted individually over Zoom. The interviews were conducted in a private, comfortable location to ensure recordings were confidential. Recordings and transcripts collected from these interviews are stored on a password-protected secure university server. Participant identities were anonymized, using pseudonyms, in the transcripts and de-identified in any reporting. Recordings were also de-identified directly after the interviews and will be discarded within a three-year period, leaving access for future research. Interview transcripts were cleaned, coded, and analyzed with ATLAS.ti software for emerging themes using open and axial coding. Codes were sorted by category based on interview questions into seven emergent code categories. We used three *a priori* categories (agency, identity, belonging) (inside school, outside school) to group emergent codes. We also identified four emergent categories (inside school, outside school, support, work stress) that helped us to better define music teacher well-being. After further analysis, the codes under *belonging* were merged into other categories.

One member of the research team conducted a second round of interviews with three participants nine months later to gain a deeper understanding of how their definitions or practices may have changed over time. The follow up interview questions were grouped again into Identity, Belonging and Agency:

Identity

- Has your definition of well-being changed since our last interview?

Belonging

- Does your work environment impact your well-being (school demographic, colleagues, students, administrators)? If yes, how? If no, why not?

Agency

- Are there currently external pressures in your life that impact your well-being at your job? If yes, do you feel comfortable expanding on that answer?
- How have stressors in your outside life changed in the last year?
    - Have these changes impacted your life inside the classroom?
    - Is there anything else that has changed in past year that is now affecting your well-being inside or outside of the classroom?
    - Are there any areas of your well-being that we did not discuss today that you would like to comment on?

This set of interviews rendered 18 new codes forming a new group code or category of *participant perception of how others value them.* We re-analyzed the first-round transcripts and codes and discovered that over half of them fit this into this new category. The new category also brought the analysis into clearer focus by highlighting the relationship between how others value them and their state of well-being. When they did not feel valued, the participants' well-being spiralled downward with feelings of anger, discouragement, resentment, exhaustion, stress, burnout, and a desire to leave the profession.

Limitations, Reliability

Two limitations exist in this study. The sample size is too small to make results generalizable. However, trustworthiness and credibility were established using validity measures such as: peer debriefing, member checks with participants, and triangulation of the first and second rounds of interviews as well as existing research.

Discussion

While it was not surprising that many codes landed in our *a priori* categories of agency and identity, we found that the questions about belonging were more accurately placed in two different categories of inside or outside of school (figure 1). Multiple participants, for example, spoke of how their relationships with their colleagues and with their families affected their well-being in both positive and negative ways. But there was a clear division between their sense of belonging in those spaces that was separate, and how work-related stressors created pressure in both spaces. Similarly, the amount of agency they felt in their work lives and outside lives was related to the support they had in those spaces from administrators and family members.

After the first round of interviews, we felt that the most significant finding from this study is how teacher well-being is affected both positively and negatively by both inside and outside of work factors. However, after the follow up interviews, we believe that it is more accurate to say that music teacher well-being is influenced by the way teachers perceive they are valued by others, both inside and outside of the classroom, leading us to revise our initial analysis figure (figure 1) to reflect that how teachers are valued is the center of their well-being (figure 2). More research in this area is needed that specifically defines what practices are most effective to improve their overall well-being and also

research into what factors affect teachers' perceptions of their value.

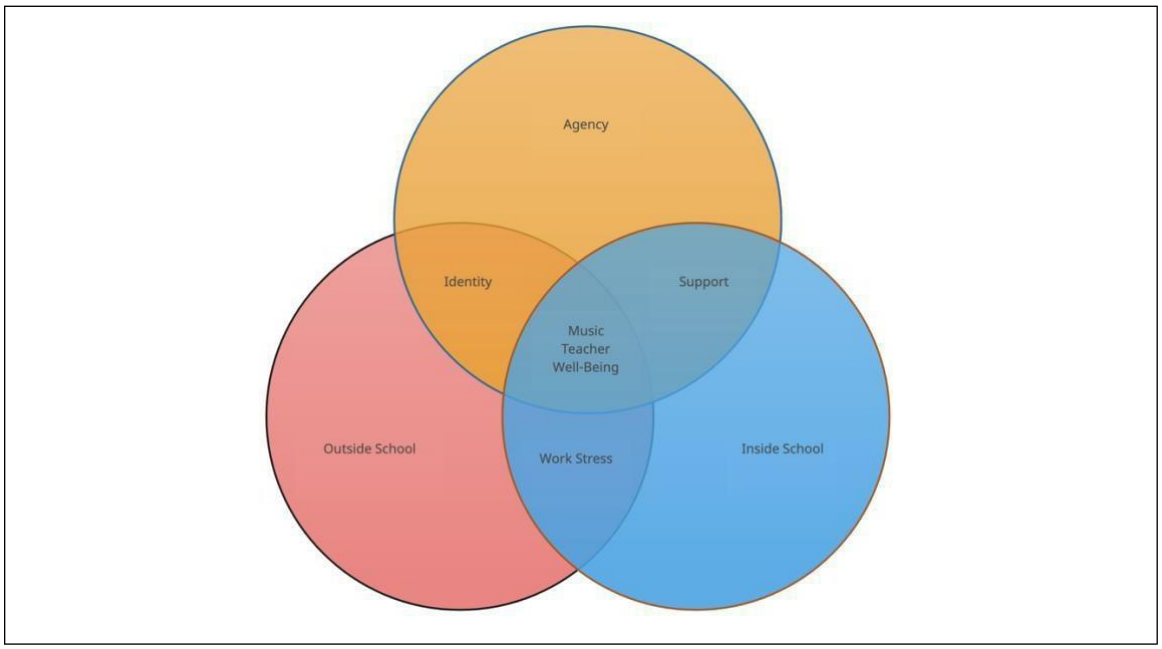


Figure 1. Original/First Round a priori and emergent themes

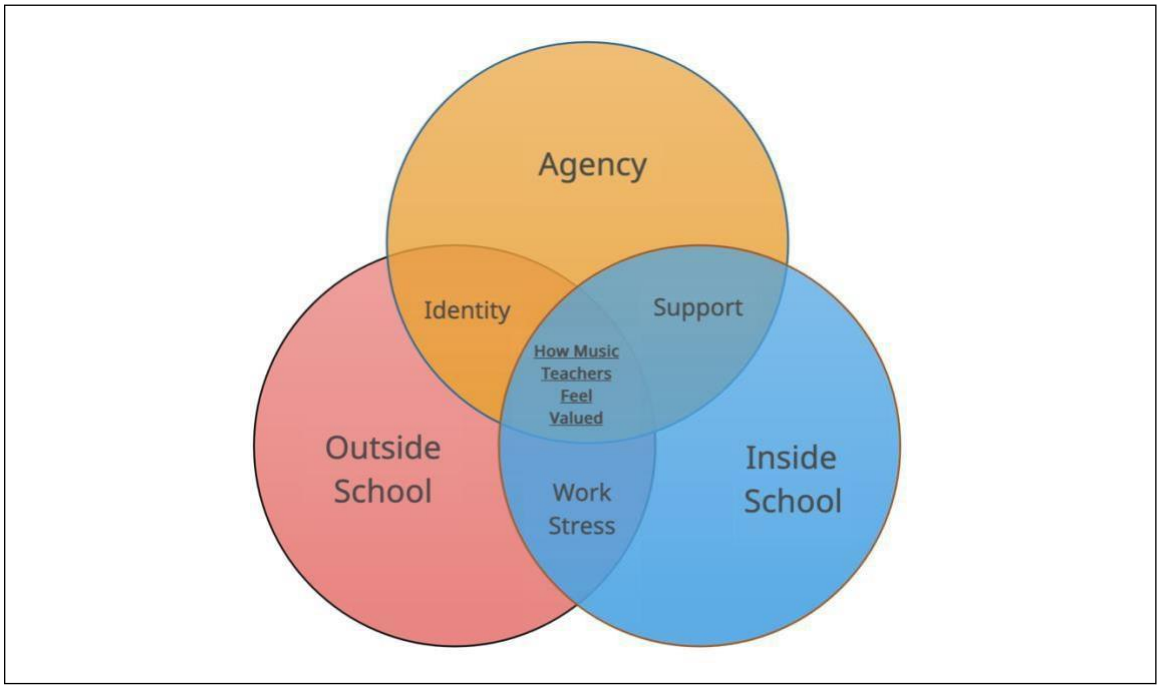


Figure 2. Perception of value at the center of well-being

References

Goodman, F. R., Disabato, D. J., Kashdan, T. B., & Kauffman, S. B. (2018). Measuring well-being: A comparison of subjective well-being and PERMA. *The Journal of Positive Psychology*, (13)4, 321-332, https://doi-org.mutex.gmu.edu/10.1080/17439760.2017.1388434

Gordon, D. (2000). Sources of stress for the public-school music teacher: Four case studies. *Contributions to Music Education*, *27*(1), 27–40. http://www.jstor.org/stable/24127016

Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review*, *34*, 1-25. https://doi.org/10.1016/j.edurev.2021.100411

McIntyre, T. M., McIntyre, S. E., Barr, C. D., Woodward, P. S., Francis, D. J., Durand, A. C., Mehta, P., & Kamarck, T. W. (2016). Longitudinal study of the feasibility of using ecological momentary assessment to study teacher stress: Objective and self-reported measures. *Journal of Occupational Health Psychology, 21*(4), 403–414. https://doi.org/10.1037/a0039966

Miksza, P., Parkes, K., Russell, J. A., & Bauer, W. (2022). The well-being of music educators during the pandemic Spring of 2020. *Psychology of Music*, *50*(4), 1152–1168. https://doi-org.mutex.gmu.edu/10.1177/03057356211042086

Nápoles, J., Kelley, J., & Rinn, T. J. (2022). Burnout and perceived agency among Texas choir teachers. *Journal of Research in Music Education*, *0*(0). https://doi-org.mutex.gmu.edu/10.1177/00224294221126889

McConkey, M. S., & Edgar, S. (2023). Social emotional learning for the pre-service and in-service music teacher. GIA.

Sandene, B. (1995). Determinants and implications of stress, burnout, and job dissatisfaction among music teachers. *Update: Applications of Research in Music Education, 13*(2), 25– 31. https://doi.org/10.1177/875512339501300208

Scheib, J. W. (2003). Role Stress in the Professional Life of the School Music Teacher: A Collective Case Study. *Journal of Research in Music Education*, *51*(2), 124–136. https://doi.org/10.2307/3345846

Varona, D. A. (2018). The mindful music educator: Strategies for reducing stress and increasing well-being. *Music Educators Journal*, *105*(2), 6471. https://doi.org/10.1177/0027432118804035

Investigating group piano learning in relation to an international program on Xindi's Applied Piano Teaching: it makes learning easier when studying abroad

Wei Guo, Xinghai Conservatory of Music, China

Abstract

Applied Piano Teaching (APT) is a pedagogical method targeting for cultivating practical and self-motivating piano learning. Conceived and developed by the Chinese music educator Xin Di, APT has been taught nationwide for more than two decades but has not yet been investigated at a scholarly level in regards to its impacts upon preparing students for their overseas music studies. The present study examines the students' learning outcome through a one-year APT group piano course before studying music abroad. The data was obtained through an online questionnaire with 23 cross-cultural students and semi-structured interviews with eight of the questionnaire respondents. Research findings revealed that the group piano course has achieved positive impacts on the potential preparations for students' overseas music studies regarding self-esteem, foreign culture understanding and adaptation, cross-cultural interaction and collaboration, and overall international adjustment. The multiple impacts of APT contribute towards developing a global-learner identity which is regarded vital for overseas studies in previous research.

Keywords: applied piano teaching, group piano learning, harmony-based simultaneous learning, liberal and creative expression, cross-cultural collaboration, global-learner identity

Introduction

Xin Di (n.d.) is a Chinese music educator and composer who has regularly taught at Anhui Normal University, South China Normal University and Xinghai Conservatory of Music (XHCM) respectively. He is currently the Dean of the School of Music Education of XHCM. Apart from piano and flute, he is also sophisticated in other eastern and western music instruments. He is the author of over 120 publications, including research articles for music education journals on topics related to applied music education.

Among Xin Di's contributions, Applied Piano Teaching (APT) stands out as an independent piano pedagogy or teaching system. It is a non-elite driven, liberal in material and practicality-focused music pedagogical method (Guo & Cosaitis, 2020).

APT aims for helping learners learn piano for personal needs, e. g. singing-playing, improvised accompaniment, improvised playing, composition, collaborative piano playing, and comprehensive keyboard skills for popular music studies and music production (Ye & Yang, 2022). Xin Di conceived this method as a justifiable approach of both one-on-one and group piano teaching to address the most common and practical learning motives of the learners (Guo & Cosaitis, 2020; Lai, 2020; Yang, 2021). The APT textbooks that were written and edited by Xin Di have been utilized in 457 educational institutions in China, enjoying the total marketing consumption of 1.6 million books by June 2023 (2nd Xin Di APT National Conference, 2023).

The present study examines the learning outcome of APT in potentially preparing students for their overseas music studies. The author investigated the initial experiences of a group of non-piano-

performance majored students in a one-year group piano course of the International Undergraduate Program at Xinghai Conservatory of Music in China. In doing this, the study intends to answer the following research questions:

(1) What skills that students learned through APT were believed practical and useful before they studied abroad?
(2) What skills that they learned through APT were proved to be helpful and useful whilst studying abroad?
(3) As cross-cultural learners, what meanings do these skills attach to their overseas studying experience?

It is hoped that the results of the study would reveal the possibilities that the APT group piano learning outcome could help students develop a global-learner identity which contributes greatly towards overseas studying. Furthermore, the research findings can be used as guidance for introducing APT at a global level.

An introduction to Applied Piano Teaching (APT)

APT is a pedagogical method which was designed for the *mass public* in the time when the all-age-piano-learning was thriving in China in the late 1990s (Wang, 2017).

Based on his philosophy of fostering the practical abilities, innovative awareness, aesthetic inclination, and musical interests of all piano learners, Xin Di established the teaching method in 2000 to accommodate both the common musical needs in everyday life and the underlying skills required in piano playing (Deng, 2022; Lai, 2020). It was expected that the mass public could develop their piano ability through an enjoyable, relaxed and rewarding learning experience whilst creating their own repertoire through self-motivated daily practice (Yang, 2021; Zhang, 2019; Yu, 2014).

While inheriting the traditional piano teaching principles, APT breaks away from the single-destination technique progress model of elite teaching and aims for emphasizing the *application* of the learnt skills and musicianship (Guo & Cosaitis, 2020; Qiu, 2021; Ye, 2018). Theoretically, harmony is the origin of all learning activities through APT. Learners are expected to develop and sharpen their harmonizing abilities through critical listening and imitating, singing-playing, improvising, and composing via both individual and group piano lessons (Qiu, 2021; Lai, 2020; Wang, 2017).

Related research

APT

Research on the APT is not limited, but most studies were conducted for exploration and introduction purposes. Via the most authorized academic platform - the China National Knowledge Infrastructure (CNKI, https://oversea.cnki.net/ index/ lastly retrieved on 27 July 2023), the author has located 32 related articles in Chinese and four in English, covering the years of 2014 to 2023. In the very first published article, Yu Ping (2014) investigated the value in immediate applications of APT developed under the reform of music teacher's education in China. Her study reported that the music education majored students (ages ranging from 18 to 22 years old) who took part in the group keyboard courses demonstrated overall improvements in both harmonizing and improvising abilities for music creation as a result of using APT (Yu, 2014).

Among the 32 Chinese articles, the one that entitled “The new values in piano education: an overview on Xindi applied piano teaching” is mostly citied. In this article, Wang (2017) interpreted the educational value of this method from the aspects of the teaching characteristics and educational advocacies through his investigations in APT textbooks and the analyses in its teaching structure. He stressed that the practical skills, especially those in melody writing, motif developing, and themes and variations on the keyboard through group teaching were crucial in music creation as well as the early stage of general music education. Wang (2017) was also convinced that APT’s targeting on the mass public instead of elites was a big step forward towards achieving education equality in music.

Deng (2022) made an extend on Wang’s perception, stating that APT pays strong attention to every learner’s self-recognition in music as well as each individual’s aptitude and learning mentalities. Such practice is typical of Confucius’ initiative in *teaching in accordance to one’s nature*. He goes further that APT encourages each individual to be a happy learner as the gratifying learning experience can reshape one’s music life. Such belief coincides with Mencius’ philosophy in *every individual was born to live for kindness*. Similarly, Ye (2022) in his article examines how APT emphasizes and implements *humanism* throughout every component of its teaching process, from the liberty in learning materials to the variety of presentations.

In regards to the teaching effectiveness of APT, most studies focused on the examination of its practice among specific learning groups. Many favourable outcomes were generated in case studies in beginner’s keyboard learning, elderly’s group piano learning, pre-service teacher’s music training, and professional pianist’s personal development. Some findings reported that students benefited significantly from the peer-mentorship through APT (Zhang, 2022; Cao, 2019; Lei, 2019; Li, Liu, Xu & Jiang, 2018) whilst others revealed positive achievements in singing-playing, modulation, and improvisational accompaniment (Zhu, 2021; Yang, 2021; Niu, 2021; Zhang, 2019).

The rest of the studies reviewing the nature of APT mostly focused on the word “applied” as this appears to be the core of the entire method. Li (2019) identified strong practicalities in APT’s teaching content through her participant-observations of Xindi’s teaching in Jazz Piano and Variations in One Song Playing. Similarly, in a study of investigating two APT textbooks, Wang (2017) found that “it is easy to obtain pleasant yet challenging practical experience” as the method encourages the learners to express their psychological needs and performing motivations through a chords-only singing-playing fashion (p. 127). Other articles reported that APT enables beginners to grasp new work quickly whilst integrating basic singing-playing skills to diversify their learning experience. Such an approach may stimulate young learner’s potential musicality and is evident in interpreting APT’s characteristics of popularity, comprehensiveness, speediness and diverse applications (Tie & Wu, 2022; Gui, 2019; Liu & Huang, 2019).

Out of the four English related articles, three were jointly written by the researcher of the current study and two other co-researchers. In our previous research, the authors have investigated both the advantages and disadvantages of APT through case studies and comparative analyses. Research findings illustrated the advantages that APT had over mainstream piano teaching methods in China, including tailor-made repertoire, harmony-based teaching structure, peer-mentorship, less focus on

techniques, practicality and positive experience (Guo & Cosaitis, 2020; Guo & Jin, 2021). The disadvantages of APT were generated from the surveys and interviews conducted in two different case studies, including lack of technical training for beginners, too many skills to be acquired all at once, and distancing from world's masterpieces. Furthermore, phrasing and timber controlling are also missing in its teaching for beginners (Guo & Cosaitis, 2020; Guo & Jin, 2021). In the latest article, the sole author placed a focus on APT's theoretical development as several aspects that appeared to coincide with John Dewey's *learning by doing* were detected in the practice field of APT (Guo & Jin, 2021).

The newly published English article was available in 2022. Ye & Yang (2022) investigated APT's teaching quality management by adapting a mixed research method. The research results offered a new angle of interpreting the effectiveness of scaffolding the teacher team and delivering problem- solving oriented classes.

Group piano teaching in China

The APT group piano teaching was one of the pioneers of this teaching fashion which was not introduced in China until the 1990s (Li & Xiang, 1993). In July 1993, the Music Education Committee of the China Musicians Association held a seminar in Shanghai on "Keyboard Teaching Methods of American Group Lessons". Hanna Wu Li, a professor emeritus of piano pedagogy at the School of Music of Carnegie Mellon University, was invited to the seminar. Li presented an overview of the American group piano instruction including its purposes, criteria, teaching materials and curriculum to more than 100 piano teachers, arousing great interest from the audience (Li & Xiang, 1993).

Since then, Chinese researchers began to explore group piano instructions at both theoretical and practical levels nationwide. Soon after, six researchers were sent to Carnegie Mellon University and Columbia University in the United States under the organization of the China Music Association to visit, study and communicate about the topic (Li, 2004).

East China Normal University was one of the first in China to develop group piano teaching and established a specialized research team to carry out six years (four stages) of teaching experiments and research on the subject (Li, 1999). The research findings were fruitful, including the publication of the first set of teaching materials for group piano classes, the establishment of the first modern electronic digital piano classroom, and the initial setup of a local form of group piano teaching in China (Li, 1999). In addition, their research data showed that students who participated in group piano teaching had a significant improvements in musicality and musicianship, and the viability of this teaching model in China was preliminarily confirmed (Li, 1999).

Challenges in studying abroad for Chinese students

Cultural adjustment is believed as a major challenge for Chinese international students (Ching, Renes, McMurrow, Simpson & Strange, 2017). It is so because Chinese students often struggle with identity crisis between Chinese culture and host country culture (Kwan & Sodowsky, 1997). The major factors that cause the identity crisis include culture shock, social difficulties, language barrier, learning environment transition, academic pressure and psychological distress (Khanal & Gaulee, 2019; Ching et al., 2017; Wilton & Constantine, 2003).

Identity appears to be the core of the process of international adjustment for Chinese international students. Interestingly, previous studies reported that some students perceiving culture shock as a positive experience (Lillyman & Bennet, 2014; Pan et al., 2013). Ching et al. (2017) then brought this finding into consideration that how "they view their own identity in a foreign country while being treated as a foreigner, which has a negative meaning in the English language" (Ching et al., 2017, p. 475).

It is, therefore, advocated by other researchers that developing a global learner identity is vital for international students during their overseas studying life. Gu, Schweisfurth and Day (2010) stated that the intercultural learning experience of international students necessitates identity change to a greater or lesser extent. Liu and Rathbone (2021) suggested that a cross-cultural identity should be constructed as it helps international students embrace multiple cultures for their continuous learning. Deardoff (2006) pointed out that it is a necessary cross-cultural competence for international students to develop the ability to successfully manage their identity reconstruction in the international education context.

Research Subjects

The International Undergraduate Program (IUP) in XHCM, also known as 2+2 Program, was established in 2019. Students in this program spend two years in XHCM and another two years overseas. Recruitment for candidates is held annually, and therefore, the research subjects in this study are the very first group of students who have finished their first-year studies overseas after completing their two-year-learning at XHCM.

A group of non-piano-performance majored students (n=23) was chosen due to its cross-cultural learning experience, intensive learning through APT, and experience in identity crisis in overseas studies. The APT group piano course was compulsory for the research subjects because the majority of the students had very limited piano background, and that this course allowed the students to primarily gain multiple skills within a short period of time.

Xin Di believes that with a solid foundation of harmonization, every keyboard player should be able to play music in all keys, improvise with voice and other instruments, and compose for various motives (Guo & Cosaitis, 2020; Wang, 2017). Thus, developing these skills at a primary level whilst establishing a concrete foundation of harmony were set to be the core learning objectives for the research subjects. Furthermore, the APT group piano course provided the research subjects with an inclusive environment for peer evaluation and valuable experiences in collaborative music making.

Data Collection

At the first stage of data collection in this study, a questionnaire method was employed for the following reasons: (1) to explore the commonly recognized skills that the students acquired through the one-year course; (2) to find out what challenges the students generally faced when studying abroad; and (3) to look at whether the recognized APT skills were helpful in overcoming the challenges in overseas studies. An online questionnaire was sent to 23 students (18 female, 5 male) via a professional online survey platform as the research subjects all resided in England when the survey was conducted. 23 valid respondents were returned within 24 hours as all participants were previously notified through a Wechat chatting group.

At the second stage of the data collection, the researcher intended to attain an in-depth understanding of the students' interpretations towards the impacts that their APT learning outcome has had on their overseas music studies. A semi-structured interview method was employed it was more flexible and focuses on the research topic (Smith & Osborn, 2003). A total of eight (6 female, 2 male) questionnaire respondents volunteered for the interviews. One-on-one interviews were conducted via Wechat Video calls. Each interview lasted 30-45 minutes and was transcribed and returned to the participants for confirmation. Interviews were carried out in China by the researcher's teaching assistant who also analyzed the data independently.

Findings

The questionnaire data was analyzed, disclosing the following skills as the most commonly recognized useful in both domestic and overseas learning phases:

(1) harmony-based simultaneous learning — singing-playing, critical listening and imitating, improvising on various themes.
(2) diversified expressions — liberal expression, creative expression, self-expression, collaborative expression.
(3) multi-style collaborations — Chinese folk, Chinese pop, western pop, Jazz and Bossa Nova. The questionnaire data also revealed that the challenges that most students faced when studying overseas was the lack of confidence in verbal communications due to language barrier and cultural uncertainty. This result was reinforced and elaborated by the interview data, rising the following issues: being (1) reluctant in self-expression; (2) passive about exchanging opinions; (3) silent in classroom discussions; (4) *obedient* in teamwork; and (5) nervous about public speech and presentations.

A focus was put on the positive impacts that the APT learning outcome possibly has on students' overseas studies. The interview questions were designed to address the research findings generated from the questionnaire responses. The data was categorized and analyzed, demonstrating the following views: (1) harmony-based simultaneous learning is helpful in establishing a solid foundation for overall musicianship which further contributes to students' self-esteem; (2) liberal and creative expression provides the students with a broader view towards understanding people of other cultures; (3) multi-style collaboration assists the students with music making activities with peers, overturning their negative attitudes, reactions and responses in language-based collaborative tasks and (4) peer evaluation and various group learning activities prepare the students for interactions with classmates of different cultures, further contributing towards their international adjustment.

Discussion and conclusion

The present study examined the quantitative responses and verbal descriptions provided by a group of cross-cultural students concerning the possible impacts their APT group piano learning outcome had on their overseas studies. Participants had a common understanding in the potential benefits of the APT learning experiences, especially after the commencement of their overseas studies. They conveyed different perspectives regarding the value of the APT group piano course for their cross-cultural learning journey. The findings could be considered as a starting point from which to explore and discuss how the APT group piano course can contribute towards developing a global learner identity and be introduced internationally.

Note
This paper is one of the project achievements of Guangdong Province Education Science Planning Project (Higher Education): Guangdong Road of Academic Planning and Career Guidance for International High-level Music Talents: A Case Study on the International Education Program of Xinghai Conservatory of Music.

References

Cao, L. (2019). Research on Xindi's Application of Piano Teaching Method in Children's piano group lessons. *Yellow River*, 8, 104–105. https://doi.org/10.19340/j.cnki.hhzs.2019.08.085.

Chen, X. (2020). Exploring the transformation and development of publishing industry under Special circumstances -- taking the online development of "Xindi Applied Piano Teaching Series" as a case. *Journal of Editors*, 6, 50–54. cnki: SUN:BJXZ.0.2020-06-013.

Ching, Y., Renes, S. L., McMurrow, S., Simpson, J., & Strange, A. T. (2017). Challenges facing Chinese international students studying in the United States. Educational Research and Reviews, 12(8), 473-482. https://doi.org/10.5897/ERR2016.3106

Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education, 10*(3), 241-266. https://doi.org/10.1177/1028315306287002

Deng, C. C. (2022a, December 20). Theory application Xin Di piano teaching method of Confucius' education concept of inheritance and innovation engineering: China wisdom research intelligent learning and innovative research committee. *2022 Education Teaching and Management of Higher Education* (BBS). https://doi.org/10.26914/c.cnkihy.2022.080291

Deng, C. C. (2022b). Theory of XinDi piano teaching method was applied to Mencius inheritance and innovation of education concept: China wisdom engineering research intelligent learning and innovative research work committee. *2022 Education Teaching and Management of Higher Education* (BBS), 400–402. https://doi.org/10.26914/c.cnkihy.2022.080292

Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and growing in a 'foreign' context: Intercultural experiences of international students. *Compare*, *40*(1), 7-23.

Gui, L. H. (2019). Exploration and practice of extra-curricular piano teaching under the background of "Combining tradition and Application" [Master Thesis]. https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202001&filename=1019922899.nh.

Guo, W., & Cosaitis, L. (2020a). Applied piano pedagogy: a new age in piano learning. *International Journal of Education. Learning and Development, 8*(9), 28–42.

Guo, W., & Cosaitis, L. J. (2020b). A Cutting Edge Method in Chinese Piano Education: the Xindi Applied Piano Pedagogy. *Higher Education Studies, 10*(1), 7–15. https://doi.org/10.5539/hes.v10n1p7

Guo, W., & Jin, Z. (2021). Xindi's Applied Piano Teaching Method from the Perspective of "Sentient Ontology" Aesthetics: Rethinking the Practical Purpose of Social Music Education: Service to Life and satisfaction of Emotion. *Educational Research, 4*(1), 151–153.

Kwan, K. L., & Sodowsky, G. R. (1997). The relationship of acculturation to perceived ethnic group prejudice for three Asian-American groups. *Journal of Counseling & Development*, 76(4), 409-415.

Khanal, J., & Gaulee, U. (2019). Challenges of international students from pre-departure to post-study: A literature review. *Journal of International Students*, 9(2), 560-581.

Lai, S. P. (2020). Research on Xindi's application of piano teaching method to promote the cultivation of core accomplishment of music discipline. *Art Education*, (1), 63-66.

Lei, L. (2019). On the enlightenment of Xindi's application of piano teaching method to the piano teaching of preschool education in secondary vocational schools. *Art Appreciation*, (11),189-190.
Lei, L. (2020). The innovative application of Xindi's Piano Teaching Method in Music education of preschool teachers' college. *Art Education*, (02),48-51.
Li, H., & Xiang, Z. (1993). Lecture on American keyboard teaching methods for adults and children held in Shanghai. *Chinese Music Education*, 06, 24.
Li, H. (1999). Teaching experiments and research on group piano lessons. *Journal of Higher Normal Education Research*, 2, 72–77.
Li, H. (2004). The development of the course "Group Piano Lessons" in Chinese normal education (Part 1). *Piano Art*, 12, 32–34.
Lillyman, S., & Bennett, C. (2014). Providing a positive learning experience for international students studying at UK universities: A literature review. *Journal of Research in international Education*, *13*(1), 63-75.
Li, C., Liu, S. Q., X, C., & Jiang, Y. (2018). Research and Exploration on the reform of the Piano Teaching method for the elderly (eds.) Proceedings of the 2018 Symposium on Teacher Education Capacity Building (pp.1310-1311). Dalianuniversity; Doi: 10.26914 / Arthur c. nkihy. 2018.005671.
Li, S. S. (2019). A New Voice for Piano Education -- "Xindi Applied Piano". *Taste Classics*, (06), 87-89.
Liu, Z.S., & Huang Guoping. (2019). A Preliminary study on the construction of piano Course groups for Musicology majors in applied undergraduate colleges -- Based on the Xindi Applied Piano Teaching Method. *Journal of Anhui University of Technology (Social Science Edition)*, (01),64-66.
Liu, W., & Rathbone, A. N. D. Y. (2021). The complexity of international student identity. Journal of Belonging, Identity, *Language and Diversity*, 5(2), 42-58.
Niu, J. (2021). The practical application of "Xindi Piano Teaching Method" in college piano teaching. *Writers Tiandi,* (10),19-20.
Pan, J. Y., Ye, S., Chen, C., & Park, C. (2019). A meaning-making model of post-migration growth for mainland Chinese university students in Hong Kong. *International Journal of Intercultural Relations*, 69, 1–10. https://doi.org/10.1016/j.ijintrel.2018.12.002
Qiu, X. J. (2021). The application of Xindi Piano Teaching Method in colleges and universities under the Core Accomplishment of music discipline. *The Artist*, (10),76-77.
Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (pp. 51-80). Sage Publications. Tie, Y. C., & Wu, X. Y. (2022). My Opinion on "Traditional + Applied" Piano Enlightenment Teaching Method. *Drama House*, (17),196-198.
Wang, J.N. (2017). Research on Xin Di's Applied piano teaching practice. *Art Review*, (09),127-128+126.
Wilton, L., & Constantine, M. G. (2003). Length of residence, cultural adjustment difficulties, and psychological distress symptoms in Asian and Latin American international college students. *Journal of College Counseling*, *6*(2), 177-186.
Yu, P. (2014). The reform trend of music teacher education from the perspective of Xindi's application of piano teaching method. *Journal of Chifeng Institute (Natural Science Edition)*, (05), 238-239. https://doi.org/10.13398/j.carolcarroll.nki.issn1673-260x.2014.05.103

Yang, Z. Y. (2021). Thinking and prospect of applied harmony teaching methods. *Art Research*, (02), 122-123. https://doi.org/10.13944/j.carolcarroll.nki.ysyj.2021.0109

Ye, B. Q. (2018). Practice of modern accelerated piano teaching method in higher vocational colleges: A case study of Heyuan Vocational and Technical College. *Yellow River*, (14), 82-84. https://doi.org/10.19340/j.carolcarroll.nki.HHZS.2018.14.059

Ye, Z. H. (2022). A study on the educational concept of "Humanism" in Xindi's applied piano teaching method. *Musical Instruments*, (08),53-55.

Ye, L., & Yang, H. (2022). Research on the Teaching Quality Management of “Xindi Applied Piano Pedagogy”. *Journal of Contemporary Educational Research*, *6*(7), 80-87.

Zhang, L. H. (2019). Research on "Integrated" piano teaching Mode from the perspective of "Basic Skills Demonstration Activities" -- A case study of traditional piano and applied piano teaching for music education majors in comprehensive colleges and universities. *Chinese Music Education*, (01),37-41.

Zhang, J. Y. (2022). How to apply Xindi Applied Piano Teaching Method in zero-basic electric piano Elective Group Class. *Qin Tong*, (10),29-33.

Zhu, Y. N. (2021). Xindi's applied research of piano teaching method in pre-school education major of Yan 'an vocational and technical college (Master's dissertation, Yan 'an University). https://doi.org/10.27438/d.cnki.gyadu.2021.000124

The Culinary Culture in Taiwanese Hakka Folksongs

Shih-hsin Huang, Cardinal Tien Junior College of Healthcare and Management, Taiwan (ROC)

Abstract

As Confucius said, "for changing the customs and traditions there is nothing better than music." This illustrates the significant effectiveness that music carries in altering societal norms over thousands of years. Advocating for health and wellbeing music can start with an understanding of folksongs, as singing is the earliest form that express humanities. From children's songs to folksongs, from labor chants to romantic ballads, humans have used their innate vocal abilities to convey their joys and sorrows. Folksongs inherently embody culture, and culture is a reflection of people's lives. Therefore, music educators are the suitable mentors who lead the learners to recognize and understand traditional culture through folksongs relevant to their own heritage, allowing children to the elderly to grasp the enduring societal values of their homeland through the background of their songs. This research explored the common presence of culinary references in Taiwanese Hakka folksongs, aiming to comprehend the lifestyle habits and culinary cultural traits of the Hakka ethnic group in Taiwan. Further insights into the Hakka people's way of life and character are gleaned through the theme of cuisine.

Keywords: folksongs, Hakka folksongs, Hakka ethnic group

Research Background and Motivation

Hakka folksongs in Taiwan are often referred to as "nine melodies and eighteen tunes", which highlights the intricate and diverse nature of the origins of Hakka folksongs. Hakka folksongs often originate from oral literature during work, and they frequently incorporate onomatopoeic words such as "wa", "yi", and "ya". These syllables symbolize the shouting while during laborious tasks. This research focused on introducing Taiwanese Hakka folksongs that feature food elements, aiming to understand the enjoyment of Hakka folksongs from the perspective of culinary culture. The main objective of this research was to select and introduce food-themed songs with Hakka characteristics from Hakka folksongs in Taiwan. The author will compile the frequently appearing food elements in these songs, with tea, pork, rice, and preserved products considered the most representative of Hakka cuisine. Through simple folksongs, we can gain insights into the historical background of these foods, while also reflecting the cultural features of the Hakka ethnic group. Surrounded by high mountains, Hakka people arrived in Taiwan and began cultivating and harvesting tea in the mountainous areas. Taiwan's climate, geographical conditions, rainfall patterns, high mountain tea regions, and agricultural traditions make it an ideal location for tea cultivation, yielding some of the world's finest tea products. Many songs have evolved from tea-picking mountain folksongs, influenced by urbanization, and now these mountain songs have taken on a more populist expression.

The Origin of Taiwanese Hakka Mountain Songs

In the early days, Hakka people migrated from the northern regions of mainland China to escape conflicts and settled in the fields and valleys. As a migratory group that found home across various locations, they were named "Hakka" which literally means "guest people". The diligent and frugal nature of the Hakka people led them to predominantly engage in hillside farming. The origin of Hakka

folksongs lies in the mountain songs, which emerged as an authentic expression of their innermost feelings towards work – a response to the joys and sorrows of their labor-intensive activities such as tea harvesting, logging, carrying loads, and boating alongside their busy farming life. Sometimes, these songs were sung among workmates between the mountains, other times they were sung by lovers, and occasionally they stemmed from rhythmic patterns created to elevate work morale. Regardless of the form, Hakka mountain songs possess qualities of free improvisation and an unrestricted range of themes, gradually transforming mountain song culture into one of the primary performance styles of Hakka folksongs.

The Hakka community could be divided into two areas: the "Northern" Hakka people centred around the north of Taiwan, which are Taoyuan (桃園), Hsinchu (新竹) and Miaoli(苗栗) areas and the "Southern" Hakka people in the Liugdui (六堆) hilly area. The "Northern" Hakka people not only sing Old Mountain Songs(老山歌) in Si-Yen accent (四縣腔), but also listen to the Hakka three-character tea-picking opera troupes (客家三腳採茶戲) from Jiaying Prefecture (嘉應地區), Guangdong (廣東, A province of Mainland China). These troupes primarily use Si-Yen accent as their standard language for singing and speaking, afterwards, it also ignited the tradition of spreading Hakka folksongs in Si-Yen accent[1] On the other hand, arriving in Taiwan earlier, the "Southern" Hakka people situated near Kaoshiung amd Pintung area, live a simple life and have managed to preserve the distinctive features of Hakka mountain songs more comprehensively.

The Characteristics of Hakka Mountain Songs

What is Hakka mountain song? According to Lai Bi-Xia "Mountain songs, as the name implies, are songs sung in the mountains, just like fisherman's songs and seafarer's songs, named after the environment in which the singers are situated" (Lai, 1993). Therefore, as people migrate, their songs spread accordingly. As long as humans engage in cultivation and development in a certain area, there will be singing there. Thus, mountain songs are not restricted to mountainous areas alone. Summarizing the types of Hakka folksongs, they can generally be categorized as follows:

(1) Hakka folksongs are predominantly rooted in mountain song literature, and their fundamental structure consists of seven words in four lines.
(2) During singing, embellishments with onomatopoeic words are added to enhance the charm. These words, such as "na"(哪), "ah"(啊), "li"(哩), "lo"(囉) and others, imbue the original melody with more grace or evoke the rustic calls of field laborers in the wilderness. These types of phonetic expressions are commonly found in lullaby as well.
(3) The improvisation duet style is an essential technique in the early creation of Hakka folksongs. It encompasses both improvisation in lyrics and melody. One exemplary instance of improvised creation is the story of "Liu San-Mei Outwitting the Scholar" (劉三妹搏到秀才a traditional Hakka story). Another form involves improvisation of melody. Singers spontaneously compose and perform verses based on the unfolding narrative, adapting the melody's progression to complement the lyrical themes. The melody is influenced to some extent by structural considerations. Among Hakka folksongs, "Laoshange" (老山歌, one of the Hakka folksong

[1] Zheng Rong-xing, *Taiwan Hakka Music*, pp.79

forms) and "Shangezi"(山歌子, one of the Hakka folksong forms) best exemplify this type of impromptu expression. These Hakka folksongs which lack fixed lyrics and melodies, are the most challenging to sing yet also most representative of the profound significance of Hakka folksongs. To further substantiate this perspective, we can refer to Lai Bi-Xia's definition of Hakka folksongs: Hakka folksongs consist of three major scales and three minor scales, hence they are collectively known as the "Nine Tones and Eighteen Modes". The major scale maintains a consistent melody, while the lyrics vary according to individuals, places, and the ever-changing tapestry of emotions and situations. Essentially, they can be shifted with people's moods, circumstances, and emotional ups and downs. These songs are primarily sung or recited in the Hakka language, embodying the pure simplicity of the local culture and the unadulterated authenticity of their origins. Furthermore, they have been passed down through generations in the folk tradition, naturally emerging as songs born from the heart of the people.[2]

(4) Apart from "Laoshange" and "Shangezi", there exists another kind of analogous musical structure referred to as "Pingbanthe"(平板調, one of the Hakka folksong forms). "Pingbanthe" could be described as a refined iteration of "Laoshange" and "Shangezi". Despite retaining an adaptable melody (of more balanced cadence) and lyrics, it is now amenable to performances in chamber music arrangements or orchestral settings.

The Cultural Essence of Dining in Hakka Folksongs.

The Taiwanese Hakka ethnic group can be traced back to the central regions of China, due to dynastic changes and the avoidance of conflicts, they gradually migrated southward and settled in mountainous areas. Living in the mountains for a long time, the Hakka ethnic group's songs are mostly mountain songs. The food mainly consists of animals, plants which were produced in the mountain areas. The research based on the folksong collection of Hakka folksongs published by the Taiwan Hakka Affairs Council, in which common food and drink themes reflected in the songs can be broadly categorized as follows:

Tea: a common beverage found in the mountains, also constituted a source of livelihood and income for the Hakka people. Many Hakka individuals engaged in tea cultivation, and the tea-picking folksongs primarily express the lifestyles and emotional expressions of tea harvesters. Tea-themed songs encompass a wide array, ranging from tea picking, drinking tea, selling tea or even singing love songs, the influence of tea on the Hakka people's lives is profound.

Pork Dishes: Given their history of nomadic migration, subsistence agriculture played a crucial role in the Hakka way of life. Raising poultry such as chickens, ducks, and pigs served as a meat source. Additionally, the Hakka community heavily relied on oxen for labor, with beef rarely incorporated into their cuisine. A prominent pork dish frequently mentioned in Hakka folksongs is "Ginger pork intestines" (薑絲炒豬腸, one of the Hakka dishes), pork intestines belong to pig internal organs. Hakka people skilled in cooking pork, maximize the virtue of thriftiness to its fullest extent, every part of the pig can be utilized into Hakka dishes. The folksongs included culinary elements from the Hakka folksongs

[2] Lai Bi-Xia, *Taiwan Hakka Folksongs*, pp.26.

collection was published by the Taiwan Hakka Affairs Council are "Zhang Niu lang" (掌牛郎, cowherd), "Bing Zi Ge" (病子歌, describe the dishes women want to eat during pregnancy) and "Shi Bao Men" (食飽旨, have you had enough to eat?).

Rice: The Hakka people, migrating from the south of China to Taiwan, developed a robust rice-centric culinary culture that adapted to the demands of their geographic environment. Whether in tea cultivation or agricultural pursuits, the Hakka people were recognized for their diligent agricultural practices. They excelled in cultivating premium rice varieties and innovating rice-based dishes like rice noodles, rice cakes, and peanut-coated sticky rice balls. These dishes all revolve around rice as a central ingredient. These dishes revolve around rice as a central component. The folksongs included rice elements from the Hakka folksongs collection was published by the Taiwan Hakka Affairs Council are "Kuai Le Zai Nong Jia"(快樂在農家, joy in the farmhouse), "Mian Pa Ban" (面帕粄, rice noodle song) and " Shi Bao Men".

From the above three types of food, it's evident that Hakka cuisine is not extravagant but rooted in simplicity. During times of demanding physical labor, a modest meal of pork with rice sufficed. Additionally, other foods such as preserved vegetables were developed to enhance the flavor of rice, giving rise to a culture of pickled condiments, such as Chinese Sauerkraut (salted leaf mustard's stem) is excellent to accompany with rice. These foods showcase the Hakka people's frugal and thrifty approach, where a small amount of pickled fare combined with rice not only offers a quick and easy meal but also effectively sustains them during labor-intensive farming periods. There are not many Hakka folksongs specifically focusing on preserved foods. Songs about tea, pork, and rice describe the versatility of Hakka ingredients, preservation techniques, and the cultural significance associated with these foods. These songs reflect essential elements of Hakka culture related to cuisine and are an enriching part of the diverse tapestry of Hakka folk music.

The Value of Folksong on Music Education

As an author and singer myself, I deeply understand the intangible responsibilities that folksongs carry across different stages of learning. Language is the conduit of culture, and folksongs encapsulate cultural essence. Taking Taiwan's Hakka folksongs as an example, the lyrics reflect aspects of daily life including sustenance, clothing, housing, transportation, and recreation. In this research, we chose Hakka cuisine as the starting point of exploration. The newer generations might identify as Hakka people, but not all of them are necessarily familiar with the Hakka language and culture. Folksongs, however, serve as the simplest way into culture. Through their lyrics, one can understand the mindset, historical background, and cultural heritage of a community, ethnic group, or nation. By composing melodies and music, from children to adults can engage in singing folksong together.

"Food is essential to life", and by delving into the origins of Hakka cuisine through its preparation methods, one can discern Hakka people's culinary preferences and their way of life based on the ingredients readily available in their surroundings. Using Taiwanese Hakka folksongs as an example, the lyrics reflect various aspects of life, encompassing food, clothing, shelter, transportation, and leisure activities. Starting with themes centered around tea, pork, and rice to understand the Hakka ethnic characteristics, these songs serve a dual role of simple, catchy tunes and imparting valuable cultural

lessons. Learning through the transmission of folksongs is crucial, especially for comprehending the historical and cultural significance as well as the social customs and sentiments. This holds profound implications for the cultural inheritance of music.

References

Common Wealth Magazine Group (2009). The Essence of Hakka Culture. Hakka Affairs Council. Hung, Y. Y. (2015). Origin, Evolution and Cultural Interpretation of Taiwanese Rice Dumpling. National Kaohsiung Normal University. https://doi.org/10.6817/NKNU.2013.00008

Jazz House Limited (2015). Selected Collection of Hakka Folksongs II. Hakka Affairs Council.

Jazz House Limited (2017). Selected Collection of Hakka Choral Folksongs II. Hakka Affairs Council. Peng, W. J. (2001). An investigation into the cultural Imports of the Hakkian Folksongs in Taiwan.

NCUE Journal of Chinese Studies. Issue 5, 321-357. https://doi.org/10.6973/CJ.200112.0321 Li, J. Y. (2016). A Study on the Educational Inheritance of Hakka Dietary Culture-Taking the Hakka Cuisine as an Example. National Kaohsiung University of Hospitality and Tourism.

Lai, B. X. (1993). Taiwan Hakka mountain songs. Encyclopedia Culture. Lai, B. X. (1993). Taiwan Hakka Folksong. Yuan Yun.

Lu, J. M. (2014). Collection of Hakka Folksongs for Choral Singing. Hakka Affairs Council.

Sun Creation Cultural Enterprises Co., Ltd. (2011). Dongshi Village - Preserving the Authentic Hakka Flavor. Hakka Affairs Council.

Yuan Yun Publishing Company (1994). Choral Collection of Taiwanese Songs, V1. National Academy for Education Research.

Zheng, R. X. (2004). Taiwan Hakka Music. Chen-xing.

The Role of Trial and Error in Creative Music Making with ICT

Mitsuru Imanari, Hyogo University of Education & Noroko Tokie, Joetsu University of Education, Japan

Abstract

Music-making requires a learning process in which students discover and devise the necessary elements of music through trial and error. Before teachers used information and communication technologies (ICT), students needed a musical background to participate in music-making classes. However, ICT reduces the physical skills required for musical expression. Further, it allows students to create music using logic and creative thinking.

The author wishes to show that, through trial and error, students using ICT can effectively learn the elements of music and how they work. This awareness will enable them to create music with thought and intention and enhance their love of music.

One of the authors taught three music-creation classes for 10-year-old students at two public elementary schools using the Scratch 2.0 learning software and the Song Maker music creation application, both of which are free. In addition, during the trial and error process, he allowed free dialogue between students in one of the classes while prohibiting it in the others. In these classes, the authors observed how students became aware of the function of repetition and change through trial and error during music-creation and how the different classroom conditions affected student outcomes.

The authors discerned that almost all students in these classes created music with intention while showing an understanding of the functions of repetition and change. However, when using more versatile ICT applications, the authors found that students required more guidance from the teacher. On the other hand, in a more open learning environment, we found a greater scope for trial and error by the students. Also, when students were allowed to engage in interactive activities, the authors determined that, while the diversity of the work decreased due to imitation, the number of more well-formed pieces increased.

The authors concluded that, for students to sustain the trial-and-error process of music-making, they need to be aware of the elements that make up music and how they function. To do this, teachers need to present the task and formulate the conditions so that students are effectively aware of problems that need to be solved.

Further, the authors found that ICT can be an effective tool in music creation classes. Its use allows students who lack the physical skills necessary for musical expression to complete music-creation tasks, and, overall, helps create a positive classroom experience.

Keywords: ICT, programming, music making, trial and error, elements of music, problem consciousness

Theoretical Background and Purpose of the Study

In 2017, the announcement of the Courses of Study indicated the implementation of programming education in elementary schools from 2020 onward; in 2018, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) issued the "Guidance for Elementary School Programming Education (2nd Edition)". One of the goals of music classes in the third through the sixth grades is the creation of music combining various rhythms and patterns.

Later, the government distributed tablet computers to all students in Japan, and they became an important tool for promoting individualized and cooperative learning. The government also promoted information and communication technologies (ICT) as tools for deep learning.

Fujiwara (2019) describes programming as "tinkering." He stated that through programming activities, "students learn how to do things through trial and error (exploring, trying, and thinking about what to do next when something doesn't work)."

Abe (2018) said that elementary students were very creative when working with a visual programming language such as Scratch. He stated, "Music making is a repetitive process of noticing and devising the necessary elements of music through trial and error. Programmatic thinking has both logical and creative aspects. It should be an optimal tool for music making."

Music making activities are those in which students "create sounds and music that are valuable to them while exercising their creativity" (Ministry of Education, Culture, Sports, Science and Technology 2017). However, traditionally, music creation requires students to possess existing physical skills such as singing or the playing of instruments. Further, methods for recording student-created music onto music sheets were limited and difficult.

The use of ICT solves both problems. ICT applications remove the need for physical skills for individual musical expression. Also, students can easily record their musical creations using free software and hardware available to all students in Japan. Further, ICT allows individual students to evaluate, judge, and think sensitively about the works they create as the acoustics used are instantly and accurately fed back. In this way, ICT is an effective and efficient tool for any student.

Further, studies have shown that ICT in music-creation classes has increased student satisfaction and motivation. However, there is no detailed discussion of how ICT affects students' thoughts and intentions in music-making. The authors wanted to know how the trial-and-error process combined with the use of ICT effects students' awareness of the elements of music. They also wanted to know how they affect students' thoughts and intentions during music creation, and whether they enhance the students' love of music.

One of the required music-making activities for elementary music courses is to make music "with an awareness of the cohesiveness of the whole, and to have thoughts and intentions (thinking, judgment, and expression)" (Ministry of Education, Culture, Sports, Science and Technology 2017). With this in mind, one of the authors worked on music-creation classes utilizing ICT. The first was taught using Scratch 2.0 in February 2019 in two 4th-grade elementary school classes. The second was taught

using Song Maker in February 2021 in one 4th-grade elementary school class. In the first hour of the lesson, one of the authors used the same learning process for both classes. However, in the second hour, the students were given different directions regarding whether they could discuss their musical works with other students to determine if changes in student learning could be observed. The authors further analyzed the process of the student's thoughts and intentions and discussed the role of trial and error in music-making using ICT with the students.

Discussion of Research Methods, Contents, and Results

Lesson using Scratch 2.0

The subjects were 4th graders (10 years old) at T Elementary School, a public school. One of the authors held two music-creation classes in February of 2019. Class A had 28 students, and Class B had 30 students. He called the class "Let's Program a Musical Drum". The teaching material was the Scratch 2.0 application "Let's Make Sounds by Repetition" by “yshgt” (https://scratch.mit.edu/projects/204979038/). This program was created in response to the "Guide to Elementary School Programming Education (2nd Edition)" (MEXT). The title of the program included the word "repetition”. However, one of the authors wanted to observe the process of students becoming aware of the elements of music and their functions. Therefore, he did not inform the students of the title.

The program has six card-shaped sprites of two beats consisting of ♩,♪,♫ , quarter rests, and eighth rests. Students were free to combine four of the sprites to create a rhythmic phrase. The drum sound is, by default, a sampled snare drum sound. The notes of each sprite are labeled. For example, "♩ ♫" is assumed to be "don-ka-ka," allowing students to imagine the sound of Japanese drums.

Flow of the first hour

First, during the first 10 minutes, the students, using four sprites, freely created musical drum sounds by trial and error. In this first trial-and-error session, the most common student outcome in both A and B classes was that all four sprites were different. When students imitated the work, they often lost track of it; when two of the four sprites were the same, more students imitated the work. Likewise, more students imitated works with rests in the middle of the piece. Through this initial process, students noticed that some pieces were easier to imitate.

One of the authors and the students then discussed the characteristics that made works easier to imitate. The teacher asked, "How can we make the sprites easier to remember? "

Students said it is easier to remember if the same sprite is repeated. They also noted that if there is a rest in the middle of a piece, it is easier to remember, but sprites that start with eighth rests are difficult to imitate.

One of the authors asked, "How can we make the sprites easier to remember?" Afterward, he conducted a second trial-and-error session of 15 minutes.

Results and discussion of the first hour

The percentage of students who used all the different sprites was 36% in Class A and 37% in Class B. Of these, 91% of the students used rests in the middle of the piece. The authors concluded that rests made it easier for students to remember.

The other recorded results were as follows:

- The percentage of students who used no sprites that were the same was 52% in Class A and 47% in Class B.
- The percentage of students who used two of the same sprites was 36% in Class A and 37% in Class B.
- The percentage of students who used three of the same sprites was 3% in Class A and 0% in Class B.
- The percentage of students who used four of the same sprites was 0% in Class A and 3% in Class B.
- The percentage of students who used two sprites of the same type was 9% in Class A and 13% in Class B.

There was no significant difference in the degree of scattering between the two classes.

Flow of the second hour

One of the authors conducted a third 15-minute trial-and-error session to create a drum beat with four more sprites added to the work from the previous period. The aim of creating an easy-to-remember piece was the same as the previous session. He used the same method for the presentation. In the process, he and the students discussed how they felt about the relationship between the two pieces.

The following are examples of common student responses:

- “If the top and bottom are the same or similar, it is easy to remember, but it is not interesting.” “If the bottom is completely different, it is hard to remember."
- "If the bottom changes a little compared to the top, it sounds cooler."

Based on these opinions, the students, one of the authors asked the students how they could make their musical presentations easier to remember and "cooler?" He then told the students that the third period would include a presentation and scheduled a fourth 20-minute trial-and-error session to allow the students to revise their works to make them sound cooler. In this trial-and-error session, one of the authors changed the learning conditions. He told Class A’s students they could discuss their work freely with friends. However, he told Class B’s students that they had to proceed alone.

Results and discussion of the second hour

The submitted works of Class A and Class B differed. In Class A, 39% of the works were Type 1, which used 4 or 3 different sprites for the top and the same or similar sprites for the bottom. However, only 13.3% of the works in Class B used this technique. The authors attributed this difference to the different revision methods imposed on the classes.

In the first hour, the scatter of both classes was similar; in the second hour, differences emerged in the use of repetition. Overall, all but two students in Class B used repetition and change differently.

Through trial and error, these students created music with thought and intention, considering the function of repetition and change.

There is no record of the content of the free dialogue by students in Class A. However, since the scattering in variation decreased while the number of more well-formed pieces increased in Class A as compared to Class B, the effect of free dialogue on thinking, judgment, and expression was deemed notable by the authors.

Lessons using Song Maker

A third music-creation class was held for eight fourth-grade students (two of whom in special needs classes) at the public I Elementary School in February 2021. The name of the class was "Let's Make a Sound Logo of ?". The "?" meant that the students were allowed to choose their sound logo theme from a list of four subjects: School, community, family, or the student's name. For the teaching material, the sound logos of several TV commercial jingles were used. The goal of the class was to create music that is short and easy to convey to others.

In the school's music textbook, the Japanese scale ((D)E G A C D) is used as the subject of melody creation. Thus, the pentatonic scale was deemed suitable for the students' melodic and harmonic improvisations. However, since there were significant differences in the students' physical skills, ICT was utilized to mitigate this factor. Chrome Music Lab's "Song Maker" was determined to be a program that all students could use. (https://musiclab.chromeexperiments.com/Song-Maker/)

Song Maker has two octaves of usable range. To avoid confusion, students were allowed to use all E (yellow) G (green) A (blue) C (red), and D (orange) notes. After creating their song, each student was required to add lyrics and perform their song for the class.

Flow of study

The first hour was a tutorial on how to use Chrome Music Lab. The second hour was for reviewing various commercial sound logos made of pentatonic and other sounds. This was followed by a music-creation session with the requirement of using the pentatonic notes in the music-making process. Every student began the 25-minute trial-and-error process with enthusiasm. Gradually, as they became more comfortable, they began tinkering with a variety of functions. One of the authors heard rhythm track manipulations, changing tones, and different tempo controls being used. Students observed their friends' operations and began borrowing from each other. After a brief pause, students seemed to refocus on their songwriting.

At the beginning of the third period, the students had a 10-minute brush-up session, followed by a presentation. The students' works were divided into different forms: Three created monophonic pieces with lyrics; two created rhythm-centered music with clustered chords that also utilized a rhythm track; two students created music with a geometric pattern similar to a graphic score, and one created game music with random single notes arranged in arpeggio-like patterns. All of the music was unique, and everyone played their music with satisfaction. One of the songwriters was too embarrassed to sing his song and asked the teacher to sing it for him. The lyrics were, "My father is a good cook."

In explaining their work, all of them talked about their interests. There was not a child who did not listen to the other children's works with interest. All applauded and cheered for everyone's song. Satisfaction with the class was high for all students. In the end, one student abandoned the requirement to use five notes, but none of the other students admonished him for doing so.

As the students had all received the same tutorial textbook and had reviewed the same sound logos that used pentatonic and other scales, the authors assumed that the students would create songs that used similar melodies, but the students' songs began to diffuse into various forms, and the range of expression expanded. It became clear that more conditions may be needed to compensate for the versatility of some ICT applications. However, the authors also found that more open conditions expanded students' trial-and-error capabilities.

Conclusions

The authors planned lessons to expand students' trial-and-error and problem-solving capabilities related to the elements of music. We then conducted a qualitative study of the students' works and opinions. As a result, three points were identified.

(1) ICT music applications are an effective and efficient tool for helping all students create musical works through repeated trial and error. It allows the students to hear their ideas fed back to them instantly as acoustical sounds, eliminating the need for third-party participation. Further, the functions provided by the software reduce the level of physical skills, such as singing or the playing of instruments, required for musical expression.

(2) To sustain students' trial-and-error capabilities in music creation, teachers must present tasks clearly and set understandable conditions regarding the elements that make up music and their functions. Student success, which, in this case, is the completion of a satisfactory musical work, increases levels of satisfaction with learning. Further, students achieve satisfaction and a sense of self- affirmation when their works are evaluated as "memorable" and "good."

(3) Further, analysis of class participants showed that students who viewed the works of and engaged in dialogue with other students during the trial-and-error process imitated techniques, leading to more effective use of musical elements. However, the authors noted a greater diversification of expression in classes where teachers discouraged dialogue with other students during the creation process.

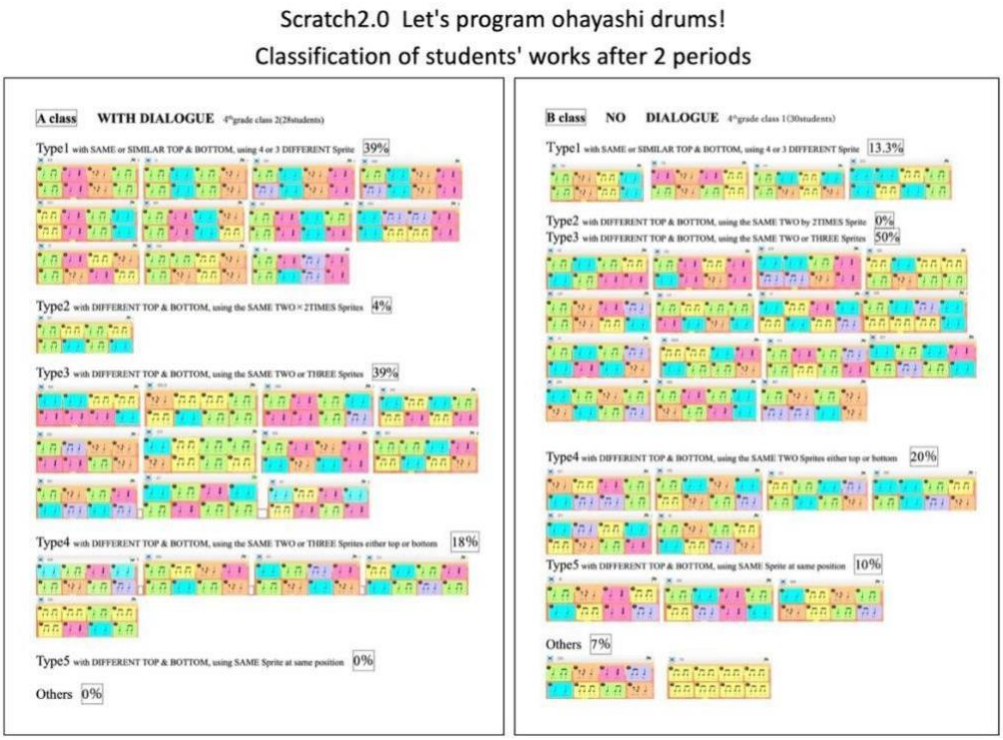


Figure 1. Classification of student's works after 2 periods

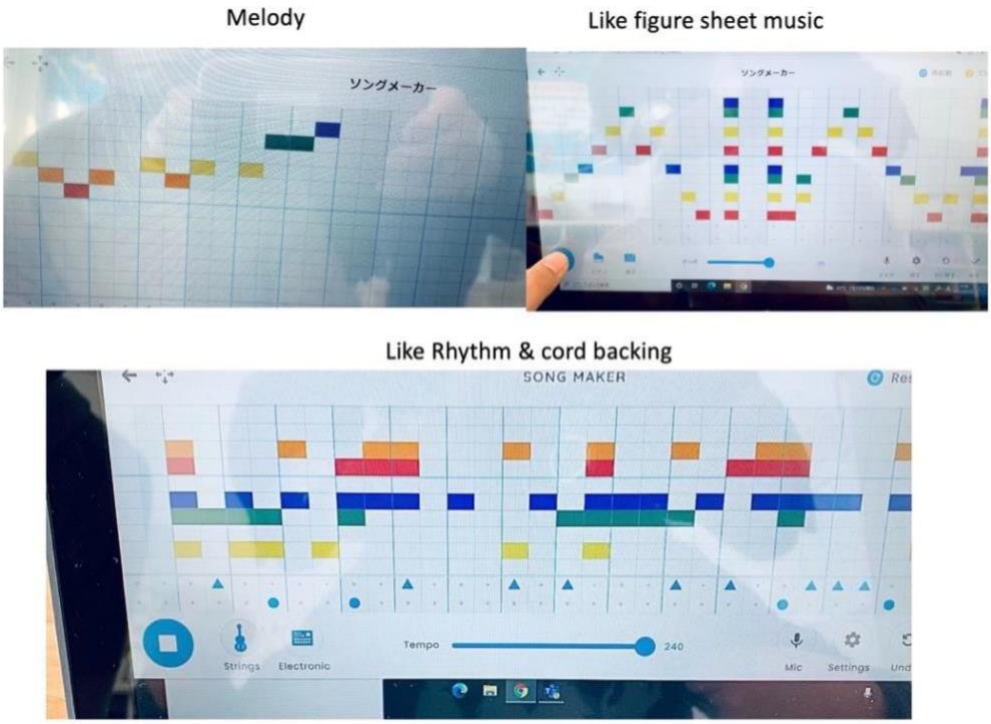


Figure 2. Sound Logo

References

Abe, K. (2018), Programming education using constructivism in elementary education, Systems/Control/Information, 62(7), 254-259. https://www.jstage.jst.go.jp/article/isciesci/62/7/62_254/_pdf/-char/en

Fujihara, N. (2019), Programming as Tinkering. Naruto University of Education Information Education Journal, 16, 21-24. info:doi/10.24727/00028464

Fukushima, K. (2018). Programming software in elementary music studies, *Computers & Education*, *45,* pp. 61-66 https://doi.org/10.14949/konpyutariyoukyouiku.45.61

Ministry of Education, Culture, Sports, Science and Technology (MEXT), (2018), Effective use of ICT in the teaching of each subject, MEXT, pp. 32-33.

Ministry of Education, Culture, Sports, Science and Technology (MEXT), (2017), Elementary school curriculum guidelines, MEXT, pp. 22-23.

Georgia in Transition: Perspectives on the Europeanization of Higher Music Education

Iveri Kekenadze Gustafsson, Lund University, Sweden & Nana Sharikadze, Caucasus University, Georgia

Abstract

Music and Performing Arts is one of the fields Georgia can pride itself on internationally. While the country is in transition as it officially embarks on its long path to the European Union membership, this study explores the process of Europeanization of Higher Music Education in Georgia. Authors analyze how Higher Music Educational Institutions employ European projects for organizational change at a grassroots level and to what extent and in what way supranational and national policy instruments influence the outcome at the local—institutional level. This study categorizes Georgia's Higher Music Education sector into three major stages since the country restored independence in 1991 and uses structural, institutional, and organizational approaches for collected data analysis. The findings suggest that significant challenges remain despite emerging European support in the cultural area and active cooperation between major stakeholders in the sector and their European counterparts.

Keywords: Georgia, Higher Music Education, Europeanization

Introduction

Georgia's journey in transforming its Higher Music Education (HME) system in the post-Soviet era and its integration into the European higher education (HE) landscape has been dynamic. This period marks significant changes in various fields as Georgia shifts from a Soviet-influenced system to engaging with broader European contexts. The country remains in transition (National Erasmus+ Office Georgia, 2021, p. 4)

Georgia applied for membership in the European Union (EU) in March 2022, together with Ukraine and Moldova (RFE/RL, 2022). However, the Association Trio, a tripartite configuration was de facto split by the EU Commission in its opinion on granting EU candidate status to Ukraine and Moldova but denying it to Georgia in June 2022 (European Commission, 2022). The following year, Georgia received a candidate status for the EU membership, too. Despite Georgia's recent political and rhetorical drift from Europe (Genté, 2022), the people of Georgia have repeatedly proven their pro-European aspirations, which have also been demonstrated in overwhelming popular support for the membership of the EU (International Republican Institute, 2023).

According to the EU Analytical Report on alignment with the EU acquis, Georgia is "moderately prepared" in the area of education and culture. It is broadly aligned with the EU objectives (European Commission, 2023, pp. 34-36). This paper analyses how Georgia endeavors to align its higher music education system with European standards, practices, and values, seeking to further integrate with the European Higher Education Area (EHEA).

Georgia's higher music education sector is dominated by one institution, Tbilisi State Conservatoire (TSC).[3] Accordingly, this research focuses on the changes in TSC as primary and broadly representative of the field. The research aims to analyze the process of Europeanization of Georgia's higher music education from the transitional perspective and answer the following research questions: (a) How is the Europeanization of Georgian Higher Music Education defined, understood, and interpreted at the supranational, national, and local levels? (b) What are the gains and failures of Georgian higher music education in its path to synchronization with the EU standards and practices?

At the international level authors looked at: EU Publications and statistics on Higher Education, including Erasmus+, Horizon and Creative Europe programme guides and statistics, as well as country reports by the European Commission and resolutions on Georgia adopted by the EU Parliament. At the national level: national rules and regulations; higher education strategy documents, such as The Unified National Strategy of Education and Science for 2022-2030 of Georgia; cultural strategies, such as Culture Strategy 2020-2025 of Georgia; governance, structure and policy documents, including reports and publications from National Erasmus+ Office were analysed. At the local level: institutional strategic development plans, internationalization mechanisms, EU-funded projects overviews, institutional involvement in the EU initiatives, statistics regarding international programs, courses, students, exchange studies, etc., were reviewed. In addition, material from the accreditation self-evolution report has been analyzed.

One hundred nineteen students of Tbilisi State Conservatoire participated in the conducted surveys. This number is 25,05% of the total student population, strengthening the representativeness of this inquiry. Data from four focus groups with teachers and students at Tbilisi State Conservatoire, with seven to ten participants each, were also used. In addition, interviews were conducted with TSC administration representatives.

Background: Higher Education in Georgia

Georgian higher education sector operates and is regulated by the Law on Higher Education and various policy documents. As part of the European Higher Education Area (EHEA), Georgia, among others, has established a three-cycle higher education system, authorization and accreditation mechanisms, as well as entities such as the National Examination Centre to ensure that student status is obtained through the United National Exams and National Centre for Educational Quality Enhancement (NCEQE). Structural changes at higher educational institutions (HEIs) included developing quality assurance bodies and adopting the European Credit Transfer and Accumulation System (ECTS), as well as preparing mandatory self-evaluation reports (SER) through internal quality assurance analysis for external evaluation by the NCEQE.

For the last three decades, educators and experts in Georgia have considerably raised in numbers to discuss not only the need for educational reforms but also opposite traits in the ongoing educational reforms, teaching and learning environment. The National Erasmus+ Office in Georgia (NEO) has frequently conducted research projects. National reports address the governance and organization of

[3] Tbilisi State Conservatoire, founded on May 1, 1917, has been Georgia's major cultural, educational, and research center. More on: National Overview Georgia, AEC. https://aec-music.eu/members/national-overviews/georgia

HE. Darchia, Bakradze, Glonti, Gurchiani, et al. have examined the policies and reforms implemented in the Georgian HE field, the results and challenges of the Bologna process in Georgia, and steps taken by Georgia to align with European standards and practices.[4]

Research on music education in Georgia, particularly in the context of the country's unique musical traditions and cultural heritage, has been a subject of interest for scholars.[5] Some areas of research related to Georgian higher music education include teaching methodology implications of certain specific courses such as ear training, music history, traditional music education, and cultural preservation. Internationalisation and Europeanization, specifically in Higher Music Education in Georgia, have not been addressed until recently.[6]

Theoretical Framework and Methodology for the Study

In late 2022, Simon Marginson published the paper "Space and Scale in Higher Education: the Glonacal Agency Heuristic Revisited," which gave another boost to the glonacal (global, national, local) framework, which has been widely used in higher education research. This model contributes to analyzing "intersections, interactions and mutual determinations of these [glonacal] levels and domains," to show that "local entities and collective efforts can undermine, challenge and define alternatives to global patterns; they can also shape the configuration of global flows" (Marginson & Rhoades, 2002, p. 289-290).

The structural approach can also be complemented by the institutional approach. New institutionalism provides a comprehensive picture of the institutional environment. William Richard Scott's *Three Pillars of the Institutional Theory* builds on addressing organizational change influenced by the institutional environment.

A phenomenographic analysis was conducted. Phenomenography has been a valuable approach to educational research, especially when addressing and understanding new concepts and phenomena; "A core premise of phenomenography is the assumption that different categories of description or ways of experiencing a phenomenon are logically related to one another, typically by way of hierarchically inclusive relationships" (Marton & Booth, 1997, pp. 322-323).

Before moving forward, we acknowledge potential bias and limitations in this exploration. Considering that both authors are closely linked to the main research subject in this inquiry, Georgia's higher music education field and Tbilisi State Conservatoire, the challenge remained that we would depend on our reflections rather than empirical findings. However, we limited personal input by collecting and reviewing a wide range of data, survey results, focus groups, interviews, statistical information, reports,

[4] See: EU-funded publications by the Erasmus+ National Office Georgia: http://erasmusplus.org.ge/en/publications
[5] Contemporary Georgian Music Education scholars include M. Nadareishvili, M. Kavtaradze, N. Sharikadze, L. Kakulia, L. Maruashvili, M. Koridze, G. Gvinjilia, T. Chkheidze, L. Pataridze, T. Mgaloblishvili, E. Oniani, K. Bolashvili, N. Zumbadze, T. Zhvania, E. Chabashvili, M. Virsaladze and others.
[6] See Iveri Kekenadze Gustafsson, "The Return to Europe: Exploring the Process of Europeanization of Higher Music Education in Georgia" (MA Thesis, and Lund University, 2023). Available online: https://lup.lub.lu.se/student-papers/search/publication/9125413

and other official documentation, which made our observation more transparent and objective and minimised the bias in the analysis.

Collected data from interviews and focus groups were anonymised, transcribed and coded. Anonymisation also contributed to limited bias in the analysis. Surveys were designed as anonymous so that students could express their opinions more freely and without reservations. Since one of the authors lives outside Georgia, most data was collected using online platforms like ZOOM and TEAMS. The Google Forms questionnaire was used for the surveys. Each interview/focus group participant granted the authors permission to record and store data and use it for the research.

We acknowledge that having Tbilisi State Conservatoire as a single case for this research also limits the scope of the study as some conclusions might be endemic to a particular organisation and not be reflective of the field in general. Nonetheless, a broad spectrum of data and the significance of Tbilisi State Conservatoire in Georgia's higher music education sector contribute to eliminating significant bias in this article.

Analysis

International Scope — Linking Europeanization with Higher Music Education

European integration greatly bolsters Georgia's Europeanization. European integration refers to European countries forming closer political, economic, and social relations (Hayrapetyan, 2020). In this article, we refer to integration in the context of Georgia's EU membership aspirations as a measurable, merit-based process. In contrast, Europeanization as a concept refers primarily to perceptions, ideas, and identities.

Georgia signed an Association Agreement (AA) with the EU in 2014, a significant milestone in Georgia-EU relations. The cooperation has advanced in the education area. Article 359 underlines the relevance to focus on "promoting quality in higher education in a manner consistent with the EU Modernisation Agenda for Higher Education and the Bologna process" (EU-Georgia Association Agreement, 2014). According to the Analytical Report, which assesses Georgia's alignment with the acquis and was published by the European Commission last year, "The education system in Georgia is broadly aligned with the EU objectives" and "Georgia's cultural policy broadly reflects the general priorities of the New European Agenda for Culture" (European Commission, 2023, p. 35).

The global dimension of glonacal also suggests the role of human agencies to which, in this study, international umbrella organizations have been assigned. AEC – European Association of Conservatoires represents the prominent platform for networking, idea exchanges, project development, socializing, advocacy, and much more in Higher Music Education. The membership increased visibility as the country hosted the international relations coordinators' annual meeting in 2017 (Association of European Conservatoires, 2017), and its staff joined the working groups of the AEC's EU-funded projects.

Top-down indirect transposition of EU priorities have also been explored through this study. The 2021-2027 EU framework stresses the importance of inclusion and diversity. The AEC, moving forward with the ARTEMIS project and participating in projects like PRIhME, has adopted a firm stance on issues in

addition to the digitization and green development of higher music education. TSC has also established a working group to address EDI – equality, diversity, and inclusion already last year, yet no substantial policy changes have been made (Focus group participant 1, 2023).

Challenges remain in several areas. Although the cultural sector has benefited greatly by joining the Creative Europe Programme, the non-associated status on Erasmus+ remains an obstacle to higher music education. While Batumi State University of Arts does not even have an international office and is not involved in Erasmus+-funded projects, TSC has been actively participating in International Credit Mobility (ICM) projects. In contrast to program countries' institutions, Georgian universities cannot apply and coordinate ICM projects and, therefore, depend on the partner institutions' will. This creates uncertainty and an unbalanced workload.

National Scope — Gains and Failures: State of Art under the Wrap

Georgia "has already made significant advancements on the key commitments of the European Higher Education Area" (EHEA) (European Commission, 2023, p. 34). This includes the importance of quality assurance mechanisms, adhering to European Standards and Guidelines for Quality Assurance (EHEA Ministerial Conference, 2015), and participating in international evaluations to ensure the quality and relevance of education programs, including in higher music education. Georgia's National Center for Educational Quality Enhancement (NCEQE), which joined the European umbrella organization ENQA in 2021, hosted an annual members' forum in Spring 2023, another step in acknowledging the progress Georgia has made recently.

However, significant differences remain between arts-specialized and multi-profile institutions. State Arts Universities (There are three of such kind: Tbilisi State Conservatoire, Theatre and Film Georgian State University and Tbilisi State Academy of Arts) are covered under the Ministry of Culture, Youth and Sport of Georgia (MCYS), a continuation of Soviet tradition.

The organization model of Higher Arts Education Institutions (HAEIs) is ambiguous: on the one hand, questions related to the authorization, accreditation, etc., remain the responsibilities of the Ministry of Education and Science and all institutions follow the guidelines of NCEQE, while on the other hand, the funding is almost entirely up to the MCYS. "Higher Arts Education Institutions (HAEI) receive only a small proportion of their funding through vouchers with the main funding coming from the Ministry of Culture, Youth and Sport (MCYS) through so-called Program Funding based on negotiation as well as on a historical basis" (Briller, 2021).

Furthermore, during the initial development period, those HAEIs lacked resources and prioritization to participate in programs such as the Trans-European Mobility Programme for University Studies (TEMPUS).[7] Georgian HMEIs have not been able to participate in the TEMPUS program, which operated via the establishment of consortia and implementing Joint European Projects (JEPs); therefore, until the establishment of Erasmus+ ICM, there has been a lack of participation in EU-funded projects.

[7] TEMPUS projects, overview. https://www.eaie.org/blog/erasmus-tempus.html

Unified Strategy for Education and Science for 2017-2021 has been focused on internationalization.[8] HEIs have been encouraged to engage further with European institutions and explore the opportunities provided by European programs. The Culture Strategy 2025 also stresses the importance of intercultural cooperation and internationalization.

However, significant challenges constitute implementing those strategies, especially for small sectors, such as higher music education. The internationalization process, as well as quality assurance, requires considerable financial resources, which remains a problem, especially in the background of the need for more funding models in HME. This is an obvious obstacle to further implementation of reforms.

In addition to limited funding and resources, there has recently been a shift towards censorship and drastic leadership changes in several key cultural organizations and arts-specialized HEIs. Higher music education professionals fear that they might be next. The clashes between sectoral workers and new management in the Ministry are frequent, which causes toxicity in the field (Lomsadze, 2023).

Local Scope — The Clash of Two Mindsets

On an organizational level, Europeanization covers various directions, starting from curriculum design and modernization of the curricula in order to reflect contemporary music education trends, as well as a balance between the labor market and specialties, bridging the gap between theory and practice, teaching methodologies, change in working culture and different types of collaboration.

Europeanization slowly transformed the work at the international offices of HMEIs. Focusing on TSC, while at the beginning of the 1990s, international work at higher music institutions was limited to disseminating information about international festivals and competitions and making copies of specific leaflets and brochures, currently, the international department is at the driver's seat of internationalization of the sector, and even beyond music education, including other art fields (Interviewee 2, Theatre and Film University, 2023).

Pre-Bologna reality was dim in Georgia and also for higher music education institutions (HMEIs). Infrastructural problems, a massive fall in students, and insufficient funding contributed to the slower speed of internationalization. Since 2005, TSC has joined international organizations, such as AEC, and expanded partnerships, especially strategically targeting two regions: Poland and Baltic countries, as good examples for transition, and Scandinavian countries, as best examples in the field. This is a period when TSC gains momentum to establish Inter-Institutional Agreements (IIA) and Memorandums of Understanding (MoA), with prominent institutions such as the Sibelius Academy in Finland and the Norwegian Academy of Music within the top 25 of QS Rankings.[9]

Another chapter began in 2015 when mobilities of individuals for teaching/training, studies, and then traineeships became possible. The latest statistics show that 43 music-specialised students have

[8] Unified Strategy for Education and Science for 2017-2021. The Ministry's Strategy. Ministry of Education and Science Georgia. Available Online: https://www.mes.gov.ge/content.php?id=7755&lang=eng

[9] See: TSC Partner Institutions: https://tsc.edu.ge/international-partners/
QS Ranking in Performing Arts: https://www.topuniversities.com/university-rankings/university-subject-rankings/2023/performing-arts

participated in the ICM during 2022-2023 out of TSC's just over 420 active status students, and 32 more students were expected to start their Erasmus+ studies from Autumn 2023 in programme countries.

TSC also established new programs in the past years, namely the Music Technology MA program and the Jazz Programme on the BA level. The Music Technology programs have been designed in collaboration with Norwegian partners. TSC has participated in and benefited from the Eurasia development projects financed by the Norwegian Centre for International Cooperation in Higher Education (SIU) funded in 2015 and 2016.[10]

Progress has been made in addressing teaching methodologies and modernizing the assessment system, especially by inviting European professors to attend and assess the degree entrance and final exams and give expertise and opinions. The *Critical Friends* format also contributed to the advancements in the study environment. *Critical Friends* are international experts from Sibelius Academy, the University of Arts Helsinki, who have conducted assessments of the study environment at TSC in 2019 and 2022. The produced Report helps TSC management to strategically plan and develop policy through international guidance.

Financial challenges remain one of the major concerns. It is worth noting that the total budget of international collaborations that TSC is involved in amounts to more than a third of its total yearly budget. European projects benefit short-term mobilities and internationalization at home and act as a lifeline for students who strive for better opportunities.

Considering the economic success and best practice examples from Eastern European countries that joined the EU during 2004-2007,[11] one should expect that the EU membership will have a boosting effect on the development of Georgia and its higher music education sector, too, as it will increase representation and participation in culture, career opportunities, salaries, and possibilities for a more equal society.

Concluding remarks

Departing from the recent shift in the EU's approach to culture, the unity and cooperation of those organizations such as Culture Action Europe, European Music Council, Association of European Conservatoires, and others are vital for higher music education institutions. It is also important that those organizations also focus on regional differences in the EU and pre-accession countries. As many pan-European platforms are establishing new partnerships and projects in Ukraine, including with Ukrainian higher music education institutions, the focus should be on sustainable relations rather than emergency assistance-type partnerships for the entire region.

[10] See: Norwegian Academy of Music. *Bridging the Gap* project, International Collaboration with Tbilisi State Conservatoire. https://nmh.no/en/about/international-collaboration

[11] See: Daiva Kriukienė. Change of living standards in Lithuania, Latvia and Estonia after joining the European Union. Regional Formation and Development Studies. 2014: 14. 10.15181/rfds.v14i3.875.

On the organizational level, the challenge remains an unhealthy working culture, uncertainty regarding the future, and the slow speed at which the organizational mindset changes. There is a young generation of students and teachers, full of energy, who speak fluent English and would like to gain as much as possible in the process of teaching and learning, those who welcome introducing new courses, having masterclasses, or collaborating with European teachers and colleagues, those who are actively participating in the international mobilities and projects. However, they often clash with those with an old-fashioned understanding of third-cycle studies, in which university is just a continuation of a Soviet-type secondary school, and the teacher's conduct is unquestionable. The divide creates polarisation in opinion and causes either nihilism or confrontation.

One can assume that stakeholders at higher music education institutions sometimes take the progress made regarding internationalization for granted and do not internalize the need for improvement. Europeanization is a process, a tool for development, and not something that can be achieved and celebrated with an award like winning a classical music competition, nor is it measured by the number of international mobilities or partner universities.

Europeanization is a direction that needs everyday work and a realization that it is needed on all levels.

This paper is a shorter version of a forthcoming article in Baltic Worlds XVII:3, available in September 2024 at https://balticworlds.com/back-issues/. The part of the data in this article was collected during the author's MA project.

References

Association of European Conservatoires. (2017). International Relation Coordinators Meeting 2017. https://aec-music.eu/event/international-relations-coordinators-meeting-2017/

Briller, V. (2021). Higher Education Financing and Relevant Recommendations. In Results of Internal and External Evaluation of Quality Assurance Analysis 2018-2022. Tbilisi State Conservatoire. (2023)

EHEA Ministerial Conference. (2015). ESG - The Standards and Guidelines for Quality Assurance in the European Higher Education Area. https://www.enqa.eu/esg-standards-and-guidelines-for-quality-assurance-in-the-european-higher-education-area/

EU-Georgia Association Agreement. (2014). https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:22014A0830(02)

European Commission. (2022). EU Commission Opinion on Ukraine, Moldova, Ukraine Membership. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3790

European Commission. (2023, February). EU Commission Analytical Report on Georgia's Alignment with EU Acquis. https://neighbourhood-enlargement.ec.europa.eu/commission-analytical-report-georgias-alignment-eu-acquis_en

Genté, R. (2022). Broken Dream: The oligarch, Russia, and Georgia’s drift from Europe. https://ecfr.eu/publication/broken-dream-the-oligarch-russia-and-georgias-drift-from-europe/

Hayrapetyan, A. (2020). The Process of European Integration Through the Lenses of Institutionalism. https://www.e-ir.info/2020/09/06/the-process-of-european-integration-through-the-lenses-of-institutionalism/

International Republican Institute. (2023, March). National Public Opinion Survey of Residents of Georgia. https://www.iri.org/resources/national-public-opinion-survey-of-residents-of-georgia-march-2023/

Interviewee 1, Tbilisi State Conservatoire (2023, March). Focus Group 1. (I. Kekenadze Gustafsson, Interviewer)

Interviewee 2, Theater and Film University of Georgia (2023, March). (I. Kekenadze Gustafsson, Interviewer)

Kekenadze Gustafsson, I. (2023). The Return to Europe: Exploring the Process of Europeanization of Higher Music Education in Georgia (MA Thesis). https://lup.lub.lu.se/student-papers/search/publication/9125413

Lomsadze, G. (2023). Georgian Culture is Trying to Cancel its Minister. https://eurasianet.org/georgian-culture-trying-to-cancel-its-minister

Marginson, S. (2022). Space and Scale in Higher Education: the Glonacal Agency Heuristic Revisited. Higher Education, (84), 1365-1395.

Marginson, S., & Rhoades, G. (2002). Beyond National States, Markets, and Systems of Higher Education: A Glonacal Agency Heuristic. Higher Education, (43), 281-309.

Marton, F., & Booth, S. (1997). Learning and Awareness. In G. S. Åkerlind, Variation and Commonality in Phenomenographic Research Methods (pp. 322-323). Hillsdale, NJ.

National Erasmus+ Office Georgia. (2021). Higher Education and Research Internationalization in Georgia 2030: Recommendations. Tbilisi: NEO Georgia. http://erasmusplus.org.ge/en/publications. Parliament of Georgia. (n.d.). Law of Georgia on Higher Education. https://matsne.gov.ge/ru/document/download/32830/53/en/pdf

RFE/RL. (2022). Georgia, Moldova Formally Apply For EU Membership Amid Russia's Invasion Of Ukraine. https://www.rferl.org/a/georgia-moldova-eu-applications/31734092.html

Designing a Music Inquiry Project Centered Around Questions

Sung-Ji Kim, Halla Elementary School, South Korea & Jeongju Song, Daegu Suchang Elementary School, South Korea

Abstract

The purpose of this study is to design a concept-based music inquiry project centered around teacher questions. To achieve this, we examined conceptual understanding, inquiry-based learning, and the meaning and role of inquiry questions. Based on this, we designed a music inquiry project plan that incorporates teacher questions. The results of this study can be summarized as follows: Firstly, inquiry-based learning is essential in music education, and diverse inquiry unit designs are required. Secondly, systematic preparation of teacher questions is imperative to support students' inquiry through lesson design. Teacher questions can be categorized into two main types: a key inquiry question that provide an objective for the entire unit and inquiry questions that serve as guidance for each session. Music inquiry lessons centered around systematically prepared teacher questions will enable students to achieve a profound understanding of fundamental musical concepts and empower them to take an active role in leading their inquiry and learning.

Keywords: inquiry questions, inquiry-based learning, conceptual understanding, music inquiry project

Introduction

In the era of the fourth industrial revolution and rapid societal changes, education goes beyond rote knowledge acquisition, focusing on cultivating deep conceptual understanding and problem-solving skills. Concept-based curriculum and inquiry-based learning have gained prominence in this shift, emphasizing the importance of guiding students to explore key concepts. Yet, the role of teacher-generated questions often goes unnoticed. Questions are essential tools that ignite students' curiosity, guide their inquiry, and stimulate cognitive faculties. While open-ended questions have been valued, many are improvised in class. This research addresses this issue by presenting a music inquiry project designed around systematically prepared questions. To this end, we will discuss conceptual understanding and inquiry learning, examine the meaning and role of inquiry questions, and present a concept-based music inquiry project designed around questions.

Theoretical Background

Conceptual understanding

Conceptual understanding, as emphasized in Erickson's concept-based curriculum, involves thinking at the conceptual level rather than teaching the concept itself. It refers to central ideas that students must understand at a deeper level (Erickson et al., 2019). Students must learn factual knowledge and be able to perform at a lower level, but they should not stop there and should reach the stage of conceptual understanding through conceptual thinking. Conceptual understanding leads factual knowledge and skills to a higher level of knowledge and transferable knowledge based on them.

An important instructional design strategy for conceptual understanding is the design of 'conceptual lenses'. Conceptual lenses are essential concepts that focus and deepen learning on a particular idea or concept (Erickson et al., 2019). Second-dimensional learning focuses on what students know and

can do, centered on facts and skills. Adding 'conceptual lenses' to this can transform factual and functional learning into three-dimensional learning, allowing students to view and think about them from a new perspective. According to Erickson (2019), when we focus and deepen students' learning through a particular idea or concept, it promotes understanding transfer and generates thinking that produces synergy.

Other curricula that focus on conceptual learning include McTighe and Wiggins' Backward Design. Unlike Tyler's approach, the backward design prioritizes students' authentic inquiry by placing the assessment plan after goal setting. McTighe and Wiggins refer to generalizations and principles as enduring understanding and define understanding as the complete acquisition and application of knowledge (Ohn et al., 2020). In the backward design model, assessment tasks are developed as evidence of understanding, so understanding becomes the goal of instruction and the big ideas, generalizations, and concepts of the lesson that students need to understand. Big ideas, objects of enduring understanding that students construct meaning through exploration rather than acquisition, are "essential concepts, principles, and theories that should serve as the focus of curriculum, instruction, and assessment" (Kang et al., 2021) and are organizers of integration, conceptual tools that allow students to connect fragmentary knowledge with other knowledge and apply it where it is transferable.

In addition to using conceptual understanding, Erickson also suggests that inductively guiding conceptual understanding promotes integration of thinking, citing McTighe and Wiggins' "enduring understandings", "big ideas" and the IB's (International Baccalaureate) "central ideas", "learning of inquiry" (Erickson et al., 2019).

Inquiry-based learning

Inquiry-based learning is an active learning approach where students generate hypotheses under guidance and subsequently explore, gather evidence, and generalize. The objectives of inquiry-based learning closely align with those of concept-based instruction, which emphasizes students' construction of their understanding. Teachers should guide students through various methods and provide the tools and experiences needed during the inquiry process to encourage deep learning, enabling students to reach conceptual understanding on their own and enhancing their independence.

According to Erikson (2019), there are two types of inquiry for inquiry-based instruction: structured and guided. In structured inquiry, teachers provide questions and facts, and students analyze to understand concepts with the help of guiding questions. Guided inquiry involves teachers and students jointly developing questions, selecting context, investigation methods, and presentation. This fosters students' responsibility for learning, making it personally relevant. Regardless of the inquiry type, it's crucial for teachers to select an appropriate inquiry method based on the students and content. Furthermore, they should consistently offer feedback and guiding questions throughout the inquiry process to promote students' synergistic thinking.

The Meaning and Role of Inquiry Questions

Teacher questioning is a crucial component of successful classroom instruction. Effective teacher questioning promotes student learning and engagement in the lesson and can be used strategically

throughout the lesson to maximize student understanding.

In concept-based inquiry learning, questioning holds significant importance. Teachers guide and support students' understanding through questioning, while students are encouraged to uncover concepts themselves. Thus, the teacher's questioning takes on a central role in guiding students' inquiry in this approach to learning.

In the context of inquiry learning, we can highlight one of the prominent assertions of various scholars regarding the significance of teacher questioning, which is McTighe and Wiggins' notion of essential questions. An essential question is a fundamental query that assists students in comprehending and exploring important concepts in the learning process. An essential question pertains to the central inquiry of a discipline and involves a high-level query that relates to the main idea in the lesson (McTighe & Wiggins, 2016). Therefore, when crafting an essential question, teachers must contemplate the broader objectives encompassing the inquiry and its contextual circumstances, such as subsequent interrogations, tasks, and evaluations. (McTighe & Wiggins, 2016).

Essential questions are related to the fundamental topics or objectives being taught, but Erikson's guiding questions place more emphasis on the educational process. Guiding questions aim to stimulate students' thinking and guide them towards forming generalizations, with the goal of aiding their conceptual understanding. Guiding questions are categorized into factual, conceptual, and argumentative categories. All three types of questions are included in concept-based instruction, and among them, conceptual questions help students extend their thinking to a deeper and transferable understanding.

The IB curriculum prioritizes key questions to facilitate concept-based inquiry as the key concepts are introduced as questions. The key questions synthesize the philosophy behind the essential and guiding questions. In the IB, the concepts are key in the sense of importance in students' learning and inquiry and they also provide a key—a way into a body of knowledge through structured and sustained inquiry. These key concepts, when structured as a set of questions, can be easily managed by teachers and become a research tool for students to inquire with an open mind (IBO, 2009).

All of these questions are tools used by students themselves to achieve their learning objectives, assisting them in exploring essential concepts and gaining a deeper understanding. These questions also help their deeply understood concepts to transfer to other fields. The teacher's questions provide scaffolding for students' thinking, enabling learners to focus on their inquiries, lead themselves, and take charge of their learning.

Designing a Music Inquiry Project Centered Around Questions

Music Inquiry Project Overview

Choosing the Central Idea and Topic

The music inquiry project's main idea and topic were chosen by aligning with South Korea's 2022 revised music curriculum, specifically focusing on "Understanding Musical Elements" and "Creating Music Using Musical Elements". These areas are typically covered in teacher-led lessons, but there was a need to encourage students to inquire and contemplate the relationship between music and

emotions. This led to the central idea that 'Music has the power to evoke our emotions', which was further refined by linking it to the 'Selecting Materials and Utilizing Media (Advertisements)' content in the Korean language curriculum standards. This connection resulted in the specific topic of "Exploring the Impact of Musical Elements on Emotions to Create Advertisement Music".

Setting Objectives and Key Inquiry Questions

The goal of this inquiry project is to comprehend how musical elements affect human emotions and use this understanding to craft advertising music. To guide the project effectively, a key inquiry question was formulated. This question was carefully crafted following six criteria to ensure it provides clear direction, emphasizes the main topic, relates to students' daily lives, asks an open-ended question in simple language, and engages higher-order thinking (Yang, 2021). The resulting key inquiry question is: "How can we create an advertising music proposal considering the influence of music on our emotions?"

Activity Plan

After formulating the key inquiry question, we selected important elements, arranged them in a specific order, and devised concrete activities. The resulting learning sequence is as follows: Listening to music and connecting it to emotions; Identifying musical elements such as melody, rhythm, tempo, and tone, and discussing their impact on emotions; Analyzing advertisements to investigate how music conveys emotions; Finding and analyzing music that evokes a specific emotional response; Drafting an advertisement music proposal; Making or editing music; Presenting a proposal; Giving and receiving feedback; Making revisions; Submitting a final proposal.

Unit Planning of Music Inquiry

Project name: Music and
Emotions Grade: Grades 5-6
Unit overview

Music enables us to convey and recognize emotions that are not easy to express verbally. For instance, a melancholy tune can make us tear up and soothe us. A lively beat can elicit a feeling of exhilaration and happiness. In this music inquiry project, our aim is to explore how musical characteristics evoke emotions in us and ultimately create an advertisement music proposal that aligns with our intentions. The advertisement music proposal serves as the final output of this project and involves considerations about how to capture customers' interest and captivate their emotions using various musical strategies. It encompasses the process of proposal creation and presentation, reflecting our contemplation on how to achieve these objectives.

Curriculum Linkage

Table 1. Relevant Subjects and Achievement Criteria

Subject	Achievement Standards
Music	[6M02-01] Listen to music, identify and differentiate music elements.
Music	[6M03-03] Produce uncomplicated music utilizing these elements.
Korean	[6K01-05] Choose materials, arrange them based on crucial data, and communicate them through a medium.

Unit Objectives

Understand the influence of musical elements on human emotions to strategize for advertising music.

Planning sessions

Table 2. Lesson Plans for Music Inquiry Units

Conceptual Lens		Effect	
Central Idea		Music has the power to evoke our emotions.	
Key Inquiry Question		How can we create an advertising music proposal taking into consideration the influence of music on our emotions?	
Session	Conceptual Understanding	Contents for learning	Inquiry question
1	Music expresses and conveys emotions through specific melodies, rhythms, lyrics, and other elements.	<Introduction and topic overview> -Listen to different parts of music and connect them to emotions -Identify musical elements that evoke similar emotions in students	-What emotions did you feel when listening to this music? -What musical elements make this song special to you (e.g., rhythm, melody, lyrics)? -What features of the music do you think made you feel similar emotions to other students? -If you felt differently about the music than others, what factors do you think made you feel different?

2~3	Emotions also vary depending on changes in music elements like rhythm, lyrics, and tempo.	<Perceived Emotion by Musical Element> -Compare emotions while listening to songs in major and minor keys -Listen to songs with different speeds and compare how they make you feel -Listen to songs in major and minor at different speeds and compare how they make you feel. -Compare how you feel listening to songs with different rhythmic styles -Compare between instrumental and lyrical version -Compare music with and without video -Talk about how musical elements affect our emotions.	-Which elements of music do you think affect our emotions most powerfully and why? -What features of music make you feel this way? -If different emotions arise when listening to the version with lyrics compared to the instrumental version, what factors do you think made you feel different? -What do you think is the reason if your emotions change/do not change when listening to songs with lyrics in a language you barely understand“ -How might our feelings change if the background of this music video were changed?

Conceptual Lens		Effect	
Central Idea		Music has the power to evoke our emotions.	
Key Inquiry Question		How can we create an advertising music proposal taking into consideration the influence of music on our emotions?	
Session	Conceptual Understanding	Contents for learning	Inquiry question
4	The musical elements used in the ad work together to convey certain emotions and increase the effectiveness of the ad.	<Analyzing ad Music> -Understanding the content and intent of an ad -Analyze the ad music -Talk about why this music was used -Explore how music conveys emotion	-What emotions did you feel after watching the ad? What features of the ad conveyed those emotions? -What role did the music play in the ad? -How did the music harmonize with the ad's message? -How did the background music or the voice-over by actors help emphasize the emotion the ad wanted to convey?" -What other music could be used in this ad? Why do you think that?

Conceptual Lens		Effect	
Central Idea		Music has the power to evoke our emotions.	
Key Inquiry Question		How can we create an advertising music proposal taking into consideration the influence of music on our emotions?	
Session	Conceptual Understanding	Contents for learning	Inquiry question
5	Music expresses and conveys emotions through specific melodies, rhythms, lyrics, and other elements.	<Categorize music by emotion> -Listen to a variety of music and categorize it into emotions such as sad, happy, relaxed, angry, fearful, etc. -Analyze the characteristics of the music you categorized -Explore music that makes you feel sad, happy, relaxed, angry, fearful, etc.	-What emotion did you feel when listening to this song? -What features of this music serve to reinforce that emotion? -What do songs in the same category have in common musically? What other music has common characteristics with the music in the category?

Conceptual Lens		Effect	
Central Idea		Music has the power to evoke our emotions.	
Key Inquiry Question		How can we create an advertising music proposal taking into consideration the influence of music on our emotions?	
Session	Conceptual Understanding	Contents for learning	Inquiry question
6	In ad, specific emotions are emphasized by selecting and using music that can evoke those emotions.	<How to Write the proposal for the ad music plan> -Establish the intent and target audience for the ad -Discuss suitable musical elements and characteristics for the advertisement -Determine the music style for the advertisement -Draft the proposal for the ad music plan	-What emotion do you want the music in your ad to convey? -Where do you want to use music in the ad? -In what manner do you want to utilize the music? (e.g., specific section repetition, removal of lyrics, grand style)
7~8	In ad music, musical elements are manipulated to effectively convey certain emotions.	<Creating/Editi ng ad Music> -Find and edit music for the ad -Create the music for the ad	-What style of music aligns with the message of the ad? -Which aspects of the chosen music align with the ad's intention? -To convey the ad's intention, which elements of the music do you plan to emphasize in the editing process?

Conceptual Lens		Effect	
Central Idea		Music has the power to evoke our emotions.	
Key Inquiry Question		How can we create an advertising music proposal taking into consideration the influence of music on our emotions?	
Session	Conceptual Understanding	Contents for learning	Inquiry question
9	In ad music, musical elements are manipulated to effectively convey certain emotions.	<Presenting the ad music proposal> -Present the intent and target of the brief. -Play the ad music. -Describe the ad music's characteristics and the emotions to be conveyed through the ad music.	-What visual or musical elements will you utilize during your presentation? How do you think these choices will further emphasize emotion? -What emotions did you notice in other teams' ads? What musical features and editing were used in ad music to successfully convey emotions?
10	In ad, specific emotions are emphasized by selecting and using music that can evoke those emotions.	<Revising and Submitting the Final Proposal> -Give feedback on each other's work -Revise the ad music and the proposal. -Submit the final ad music proposal	-What was the most useful feedback you received from other students? -What musical elements of the produced music should be modified to incorporate feedback? -What elements of the music need to be altered to align with the intent of the ad? -How can certain elements of the produced music be emphasized to enhance the quality of the ad?

Conclusion

This study has developed and presented a concept-based music inquiry project plan centered around questions. A summary of the study's content is as follows:

Firstly, it emphasizes the need for inquiry-based learning in music education. Inquiry-based learning is a teaching approach that prioritizes conceptual understanding, enabling students to acquire in-depth and transferable knowledge and skills. While inquiry-based learning is predominantly implemented in subjects like science, history, and social studies, music education often leans toward teacher-led activity-centered lessons. Nonetheless, there exists a need for inquiry-based learning in music education. Through inquiry, students can enrich their comprehension of music, explore it from novel perspectives, and cultivate deeper insights and enthusiasm.

Secondly, systematic preparation of teacher questions is imperative to support students' inquiry through lesson design. This study proposes two types of questions: a key inquiry question that offer objectives for the entire unit and inquiry questions that provide direction for each session. These questions are crafted to facilitate students' inquiry of the relationship between music and emotions. The journey of inquiry begins with questions. To stimulate and support students' inquiry, teachers need both spontaneous and flexible questions, but planned inquiry questions are also necessary for this purpose.

Inquiry-based music learning empowers students to attain a profound understanding of fundamental musical concepts, and systematically formulated teacher inquiry questions act as scaffolds for students' thought processes, assisting them in taking an active role in steering their inquiry and learning.

References

Kang, H. S., Lee, J. E., & Yoo, J. S. (2021). Theory and Practice of Backward Design (2nd ed.). Hakjisa.

Erickson, H. L., Lanning, L.A., & French, R. (2019). Concept-Based Curriculum and Instruction for the Thinking Classroom (J. D. Ohn & J. Y. Yoon, trans.) Hakjisa. (Original work published 2017)

IBO (2009). Making the PYP happen: A curriculum framework for international primary education. https://mtpyph.weebly.com/uploads/9/0/6/9/9069240/mtpyph_doc.pdf

Marschall, C., French R. (2021). Concept-Based Inquiry in Action: Strategies to Promote Transferable Understanding (G. M. Shin & H. S. Kang, trans.) Hakjisa. (Original work published 2018)

McTighe, J., Wiggins, G. (2016). Essential Questions: Opening Doors to Student. Academy of Social Review.

Ohn, J. D., Byun, Y. I., An, N., & Yoo, S. J. (2020). Understanding-centered curriculum that went into the classroom. Salimter.

Yang, E. S. (2021). Project Based Learning PBL Manual (2nd ed.). VisangEducation.

The Influence of the Conceptual Approach on Music Education Curriculum in Korea in the 1970s–1980s

Rowoon Lee, Music Education, University of Florida, USA

Abstract

In the past, music education during the Japanese colonial era was centered on traditional teaching methods such as vocal music and instrument classes, but as the American educational theory was accepted after the 1970s, Korea's curriculum changed. The purpose of this study was to examine the influence of American music education on the ideology and curriculum of music education in Korea in the 1970s–1980s. To examine the characteristics of music education in Korea in the 1970s, I collected official gazettes, news footage, photos, videos, and other official documents published in those years. These historical sources guided me to explore the evidence for how American music education was related to changes in Korean music education. As a methodology, immersion and saturation were used and historical facts could be contextualized using governmental sources to collect and infer meanings of different contexts from primary sources. I found that the music education theory, which was popular in the United States in the 1970s, was accepted in Korea and influenced the 4th curriculum. The active overseas study of music educators and music scholars had an influence on the 4th curriculum in Korea.

Keywords: Korean music curriculum, conceptual approach, music education in the 1970s, American music education

From the 1880s, the end of the Joseon Dynasty, American missionaries visited Korea to spread the gospel, conveying Christianity and other Western cultures in the civilian realm. Immediately after the end of the Korean War in 1953, the people and government of Korea actively accepted advanced culture to reorganize and rebuild the country. Music education in Korea in the 1960s had the remnants of Japanese education and the burden of escaping from it, but it was not significantly different from or differentiated from the previous period (Chung, 1982; Moon, 2017; Ryu & Ko, 1996). The 1970s and 1980s, when the first generation of music education doctors who returned from studying in the United States in the mid-1970s began to work in education-related organizations, was the period when music education in the United States had an impact on Korea (Kim, 2002; Kwon et al., 2010; Min et al., 2013; Moon, 2017). Examining the music curriculum at that time and what concepts or elements were considered important in designing it will be important evidence to understand how music education in Korea grew and how it was influenced.

Music Education in Korea before the 1970s

H. G. Appenzeller spread hymns without sheet music in 1892, and H. G. Underwood published them as sheet music the following year, which can be seen as the first case in which Western music was introduced into Korean schools (Lee, 1985). In 1910, Korea lost its sovereignty due to the Korea-Japan Annexation Treaty, and the Japanese Government-General of Korea, the governing body of Korea, was established, and education on colonial policy began. In 1911, a music subject was included under the name of *changga*, a type of song, but it was optional and did not have to be taught (Kwon et al., 2017). In the curriculum published in 1943, the title of the subject was changed from *changga* to music.

Korea was liberated from Japan in 1945 as Japan surrendered unconditionally to the United States in World War II, but the situation of music education in Korea was still dark. Since most of the teachers were influenced by Japanese colonial rule, new standards were needed to overcome this (Kwon et al., 2010). After the establishment of the Korean government in 1948, the state-led education law was enacted and promulgated, and a documented and comprehensive curriculum began to be developed (Min et al., 2013). Although the Korean War was fought from 1950 to 1953 and the country was put in a more difficult situation, music teachers had been working to rebuild music education in Korea (Lee, 1998; Ministry of Education, 1998).

In the 1950s, the national education system was reorganized, and the six-year elementary school system, three-year middle school system, three-year high school system, and four-year education training school system were established (Kwon et al., 2017). During this period, the most important thing in Korean music education was basic musical knowledge and skills. Books such as Nak-eung Lee's book *Music First Step*, Se-moon Chung's *Music Learning for 3rd and 6th Graders*, and Gye-Seok' Lee's *Music Learning for Beginner Learning in Elementary School* showed that they emphasize musical terminology, singing, and aural skills (Kwon et al., 2017). As the first curriculum was enacted and promulgated in 1954, state-issued textbooks were reorganized or compiled annually. The music curriculum aimed to emphasize personality formation through music experiences and the spirit of national culture, patriotism, and affection for the country.

Conceptual Approaches

Since music education in the United States was first introduced to Korea in the 1970s, several new theories of music education in the United States emerged in Korea from the late 1970s to the 1980s. In particular, the conceptual approach was emphasized, not simply learning singing skills in music classes, or training them to sing a particular song well but learning the musical elements that appear in all music. This is also related to comprehensive musicianship, which is a concept that emphasizes learning about the relationship between music and various majors and elements or integrating all of these (Min et al., 2013). The acceptance of such music theory has brought many changes to the Korean music education community, and there have been many academic studies on this. Several papers mentioned education in the United States and Korea (Kwon, 2002; Moon, 2017; Oh, 2014), but it is only a simple comparison of theories, and there are not many papers on what historical consequences have been brought by a historical point of view.

The purpose of this historical research was to examine the influence of American music education on the ideology and curriculum of Korean music education in the 1970s–1980s. This goal led to the following four research questions: (a) How was music education in Korea before the 1970s and 1980s different from the 1970s and 1980s? (b) Why and how did Korea accept American education? (c) What was the background that allowed music education in Korea to accommodate American music education? and (d) In what form was the conceptual approach in the US accepted in Korea?

I collected primary resources from Korea to find out the characteristics of Korean music education in the 1970s–1980s. These historical sources guided me to explore the evidence for how American music education was related to changes in Korean music education. Immersion and saturation were used as methodologies (Phillips, 2008), and historical facts were contextualized using governmental sources to

collect and infer the meaning of various contexts from primary sources (Froehlich & Frierson-Campbell, 2013). I used secondary sources to understand background information, contextual information, and what historians have already studied or recorded about the relevant areas.

Data Collection

This paper focused on collecting chronological information, not event-oriented information collection. This is because the purpose of this paper was not to pay attention to specific events but to examine the various reasons and circumstances that changed Korea's overall educational environment in the 1970s–1980s and to explore how Korean music education accepted American music education. I accepted newspaper databases of articles published in the 1960s and 1970s in Korea as another primary source for a more in-depth and accurate analysis of the topic of this paper.

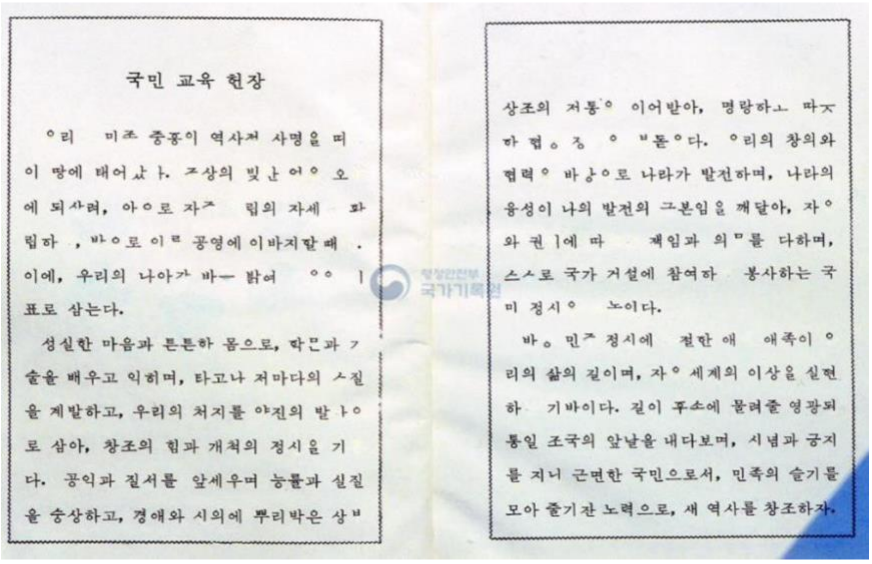
There were difficulties in analyzing the data in the process of collecting primary sources data. When the official gazette was first published in 1948, it was composed of vertical writing due to the influence of Japan, which ruled Korea as a colony, rather than horizontal writing, which is the current type of article writing in Korea. Since the writing format of the official gazette was changed to horizontal writing only in 1963, I had difficulty reading the vertical writing of the official gazettes published before that.

I also collected Internet sources because I looked for data from a time when it was quite old. Since data from around the 1960s are at high risk of loss, and paper is likely to be damaged, most of the old information is recently provided by each agency through online archives. Because of the fact, however, that Internet sources can be uploaded by anyone, I had to take a critical view of their accuracy and reliability. To avoid invalid or inaccurate information, I only accessed information from organizations directly provided by the government or operated with state agencies. This method, which mainly uses government periodicals, government gazettes, national records, or documents as the main data of this study, was effective in this study due to the nature of Korea, which designs curricula led by the government.

Proclamation and Education of the National Education Charter

On December 5, 1968, the Kyunghyang Shinmun, a Korean newspaper, published an article titled “The Declaration of the National Charter of Education” (Nam, 2022; see figure 1). At that time, President Park Chung-hee said, “Starting today, all of us, as masters who are aware of the historical mission of national revival and create a new history, let’s make this educational charter a part of our daily life” (Kyunghyang Shinmun, 1968). The National Education Charter was placed at the beginning of all textbooks, and elementary school students had to memorize the charter. The Ministry of Education hastened the reorganization of the curriculum based on the National Education Charter (see Figure 2), which later had a great impact on music education in the 1970s (Ministry of Government Administration, 1975). In June 1968, President Park Chung-hee instructed then Minister of Education Kwon Oh-Byung to enact a bill of education, covering opinions from all walks of life, for “establishing a long-term and sound direction of national education and establishing sound ethics and values of civic life” (National Film Production Center, 1968). To this end, a draft of the charter was drafted, led by renowned philosopher Park Jong-hong at the time, and passed unanimously at the plenary session of the National Assembly before being promulgated in December of that year.

Figure 1. The declaration of the national charter of education



국민 교육 헌장

우리 민족 중흥의 역사적 사명을 띠
이 땅에 태어났다. 조상의 빛난 얼을 오
에 되살려, 안으로 자주 립의 자세 확
립하 , 밖으로 인류 공영에 이바지할 때 .
이에, 우리의 나아갈 바를 밝혀 ㅣ
표로 삼는다.

성실한 마음과 튼튼한 몸으로, 학문과 기
술을 배우고 익히며, 타고난 저마다의 소질
을 계발하고, 우리의 처지를 약진의 발판으
로 삼아, 창조의 힘과 개척의 정신을 기
다. 공익과 질서를 앞세우며 능률과 실질
을 숭상하고, 경애와 신의에 뿌리박은 상부

상조의 전통을 이어받아, 명랑하고 따뜻
한 협동 정신을 북돋운다. 우리의 창의와
협력을 바탕으로 나라가 발전하며, 나라의
융성이 나의 발전의 근본임을 깨달아, 자유
와 권리에 따 책임과 의무를 다하며,
스스로 국가 건설에 참여하 봉사하는 국
민 정신을 높인다.

반공 민주 정신에 철한 애 애족이 우
리의 삶의 길이며, 자유 세계의 이상을 실현
하 기반이다. 길이 후손에 물려줄 영광된
통일 조국의 앞날을 내다보며, 신념과 긍지
를 지닌 근면한 국민으로서, 민족의 슬기를
모아 줄기찬 노력으로, 새 역사를 창조하자.

Figure 2. A copy of the national charter of education (see Appendix 1 for translation)

Restrictions on Studying Abroad and Deregulation

In the 1950s–1960s, as Korea was still under a ceasefire with North Korea, citizens were strictly restricted from overseas travel due to the risk of information leaks and national security. For example, according to the Dong-A Ilbo, 418 people studied abroad in 1959 (Sung, 2004) and only 44 Koreans travelled abroad in 1964 when the Tokyo Olympics were held (Korea Statistics Promotion Institute, 2008). With economic development in the 1970s, however, securing high-quality human resources through overseas study emerged as a policy task, and restrictions on overseas travel were gradually eased (Ministry of Transportation, 1989). Starting with Kang-sook Lee, who obtained his first doctoral degree in music, more and more music education and music-related figures left for study in the United States. In addition to Kang-sook Lee, Hak-goon Kim received a doctorate in music education from the University of Northern Colorado and Sook-kyung Oh from the University of Alabama at that time (Chung, 1982). About 20 out of 30 PhDs in music education received degrees in the United States at that time (Kwon, 2002).

Kang-sook Lee and Manhattanville Music Curriculum Program (MMCP)

Kang-sook Lee (1936–2020) was the first music scholar in Korea and the first Korean to get Ph.D. in music education in the United States. After receiving his doctorate in music education from the University of Michigan in 1975, he was selected as an assistant professor by Ronald B. Thomas, then dean of the College of Music at Virginia Commonwealth University in the United States (Moon, 2017). His relationship with Thomas gave him a detailed understanding of the Manhattanville Music Curriculum Program (MMCP). MMCP was one of the representative curriculum development projects promoted with government financial support as part of the education reform movement in the US in the 1960s (Mark, 1992). In his book, *The World of Open Music* (1983), Lee introduced Thomas as "a famous music education theorist who advocates a comprehensive music education theory" (Lee, 1983, p. 42), insisting on the importance and necessity of comprehensive musicianship as explained in Thomas' book *MMCP Synthesis; a Structure for Music Education* (1971). He later introduced MMCP as a representative work of comprehensive musicianship in books such as *The Method of Music* (1982), *Understanding Music* (2009), and *For Music Teachers* (2015).

In a phone interview with Lee conducted by Moon on November 18, 2016, Lee recalled that Thomas advised him to write "MMCP TWO" since "you are familiar with the basic concepts of MMCP" (Moon, 2017, p. 13). Lee invited Thomas to Korea in 1980, and Thomas presented two papers at that time in Korea. At that time, Se Moon Chung (1923–1999), who was working at the Korea Educational Development Institute at the time, positively accepted the comprehensive musicianship (Moon, 2017). Chung was able to formally reflect the latest music education theory in the 4th music education curriculum to be reorganized in 1981 because he served as the editorial director of the Ministry of Education that made state textbooks (Chung, 1982).

Differences between the 3rd and 4th Curriculum

I investigated five areas, and differences in goals, contents, evaluation, teaching approaches and evaluation methods stood out. It can be said that the declaration of the National Education Charter in 1968 accelerated the revision of the third curriculum. Using this as a belief, the main contents were to cultivate the qualities of the people, strengthen human education, and reform knowledge and technology education (Ministry of Government Administration, 1975). On the other hand, the 4th curriculum revision (1981–1987), was announced on December 31, 1981, the bill consisted of curriculum goals, goals and contents for each grade level, and points to keep in mind in teaching and evaluation (Ministry of Education, 1981). As for the contents of the 3rd and 4th curricula, "sing, instrumental music, creation, appreciation, and musical sense" were included in the contents in the 3rd, and 'basic concept (basic theory), expression (singing, instrumental music, creation), and appreciation in the 4th (Ministry of Education, 1988). In addition, a phrase was added that defines basic concepts as the ability to understand and express seven concepts: Rhythm, melody, harmony, form, tempo, dynamics, and tone.

In terms of teaching and learning approach, the third curriculum was the same as the second. The characteristics of the second curriculum were the integrated guidance and use of singing, instrumental music, composition, and appreciation in daily life, music learning, rhythm learning in lower grades, chorus learning in middle and high grades, appreciation learning, and Korean traditional music learning

(Kwon et al., 2017). In the 4th curriculum, on the other hand, three areas were integrated, which included the seven basic concept areas of music included in basic concept, the expression area by combining singing, instrumental music, and composition, and the appreciation area at the end. The description of “Korean traditional music learning” in the third curriculum emphasized “Learning Korean traditional music according to musical concepts” in the fourth curriculum, focusing on learning the basic concepts that can be applied to any Korean folk songs and traditional music (Gugak National High School, 1995). Finally, since the music curriculum evaluation method was first presented in the 4th curriculum, the comparison with the previous curriculum is meaningless. In the 4th curriculum, it was suggested to evaluate each area in a balanced manner, and an evaluation by observation was presented to the lower grades.

Conclusions

Even after liberation from Japanese colonial rule, music teachers who were influenced by Japanese-style education still taught students, and there was no opportunity to accept advanced education abroad due to the Korean government's regulations on studying abroad. Since the early 1970s, as the government eased regulations on studying abroad to accept the advanced culture and active exchanges abroad, many Korean students studying music education went to study in the United States. At that time, two-thirds of Ph.D. holders in music education were scholars who had degrees in the United States. In the late 1970s, when the U.S. education theory was accepted by them in Korea, several new theories such as “comprehensive musicianship” and “conceptual approach” drew attention. This trend began with Kang-sook Lee (Kwon, 2002; Lee 1983). Lee brought MMCP and comprehensive musicianship to Korea under the influence of Thomas, who was his advisor in the United States, and emphasized a conceptual approach (Kim, 2002; Moon, 2017). Chung, who was the state textbook editorial director of the Ministry of Education at the time, consulted Lee and introduced it to the 4th music curriculum revision (Chung, 1982; Moon, 2017).

Among the newly revised parts of the 3rd and 4th curricula, differences in goals, contents, evaluation, teaching methods, and evaluation methods were noticeable. At the time of the revision of the 4th curriculum, Korea also became interested in comprehensive music education, which was frequently mentioned in music education in the United States (Kwon, et al. 2017; Min, et al, 2013). This was possible because the first generation who studied abroad from the 1970s to the 1980s remained in academia after returning home and participated in the curriculum based on the academic background they learned. In particular, the basic concept was added to the 4th curriculum under the influence of the conceptual approach that emphasized the basic concept of music, which was an item that did not exist in the 3rd music curriculum announced in 1973. In addition, the 4th curriculum focused on the attitude of encouraging active music activities, loving and enjoying music, and emphasized that students themselves should be actively accepting music. This is different from the 3rd curriculum, which was aimed at cultivating patriotism and the ability to contribute to the development of the country due to the declaration of the National Education Charter.

In the 1970s and 1980s, music education in the United States was accepted thanks to the efforts of Korean music educators and scholars who returned from studying abroad, but it is difficult to say that it had much influence on music education in Korea in a short period because it was in its infancy (Kwon, 2002). From the 4th curriculum, nevertheless, some of the theories they introduced were adopted,

broadening the horizons of music education in Korea. As overseas travel became completely autonomous from the late 1980s, more students went to study in the United States, and the first generation of students studying in the United States continued to teach their younger students. In the 1990s, music education in the United States was accepted more actively than in the 1970s and 1980s. Still, the first introduction of American musicology to Korea in the 1970s and 1980s and its application to the music curriculum in Korea holds great significance in the history of music education in Korea.

References

Chung, S. M. (1982). Elementary school curriculum commentary. In Lee, Y. D, (Ed.), *Music department* (pp. 319–362). Kyoyook Book. Fifty Years' Compilation Committee on Education. (1998). *50 years of education.* The Ministry of Education. https://lib.seoul.go.kr/search/detail/CATLAZ000000249203

Froehlich, H., & Frierson-Campbell, C. (2013). *Inquiry in music education*. Routledge. Gugak National High School. (1995). *A review of 40 years of Korean traditional music Education*. Gugak National High School.

Kim, Y. H. (2002). Contemporary trends in music education. *The Journal of Education*, *19*, 1–29. http://www.riss.kr/link?id=A106290501

Korea Statistics Promotion Institute. (2008). *60 years of Korea in statistics*. Korea Statistics Promotion Institute. https://www.korea.kr/news/pressReleaseView.do?newsId=156014161

Kwon, D. W. (2002). The influence of American music education on Korean music education. *Korean Journal of Research in Music Education*, *23*, 47–84.

Kwon, D. W., Hwang, B. H., Song, J. H., & Park, J. M. (2010). *Korean traditional music education*. Kyoyook Book.

Kwon, D. W., Suk, M. J., Choi, E. S., & Ham, H. J. (2017). *Introduction to music education* (4th Ed.). Kyoyook Book.

Kyunghyang Shinmun. (1968, December 5). The Declaration of the National Charter of Education. *Kyunghyang Shinmun*.

Lee, H.Y. (1998). A study on the 100-year history of modern school education in Korea (III): School education after liberation (RR98-08). https://www.kedi.re.kr/khome/main/research/selectPubForm.do?plNum0=13

Lee, K. S. (1982). *The method of music*. Minumsa.

Lee, K. S. (1983). *The world of open music*. (5th Ed.). Hyunumsa.

Lee, Y. S. (1984). *Centennial history of Western music in Korea*. Eumagchunchu. Lee, K. S. (2009). *Understanding music.* (2nd Ed.). Minumsa.

Lee, K. S. (2015). *For music teachers*. Yesol Press.

Lee, K. S. (2016). Phone interview with Lee conducted by Moon on November 18, 2016. Mark, M. L. (1992). *A concise history of American music education*. R&L Education.

Min, K. H., Kim, S.Y., Kim, Y. H., Bang, K. J., Seung, Y. H., Yang, J. M., Lee, Y. K., Lim, M. K., Jang, K. B., Cho, S. E., Ju, D. C., & Hyun, K. S. (2013). *Introduction to music education.* (2nd Ed.). Hakjisa. Ministry of Education. (1981). *Ministry of education notice No. 332. (Annex 2).* National Curriculum Information Center.

Ministry of Education. (1988). *40 years of education.* The Ministry of Education http://ncic.re.kr/mobile.dwn.ogf.inventoryList.do

Ministry of Government Administration. (1975). *6941 official gazettes*. National Archives of Korea.

http://theme.archives.go.kr/viewer/common/archWebViewer.do?bsid=200301056844&dsid=000000000001&gubun=search

Ministry of Transportation. (1989). Measures to induce sound travel among the public due to the liberalization of overseas travel. National Archives of Korea.

Moon, K. (2017). A historical perspective on Kang-Sook Lee's life and his thoughts on music education. *Korean Journal of Research in Music Education*, *46*(2). 51–79.

Nam, A. R. (2022). *The Declaration of the National Charter of Education* [Image]. Retrieved from *https://theme.archives.go.kr/next/koreaOfRecord/charterNaEdu.do*

National Archives of Korea. (1968). A copy of *the National Charter of Education*. National Archives of Korea. http://theme.archives.go.kr/viewer/common/archWebViewer.do?singleData=Y&archiveEventId=0051551325

National Film Production Center. (1968). *The charter of national education*. [Documentary]. The National Charter of Education. http://theme.archives.go.kr/viewer/common/archWebViewer.do?singleData=Y&archiveEventId=0034670502

Oh, J. H., Moon, K. S., & Choi, M. Y. (2014). The historical Consideration regarding national Music curriculum in Korea: Focused on the content of musical concepts. *Journal of Learner-Centered and Instruction*, *14*(7). 187–207.

Phillips, K. H. (2008). Exploring Research in Music Education and Music Therapy. Oxford University Press.

Ryu, D. H. & Ko, S.H. (1996). History of the development of children's songs in Korea. Hansung Publishing House.

Sung, D. K. (2004, July 18). Half a century ago: The 4th week of July as seen by the Dong-A Ilbo. *Dong-A Ilbo*. https://n.news.naver.com/mnews/article/020/0000250822?sid=110 Thomas, R. (1971). *MMCP synthesis: A structure for music education*. Media Materia

Appendix 1: English Translation of the National Charter of Education

Figure 2. is the full text of the National Charter of Education. This is translated as follows.

We have been born into this land, charged with the historic mission of regenerating the nation. This is the time for us to establish a self-reliant posture within, and contribute to the common prosperity of mankind outside our borders, by revitalizing the illustrious spirit of our forefathers. We do hereby state the proper course to follow and set it up as the aim of our education. With sincere minds and strong bodies, improving ourselves in learning and the art, developing our innate faculties, and overcoming the existing obstacles to the rapid progress of the nation, we will cultivate a creative power and pioneer spirit.

We will give the foremost consideration to public good and order and set a value on efficiency and quality, and having inherited a tradition of mutual assistance rooted in love and respect, and faithfulness, we will promote the spirit of fair and warm cooperation. Realizing that the nation develops through creative and cooperative activities and that national prosperity is the ground for individual growth, we will do our best to fulfill the responsibilities and obligations attendant upon our freedom and rights and encourage the willingness of the people to participate and serve in the building of the nation. To love country and fellow countrymen together with a firm belief in democracy as opposed to communism is the way to our survival and the basis for realizing the ideals of a free world. Looking forward to the future when we shall have our honored fatherland unified for the everlasting good of posterity, we, an industrious people, with confidence and pride pledge ourselves to make new history with untiring efforts and the collective wisdom of the whole nation.

Engaging Music Students with CPD: LivePBL Model for Hybrid and Situated Project-Based Learning

Yuanyuan Li, Capital Normal University, China; Ting Zhao, Beijing Youth and Politics College, China; Lian Sun, Capital Normal University, China; Ying Liu, London School of Science and Technology, UK; Andy Hogg, The Support School, UK

Abstract

Music education in developing countries faces significant challenges in Continuous Professional Development (CPD) for teachers and pre-service students, such as maintaining engagement, limited resources, and restricted mobility. This paper introduces the hybrid CPD Project Based Learning (PBL) model, LivePBL, implemented since 2020 through partnerships in Nepal, China, and the UK. The model shows our research and development for scalable hybrid applications, demonstrated through several case studies. One includes online CPD courses for university music education students, where a UK teacher led online sessions for Chinese families on multimedia music project design using Canva. Students from China and Nepal engaged by observing and reflecting on these activities. Another case study features a CPD-certified seminar where students from these countries performed folk songs, enhancing teamwork and language skills. The model promotes cultural understanding, stimulates enthusiasm for CPD, and supports social mobility, proving effective in music education contexts.

Keywords: teacher student CPD, project based learning, hybrid home learning

Introduction

During the COVID-19 pandemic, CPD (Continuous Professional Development) activities moved to online, hybrid and blended environments. It is now critical to rethink CPD activities for music teachers: how CPD for music teachers can be added in response to emerging schoolteachers' and pre-service teacher students' professional learning needs (Perry, 2023). Music education in developing countries has been facing greater challenges in recent years (McCarthy, 2004; Quan & Jia, 2021; British Council 2023). However, among many barriers, there are several critical challenging issues in engaging CPD with teacher students as well as schoolteachers (Underhill, 2022):

1) Lacking sustainable engagement with teachers. CPD requires schoolteachers to sustain their teaching activities and professional values. Many teachers often do not understand what, why and how to pursue CPD
2) Lacking sustainable engagement with schools. For instance, training cost complications limit the school organisation's budget. Schools see teacher CPD as partly formed by the different worlds in which schools operate. Schools often do not understand what, why and how CPD can be operated effectively to meet teachers' individual needs
3) Lacking sustainable engagement with higher education that trains pre-service teachers under-/post-graduate students. For instance, cost and time consumption constrain the mobility of CPD, where teachers can visit and observe advanced schools

This paper reports our R&D (research and development) by case studies in music education to provide a solution to enhance engagement. A hybrid and situated PBL (Project Based Learning) model called LivePBL is presented; the outcomes of the cases we piloted to test the model so far will be discussed.

Still ongoing since 2020 when COVID-19 started, the study cases are based on international collaborations between Nepal, China, and the UK. The model test had been carried out in situations across cultural collaborations among Nepal, China, and the UK. The rest of the paper is organised as follows. Section 2 reviews the relevant concepts to establish the research foundation. Section 3 presents the research methodology adopted and the PBL-situated CPD LivePBL model. Section 4 presents our cases and situations as our research development outcomes. Section 5 gives conclusions.

Foundation

CPD's effectiveness for teachers (Brande, 2021) is often seen as a set of essential elements, with six key factors identified through various studies (Pedder et al., 2018; Hickey & Schmidt, 2019):

1) Customization to Specific Learning Needs: CPD should align with the unique needs of students and teachers
2) Long-Term Dedication: CPD initiatives should be consistently maintained for lasting impact
3) Subject-Specific Relevance: Prioritizing subject-specific knowledge and skills
4) Classroom-Centric Approach: Rooting CPD in practical pedagogical practices.
5) Foster Collaboration: Encouraging collaborative efforts among educators
6) Integration of External Expertise: Leveraging external expertise when needed

However, achieving these goals is challenging without sustainable CPD involvement. Traditional top-down approaches often fail to efficiently address the perspectives of policymakers, organizations, and educators. Broad (2015) introduced a framework using Actor-Network Theory (ANT) to understand CPD engagement across three networks: policy reality, organizational reality, and teacher/CPD reality. The focus should be on the teacher's CPD reality. Teacher trainee students in colleges are often unfamiliar with CPD, and educational institutions struggle to provide resources for their engagement in professional practices. We therefore innovate LivePBL - a cost-effective hybrid model (Perry, 2023) to bridge the gap between teacher students' academic studies and their involvement in schoolteachers, local families, and social communities.

The urgent requirement for a CPD pedagogical approach is to enhance teacher student training occurring in HE with real-world experiences

Teacher students (and teachers in school workplaces) often face CPD challenges when it comes to motivation for CPD (Sheffield Hallam University, 2022). These challenges can include being overloaded with work, the inconvenience of CPD sessions, a lack of financial support from the school, training content that they may have experienced before, or a failure to see how CPD contributes to their professional growth. School institutions encounter difficulties in providing CPD that addresses existing pedagogical theories teachers are using, understanding the specific CPD needs of their staff, and planning opportunities for long-term, effective CPD implementation rather than just short-term fixes. Therefore, there must be a pedagogical approach to undertake the challenges in understanding CPD connecting schools as professional workplaces and higher institutions in training teacher-students. We have the following situations:

1) Class teachers and professional instrumental teachers both need to undertake the CPD programme, there must be a strength in the pedagogic relationship which could develop
2) The pedagogical approach must also have the capacity of retention and progression connecting teacher experience and understanding of wider music lives as well to the structure of the music curriculum that is adapted at the time.

Arguably, a CPD pedagogical approach is critical to be able to situate teacher-student trainings that take place in higher educational institutions to the "real world".

Project Based Learning

PBL (Du & Han, 2016; Kibici, 2022), as a pedagogical approach, has been applied in the realm of music education. However, the current PBL does not seem to have a strong focus on PBL sustainability. Learning has long been regarded as an effective process when it occurs within the context of the learner's experience, prior knowledge, or through hands-on learning. When various learning is situated, the foundation for CPD programs can be further designed to challenge teachers' existing pedagogical theories and offer them opportunities to effectively model and implement new teaching methods in their classrooms.

The sustainability of PBL should enable CPD to

1) Shaping the design, planning, and execution of music educational tasks that provide sustainable pedagogical mechanisms for guiding training projects
2) Developing operational tools that can be repurposed to integrate a diverse array of resources, collaborators, and materials
3) Establishing a platform where students can actively engage with real-world challenges or subjects, thereby acquiring a comprehensive set of competencies
4) Adapting to various educational settings, equipping learners with the essential proficiencies needed in the twenty-first century
5) Constructing effective pedagogical strategies with the potential to significantly boost students' motivation to participate in Continuing Professional Development (CPD) initiatives

Hybrid and situated PBL to engage CPD

Engaging CPD is essential for teachers and extends beyond mere functionality. Two critical aspects of CPD engagement should be noted (Pedder et al, 2008; Walsh, 2014; Eroglu & Kaya, 2021):

1) CPD for schoolteachers currently working in schools
2) CPD for pre-service teacher trainees, whether at the undergraduate or postgraduate level, both within and outside the classroom

There has been significant research in understanding and developing social mobility in music education (Hickey & Schmidt, 2019). The situation in music education at universities is very limited in playing a social role in nurturing elementary and secondary school music teachers. In China and Nepal, for example, more programmes seem to focus on motivating music talent development within university music education programs; so many social issues in elementary and secondary school music education cannot be observed fully in the universities. On the other hand, a significant number of elementary and secondary school music teachers are facing many social issues but are not proficient in music lesson

planning and teaching. Lesson planning primarily relies on individual and informal textual explanations from teaching materials; they are not skilled in connecting to their language of music to communicate emotions and engage in dialogue with students.

Methodology

The current methodologies of CPD for music teachers are very limited (British Council, 2023):

1) Top-down approaches alone are not cost-effective to overcome the barriers. PBL can be the pedagogy for CPD training design, as well as the platform for CPD innovating and managing the synergies between top-down and bottom-up approaches, or vice versa to adapt different CPD training needs when such a situation occurs
2) While educational technology has increasingly played a crucial role in CPD in these regions in developing countries where the internet is accessible, top-down approaches should have been even more converged with different-up approaches, so as to undertake timely effective actions to make adequate changes in CPD collaboratively among teachers, schools and higher education institutions
3) The hybrid PBL pedagogical model in question can be as a solution to enable teachers, schools, colleges, and universities to engage with CPD

There has been a movement in CPD for music teachers "to reshape music education driven by teachers for teachers. At its heart is a set of pedagogies that bring non-formal teaching and informal learning approaches into more formal contexts, to provide engaging, sustainable and relevant music-making activities for all young people" (Henley & Barton, 2022). In line with adapting case-based study and action-based research methodology, a specific methodological focus has been on

1) adapting the PBL pedagogy
2) constructing a PBL CPD model
3) piloting hybrid and situated a model by case-based studies
4) testing and evaluating the model

The term pedagogy is referred to as being a theory of teaching and learning encompassing aims, curriculum content and methodology. Here, the term model often means a representation of a system of CPD situations. The situations have been framed to engage with schoolteachers at the workplaces and students as teacher trainees based in universities, including the dimension of formal- and non- formal education, HE institutional academic and social impacts' activities, etc. see Diagram 1.

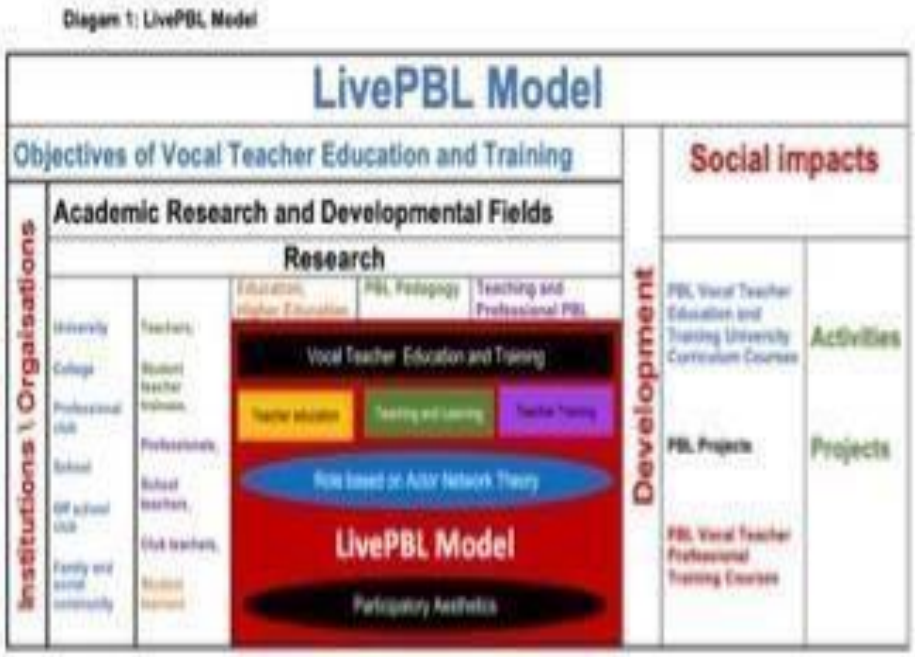


Diagram 1. LivePBL Model

Some elementary and secondary school music teachers lack the ability to organize polyphonic music, and have limited musical techniques, resulting in a limited variety of activities in music classrooms. For example, in choral teaching with more than two parts, teachers cannot discern pitch problems and fail to correct issues related to pitch and vocal balance. Students end up only singing in unison and the like.

Given the diverse methods of organising and facilitating learning, PSE has evolved beyond rigid curricula traditionally offered to children from around three years of age. In China, teacher training in PSE faces the critical challenge of actively involving students in social and professional practices [8]. This necessitates exploring diverse training approaches, with our primary concern being how to empower students to assume multiple professional roles akin to adults who support learning through various resources and activities, including direct engagement with young children in early years education settings.

The hybrid dimension includes a leadership team (Li, 2020) that consists of China's

1) Professors and lecturers based in universities and colleges
2) Headteachers based in schools, kindergartens, and children's clubs, and recently joined
3) Dalian Shuxiang social community of parents and children

The leaders are from UNIC, i.e., the UK, Nepal, Ireland/India and China. The following groups diversify learners:

1) Under- and post-graduate students led by the professors and lecturers
2) Children learners led by headteachers from schools and children's clubs
3) Parents and children learners led by parents based in the local social communities

Piloting and testing models were operated on Zoom. Teaching, learning and activity-related materials are administrated by The Support School's Learning Management System. The further development

of this model will continue to focus on the “E-learning ecology”. E-learning ecology is a metaphor (Cope & Kalantzis, 2017) that undertakes “learning ecology” as lenses to consider e-learning on the facets of online socio-cultural activities in teaching and learning contexts (Li, et al. 2022a; Li, et al. 2022b; Zhang, et al. 2022; Zhou, et al. 2023).

Piloted Cases and Situations

University students in music education studies observed and reflected on CPD courses online A UK-based teacher delivered an online PBL with five sessions for family communities in China to learn how to use Canva to design music multimedia to promote songs across Sino-UK-Nepal cultures. There were five mums with five children who were based in Beijing, Dalian and Xiamen in China. Chinese university students and Nepalese college students observed how to teach children digital literacy. The students also assisted tutorials and groupworks for Chinese families in bilingually. The learning outcomes were based on using Storyboard, Canva’s animation, audio, text and image digital tools. University and college students used learning journals to reflect the teaching observations (see Figure 1). Some of the students published proceedings and journal papers on their CPD activities.

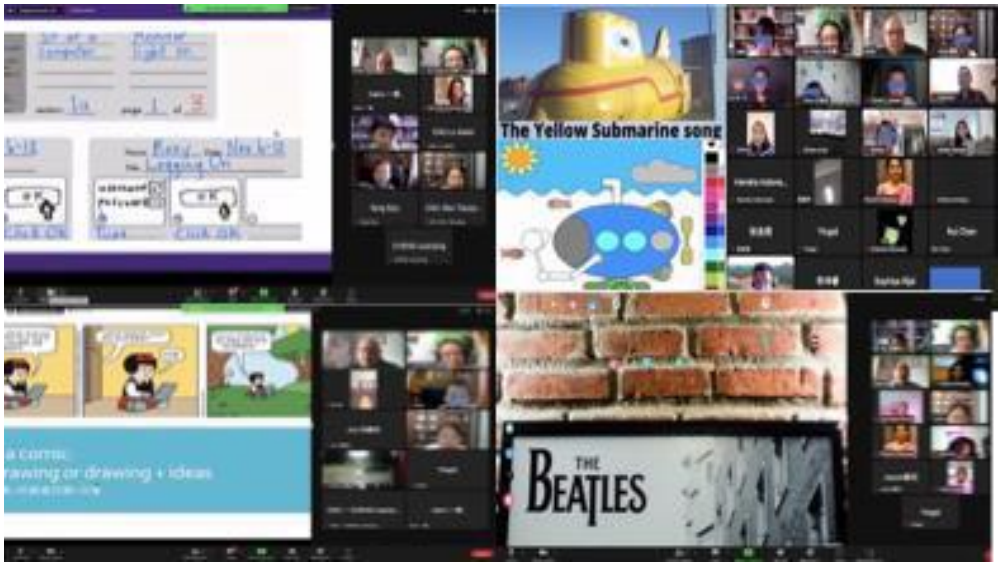


Figure 1. A teacher based in the UK delivered 5 sessions using the Canva tool to enable children to explore Storyboard, Animation, and Audio to understand the social aspects of the music

Sino-International Cloud Family Visit to learn to sing folk songs

CPD-certified seminar of five sessions conducted by Chinese university students and Nepalese college students learn and sing a folk song from another country (see Figure 2). Chinese family communities participated and observed. This was to promote teamwork skills, language and communication skills and engagement in music education with local communities (see Figure 3).

Student-led research and development PBL initiatives

A CPD-certified workshop actively engaged students in teaching and learning. This model incorporated PBL, encouraging diverse roles and the development of students' projects based on their teaching and learning experiences. Students presented their music-related encounters, while educators created various projects and roles, fostering collaboration between professors and student teams. Four pilot projects included (see Figure 4):

1) Exploring Bel Canto, Chinese music, and culture
2) Investigating Folk/Pop music from Nepal and China
3) Showcasing individual singing performances from Nepal and China
4) Addressing education and social work development

This model promoted shared leadership and responsibility in teaching and learning, adding value to the digital sphere through individual projects that celebrated unique experiences.

Figure 2: CPD-certified seminar of five sessions conducted by Chinese university students and Nepalese college students learn and sing a folk song from another country.

Figure 3: Chinese family communities participated and observed to promote teamwork skills, language and communication skills and engagement in music education with local communities.

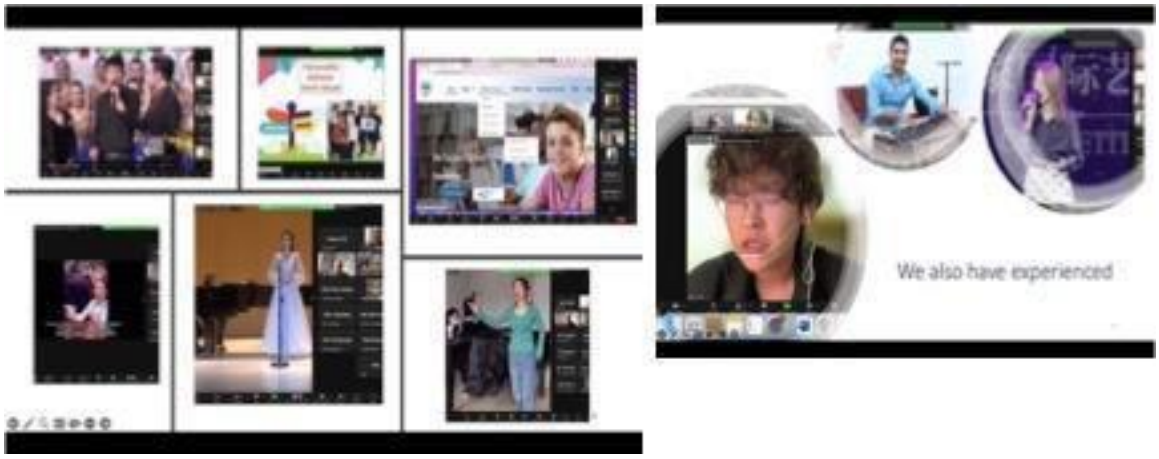


Figure 4: Students presented their music-related encounters, while educators created various projects and roles, fostering collaboration between professors and student teams

Conclusions

A compelling need exists for the implementation of CPD by a hybrid model (Quan & Jia, 2021; Henley, J. & Barton, 2022), serving as a vital bridge between local and international social mobility. LivePBL is such an innovative CPD Hybrid and Situated model demonstrated to facilitate the engagement with both schoolteachers in real-world settings and university or college pre-service teacher students in HE classrooms (Fautley et al., 2011; Gande & Kruse-Weber, 2017; Chen, 2022; Fautley, 2023). The goal is not merely to revolutionise cost-effective pedagogies but to construct a sustainable model that embodies and expands teachers' academic and professional networks (Biasutti et al., 2019). In this pursuit, LivePBL emerges as a promising PBL pedagogical model.

Effectiveness in CPD engagement thrives when it aligns closely with teachers' cultural backgrounds and learning experiences. E.g., the model demonstrated that the case studies have underscored the significance of integrating cultural heritage, like folk music, into music education and that can be effectively delivered and observed. The model has the potential to facilitate schoolteachers' teaching methods and skills.

Diversity among CPD participants holds the power to significantly engage and motivate university or college pre-service teacher students. Often, Chinese students lack experience in reflective learning processes. However, by directly observing mentorship from the UK through online channels and swiftly translating these observations into practice, they can make remarkable progress in reflective discussions and writing. Consequently, this model captures the attention of both teachers and students while flexibly adapting to their interests during the project design phase.

LivePBL model encourages the development of projects that emphasise seamless transitions among students, educators, and experienced mentors within an educational context. It fosters connections between teaching and learning while bridging diverse cultural and experiential backgrounds. For instance, when introducing a song from a different cultural context, all participants express a keen interest in comprehending the essence of the music. Another example can be seen in multimedia training using tools like Canva, where PBL can be customized to explore the auditory aspects of music. Schoolteachers and pre-service teacher students collaborate on designing various natural phenomena,

such as hurricanes, rain, thunderstorms, lightning, and more. In partnership with educators, students delve into the underlying principles of these natural sounds, exploring the 'whys' and 'hows', and learning how to align them with narrative content. This model encourages active student participation, fostering a dynamic hybrid PBL culture. Ultimately, this model nurtures students' enthusiasm for CPD.

In developing countries, LivePBL harnesses the personal charisma of teachers, enabling them to emphasize bilingual instruction in their teaching. With teachers representing a wide range of cultures, the integration of this model into music education presents several challenges:

1) Developing cost-effective, non-formal pedagogy and a sustainable model to infuse CPD with music education values
2) Understanding comprehensive PBL across various design approaches for implementing model- based deliverables
3) Adopting a multidisciplinary perspective encompassing community learning, community music, and skill development
4) Navigating the ethical dimensions of music teaching professional values while integrating music technologies with teaching methods and skills

Addressing these challenges will be instrumental in leveraging the potential of a hybrid CPD model grounded in PBL for the enhancement of music education on a sustainable and flexible scale.

References

Biasutti, M., Frate, S. & Concina, E. (2019). Music Teachers' Professional Development: Assessing a Three-Year Collaborative Online Course. *Music Education Research 21,* 116–133.

Brande, J. vd (2021) The Effects of High Quality Professional Development on Teachers and Students – A cost-effective analysis, Education Policy Institute (UK), Research Report. https://epi.org.uk/wp-content/uploads/2021/04/EPI-CPD-entitlement-cost-benefit- analysis.2021.pdf

British Council. (2023) Exploring principles of effective continuing professional development for teachers in low-and middle-income countries, Report. https://www.teachingenglish.org.uk/publications/case-studies-insights-and-research/exploring-principles-effective-continuing

Broad, J. H. (2015). So many worlds, so much to do: Identifying barriers to engagement with continued professional development for teachers in the further education and training sector, *London Review of Education, 13*(1).

Chen, J. I-H. (2022). Working and Learning Together: The Lived Experiences of Further Education Teachers Engaging with Joint Practice Development as a Model of Collaborative Enquiry for Professional Learning, PhD Thesis, University of Sunderland.

Cope, B. & Kalantzis, M. (2017) e-Learning Ecologies Principles for New Learning and Assessment. Routledge.

Du, X. & Han, J (2016) A literature review on the definition and process of project-based learning and other relative studies, *Creative Education, 7*,i 1079-1083 Published Online May, https://www.scirp.org/pdf/ce_2016053115541286.pdf

Eroglu, M. & Kaya, V. D. (2021). Professional development barriers of teachers: a qualitative research, *International Journal of Curriculum and Instruction 13*(2), 1896–1922.

Fautley, M. (2023). Teach Through Music What we have learned, Birmingham City University, Report. https://www.open-access.bcu.ac.uk/6966/1/ttm_lessons_learnt.pdf

Fautley, M., Col, H. & Henley, J. (2011). Report into the Wider Opportunities Continuing Professional Development Programme provided by Trinity Guildhall and The Open University, Report, Centre for Research in Education, Birmingham City University.

Gande, A. & Kruse-Weber, S. (2017). Addressing new challenges for a community music project in the context of higher music education: A conceptual framework, *London Review of Education, 15*(3).

Henley, J. & Barton, D. (2022). Time for change? Recurrent barriers to music education, *British Journal of Music Education, 39*, 203–217.

Hickey, M. & Schmidt, C. (2019). The effect of professional development on music teachers' improvisation and composition activities, *Bulletin of the Council for Research in Music Education, Fall,* No. 222.

Kibici, V. B. (2022.) The effect of project-based learning approach on lesson outcomes, attitudes and retention of learned in secondary school music. OPUS– *Journal of Society Research, 19*(49), 771-783.

Li, C. (2020). [in Chinese] Analysis of the Causes of Ineffectiveness in Higher Education Teacher Training and Pathway Selection, China Adult Education, June.

Li, Y., Lu, K., Zhang, L., Yang, S., Li, H., Ren, T., Tang, T., Zhou, Y., Xie, Y., Li, J., Chen, N., Liu, Y., & Hogg, A. (2022). China's Cases of LivePBL: Linking Vocal Education with Project Based Learning in Aesthetics of Life. In Proceedings of the Ireland International Conference on Education (IICE-2022), Virtual Conference, Dún Laoghaire, Ireland, 18-20 October

Li, Y., Zhao, T., Sun, L., Zhu, Z., Geng, J., Hogg, A., Liu, Y., & Shah, P. (2022). LivePBL on Training Pre-School Music Teachers in China: Linking Vocal Education with Project Based Learning. In Proceedings of the London International Conference on Education (LICE-2022), Virtual Conference, London, UK, 14-16 November 2022.

McCarthy, M. (2004). *Toward a Global Community: The History of the International Society for Music Education 1953-2003*, ISME. https://www.isme.org/sites/default/files/documents/ISME+History+Book.pdf

Pedder, D., Storey, A. & Opfer, V. D.(2008) 'Schools and continuing professional development (CPD) in England–State of the Nation research project'. Training and Development Agency for Schools (TDA), Cambridge University and Open University.

Perry, E. (2023). Teacher Professional Development in Changing Circumstances: The Impact of COVID-19 on Schools' Approaches to Professional Development, *Education Sciences, 13*, 38.

Quan, H. & Li, J. (2021.) Innovative music education in China: theory and practice, International Journal of Engineering Applied Sciences and Technology, 6, 63-76.

Sheffield Hallam University. (2022.) Meeting the Challenge of Providing High-Quality Continuing Professional Development for Teachers, The Wellcome CPD Challenge: Pilot Delivery Report, February, Sheffield Hallam University.

Underhill, J. (2022). The Case for Change – The music education workforce in 2022, ISM Report. https://www.ism.org/images/images/ISM-The-case-for-change-Report_July-2022_Online.pdf

Walsh, P. D. (2014). Accident or Design: To What Extent Do Teachers Plan and Own Their Professional Learning? EdD Thesis, Department of Education, University of Roehampton and Kingston University, UK.

Zhang, L., Ren, T., Xie, Y., Tian, Z., Tang, T., & Li, Y. (2022). Student Choirs and Virtual Social Practices by LivePBL: Linking Vocal Education with Project Based Learning. *Literacy Information and Computer Education Journal* (LICEJ), 13(1).

Zhou, Y., Ren, T., Chen, N., Li, J., Lu, K., Li, Y., Acharya, A., Shah, P., Hogg, A., & Liu, Y. (2023). Student Virtual Social Practices between China and Nepal. *International Journal of Technology and Inclusive Education (IJTIE)*, [online] 12(1).

Analysis of Music curriculum standards in Mainland China, Hong Kong and Macao: a comparative study

Seng I Ling, Capital Normal University, Beijing, China

Abstract

The purpose of this study focuses specifically on analysis and compares the latest music curriculum standards from Mainland China, Hong Kong SAR and Macao SAR. According to the three music curriculum standards, different strategies are used to promote arts education. However, China's *Compulsory Education Art Curriculum Standards (2022 Edition)* adopts a comprehensive design for art education, while *Hong Kong Art Education Learning Area Curriculum Guide (Primary 1- Secondary 6) (2017)* adopts an interdisciplinary approach and Macao's *Requirements of Basic Academic Attainments (Music) (2015)* is a practical document that details various indicators. This article objectively analyzes the goal positioning of education policies in different regions through comparative research, compares the curriculum framework, learning targets and objectives in recent education documents, and analyzes how the "core competencies" of Mainland China's music curriculum standards is hidden in Hong Kong and Macao's music standards. "Educating people with aesthetics and educating people with culture" is the core of the curriculum standards of all three regions in China, emphasizing the importance of learning traditional Chinese music culture to enhance cultural identity and interdisciplinary learning.

Keywords: music curriculum standards, music education, China, Hong Kong, Macao

Introduction

Mainland China music curriculum standards reforms in the 21st Century

In 21st Century, China music curriculum standards have undergone three reformations within two decades. Initially, *The Experimental Draft of Compulsory Education Music Curriculum Standards (2001 Edition)* had expanded the experimental area year by year, accounting only 0.5% to 1% of China's primary and secondary schools had music curriculum. By the end of 2004, the experimental area rapidly expanded to 70% to 80% of China's primary and secondary schools. *Compulsory Education Music Curriculum Standards (2011 Edition)* adheres to the "aesthetics-centered" perspective while highlighting the study of traditional Chinese music which is more clearly than the 2001 Edition which aims to the holistic personal development of students and the cultivation of positive attitudes and wellbeing (Yu & Leung, 2019). *Compulsory Education Art Curriculum Standards (2022 Edition)* are based on *Compulsory Education Music Curriculum Standards (2011 Edition)* and *Compulsory Education Art Curriculum Standards (2011 Edition)* which has been changed from a single subject category to a comprehensive art category. Therefore, the art curriculum integrates music, art, dance, drama (including opera), film and television (including digital media art) to present holistic education from an artistic perspective and cultivate students to become "complete people". The Learning Targets of 2011 Edition emphasized the three-dimensional goals, whereas the 2022 Edition takes "core competencies" as the main thread throughout the art curriculum standards. This concept has already appeared in *General High School Music Curriculum Standards (2017 Edition)*, the transformation of "three-dimensional goals" into "core competencies" has become a new concept to succeed (Mao, 2023). *The Compulsory Education Art Curriculum Standards (2022 Edition)* turns it into a kind of "tacit knowledge" that runs through the whole process of art learning.

Hong Kong music curriculum standards reform

Hong Kong experienced two music curriculum reforms in 2003 and 2017. Hong Kong did not attach importance to the development of music education until its return in 1997 (Liu, 2014). After the transfer of its sovereignty to China in 1997, Hong Kong SAR government immediately carried out comprehensive education reforms. The government required the revision of local music teaching materials that conformed to the policy content. The Hong Kong Curriculum Development Council separately revised Music Curriculum Guide (Primary 1- Secondary 3) (2003) and *Music Curriculum and Assessment Guide (Secondary 4 to Secondary 6)* (2007) based on the goals, framework, teaching and assessment of *Learning to Learn: Key earning Area Arts Education* (2001), in both documents, creativity and Chinese music culture are highlighted in the music syllabus. In 2001, Learning to Learn: Key earning Area Arts Education divided the implementation time of Hong Kong's art education curriculum reform into three stages: 2001-2002 to 2005-2006 (short term), 2006-2007 to 2010-2011 (medium term) and after 2011 (long term). *The Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6)* (2017) added a three-year high school art education curriculum based on the 2002 *Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 3)*. Currently, Hong Kong's art curriculum accounts for approximately 10-15% and 8-10% of the total class time respectively, the curriculum guidelines recommend the use of comprehensive learning methods and flexible course structures to accommodate formal, informal, modular, comprehensive and project learning, and high-quality art education tendencies to establish a strong partnership between schools, external artists/arts organizations and the community, for example, Leung, proposed the "Cantonese Opera Teaching Collaboration Project for Primary and Secondary Schools" to implement the nature of partnership between music teachers and traditional Cantonese opera artists in Hong Kong school music education (Leung & Leung, 2010), Cantonese Opera Performance Artists bring authenticity and practice to music courses in the classroom, cultivating audiences through the continuous cycle between learning appreciation, creation and performance to promote traditional Chinese art (Guo, 2017).

The formation of Macao's music curriculum standards

Before 1999, Macao was colonized by Portuguese for over 400 years. Autonomous Region of Macau government didn't take music curriculum serious at the time. *Primary School Music Curriculum* (1999), which is the first document of music curriculum standards, was settled after the transfer of its sovereignty to China in 1999. It did not list the music teaching evaluation standards in detail, whereas Macao's music education policy was not refined until the *Requirements of Basic Academic Attainments (*Music) promulgated in 2015. For the first time, Macao's curriculum standard has specified the indicators for each subject, listing in detail the specific content of each subject at different stage, such as kindergarten stage, primary stage, middle school stage and high school stage. Macao DSEDJ has successively launched the *Music Curriculum Guidelines for Primary Schools* (2016), *Music Curriculum Guidelines for Middle Schools* (2017) and *Music Curriculum Guidelines for High Schools* (2018) based on the *Requirements of Basic Academic Attainments* in 2015. In 2020, the *Medium- and Long-term Plan for Non-Tertiary Education* (2021-2030) focused on cultivate aesthetics and artistic literacy (MSAR, 2021). According to the 2014 Macao high school

music curriculum statistical report survey, 75% of Macao schools use Hong Kong music teaching materials and textbooks, The *Requirements of Basic Academic Attainments* (Music) evaluation committee was revised by Macao music teachers and Hong Kong music education researchers. Therefore, Macao education system depends on the Hong Kong education system to a certain extent. Since Macao has relatively abundantly community music education activities, some scholars have refined the concept of "promoting teaching through activities" and "more spontaneity, freedom, and less planning, rules and norms" as Macao music education characteristics (Dai, 2011; Dai, 2004).

Methodology

This paper using comparative method to analyze the similarities and differences between or among sets of standards (Collier, 1993). As a field of comparative research on music curriculum standards provides a method to help people understand how policies operate and change in different regions, and to help people gain a deeper understanding of the characteristics and practices of the system. In Hill's view, comparison of policies mainly includes three aspects:

1. comparison at different points in time within a country
2. comparison between different regions in the same country
3. comparison between countries (Hill, 2006. p 11)

This paper mainly compares Mainland China, Hong Kong and Macao's learning targets of music curriculum standards.

Results

Similarities and differences in education policies between Mainland China, Hong Kong and Macao

In terms of education policy, China's education standards learning stages are divided into compulsory education and high school, China's nine year compulsory education refers in 3 stages: Stage1: Primary1–2, Stage 2: Primary3–6, and Stage 3: Secondary1–3; while Hong Kong and Macao have 15 years of compulsory education in 4 stages: Stage 1: Kindergarten 1-3, Stage 2: Primary 1-6, Stage 3: Secondary 1-3 (Middle school), Stage 4: Secondary 4-6 (High school). Hong Kong has integrated education documents from Primary 1 to Secondary 6, while Macao has detailed educational documents and has specific practical content for different learning stages. China's *Compulsory Education Art Curriculum Standards (2022 Edition)* emphasizes the comprehensiveness of art courses and builds an integrated art curriculum learning system (Du, 2022), Hong Kong's *Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6)* (2017) highlights the comprehensive use of art courses to cultivate creativity, while Macao art education standards is divided into visual art and music, Macao's three stages of Music Curriculum Guidelines strengthens to inherited local music and Chinese music culture. Since the reform and opening in China, China's music curriculum standards has gone through three reforms, the first reform restored the learning of basic music knowledge and skills, the second reform experienced the dilution of dual basics and the pursuit of entertainment, resulting in a lack of educational content in music classes and the third reform which is taking aesthetics as the core ignores the emotional experience of students' music. At present, music curriculum practice returns to the origin of aesthetics education (Gao, 2015).

The invisible "core competencies" of music curriculum in Hong Kong and Macao

In Hong Kong and Macao's music curriculum standards do not explicitly use "core competencies", but it was hidden inside the education documents. The Hong Kong Curriculum Development Council's *Basic Education Curriculum Guide* (P1-P6) (2014) stipulates that the curriculum structure is composed of three interrelated eight learning areas, nine generic competencies, values and attitudes.[12] In terms of art education, the Hong Kong's *Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6*) (2017) clearly states that the learning targets and objectives consist of the following four points in Figure 1:

1. Developing Creativity and Imagination
2. Developing Skills and Processes
3. Cultivating Critical Responses
4. Understanding Arts in Context

First of all, "Developing Creativity and Imagination" is explained in the document as "Students should be able to generate ideas through imagination and creativity by participating in arts appraising, creating and performing activities" respectively corresponding to the *China's Compulsory Education Art Curriculum Standards (2022 Edition)* aesthetic perception and creative practice of "core competencies". Secondly, "Developing Skills and Processes" is defined in the document as "Students should be able to use different materials, elements, arts language and resources to experience and express the arts. Exploration and experimentation in the creative process should also be treasured in arts education" which consistent with artistic expression and creative practice of China's "core competencies"; Thirdly, "Cultivating Critical Responses" is defined as "Students should be able to appraise and respond to the arts and arts-related issues from multiple perspectives" which corresponds to the aesthetic perception in China's "core competencies". Lastly, "Understanding Arts in Context" is defined in the article as "Students should be able to understand the arts in context and their relationship with human life and society" which matches the cultural understanding of "core competencies". The four curriculum goals above have dual connotations in the China's "core competencies" the duality of connotation in "core literacy". Hong Kong music curriculum standards focus on creativity in the first place, while China music curriculum practice focuses on aesthetic experience, it turns out the development orientation of music education is different.

The curriculum goals of Macao's music education are relatively specific to each education stages. Macao's primary music curriculum standards mainly focus on the aesthetic perception of "core competencies", exploring the structure of music sound, cultivating students to actively stimulate their aesthetic perception and establishing student's national identity and patriotism through Chinese music culture at the early stage. Figure 2 shows that the focus of the music curriculum for middle and high schools in Macao has shifted from aesthetic perception to creative practice to cultural understanding of "core competencies" has been connected throughout the entire stage, emphasizing "the coexistence of multiple cultures and taking Chinese culture as the mainstream".

Therefore, the music curriculum goals in Hong Kong and Macao cover the four connotations of "core competencies" implicitly. The "core competencies" of Hong Kong's art education standards is

[12] Nine common abilities: collaboration ability, communication ability, creativity, critical thinking ability, ability to use information technology, computing ability, problem-solving ability, self-management ability and learning ability.

dualistic, while the “core competencies” of Macao's music curriculum is progressive, starting from cultivating Students' musical aesthetic ability in early childhood has accumulated a certain musical foundation by the elementary school stage. In the junior high school stage, performance and creation are the mainlines. Interdisciplinary is the main focus in the high school educational stage, combining information technology and audio-visual art to cater to those who are not interdisciplinary.

Discussion

Music curriculum standards emphasize cultural identity

In recent years, education documents in Mainland China, Hong Kong and Macao have increasingly emphasized the promotion of traditional Chinese culture in school education. After experiencing the loss and reshaping of Chinese traditional music culture (Cui & Zhu, 2012), all the music curriculum standards emphasize respect, understanding and inclusive cultural identity for local culture and patriotism. Music curriculum should become "an important center for the inheritance of traditional music". *Compulsory Education Art Curriculum Standards (2022 Edition)* states that "Inherit and carry forward China's excellent traditional culture, revolutionary culture, and advanced socialist culture, strengthen cultural confidence, and build a strong sense of community for the Chinese nation", *Hong Kong Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6)* (2017) indicate that “Appraising works of the arts in different cultural contexts contributes to students’ understanding and respect of diverse cultures, as well as cherishing historical and cultural heritage; Appreciating Chinese painting and calligraphy, Chinese music and Cantonese opera helps students develop their sense of national identity”, Macao's *Fundamental Law of non-tertiary Education System* proposes to "take Chinese culture as the mainstream, understand and respect the characteristics of Macao culture" to cultivate Macao students' self-identity and national belonging (MSAR, 2006). Some studies show that promoting students' national identity in Hong Kong music curriculum practice is still a major focus of Hong Kong’s political development in the future (Ho, 2020).

Interdisciplinary learning

Since start of the 21st century, Hong Kong and Macao have always emphasized interdisciplinary learning to enhance students' comprehensive abilities and learning motivation. In China, the 2022 edition of the *Compulsory Education Art Curriculum Standards (2022 Edition)* highlights interdisciplinary learning (Yu, 2023). Interdisciplinary learning aims to expand learning experience horizontally, strengthen the organic connection between subject knowledge and structures, connect the "core competencies" between subjects from different dimensions, and enhance students' synesthetic memory. Interdisciplinary learning is divided into internal and external subjects. The internal inter-art curriculum design connects students’ music subject knowledge with another artistic knowledge. The inter-disciplinary external is more integrated and connected with information technology and humanities. All learning experiences and the "core competencies" of music courses are interrelated with the "core competencies" of other humanities subjects, such as Chinese, art, history, ideological and political subjects, etc. Through this method, students can extend their concept of art, stimulate their creativity, connect the connotations between all disciplines, and deepen their understanding of knowledge.

Conclusion

Art education has great impact on students' aesthetic abilities, creativity, cultural awareness and effective communication skills. The art curriculum standards in the China Mainland, Hong Kong and Macao focus more on promoting traditional Chinese music culture in music curriculum practice in order to cultivate students' cultural identity. The connection between art and other subjects can expand students' knowledge and complete the development of holistic education. Integrating various fields of education and emphasizing cultural identity are the main focus in the future.

References

Collier, D. (1993). The comparative method. Political Science: The State of Discipline II, Ada W. Finifter, ed., American Political Science Association.

Cui Xuerong, Zhu Ling. (2012). Reflection, Integration, and Outlook—Related Thoughts on the Construction of the Discipline of Music Pedagogy in China, People's Music, 707(03), 62-65.

Dai Baisheng. (2011). Music Education and Music Teacher Education in General Schools in Macao. Journal of Xinghai Conservatory of Music, 3, 151-156.

Dai Dingcheng. (2004). Music Education in Macao Schools: It's a long way to go, Teacher Magazine, 8, 45.

Du Hongbin. (2022). Focus on core competencies and highlight the function of aesthetic education - Interpretation of the Compulsory Education Art Curriculum Standards (2022 Edition), China: Basic Education Curriculum, 321(09), 57-64.

Gao Jianjin. (2015). Returning music education in primary and secondary schools to the origin of music, China: People's Music, 631(11), 38-40.

Guo Wei. (2017). Win-win connection between college music teacher education and basic music education - Review of the Sixth Cross-Strait and Hong Kong and Macao School Music Education Forum, Symphony (Journal of Xian Conservatory of Music), 36(02), 127-131.

Hill, M. (2006). Social Policy in the Modern World: A Comparative Text. London: Blackwell Publishing.

Ho, W. C. (2020). The Construction of Politics in School Education 23 Years after the Handover of Hong Kong from the United Kingdom to China, International Education Journal: Comparative Perspectives, 19(2), 36-53.

Hong Kong Curriculum Development Council (2002). Arts education key learning area curriculum guide (Primary 1 - secondary 3). Hong Kong: Government Printer.

Hong Kong Curriculum Development Council (2003). Music curriculum guide (Primary1 - secondary 3). Hong Kong: Government Printer.

Hong Kong Curriculum Development Council (2007). Arts education key learning area music curriculum and assessment guide (Secondary 4 to secondary 6). Hong Kong: Government Printer.

Hong Kong Curriculum Development Council. (2014). Basic Education Curriculum Guide (P1-P6), Hong Kong: Government Printer.

Hong Kong Curriculum Development Council. (2017). Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6), Hong Kong: Government Printer.

Leung, B. W. & Leung, E. C. K. (2010). Teacher-Artist Partnership in Teaching Cantonese Opera in Hong Kong Schools: Student Transformation, International Journal of Education & the Arts, 11(5), 1-26.

Liu Jingzhi. (2014). Hong Kong Music History - Cultural Policy - Music Education. Hong Kong: The Commercial Press.

Macao Special Administrative Region (1999). Primary school music curriculum. Macao: Education and Youth Development Bureau.
Macao Special Administrative Region. (2006). Fundamental Law ofnon-tertiary Education Syste.
Macao: Education and Youth Development Bureau.
Macao Special Administrative Region. (2016). Music Curriculum Guidelinesfor Primary School.
Macao: Education and Youth Development Bureau.
Macao Special Administrative Region. (2017). Music Curriculum Guidelines for Middle Schools.
Macao: Education and Youth Development Bureau.
Macao Special Administrative Region. (2018). Music Curriculum Guidelinesfor High Schools.
Macao: Education and Youth Development Bureau.
Macao Special Administrative Region. (2021). Medium - and Long-term Planfor Non-Tertiary Education (2021-2030). Macao: Education and Youth Development Bureau.
Ministry of Education, People's Republic of China (2001). The experimental draft of compulsory education music curriculum standards (2001 Edition). Beijing, China: Beijing Normal University Press.
Ministry of Education, People's Republic of China (2011). Compulsory education music curriculum standards (2011 Edition). Beijing, China: Beijing Normal University Press
Ministry of Education, People's Republic of China (2022). Compulsory Education Art Curriculum Standards (2022 Edition). Beijing, China: Beijing Normal University Press
Mao Yuyang, Song Min, Zhou Fan. (2023). From music to art: Formal evolution and conceptual logic of "Compulsory Education Art Curriculum Standards (2022 Edition). Chinese Music Education, 06, 11-15.
Yu Danhong. (2023). Historical Origins and Practical Significance of Interdisciplinary Learning in Music. People's Music, 718(02), 50-53.
Yu, Z., & Leung, B. W. (2019). Music teachers and their implementation of the new Music Curriculum Standards in China, International Journal of Music Education, 37(2), 178-197.

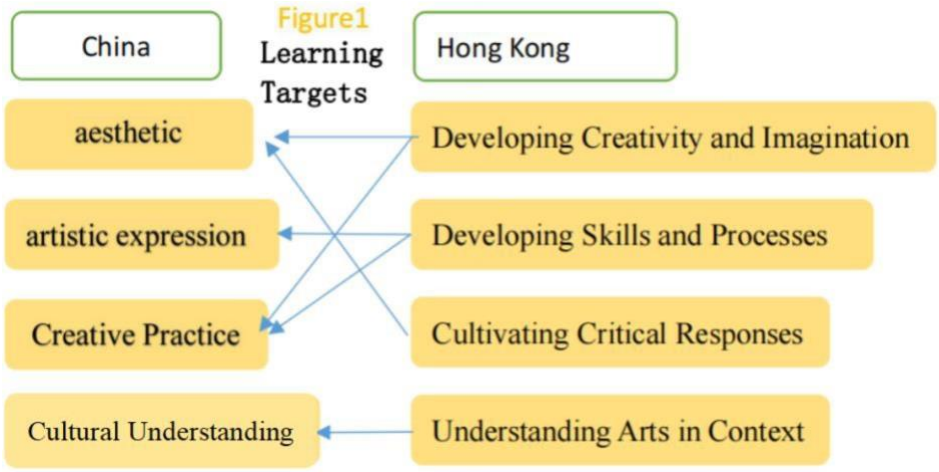


Figure 1: the Hong Kong's Arts Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6) (2017) learning targets and objectives

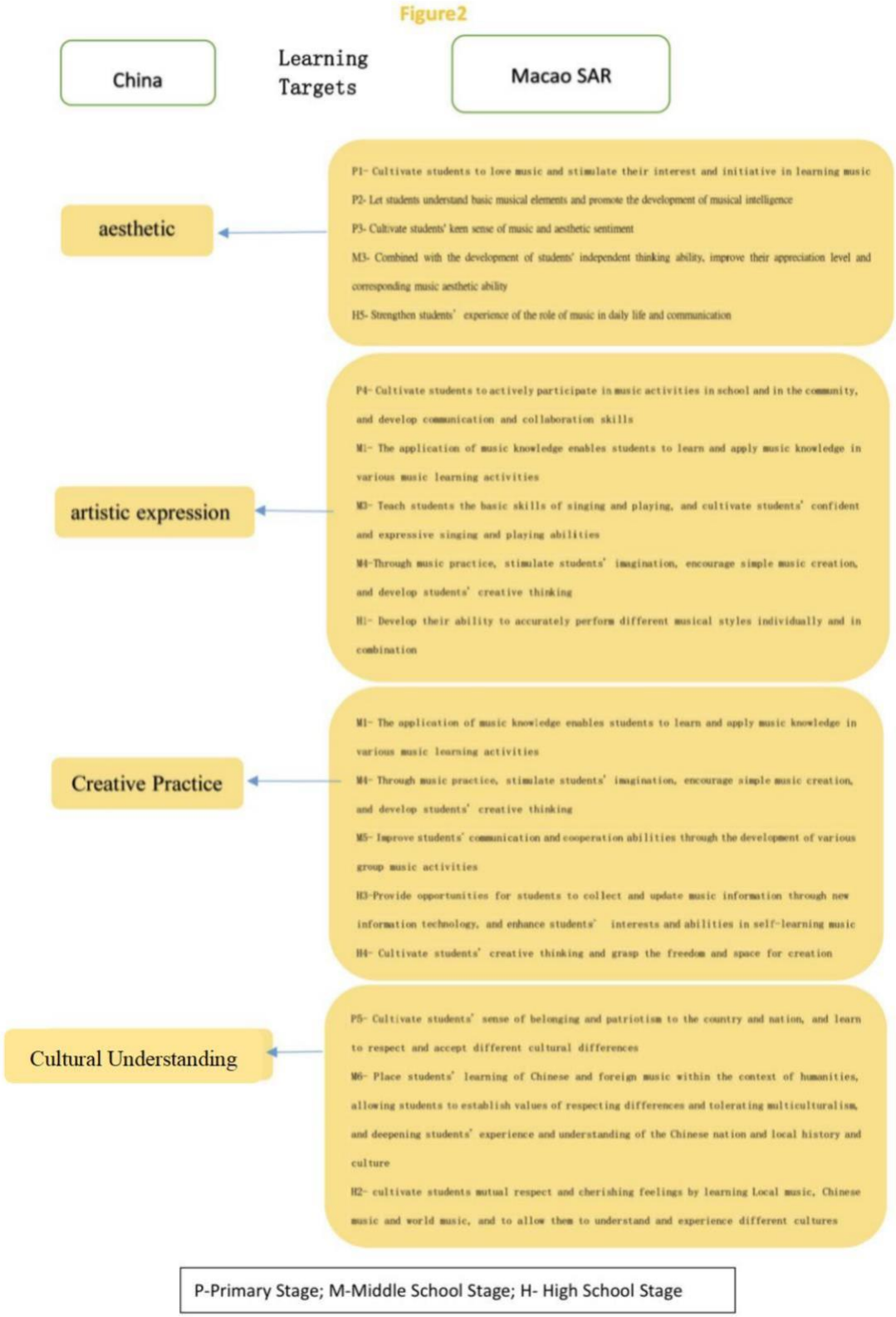


Figure 2: the focus of the music curriculum for middle and high schools in Macao

Exploring the Occupational Well-being of Music Teachers in Mainland China: A Quantitative Study

Chang Liu, Northeast Normal University, China

Abstract

Music teachers play an important role in music education. With the implementation and promotion of the policies which are strengthening and improving aesthetic education in mainland China, music teachers have received increasing attention nationwide. Researchers have focused on the professional development of music teachers and the number of studies has increased. However, there are few relevant research on teachers' occupational well-being, which is an important factor to promote music teachers' professional development and influence music teaching.

This study aims to contribute to a better understanding of the current situation of music teachers' occupational well-being in mainland China and the factors that affect it. It aims to answer three questions:
What are the current characteristics of music teachers' occupational well-being?
To what extent do different types of music teachers report their different level of occupational well-being?
To what extent the factors correlate to the level of music teachers' occupational well-being?

An online questionnaire was designed and used to collect data which was based on OECD (2020) "Teachers' Well-being: A Framework for Data Collection and Analysis". The questionnaire consisted of sections pertaining to
Demographic and institutional information;
Teachers' occupational well-being including four key components: physical and mental well-being, cognitive well-being, subjective well-being and social well-being;
Influencing factors including four dimensions: individual factor, professional development factor, working environment factor and social environment factor.

In total, 939 music teachers of basic education from 22 provinces and cities in mainland China participated in the survey. Descriptive statistics, ANOVA, and multiple regression analysis were used to analysis the survey data.

The research found that:
The level of music teachers' occupational well-being was higher in cognitive well-being (M=3.86, SD=0.56), subjective well-being (M=3.89, SD=0.66) and social well-being (M=3.94, SD=0.66), while the physical and mental well-being (M=3.43, SD=0.84) of music teachers was lower.
There were significant differences in occupational well-being of music teachers due to different individual characteristics. Music teachers with 35 to 40 years of teaching experience had significantly higher occupational well-being than other teachers ($F=2.101$, $p<0.05$). The level of occupational well-being of independent music teachers was significantly higher than that of obedient and rebellious music teachers ($F=12.837$, $p<0.001$).

Music teachers' professional belief was the most critical factor that affected music teachers' occupational well-being(β=0.229), Working intensity had significant negative influence on music teachers' occupational well-being(β=-0.041).

This study offers insights for promoting professional development of music teachers through teachers' occupational well-being.

Keywords: music teachers' occupational well-being, teachers' professional development

Introduction

Music teachers play an important role in music education. With the implementation and promotion of the policies which are strengthening and improving aesthetic education in mainland China, music teachers have received increasing attention nationwide.

However, with the high-quality development of aesthetic education, music teachers are facing unprecedented challenges and pressures. Increased job burnout and lack of well-being have become important issues to be solved urgently in the construction of music teachers and their professional development (OECD, 2018; Bakker et al., 2007; Collie, Shapka & Perry, 2012).

Well-being is the eternal pursuit of human beings related to the living state of the individual. Music teachers' well-being affects teachers' work commitment and the quality of education and teaching. How to improve teachers' professional well-being has become an important issue in music teacher education research.

Literature Review

Recently, teachers' occupational well-being has received widespread attention from the international community. Researchers have studied the theory and the conceptual structure of teachers' occupational well-being, the role of value, and the effect of well-being on teaching quality (Darling-Hammond, 2000; Konstantopoulos, 2006; OECD, 2014) and factors affecting teachers' occupational well-being (Chung, Marvin, & Churchill, 2005; Day Gu, 2013; Hall-Kenyon, Bullough, MacKay, & Marshall l, 2014; Sangmi Kang, 2019) and other aspects of research.

The researchers focused on the related research on job stress and job burnout of music teachers and discussed the negative impact of different environments on teachers and their solutions. (Scheib, 2003; Hancock, 2008). Recently, under the influence of positive psychology, scholars have gradually begun to analyze the characteristics and related factors of music teachers' occupational well-being from a positive perspective, in order to promote the healthy and positive development of music teachers. (Arajo et a., 2017; Ascenso et al., 2017; Miksza et al., 2021).

Researchers have focused on the professional development of music teachers and the number of studies has increased. However, there are few relevant research on teachers' occupational well-being, which is an important factor to promote music teachers' professional development and influence music teaching.

The definitions of well-being differ across the literature (Dodge et al., 2012). More recently, McCallum and Price (2015) came up with a holistic approach of well-being. They highlighted that well-being "encompasses intertwined individual, collective and environmental elements which continually interact across lifespan. Well-being is something we all aim for, underpinned by positive notions, yet is unique to each of us and provides us with a sense of who we are which needs to be respected" (pp. 112-132).

Teacher well-being can be defined as a sense of personal career achievement, satisfaction, purpose, and well-being that is built up in collaborative processes with colleagues and students (Acton & Glasgow, 2015, p. 102).

This study adopts the definition of teachers' occupational well-being in the OECD report (Viac & Fraser, 2020, p. 18). Music teachers' occupational well-being is: "music teachers' responses to cognitive, subjective, health, and social aspects related to their work and occupation".

Theoretical Framework

The theoretical framework of this study is based on the report "Teachers' well -being: A framework for data collection and analysis" released by the OECD in January 2020.
Teachers' occupational well-being is divided into four dimensions: cognitive well-being, subjective well-being, physical and mental well-being, and social well-being. The influencing factors of teachers' occupational well-being are specifically divided into four dimensions: individual level, professional development, work environment and social environment.

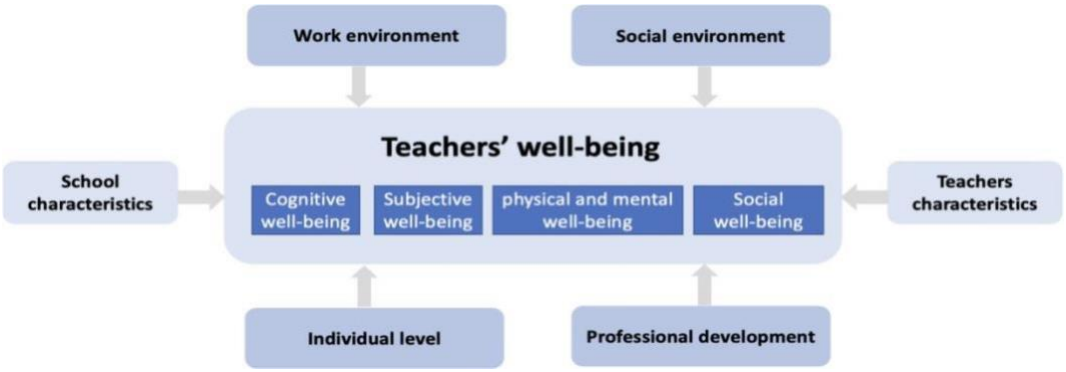


Figure 1. Teachers' well -being: A framework for data collection and analysis

Purpose and Questions

This study aims to contribute to a better understanding of the current situation of music teachers' well-being in mainland China and the factors that affect it.

It aims to answer three questions:
What were music teachers' perceptions of their well-being?
What are the significant differences of well-being among different types of music teachers? What factors affect music teachers' well-being?

Methodology

Questionnaire Design

The questionnaire for this study that consisted of five sections. The first part is the background information of music teachers, including 30 items such as teachers' demographic variables, teachers' professional background and school organization information.

The second part is a survey on the status quo of music teachers' occupational well-being, including four dimensions of health well-being, cognitive well-being, subjective well-being, and social well-being. 65 items of music teachers' occupational well-being scale and satisfaction survey. The scale is scored on a 5-point Likert scale, with 15 points from "completely disagree" to "completely agree".

The third part is an investigation of the influencing factors of teachers' occupational well-being, including four major factors, including individual level, professional development, work environment, and social environment, with a total of 64 items.

The fourth part is a supplementary survey on the factors affecting teachers' occupational well-being, including teachers' income and workload, professional beliefs, self-evaluation, mentality, energy and stress status, and a survey on teachers' ranking of factors and measures to improve well-being.

The fifth part is open-ended questions, investigating primary and secondary school teachers' suggestions for improving teachers' professional well-being and suggestions for improving the questionnaire.

Sampling and Participants

An online questionnaire was designed and used to collect data. In total, 939 music teachers of basic education from 22 provinces and cities in mainland China participated in the survey.

Reliability

The Cronbach's alpha coefficient of the music teacher's well-being scale, the influencing factor scale are all above 0.80, indicating that the test results of the formal questionnaire are stable and consistent.

Validity

In this study, confirmatory factor analysis was carried out on the subscales of music teachers' well-being and influencing factors. Most of the main fitness indicators of each scale measurement model meet the standard value requirements. Some indicators are at the boundary level, but still acceptable, indicating that the hypothetical model of confirmatory factor analysis is more suitable for the actual data. At the same time, taking into account the theoretical rationality criteria it can be comprehensively judged that the final measurement tool has good construct validity in general.

Result

What Were Music Teachers' Perceptions of Their Well-being?

The research found that the mean of music teachers well-being (M=3.83, SD=0.59) is at the upper middle level. From the specific performance of each dimension, music teachers' cognitive well-being (M=3.86, SD=0.56) and subjective well-being (M=3.89, SD=0.66) are at the medium level, their social

well-being (M=3.94, SD=0.66) is relatively high, and their average health well-being (M=3.43, SD=0.84) is the lowest.

To what extent do different types of music teachers report their different level of occupational well-being?

The research found that music teachers' well-being scores significantly differed on each subscale as well as in overall well-being. Teachers with 0-2 years or 35-40 years of teaching experience reported significantly higher well-being. ungraded teachers and senior teachers reported significantly higher well-being. The teachers in large-scale classes and with working hours of 9-10 hours scored significantly lower well-being.

Through analysis of variance, music teachers with different teaching ages have significant differences in their occupational well-being. Teachers with 0-2 years of teaching experience and teachers with more than 35 years of teaching experience have higher levels of well-being.
There are significant differences in the occupational well-being of music teachers with different professional titles through variance analysis, and the ungraded teachers and senior teachers have higher levels of well-being.

There are significant differences in the occupational well-being of music teachers with different working hours through variance analysis. The level of well-being of teachers with working hours of 9-10 hours is significantly lower than that of music teachers with working hours of less than 8 hours.

To what extent the factors correlate to the level of music teachers' occupational well-being?

From the perspective of standardized regression coefficient, this study analyzes the sub factors that have greater influence among the four factors. The "professional belief" and "personality characteristics" at the individual level is the most influential of all factors; Among the professional development factors, "development community" has greater influence; Among the factors of work environment, "work intensity" has a significant negative impact; "Social status" has great influence in social environmental factors.

The research found that:
The level of music teachers' occupational well-being was higher in cognitive well-being, subjective well-being and social well-being, while the physical and mental well-being of music teachers was lower.
There were significant differences in occupational well-being of music teachers due to different individual characteristics. Music teachers with 35 to 40 years of teaching experience had significantly higher occupational well-being than other teachers. The level of occupational well-being of independent music teachers was significantly higher than that of obedient and rebellious music teachers.
Music teachers' professional belief was the most critical factor that affected music teachers' occupational well-being. Working intensity had significant negative influence on music teachers' occupational well-being.

Table 1. The factors correlate to the level of music teachers' occupational well-being

Influencing factors		Unstandardized coefficients		Standardization coefficient	t	p	Collinearity Statistics	
		B	*SE*	*Beta*			Tolerance	VIF
	(constant)	23.444	5.005		4.684	0.000		
Individual level	Character	2.561	0.334	0.168	7.661	0.000	0.390	2.565
	Motivation	**1.371**	**0.449**	**0.057**	**3.055**	**0.002**	0.538	1.860
	Occupational belief	**3.255**	**0.363**	**0.229**	**8.961**	**0.000**	0.285	3.504
	Occupational vision	1.009	0.396	0.059	2.546	0.011	0.345	2.896
	Family relationship	0.676	0.559	0.026	1.209	0.227	0.405	2.470
Professional development	Development path	0.083	0.347	0.006	0.240	0.810	0.287	3.485
	Expansion capacity	0.762	0.310	0.066	2.459	0.014	0.261	3.835
	Development community	**1.367**	**0.313**	**0.128**	**4.365**	**0.000**	0.219	4.570
	Professional autonomy	0.905	0.351	0.069	2.580	0.010	0.258	3.877
Working environment	School culture	-0.353	0.406	-0.027	-0.870	0.385	0.191	5.235
	Working conditions	0.050	0.319	0.004	0.157	0.876	0.360	2.780
	Working intensity	**-2.026**	**0.890**	**-0.041**	**-2.276**	**0.023**	0.589	1.699
	Management system	0.987	0.276	0.100	3.576	0.000	0.239	4.182
	Policy support	0.559	0.315	0.044	1.774	0.076	0.309	3.235
Social environment	Public opinion	0.759	0.471	0.034	1.612	0.107	0.421	2.378
	Social position	**1.919**	**0.390**	**0.114**	**4.924**	**0.000**	0.350	2.861
	Living environment	1.092	0.368	0.075	2.963	0.003	0.294	3.396

R=0.910 R^2=0.828 adjusted R^2=0.825 F=260.833***

Conclusions

Music teachers' well-being index is generally high. The high-level characteristics of music teachers' well-being index reflect teachers' positive well-being experience at work. Music teachers can better handle the relationship with leaders, colleagues, teachers and students, home and school, and feel the society's respect for the teaching profession. At the same time, music teachers have higher job satisfaction, professional honor, self-fulfilment and good mental state. In addition, music teachers generally have good work concentration, occupational security and outstanding teacher competence.

Novice music teachers have a high degree of professional identity, positive work attitude, and dedication to work, which makes them have a higher level of well-being. Competent teachers with 11 to 15 years of teaching experience encounter a "mid-life crisis". Competent teachers have anxiety, unease and panic due to heavy workload, professional title evaluation and other pressures, and their well-being is in crisis. The well-being of expert teachers with a teaching age of 36-40 years goes to the "peak", and the level of teachers' professional well-being is significantly higher than that of other teaching age groups. Expert teachers have gone through hardships and efforts and have reached the peak in terms of professional ability and professional title status. Teachers' professional identity and professional self-confidence make their happiness "peak" experience.

Music teachers have a variety of work affairs, and the work content is relatively cumbersome. In addition to teaching tasks such as preparing lessons and tutoring students, teachers also undertake campus activities, literary and art exhibitions and other work. Teachers' overloaded workload and long hidden working hours make teachers physically and mentally tired, and even have no time to take care of their own health, which invisibly causes teachers to have excessive physical and mental burdens. Teachers' motivation and the professional belief are the key factors that affect the music teachers' well-being. On the one hand, teachers' "ideal-driven" internal motivation and "student-oriented" altruistic motivation strongly stimulate teachers' well-being. On the other hand, the professional belief of "holding on to ideals" continues to improve teachers' professional well-being.

References

Acton, R. & Glasgow, P. (2015). Teacher wellbeing in neoliberal contexts: a review of the literature. Australian Journal of Teacher Education, 40(8), 99–114.

Araújo LS, Wasley D, Perkins R, Atkins L, Redding E, Ginsborg J, Williamon A. (2017). Fit to perform: an investigation of higher education music students' perceptions, attitudes, and behaviors toward health. Frontiers in Psychology, 8, 1558.

Ascenso, S., Williamon, A., & Perkins, R. (2016). Understanding the wellbeing of professional musicians through the lens of positive psychology. Psychology of Music, 65-81.

Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. Journal of Educational Psychology, 99(2).

Centre, B., & Publikationen. (2014). Talis 2013 results: An international perspective on teaching and learning. OECD publishing.

Collie, R. J., & Martin, A. J. (2017). Teachers' sense of adaptability: examining links with perceived autonomy support, teachers' psychological functioning, and students' numeracy achievement. Learning and Individual Differences, 55, 29-39.

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. Education Policy Analysis Archives, 8(1).

Dodge, R., Daly, A. P., Huyton, J., & Sanders, L. D. (2012). The challenge of defining wellbeing. International Journal of Wellbeing, 2(2).

Hall-Kenyon, K. M., Bullough, R. V., Mackay, K. L., & Marshall, E. E. (2014). Preschool teacher well-being: A review of the literature. Early Childhood Education Journal, 42(3), 153-162.

Hancock, C. B. (2008). Music teachers at risk for attrition and migration: an analysis of the 1999-2000 schools and staffing survey. Journal of Research in Music Education, 56(2), 130-144.

Konstantopoulos, S. (2006). Trends of School Effects on Student Achievement: Evidence from NLS:72, HSB:82, and NELS:92. Teachers College Record, 108(12), 2550-2581. https://doi.org/10.1111/j.1467-9620.2006.00796.x

Chung, L., Marvin, C. A., & Churchill, S. L. (2008). Teacher factors associated with preschool teacher-child relationships: teaching efficacy and parent-teacher relationships. Journal of Early Childhood Teacher Education, 25(2), 131-142.

Mccallum, F., & Price, D. (2015). Teacher well-being. In F. McCallum & D. Price (Eds), Nurturing well-being development in education: From little things, big things grow. Routledge, 112–132.

Miksza, P., Parkes, K. A., Russell, J., & Bauer, W. (2021). The well-being of music educators during the pandemic spring of 2020. Psychology of Music, 50, 1152 - 1168.

Scheib, J. W. (2003). Role stress in the professional life of the school music teacher: A collective case study. Journal of Research in Music Education, 51(2), 124–136.

Schutz, P. A. (2009). Introduction to advances in teacher emotion research: The impact on teachers' lives. Springer, pp. 15–31.

Viac, C., & Fraser, P. (2020). Teachers' well-being: a framework for data collection and analysis. OECD Education Working Papers.

Yoo, H., Kang, & Yoo. (2019). Music teachers' psychological needs and work engagement as predictors of their well-being. Bulletin of the Council for Research in Music Education, (221), 58.

Integrating Classical Chinese Poetry into Music Education for Early Childhood Education Majors

Yuhui Lu, Faculty of Creative Arts, University of Malaya, Malaysia

Abstract

With the issuance and implementation of the Opinions on the Implementation of the Project for Inheriting and Developing Chinese Excellent Traditional Culture by the State Council, integrating Chinese excellent traditional culture into education at all levels has become a focal point. This study is grounded in the growing attention in Chinese society to classical poetry. The research comprehensively examines the integration of classical poetry into music education activities within the context of early childhood education majors. The primary research objectives for incorporating classical poetry into music education for early childhood education majors encompass exploring new forms and methods of classical poetry education, identifying suitable classical poetry materials for music education in preschool, and developing a new curriculum framework for classical poetry education. Incorporating classical poetry into the curriculum of early childhood education allows for the presentation of classical poetry through diverse musical forms. This engagement triggers the cognitive processes of early childhood education majors, encouraging proactive thinking and fostering divergent thinking. It empowers students to interpret textbook knowledge and instructional content with greater flexibility in their future learning and teaching endeavors. Moreover, the unique rhythmic and tonal characteristics of classical poetry further enhance the singing, rhythmic, and musical movement abilities of preschool education majors. Exploring ways to express understanding of classical poetry through various musical forms is also an exploration of creativity in early childhood music.

The research employs a case study analysis method, focusing on the early childhood education major at Z University in Zhengzhou. The study analyzes the feasibility of integrating classical poetry into early childhood music education activities from three perspectives: aligning classical poetry content with the cognitive characteristics of preschoolers, aligning classical poetry metrics with the development of musical abilities in preschoolers, and integrating classical poetry to foster musical creativity. Based on this analysis, practical explorations were conducted across three music activity types: singing activities, rhythmic activities, and rhythm-music activities. Through these practical explorations, the study concludes that integrating classical poetry into music education activities contributes to promoting traditional culture, enriches materials for music education activities, and facilitates the comprehensive development of early childhood education. In the context of higher education reform, this study discusses the construction and design of the *Classical Poetry Singing* course in preschool education majors at universities. The aim is to enhance students' core competencies, which play a crucial role in their professional development.

Keywords: classical poetry singing; curriculum development; curriculum evaluation; core competencies.

Background

Research on the Relationship Between Chinese Classical Poetry and Music

Research on the relationship between classical poetry and music has been approached from both literary and musicological perspectives, revealing a complex interplay of rhythm and melody that transcends the boundaries of the two disciplines. Fu (1996) investigates the rhythmic structures inherent in classical Chinese poetry and how these structures mirror specific rhythmic requirements in music. Despite the differences between musical rhythms and poetic meters, his study highlights a significant commonality that bridges the two art forms. Mo (2001) focuses on existing musical settings of classical poetry, exploring how these poems are transformed into songs within the music domain. His research provides detailed descriptions of the forms and styles of performance, offering insights into the interpretative processes that singers use to convey poetic narratives. Xu (1982) shifts the discussion to educational methodologies, tracing the roots of classical poetry recitation and its inherent musicality. His study aims to revive and further develop these traditional methods of recitation, which resemble a form of light singing. Chen (1997), from a classical literature perspective, delves into the origins and purposes of classical poetry creation, ranging from ritualistic to folkloristic inspirations. He discusses how these origins are intrinsically linked to musical accompaniment and singing, thereby illustrating the deep connection between poetic creation and musical expression. Chen further elaborates on various forms of poetic recitation, emphasizing the musicality of classical poetry through its rhythmic and metrical demands. Ultimately, Lu (2013) encapsulates the essence of how classical poetry is sung, showcasing not only the linguistic allure but also the artistic charm that encompasses both the art of words and the art of music. The rhythmic cadences in classical poetry often manifest as melodious tunes within the text, enhancing the harmony and rhythmic dynamics when recited or sung, thereby underscoring the inseparability of music and poetry in cultural practices.

Integrating the practice of singing classical poetry into early childhood education majors and the development of students' professional competencies refers to the integration of singing classical poetry practice, combining university language and music teaching, to enhance students' core competencies in this process.

The Application of Music Teaching Methods in Early Childhood Education

Music teaching methods in early childhood education primarily focus on Orff Schulwerk and Dalcroze Eurhythmics. The Orff approach emphasizes "rhythmic training", which uses the human body as a natural instrument. This method involves clapping hands, tapping feet, and snapping fingers to produce sounds that enhance the effects of instrumental music. It integrates rhythm with musical tempo and engages students through seeing, listening, touching, and feeling, thereby stimulating their cognition and memory of rhythm.

In the field of early childhood education, the Dalcroze method is chosen as the applied teaching approach. This method breaks away from traditional teaching techniques by reforming and innovating instructional methods that align with the psychological and developmental characteristics of vocational early childhood education students. It allows students to directly interact with music, enhancing their skills in perceiving and performing music.

However, the literature on the integration of music teaching methods with early childhood education often lacks detailed case studies and analysis on how to effectively incorporate classical poetry into music education. It is crucial not only to focus on enhancing musical theoretical knowledge and professional skills but also to develop specific strategies tailored to the characteristics of young children in the teaching process.

Research Approach

Starting with an analysis of the characteristics of classical poetry, the feasibility of integrating classical poetry into early childhood music education activities is examined, demonstrating that classical poetry can be integrated into early childhood music activities and is operationally viable. Classical poetry is then used as activity material, and based on the designed practical exploration plan, several different types of music education activities are carried out. During the practical process, careful observations are made on the performance of preschool students in the implementation of classical poetry music education activities. Records are maintained to explore new methods in classical poetry education. Research conclusions are drawn after several rounds of practical exploration, and relevant suggestions for integrating classical poetry into early childhood music education activities are proposed.

Research Methods

Case Study Method

After each music activity in this study, the researcher analyzes typical problems and typical preschoolers who encountered these problems, proposes corresponding solutions, and accurately identifies problems in the activity using the case study method to improve the efficiency of the activity.

During the practical implementation, the researcher divided 56 early childhood education students into two groups based on their music backgrounds, Z1 (20 students with music background) and Z2 (36 students without music background), and conducted two practical activities targeting each group separately. The specific distribution of the practice groups is shown in Table 1.

Table 1.

Classical Chinese poem	**Type**	**First practice object**	**Second practice object**
Autumn Evening in the Mountain Dwelling	Musical and singing activities	Z1	Z2
Spring Morning	Musical rhythm activities	Z1	Z2
On the Stork Tower	Rhythmic practice activities	Z1	Z2

Singing Activity *Autumn Evening in the Mountain Dwelling*

Curriculum Design

When designing the singing activity for the ancient poem *Autumn Evening in the Mountain Dwelling*, the researcher directly selected a portion of the poem set to music by Gu Jianfen. This allowed young children to feel and appreciate the natural scenery and the poet's emotions described in the poem during the activity. Through singing, they could express their fondness for the ancient poem set to music and intuitively experience the different ways in which ancient poetry can be expressed, developing a liking for this musical expression.

Teaching goals

Expressing ancient poetry through singing enables young children to grasp the content of the poem clearly by singing the lyrics and understand the thoughts and emotions expressed in the ancient poetry through singing. They will develop a liking for singing ancient poetry songs.

- Feel the atmosphere depicted in the ancient poem *Autumn Evening in the Mountain Dwelling*

during the singing activity.

- Sing along with the teacher's piano accompaniment using natural voice.
- Enjoy singing the song Autumn Evening in the Mountain Dwelling.

Teaching content and sequence

- Perception and Experience
- Contextual introduction to experience autumn.
- Play the ancient poem song *Autumn Evening in the Mountain Dwelling* and guide the students to appreciate the music.
- Teacher sings the song, and students further appreciate the song based on the lyrics.
- Creation and Expression
- Early childhood education students learn to sing the song.
- Singing games.
- Teacher explains the ancient poem, and students share their feelings about singing the song.

By evaluating and assessing the receptiveness of students with and without musical backgrounds (Z1 and Z2), it was found that students with a musical background adapt more quickly in terms of singing and are able to complete the activity well. For students without a musical background, they can appreciate the ancient poem and, with demonstration, singing may require some vocal training to effectively integrate singing with teaching.

Practical Exploration of Rhythmic Activities in Music Using *Spring Morning* as an Example

Curriculum Design

The poem *Spring Morning* vividly portrays the lively and bright spring scene with grass growing, warblers flying, and willow catkins drifting in the first two lines. The latter two lines depict a scene where a group of playful children, returning from school, fly kites. It is well-suited to be integrated into rhythmic activities. Through rhythmic activities, children's musical perception and their ability to express and

create using their bodies are enhanced, ultimately improving their musical qualities.

Learning goals

Students create movements based on the content described in the ancient poem *Spring Morning,* fostering the development of children's creativity and expressive abilities. It also provides children with the opportunity to experience the joy of collaboration and interaction with peers.

- Feel the scenes described in *Spring Morning* and appreciate the imagery in the ancient poem.
- Freely create game movements based on the content of *Spring Morning.*
- Enjoy expressing ancient poetry through performance and experience the joy of collaboration with peers.

Teaching content and sequence

- Appreciation and Sensation
- Introduction through conversation
- Appreciation and sensory experience of the ancient poem *Spring Morning*
- Creation and Expression
- Students creatively devise movements for *Spring Morning*
- Perform *Spring Morning* using movements accompanied by audio

Based on the results from the two experimental groups, it was found that 90% of students without a musical foundation performed equally well in rhythmic learning compared to students with a musical background. They were able to complete the required movements and choreography in class, indicating that the influence of musical foundations on basic rhythm is not significant. Students without a musical background can essentially undergo rhythmic training.

Exploring the practice of rhythmic music activities with *On the Stork Tower* as an example

Teaching design

On the Stork Tower is a seven-character poem that can be assigned different durations to each character, forming various body movements, and allowing students to recite the poem in different rhythms, increasing the fun of reciting ancient poems.

Teaching goals

Let students feel the length of quarter notes and eighth notes while matching body rhythmic music for *On the Stork Tower*, and like to match body rhythmic music for ancient poems through this activity.

Have a basic understanding of quarter notes and eighth notes. Be able to imitate the rhythm of the ancient poem in the audio, and use different rhythm patterns to match the rhythm for the ancient poem. Feel the meaning of the ancient poem through the activity, and like to match vocal and rhythmic music for the ancient poem.

Teaching content and sequence

- Appreciate and feel
- Guide children to enter the activity room with the rhythm of | XX X XX X |
- Guide children to use other parts of body to complete the percussion rhythm | XX X XX X |
- Listen to the audio of the ancient poem *On the Stork Tower* and feel the rhythm of the ancient poem itself.
- Create and express
- Show the rhythm score of the ancient poem, and guide children to understand the basic rhythm pattern of the ancient poem.
- Guide students to use different rhythm patterns to match the rhythm for *On the Stork Tower.*

Through evaluation and assessment, it was found that the sensitivity to rhythm of student Z1 is greater than that of Z2. However, after conducting after-class exercises for Z2 students, it was found that through additional time for rhythm practice, Z2 can achieve the same level as Z1.

Suggestions for incorporating classical poetry into early childhood education activities

Recommendations for Setting Goals in Integrating Classical Poetry into early childhood Music Education Curriculum. In any educational activity, the starting and ending point should always be the activity's objectives. Similarly, in the context of incorporating classical poetry into music education activities, goal setting plays a crucial role. It serves as the backbone of the entire teaching process and serves as the evaluation criteria for measuring the effectiveness of the activities.

Integrating classical poetry into early childhood education is inherently part of the field of arts. When designing the curriculum, it's essential to align it with the corresponding educational objectives. *The Guidelines for Learning and Development of Children Aged 3-6* state that in the field of early childhood arts education, the key lies in creating conditions and opportunities for children to develop their sense of beauty and experience it fully in the natural and cultural world, enriching their imagination and creativity. This guides children to learn to perceive and discover beauty with their hearts and to express and create it in their own ways.

From this perspective, it's evident that young children need to focus on two aspects of objectives in their arts learning: appreciation and expression. In the context of educating children through classical poetry integrated into kindergarten music education activities, the primary appreciation objectives include: first, experiencing the beauty described in classical poetry through music education activities; and second, developing an enjoyment for appreciating classical poetry music and other art forms related to classical poetry.

The primary goals concerning expression and creation are: first, developing an appreciation for classical poetry music education activities and expressing themselves boldly; and second, possessing initial artistic expression skills and creating related artistic works based on classical poetry music education activities content.

Based on the analysis above regarding the objectives of integrating classical poetry into early childhood music education curriculum, and through practical exploration of three types of music education activities, the researchers propose the following goals for classical poetry music education.

Table 2.

Type	**Teaching goals**	
	Feel and appreciate	**Perform and Create**
Musical and singing activities	Preliminarily feel the wonderful melody of ancient poetic songs, and enjoy listening and singing. They are happy to listen to and sing ancient poems and songs. Be able to appreciate the things depicted in the songs of ancient poems and lyrics. Feel the musical beauty of the lines of ancient poems.	Be able to sing according to the emotions expressed in the songs of ancient poems and lyrics Sing with the corresponding emotion. Learn to sing ancient poems with the existing songs of young children. They will try to sing the poems by themselves with the tunes of their favourite children's songs. They can try to sing the poems by themselves with the tunes of their favourite children's songs.
Musical rhythm activities	Feel the rhythm routine and movement in the ancient poetry and music education activities, and connect the body movement with the musical performance.	Be able to express the content of ancient poems with basic rhymes or dance movements. Express the content of ancient poems, and express their understanding of ancient poems. Understand the content of ancient poems.
Rhythmic practice activities	Appreciate the tonal rhythm and meaning of the old poems themselves Rhythm stimulates young children's potential to be musically gifted.	Be able to clap your hands, tap your legs, stomp your feet on a musical instrument etc. to set ancient poems to music. Experiment with different rhythmic patterns for the same Poetry.

Improve the course evaluation system

Teaching evaluation refers to the scientific and reasonable evaluation methods for teachers' teaching process, results, and students' learning process and results. The construction of the evaluation system is particularly important when the ancient poetry new singing course is carried out. A good and effective evaluation system can help students improve their enthusiasm and participation, and promote the development of students' core literacy. When constructing the evaluation system, teachers should actively combine the content of the course with the teaching needs, and actively enrich the evaluation content while combining them.

Evaluation principles

Teaching evaluation should take students as the main body and implement the main position of students in the evaluation. Fully mobilize the initiative, enthusiasm, and consciousness of each student, and respect the diversity, diversity, and uniqueness of students. Teaching evaluation should adhere to rationality and objectivity, and highlight pertinence. Clarify the relationship between ancient poetry new singing courses and core literacy development, and realize the transition from measuring subject knowledge to measuring students' comprehensive abilities and literacy.

Teaching evaluation should combine evaluation and guidance. Analyze student evaluation results carefully, and provide timely, specific, and enlightening information feedback to make the evaluators clear about their future efforts. Teaching evaluation should pay attention to the mastery and development of various aspects of students, prevent taking a part for the whole, and generalize. The ultimate goal of developing students' core literacy is to enable students to form the necessary character and key abilities that adapt to social development. The evaluation of students' learning process is particularly important.

Specific content of evaluation

Classroom teaching evaluation The Ministry of Education *Several Opinions on Deepening Vocational Education Teaching Reform and Improving Talent Training Quality* clearly states: "Higher vocational colleges should strengthen quality awareness, especially strengthen quality management system construction, and pay attention to process monitoring", highlighting teaching quality and pay attention to the evaluation of the entire teaching process. Classroom teaching evaluation refers to the evaluation activities of student learning outcomes that occur during the implementation of classroom teaching. The scope of evaluation includes both teaching and learning. Classroom teaching evaluation is an important means to promote student growth and improve classroom teaching quality. In ancient poetry new singing courses, students should be clear that the core goal of ancient poetry new singing courses is to cultivate students' poetry comprehension ability and divergent thinking, consciously take the initiative to interpret and think about the content of new singing ancient poems by themselves, and form based on their own thoughts Poetry insights, dare to sing and dare to perform, under the combination of self-interpretation and teacher-assisted interpretation, accurately interpret the connotation expressed by classical poetry songs. After learning a song, each teacher will conduct an assessment one by one, find out the problems in the classroom in time and propose solutions. According to the performance of the students and give out usual grades, timely feedback on student learning through assessment and adjust teaching ideas at any time. Teachers regularly discuss, reflect, summarize and solve existing problems, all for improving student core literacy.

Conclusion

As the country pays more and more attention to preschool education, preschool education majors in colleges and universities are developing rapidly, especially the teaching curriculum is also being enriched and improved. Under the enrichment of the educational curriculum of preschool education majors in China, the ancient poetry new singing course has come into the teaching of preschool education majors, in order to analyse the ancient poetry new singing course of preschool education majors in colleges and universities in a more in-depth way, this paper discusses the value and

significance of the integration of ancient poems into the music course, the development of the course, the relationship between the teaching and evaluation and the development of the core qualities and so on in order to make sure that the study and thesis can be able to provide China's colleges and universities with the preschool professional Ancient poetry into music curriculum practice development to provide valuable theoretical suggestions.

References

Chen, S. S. (1997). *Research on recitation of ancient poetry and lyrics.* Beijing Social Science Documentation Publishing House.

Fu, X. Y. (1996). *Selected interpretations of classical Chinese poetry and lyrics.* China Drama Publishing House.

Lu, Y. L. (2003). *Cultural interpretations of traditional poetry and lyrics.* Beijing Social Sciences Press.

Mo, L. H. (2001). *History of the origins of Chinese poetry.* China Social Sciences Press.

Wang, L. (1979). *Outline of poetry and lyrics rules.* Beijing Publishing House.

Xu, Q. (1982). *History of classical poetry prosody.* Qinghai People's Publishing House.

Yi, S. Y. (2016). A preliminary study of the Orff approach to music education. *Popular Literature and Art,* (4), 209.

Yin, A. Q. (2021). Humanistic interpretation and reflection on music aesthetic education. *Journal of Northeast Normal University (Philosophy and Social Sciences Edition).* 2015(3), 140-144

Post-Pandemic Opportunities and Challenges: A SWOT Analysis of Musical Instrument Education and Training in China

Rui Ma, Beijing City University, China

Abstract

The COVID-19 pandemic exposed the vulnerabilities of the education system and accelerated the digitalization of education. Since the outbreak of the pandemic, the music education sector in China has gradually undergone a teaching transformation, leveraging online platforms to explore new models of music teaching. This paper employs the SWOT analysis method to examine the strengths (S), weaknesses (W), opportunities (O), and threats (T) of the music education sector in the post-pandemic era in China. Currently, music education is still in the early stages of informatization. Looking to the future, it is necessary to adhere to the professionalism of teaching while further aligning with the media environment and user needs. By learning from each other's strengths and weaknesses, we can seize opportunities and meet challenges.

Keywords: Post epidemic era, musical instrument education and training, SWOT analysis, China

Background

Musical instrument education and training is a significant component of the music education industry. Prior to the COVID-19 pandemic, the field experienced steady development and continuous growth. However, the global outbreak brought about unprecedented changes (UNESCO, 2020), leaving the entire field unprepared. During the pandemic, China made significant efforts in musical instrument teaching and training to ensure safe continuation of education. From adapting to the changes, the country progressively shifted towards maximizing flexibility, creativity, and exploring additional possibilities. Compared to previous teaching reforms, many implemented during the pandemic were passive coping strategies. Consequently, the pandemic provided an opportunity for China's musical instrument education and training to keep pace with information technology development.

The SWOT analysis method employed in this article was initially proposed in the early 1980s by American management professor Heinz Weihrich. It has been widely utilized in the field of corporate strategic management and formulation, with the initials SWOT representing Strengths, Weaknesses, Opportunities, and Threats (Gurl, 2017). As the scope of SWOT analysis has expanded, the academic community creatively applied this method to various fields of social science research (Benzaghta, Elwalda, Mousa, Erkan, & Rahman, 2021).

Strengths and Potential

Positive and Effective Epidemic Prevention Work Has Laid the Foundation for the Safe Recovery of the Market

Major strategic achievements have been made in the prevention and control of COVID-19 in China. The epidemic situation in the country has been effectively controlled, and the production and living order has been gradually restored. In order to ensure the safe resumption of classes and epidemic prevention and control, various regions and institutions have taken targeted measures to implement epidemic

prevention and control management. Musical instrument education and training institutions across the country have attached great importance to epidemic prevention, maintaining a high level of awareness, and have successfully resumed work and classes safely. As a result, the entire market has gradually warmed up.

In the post-epidemic era, epidemic prevention work has been normalized throughout the entire process of teaching and training. The pandemic has thrown out test questions that need to be addressed by education and training institutions, teachers, children, and parents, spawning new opportunities for home-school cooperation and teaching innovation. Consequently, home-school collaborative management has become the norm. It is conceivable that with the gradual deepening of exploration, the teaching and training management coordination mechanism adapted to the normal epidemic prevention and control will become increasingly perfect and perfected.

The Customer Group Has a High Degree of Recognition, and the Consumer Demand in the Sinking Market is Obvious

Generally speaking, the audience within the field of musical instrument education and training in China exhibits a high level of recognition (Wang, 2020). The target audience is large, and the learning cycle is long, catering to the diverse needs of various age groups. The primary demand stems from the learning needs of piano children, supplemented by the leisure needs of young and middle-aged individuals and the music appreciation needs of the elderly, indicating a trend of diverse age groups engaging in musical instrument education.

Notably, the growth rate of second, third, and fourth-tier cities is worth mentioning. With the continuous development of the economy, the consumption of the sinking market in these cities has increased, and the demand for art education is evident. Some musical instrument education and training institutions that maintain a well-controlled curriculum quality and orderly teacher management have a relatively stable ability to continuously attract customers and enter a virtuous cycle. In the sinking market, an increasing number of parents are paying attention to the cultivation of their children's musical abilities; more and more students are beginning to learn musical instruments and embracing music.

Simultaneously, in the sinking market, there are also teachers who desire professional growth. Through various trainings, they actively seek to enhance their abilities, and the demand for continuing education on the teacher side is gradually emerging (Zhang & Liu, 2021).

The Organization is Flexible and Diverse, which Promotes the Empowerment of Technology on Teaching Activities

The implementation of online courses, cloud art tests, cloud lectures, events, concerts, and other measures have evolved from initial epidemic response plans to post-epidemic normalization plans. These measures utilize new media platforms such as WeChat, Tencent Conference, and QQ audio and video to deliver online instruction, student self-study, and online question answering. The teaching methods and content have been adjusted to guide students' learning and task completion. Online classrooms promote participation and interaction while considering the unique aspects of different disciplines and network factors. To overcome sound distortion caused by network delay, some courses have adopted video-based teaching with live explanation.

Cloud lectures, events, and concerts have taken a hybrid approach, combining online and offline elements. Musical instrument performance activities focus on real-time interaction and on-site experience, which can be challenging to replicate online. However, online submission of audio and video materials or participation has helped overcome this challenge. During the epidemic, the advantage of online submission was reduced risk, increased participant coverage, and flexibility in time and space. For example, the "Xinghai Cup" national piano competition in 2020 adopted video submission for the preliminary round selection. In 2022, as the pandemic entered a normalized stage of containment efforts, the 19th "Xinghai Cup" National Piano Competition adopted a hybrid format combining online and offline elements. This provided participating contestants and their parents with a wonderful competition experience, garnering unanimous recognition from various sectors of society.

In special circumstances, software and hardware tools facilitate the adaptation of technology to meet individual needs.

The unique epidemic environment enables music educators to reconsider and redesign remote, virtual, and mixed teaching methods, integrating media and music learning. This broadens music education practices and connects music experiences with real life, stimulating aesthetic interest and fostering awakening. Due to the special epidemic environment, online tools are extensively used to facilitate student autonomous learning, creating opportunities for conservative students to participate actively. Previously, teachers held roles of instructors and decision-makers (Dong, Shao, Lou, Ni, & Wu, 2022). Since the epidemic outbreak, students have more time and opportunities to think, explore, and develop autonomous learning. When engaging in online activities, students become more active, commenting and reacting frequently. This presents an opportunity for teachers to identify these students and tailor teaching activities accordingly. The special epidemic environment explores deeply, with software and hardware fostering cooperation and sharing between teachers and students. Although these technologies have been available, they have not been widely integrated into music teaching until this environment provided opportunities (Ma, 2023). Some teachers and students have prepared to build digital audio workstations, expanded course scopes, and shared teaching achievements and cooperation. Due to its online nature, this enables cross-space cooperation and sharing.

Weaknesses and Vulnerabilities

The Implementation of Online Musical Instrument Teaching is in its Early Stages

The specific application of online musical instrument teaching is still in its early stages of exploration, with a considerable distance to cover before achieving habituation and mastery. In the context of the epidemic, it is crucial for front-line teachers of musical instrument teaching and training to promptly adapt to the virtual teaching environment to address issues related to teaching effectiveness, parental expectations, student adaptability, and technology integration (Li, 2020). For most people, this represents their initial exposure to purposeful online music education. Despite the prevalence of online music teaching during the pandemic, some teachers remain unconvinced of its effectiveness.

As we navigate the exploration process, several factors deserve consideration. For instance, the decline in actual social interaction may result in digital fatigue for both teachers and students. Teachers face limitations in providing on-site assistance when students encounter learning difficulties and can offer only limited psychological support in mitigating students' fear of challenges. Furthermore, due to

the uncontrollability of external factors such as network stability, teachers must invest more energy to ensure a smooth and orderly teaching process.

The Need for Improvement in the Applicability of Teaching Materials

Teaching materials used in musical instrument teaching and training require improved applicability. Currently, there are three main channels for obtaining these materials: purchasing formal publications, selecting from network resources, or creating them by teachers. Each channel has its advantages and disadvantages, highlighting the need for improvement.

Formal publications have high authority but often feature old repertoire. Thus, many latest and popular tracks are not readily available through this channel. On the other hand, network resources are constantly updated and offer various versions, but it takes more time to identify and screen through them. Moreover, network resources vary in quality due to their openness, requiring more time to select the best.

Each training institution has its own unique characteristics and uses different teaching resources. While network resources are plentiful, finding resources that align with students' characteristics and teaching objectives is challenging. Self-production of teaching materials requires higher ability from teachers and has limited universality. Although materials created by teachers are targeted and effective, many lack necessary IT and production skills. As a result, many teachers are willing to create materials but lack the ability to do so effectively.

Opportunities and Innovations

Clear Policy Orientation and Positive Growth

The government has recognized the importance of aesthetic education and has implemented a bonus policy to promote it in the high school entrance examination (Zhu & Ma, 2019). This policy aims to fully implement the bonus policy by 2022, indicating a commitment to the growth of art education.

Additionally, the recent changes in the national fertility policy, including the full liberalization of the three-child policy, have created a larger pool of potential students for musical instrument education and training. This provides a valuable opportunity for art education to cultivate future musicians and enhance its overall development.

Furthermore, the national "double reduction" policy has encouraged students to engage in more art activities by reducing their workload and promoting diverse extracurricular activities. This policy recognizes the importance of providing students with opportunities to explore their artistic interests and talents, further supporting the growth of art education.

With the combination of these three factors - the bonus policy, the expansion of the potential student population, and the reduction in workload - art education is provided with the necessary conditions to flourish. These policies and changes indicate a promising future for the development of art education in the country.

The Advent of the 5G Era: Enabling Overtaking in Curves

Currently, the rapid development of the internet and information technology has led to the widespread application of the internet across various sectors of society. With the impending arrival of the 5G era in China and the increasing ubiquity of portable mobile devices, the possibility of overtaking in the field of intelligent musical instruments and artificial intelligence (AI) becomes feasible.

Intelligent musical instruments have the potential to compensate for the limitations of traditional teaching methods, alleviate the financial burden of high musical instrument consumption and course costs, and ensure a systematic and standardized training process. Although the current market for intelligent musical instruments is primarily confined to entry-level education, there is significant potential for growth in the future.

Artificial intelligence is anticipated to become the next significant learning tool. With the assistance of augmented reality (AR) technology and AI robots, music education and music creation can become engaging and user-friendly. For instance, AR technology can aid in the learning of musical instruments, while intelligent AI robots can generate their own albums and assist users in creating and producing music.

Threats and Challenges

In light of the integration of multiple disciplines in China, music is no longer the sole option for students.

In March 2022, the Ministry of Education issued the Compulsory Education Curriculum Plan and Curriculum Standards (2022 Version), which are scheduled to take effect in the autumn semester of 2022. A significant change in the revised compulsory education curriculum standard is the incorporation of music, art, and the “new three subjects” (dance, drama (including traditional opera), and film and television (including digital media art)) into an integrated system of the art curriculum standard. This integration aims to cultivate comprehensive artistic quality, with the core quality of the art curriculum serving as the guiding factor, the foundation and practicality of art education as the basis, and the basic principle of realizing the mutual integration of various art subjects and the implementation by stages as the fundamental principle. In terms of art curriculum arrangement (Zhao, 2022), the new curriculum standard mandates that students should choose at least two studies.

This novel approach is bound to influence students’ subject choices and parents’ investment strategies, thereby altering the status quo of music and art. Given the constraints on students’ spare time, competition between music and the other four art disciplines will intensify. Consequently, it becomes imperative for institutions involved in musical instrument education and training to adopt a specialized approach while continuously refining their unique skills. Additionally, these institutions must strive to adopt a comprehensive approach and expand the scope of education and training.

The Rapid Progress of Global Online Instrument Education and Training

Overall, the global online music education market is experiencing growth, with the North American region leading the way (Astute, 2023). Renowned music conservatories have started offering online instrument teaching and training, and MOOCs have become popular in supporting students’ learning

(Chen & Zhang, 2020). The Berkeley Conservatory of Music and the Julia Conservatory of Music are examples of conservatories that have embraced online music learning platforms.

The market is dominated by four major musical instruments, with piano holding the highest market share (Astute, 2023). Piano's market value in 2020 was approximately USD 44.7 million, followed by guitar. The guitar instrument type is expected to have the fastest growth rate of 19.0% during the forecast period due to its versatility in various music forms. Different platforms cater to diverse user needs. Some platforms provide interactive and game-based methods for learning instruments like guitar, piano, and ukulele. Others focus on guiding users in writing original songs, while some offer professional teaching guidance and virtual performance coaching for performers of different skill levels. Innovative marketing and positioning strategies are also being employed by companies in the online music education market to promote growth.

Conclusion

In conclusion, the teaching and training of musical instruments in China have undergone significant changes during the epidemic period. However, certain aspects have remained unchanged, providing confidence in implementing flexible and creative strategies. The use of technology in education has been pervasive and the attitude towards positive and continuous response has been consistent (Cai, 2023). Moving forward, the trend of digital education in the post-epidemic era is unstoppable. Technology-enabled music education should be seen as more than just an emergency measure, but as an integral part of the future flexible education system. By combining online and offline learning methods and leveraging the strengths of each, the field of music education can improve its resilience and adapt to future trends. It is important for educational institutions to analyze specific issues, tailor measures to local conditions, and gradually explore and progress in practice.

Acknowledgments

The author gratefully acknowledges the financial support from Beijing Education Science Planning Project funds. The title of the project is "Research on TPACK Status Quo and Training Path of Music Education Students in Beijing Municipal Universities" (Project No. CDDB22209).

References

Astute Analytica. (2023). *Online Music Education Market* [Online]. Retrieved from https://www.astuteanalytica.com/industry-report/online-music-education-market.

Benzaghta, M. A., Elwalda, A., Mousa, M. M., Erkan, I., & Rahman, M. (2021). SWOT analysis applications: An integrative literature review. *Journal of Global Business Insights*, *6*(1), 54-72. https://www.doi.org/10.5038/2640-6489.6.1.1148

Cai, S. (2023). Analysis of the Reform Path of Music Education in Colleges and Universities in the Era of" Internet+". *Contemporary Education and Teaching Research*, *4*(12), 644-648. https://doi.org/10.61360/BoniCETR232015431206

Chen, P., & Zhang, X. (2020). A review of music education in the digital age. *Journal of Music Education*, *68*(3), 27-37.

Dong, Y., Shao, B., Lou, B., Ni, C., & Wu, X. (2022). Status and development of online education platforms in the post-epidemic era. Procedia Computer Science, 202, 55-60. DOI: 10.1016/j.procs.2022.04.008

Gurl, E. (2017). SWOT analysis: A theoretical review. *Journal of International Social Research, 10*(51), 994-1006. http://dx.doi.org/10.17719/jisr.2017.1832

Li, X. (2020). The “change” and “unchange” of online teaching in art majors in the epidemic era. *Art Education*, (6), 4.

Ma, R. (2023). A case study of higher music education during the epidemic and post-epidemic period. *Education in Crisis: Lessons from Today*, 233-242. https://www.gires.org/publishing/books/education-in-crisis-lessons-from-today.

UNESCO (2020). *The impact of the COVID-19 pandemic on education: international evidence from the Responses to Educational Disruption Survey (REDS)*. UNESCO.

Wang, Z. (2020). Current situation and marketing strategy optimization of children’s art training industry in small and medium-sized cities. *Chinese and Foreign Entrepreneurs*, *680*(18), 162.

Zhang, W., & Liu, J. (2021). An analysis of the factors influencing the demand for music education in China. *Music Education Research*, *23*(4), 427-437.

Zhao, K. (2022). Reshaping art participation and ecological citizens—Reflections on the artistic function in the post/epidemic era. *Academic Research*, (3), 11.

Zhu, K., & Ma, J. (2019). Summary of the first Social Aesthetic Education International Forum. *Proceedings of the China Realist Research Association*.

“Teaching Music Inclusively”: Music teacher education for an inclusive and sustainable classroom in Germany

Beatrice McNamara, Ludwig Maximilian University, Germany

Abstract

A central aim of the project “Teaching Music Inclusively”, which was conducted at Ludwig Maximilian University in Munich from 2019 to 2023, funded by the “Qualitätsoffensive Lehrerbildung” and initiated by the German Ministry of Education and Research, was to unite theory and practice to prepare future educators for teaching in inclusive settings. Focusing on inclusive music education and music teacher education in Germany has become a necessity concerning the increasingly heterogeneous music education classroom and society. Therefore, the project’s research explores the scarcity of empirical studies on inclusive subject teaching (Liebers & Seifert, 2014) and emphasizes that subject-specific teaching methods must be generated (Rabenstein, 2016). This research, involving 63 music education students, was conducted via an online questionnaire, focused on answering the following questions: “How are the areas of subject, methodological, social, and personal competencies weighted in relation to the areas of special needs, i.e., hearing, language, learning, and mental development?”, “Does previous experience with inclusive music teaching influence the desire for further training and does it affect the weighting of the areas of competence, based on the hierarchical structure model by Frey (2008)?”. In four case studies, referring to inclusive music lessons, the participants had to set priorities regarding the four special needs areas. The results show that 65.08% had a desire for further training. Moreover, the evaluation proves a significant connection between previous experience with inclusive education and the motivation for further training. In conclusion, this study highlights the critical link between the perceived complexity and time commitment of inclusive music education, school performance comparability, and the ensuing challenges in implementing inclusion. Understanding this relationship allows for tailored approaches to inclusive teaching, particularly in varying academic contexts. Furthermore, the study emphasizes the necessity of providing future educators with practical exposure to inclusive music education settings. Additionally, equipping them with subject-specific social and political knowledge is fundamental for fostering sustainable inclusive practices within the educational system and broader society in Germany. The results show that all four areas of competence are important, with a context-specific focus on the learner’s needs. Thereby, this study aims to contribute to building a professional basis for sustainable teaching and learning in inclusive music teaching.

Keywords: Inclusive music education, teacher education, sustainability

Introduction

The project “Teaching Music Inclusively”, which was conducted at Ludwig Maximilian University in Munich from 2019 to 2023, mainly aimed to unite theory and practice to prepare future educators for teaching in inclusive settings. Focusing on inclusive music education and music teacher education in Germany has become a necessity regarding the increasingly heterogeneous music education classroom and society. Therefore, the project’s research explores the scarcity of empirical studies on

inclusive subject teaching (Liebers & Seifert, 2014) and emphasizes the need for generating subject-specific teaching methods (Rabenstein, 2016). This research, involving 63 music education students, was conducted via an online questionnaire that is focused on answering the following questions: “How are the areas of subject, methodological, social, and personal competency weighted in relation to the areas of special needs, i.e., hearing, language, learning, and mental development?”, “Does previous experience with inclusive music teaching influence the desire for further training and does it affect the weighting of the areas of competence, based on the hierarchical structure model by Frey (2008)?”. In four case studies, referring to inclusive music lessons, the participants had to set priorities regarding the four areas. Furthermore, the study aims to gain insights into the future educator’s preconceptions of inclusive music education and whether previous experience with inclusive education is connected to the motivation for further training.

Additionally, this research seeks to enhance the understanding of this connection, allowing for adequate strategies in inclusive teaching. Consequently, this study aims to contribute to the establishment of a solid professional foundation for sustainable inclusive (music) teaching and learning in Germany.

Research Context and Background

The accompanying research of the project “Teaching Music Inclusively” addresses the still sparse empirical research on inclusive subject teaching (Liebers & Seifert, 2014; Merl & Winter, 2014; Musenberg & Riegert, 2015). Moreover, research on inclusion has not allocated sufficient attention to individual funding priorities (Hackbarth & Martens, 2018). Furthermore, inclusive subjects and level didactics, teaching, and learning processes of the individual subjects must also be explored (Rabenstein, 2016). The special relevance of practice-based research in the project also results from the demand formulated by Moser and Kipf (2015) for “content-related problem(s) …, such as the generation of teaching objects in subject teaching (including task formats) at different levels of abstraction in connection with a reconstruction of (subject) didactic action” (p. 33). It is also the task of the project’s research to address the need for formulating a subject-specific basis for teaching and learning in the context of inclusive teaching (Hackbarth & Martens, 2018). The data obtained through empirical research or surveys can thus contribute to the further development of inclusive music education and form a basis for further development.

Prior to the implementation of the accompanying research in the project, the following research questions emerged:

1. How are the areas of subject, methodological, social, and personal competencies weighted by the test persons in relation to particular areas of special needs (hearing, language, learning, and mental development)?

Sub-question: Which conclusions can be drawn from this in view of teacher education and the conceptualization of seminars for inclusive music teaching?

2. Does previous experience with inclusive music education affect the desire for further training in inclusive teaching?
3. Does previous experience with inclusive teaching influence the weighting of the competence areas regarding the case studies?

This research project aims to contribute to the professional basis for teaching and learning in inclusive (music) teaching established by Hackbarth and Martens (2018).

Field of Participants and Research Design: Online Questionnaire

The research method was in the format of an online questionnaire, facilitating a broader range of participants. Specifically, 63 students pursuing music as a didactic subject for teaching at elementary or middle schools, either in regular or special school contexts at the Institute for Music Education at Ludwig Maximilian University participated. The objective was to understand the competencies that the students believed were essential for effectively conducting inclusive music lessons. To achieve this, the participants were asked to prioritize competencies in four case studies related to hearing, language, learning, and mental development.

The participants had diverse specializations, ranging from learning disabilities to speech therapy pedagogy and German as a second language, with ages between 18 to 39 years, mostly between 21 and 29 years old. Conducted over a year, the online questionnaire covered closed-ended questions regarding age, course of study, subjects, and decision-making questions about prior inclusive music education experience, ongoing inclusive teaching activities, and desired further training. Using predefined answer alternatives to avoid bias, the ranking questions assessed competencies in different specialization areas and their weight for successful inclusive music teaching.

The research found that successful inclusive music teaching necessitates competencies in subject, method, personal, and subject competencies, tailored to the specific needs of students. Furthermore, the study analyzed how responses varied based on participants' inclusive teaching experience using ranking averages and statistical measures such as the phi coefficient and Cramér's V to explore correlations.

Theoretical Basis

The questionnaire was theoretically based on the hierarchical structural model of operational competence (Figure 1) established by Frey (2008), which was chosen for its relevance to the research questions. Frey (2008) emphasized continuous professional development for teachers, which is essential because of the evolving nature of professional competence. The increasing inclusion rate and shifts in specialization areas highlight the need for comprehensive teacher training (Hollenbach-Biele & Klemm, 2020). Frey's model aligns with the research's theoretical foundation, defining ability dimensions as a construct that encompasses mental and physical skills. It emphasizes the holistic challenge posed to a teacher's personality regarding the needs, skills, abilities, and developmental levels of inclusively educated students. The model focuses on student-supportive action, observation, and diagnosis (Frey, 2011, p. 31).

Results and Interpretation

The results of the questionnaire evaluation show that the answers to the questions focus on how the participants weighted the areas of subject, method, social, and personal competencies in relation to the areas of special needs, namely, hearing, language, learning, and mental development.

Results Relating to Language Learning and Music Education

Language learning is complex in the classroom as it is both the object of the study and the medium for educational content (Mayer, 2020, p. 101). Language impairments that affect verbal or written communication can negatively impact student development (Durkin & Conti-Ramsden, 2007). This includes reduced ability to articulate needs, consider others' concerns, and diminished self-confidence (Grimm & Wilde, 1998, as cited in Dannenbauer, 2001, p. 105). Such impairments may lead to fewer positive social interactions and the risk of social exclusion (Mayer, 2020, p. 101; Benecken & Spindler, 2004).

Music education offers valuable learning opportunities in this context. There are significant parallels between music and language, which allows the use of musical elements to highlight linguistic structures (Bossen, 2017, p. 129). Shared terms such as rhythm, pitch, tempo, accentuation, and timbre are used in both domains. Linguistics terms them as prosody or intonation (Bossen, 2017, p. 129). Leveraging these properties on a musical level, such as in songs or language games, helps illustrate textual content's mood through instrumentation and harmonization. Furthermore, musical improvisation facilitates non-verbal interaction, fostering self-efficacy experiences without rigid judgments of right or wrong.

As shown in previous research on the profitable use of musical activity for language and written language acquisition, expectedly, subject matter expertise (e.g., "Knowledge of learning connections between music and language, e.g., through letter songs, syllable claps, and rhyming games") scored the highest-ranking average (2.83) among all response options.
Conclusions that can be drawn from these figures are that the participants inevitably think of the complexity of speech and language therapy pedagogy (Grohnfeldt, 2012) as a separate scientific discipline in which specific expertise is required. Nevertheless, this does not apply to respondents who have already gained experience with inclusive teaching. The comparative analysis revealed that those with previous experience give higher weighting to the areas of personal (2.40) and social competencies (3.00) than to subject and methodological competencies.

A plausible explanation for these differences in weighting would be that those with previous experience are aware of the importance of cooperation, teamwork, and interdisciplinary work, which includes internal and external cooperation with general, special needs, parents, and authorities (Heimlich & Bjarsch, 2020). Cooperative work and interdisciplinarity are identified as conditions for success in inclusive teaching (Lütje-Klose & Neumann, 2018). Therefore, educators are expected to have a high degree of value and norm awareness, to empathize with the students to be aware of the responsibility of all participants in the interpersonal network, and to be able to act accordingly in an interdisciplinary manner. Educators should therefore be aware or be taught that their inclusive and domain-specific expertise and methodological competence complements that of the professionals. This includes acting based on their values and norms in the interdisciplinary network of inclusive school education in the interest of the students. Subject and methodological competencies must be developed flexibly on this basis.

Results Relating to Hearing and Music Education

Hearing ability profoundly influences communication modes, including sign language and mixed forms, potentially affecting written language (Leonhardt, 2020). Annette Leonhardt (2020) emphasized the need to customize school learning quantitatively and qualitatively, involving various task formats, additional written information, and adjusting the teacher's language. Hearing impairment can also impact the social-emotional aspect, which potentially leads to isolation and frustration in communication as a result of the energy and concentration required (Leonhardt, 2020). In addition to subject and methodological competencies, educators require sensitivity to students' psychosocial situations. Therefore, expectedly, the respondents rated professional and methodological competencies with weights of 2.72 and 2.87, respectively. Social and personal competencies, conversely, were respectively rated at 2.36 and 2.06 on average.

One reason for these results may be that the test persons knew that the students in this area of support have a wide range of communication modes and that competent teaching in terms of subject matter and methods is mandatory. Thus, individual learning is made possible via appropriate differentiation. However, the comparative analysis of the test persons with and without previous experience with inclusive teaching shows that personal and social competencies were rated regarded as highly significant. Those who had previous experience primarily had human or social integration and inclusion with music education in mind.

Results Relating to Mental Development

The weighting of the competence areas regarding an area of special needs, i.e., mental development was somewhat different. The analysis of the ranking averages shows that the area of subject and methodological competencies and the area of social and personal competencies achieved equal values, with personal competence achieving the highest value individually, i.e., 2.88.

These results emphasize the need for comprehensive competence in this specialized area (Ratz, 2020). Cognitive barriers and identity fragility often stem from exclusion and failure, considering the highly individual predispositions of the students (Ratz, 2020). Heterogeneity among learners, including diverse linguistic abilities, behavioural disorders, and communication difficulties, further necessitates a broad competency requirement.

The participants underscored the importance of personal and social competencies, given the vulnerability of this student group, particularly in the social realm (Ratz, 2020). The research supports the significance of psychodynamic development work in this special-needs domain (Ratz, 2020). Music, being multidimensional, provides unique opportunities for relationship building at both musical and interindividual levels, addressing the students' need for self-efficacy experiences. The German curriculum emphasizes music-related activities in developing self-concept, communication, and interaction skills (LehrplanPLUS Förderschule 2019, p. 178). Data analysis highlights the awareness of participants, especially those with prior experience, in terms of the importance of interdisciplinary competence exchange, such as involving external consultants.

Results Relating to Learning

Impairments or difficulties in the area of learning are caused by a complex combination of internal and external factors (Heimlich, 2020; Heimlich, 2016, p. 37). These include endogenous conditioning factors that affect the somatic, sensorimotor, emotional, cognitive, and social domains (Heimlich, 2016, p. 37). Nevertheless, exogenous factors, including the family and school environment, can also make learning difficult in individual ways (Heimlich, 2016, p. 37). This shows that this area of support requires highly individualized care and support.

Especially in music education, a variety of possibilities to enable musical learning exists. The ability to acquire knowledge is the cornerstone of school education. Therefore, expectedly, learning difficulties represent a major burden and can harm learning and performance motivation (Heimlich, 2020). The results of the evaluation show that the participants are aware of the learning process being influenced by an elaborate network of endogenous and exogenous factors. To empathize with the learners and their variety of learning abilities, social and personal competencies are required. This also includes taking social responsibility toward the learners, accepting, and tolerating different learning styles and previous experiences. Expectedly, social and personal competencies (2.33 and 2.59, respectively) and technical and methodological competencies (2.08 and 3.00, respectively) were weighted almost equally.

The comparative analysis revealed that the respondents with experience in inclusive education rated personal competence (3.00) even higher in importance when compared with those without experience (2.56). Social competence, however, was given an average weighting of 2.36, which was the same for both fields. These results emphasize once more the importance of the socially responsible analysis and diagnosis of the individual learning prerequisites. For music lessons in schools, on the one hand, this means to know the learners' previous musical experience and to carry on from there. On the other hand, stimulating multimodal learning is important. Multidimensional, multichannel learning can be realized particularly well in the context of music lessons. For instance, teaching content can be experienced in a haptic way, for example, by making music through percussion instruments, which act as resonating bodies to make the sound perceptible.

Correlation between previous experience with inclusive teaching and motivation for further training

In addition to weighting the areas of competence in relation to case studies from inclusive music teaching, the aim was to determine whether there was a general interest in further training in relation to inclusive music teaching or inclusive teaching. It turned out that most of the respondents (65.08%) would like to receive further training in inclusive music teaching.

Additionally, the evaluation via the phi coefficient and Cramér's V showed that no significant correlation exists between previous experience with inclusive music teaching (own school time or in own teaching activity) and the motivation for further education and training in the field of inclusive music teaching.

In conclusion, inclusive music education is crucial in society and teacher training. Furthermore, for many future educators, preparation for inclusive teaching or for teaching a heterogeneous group of students is a significant concern. Moreover, offering seminars in didactics and methodology focusing on

inclusive music teaching and conducting workshops for further training in the field of inclusive music teaching is highly important for the students.

These results justifiably lead to the assumption that the topic of inclusive (music) teaching is crucial in society and teacher training. Since inclusive music teaching and teaching with music is highly relevant for students, didactics and methodology seminars focusing on inclusive music teaching and the implementation of workshops for in-service training in the field of inclusive teaching with music can continue to provide valuable input.

Conclusion

The perception of the complexity and time intensiveness of inclusive music education relating to specific case studies seems to correlate with the extent of comparability in school performance. In instances where school performance is less comparable, the perception is that inclusion becomes more time-consuming, comprehensive, and challenging, assuming an equal weighting of all competencies.

Conversely, when academic performance is more comparable, as seen in higher-level special needs education, and there is less need for differentiation in performance assessment, inclusion appears more manageable. This perceived ease in managing inclusion in such cases stems from the ability to draw on subject and methodological competencies.
Interestingly, the participants' experiences with inclusive teaching seem to influence their perspectives on competence priorities. Students who have encountered inclusive teaching tend to prioritize personal and social skills in their assessment of competence importance. Conversely, students without prior experience tend to emphasize subject and methodological competencies as being more crucial. These insights shed light on how firsthand experience with inclusive teaching shapes one's perception of the competencies essential for successful inclusion.

Given these findings, future educators must be given chances to acquire practical experience within the inclusive music education classroom. Collaboration and an open feedback culture are thus crucial. Moreover, it is vital to impart subject-specific social and political knowledge (about inclusion). Imparting knowledge in terms of the education policy and legal framework and preparing future educators for interdisciplinary cooperation are key factors in ensuring sustainability in the inclusive music education classroom as well as in society in Germany.

Figure 1. Concise presentation of the hierarchical structure model of operational competence (Frey, 2008)

References

Benecken, J., & Spindler, C. (2004). Zur psychologischen Situation stotternder Schulkinder in Allgemeinschulen. *Die Sprachheilarbeit, 49*, 62-70. https://www.praxis-sprache.eu/fileadmin/SHA_Archiv/2004/2004_49-2_komplett_ocr.pdf

Bossen, A. (2017). Sprach- und Schriftsprachförderung mit Musik in inklusiven Settings in der Primarstufe. In B. Jank & A. Bossen (Eds.), *Musikarbeit im Kontext von Inklusion und Integration* (pp. 127-156). Universitätsverlag Potsdam.

Dannenbauer, F. M. (2001). Chancen der Frühintervention bei spezifischer Sprachentwicklungsstörung. *Die Sprachheilarbeit, 46*, 103-111.

Durkin, K., & Conti-Ramsden, G. (2007). Language, social behavior, and the quality of friendships in adolescents with and without a history of specific language impairment. *Child Development, 78*, 1441-1457.

Frey, A. (2008). *Kompetenzstrukturen von Studierenden in der ersten und zweiten Phase der Lehrerbildung. Eine nationale und internationale Standortbestimmung*. Verlag Empirische Pädagogik Redecker.

Frey, A., & Jung, C. (2011). Hierarchisches Strukturmodell von Handlungskompetenz nach Frey. In A. Frey & C. Jung (Eds.), *Lehrerbildung auf dem Prüfstand. Kompetenzmodelle, Standardmodelle und Professionsstandards in der Lehrerbildung: Stand und Perspektiven* (pp. 30-35). Verlag Empirische Pädagogik.

Grohnfeldt, M. (2012). *Grundlagen der Sprachtherapie und Logopädie*. Reinhardt Verlag.

Hackbarth, A., & Martens, M. (2018). Inklusiver (Fach-) Unterricht: Befunde – Konzeptionen-Herausforderungen. In T. Sturm & M. Wagner-Willi (Eds.), *Handbuch schulische Inklusion* (pp. 191-206). Barbara Budrich.

Heimlich, U. (2016). *Pädagogik bei Lernschwierigkeiten. Sonderpädagogische Förderung im Förderschwerpunkt Lernen*. Klinkhardt.

Heimlich, U. (2020). Förderschwerpunkt Lernen. In U. Heimlich & E. Kiel (Eds.), *Studienbuch Inklusion* (pp. 73-83). Verlag Julius Klinkhardt.

Heimlich, U., & Bjarsch, S. (2020). Inklusiver Unterricht. In U. Heimlich & E. Kiel (Eds.), *Studienbuch Inklusion* (pp. 248-294). Verlag Julius Klinkhardt.

Hollenbach-Biele, N., & Klemm, K. (2020*). Inklusive Bildung zwischen Licht und Schatten: Eine Bilanz nach zehn Jahren inklusiven Unterrichts*. https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/20200625_Inklusive-Bildung-Zwischen-Licht-und-Schatten_ST-IB.pdf

Leonhardt, A. (2020). Förderschwerpunkt Hören. In U. Heimlich & E. Kiel (Eds.), *Studienbuch Inklusion* (pp. 43-54). Verlag Julius Klinkhardt.

Liebers, K., & Seifert, C. (2014). Quantitative empirische Befunde zu Inklusion in der Grundschule – zu einem heterogenen Forschungsstand. In E. Franz, S. Trumpa, & I. Esslinger-Hinz (Eds.), *Inklusion: Eine Herausforderung für die Grundschulpädagogik* (pp. 33-46). Schneider Hohengehren.

Lütje-Klose, B., & Neumann, P. (2018). Professionalisierung für eine inklusive Schule. In B. Lütje-Klose, T. Riecke-Baulecke, & R. Werning (Eds.), *Basiswissen Lehrerbildung: Inklusion in Schule und Unterricht. Grundlagen in der Sonderpädagogik* (pp. 129-151). Klett, Kallmeyer.

Mayer, A. (2020). Förderschwerpunkt Sprache. In U. Heimlich & E. Kiel (Eds.), *Studienbuch Inklusion* (pp. 97-106). Verlag Julius Klinkhardt.

Merl, T., & Winter, J. (2014). Qualitative Befunde zur Inklusion in der Schule. In E. Franz, S. Trumpa, & I. Esslinger-Hinz (Eds.), *Inklusion: Eine Herausforderung für die Grundschulpädagogik* (pp. 47- 60). Schneider Hohengehren.

Moser, V., & Kipf, S. (2015). Inklusion und Lehrerbildung – Forschungsdesiderate. In J. Riegert & O. Musenberg (Eds.), *Inklusiver Fachunterricht in der Sekundarstufe* (pp. 29-38). Kohlhammer.

Musenberg, O., & Riegert, J. (2015). Inklusiver Fachunterricht als didaktische Herausforderung. In J. Riegert & O. Musenberg (Eds.), *Inklusiver Fachunterricht in der Sekundarstufe* (pp. 13-28). Kohlhammer.

Rabenstein, K. (2016). Methodologische Fragen einer quantitativen Erforschung inklusiven Unterrichts. Herausforderungen einer empirisch fundierten didaktischen Theoriebildung. In O. Musenberg & J. Riegert (Eds.), *Didaktik und Differenz* (pp. 233-244). Klinkhardt.

Ratz, C. (2020). Förderschwerpunkt geistige Entwicklung. In U. Heimlich & E. Kiel (Eds.), *Studienbuch Inklusion* (pp. 30-42). Klinkhardt.

Staatsinstitut für Schulqualität und Bildungsforschung München (2019). *LehrplanPLUS Förderschule: Lehrplan für den Förderschwerpunkt geistige Entwicklung*. https://www.lehrplanplus.bayern.de/sixcms/media.php/119/LehrplanPLUS%20F%C3%B6rderschule%20-%20F%C3%B6rderschwerpunkt%20geistige%20Entwicklung%20-%20Juli%202022.pdf

Music as a Reflection of our Culture in Pre-Schools: Implications for Practice in Kenya and United States

Benson Charles Odongo Okong'o, Jaramogi Oginga Odinga University of Science & Technology, Kenya

Abstract

The impetus for this study came as a result of my own childhood musical interest and experiences in the use of music in diverse preschool classrooms. Having had an experience on the use of music is Kenyan preschools, I carried my "children's" dancing styles to the preschool classroom in the United States where I was employed as an assistant teacher in a child development center. During circle time, when everyone was dancing and wiggling to the tune and words from the CD player, a boy pointed at me saying, "Look! Teacher is acting silly!" When I tried to inquire how, he retorted in laughter, "your styles of dancing!" From then, 90% of the children in that class would surround me so I could teach them my African movements to the beats. December 2008, I went back to Kenya and had an opportunity to display my "borrowed" American response to the beats of a CD player, the children were all "dying" in laughter as they chorused, "teacher you do not know how to dance!" but fortunately or unfortunately, after the second day, they all enjoyed my American style of response to the music and prevailed upon me to teach them "My new style" of dancing. It then dawned on me that there was something new in music that each child could learn from another country.

This qualitative study examined teachers' perceptions on their use of music as a medium for enhancing development in all early childhood domains including cognitive, communication, physical/motor, social-emotional and self -help. Eight early childhood teachers, four drawn from Kenya and four from the United States, responded to open ended interview questions about their experiences of teaching and using music in their classrooms and personal preparation for use of music in teaching young children. Observations in preschool classrooms were also conducted by the researcher to document the use of technologies, musical instruments and music resources used to observe planned or natural opportunities for children's involvement in music. Results revealed strategies used to teach music, the role of music in early childhood curricula, instructional strategies used, including singing and movement and use of musical instruments.

Additionally, similarities and differences of early childhood music use are compared between preschool programs in Kenya and the United States. Implications for practice are offered which includes but not limited to collaborations, workshops, and policy change.

Keywords: early childhood, music education, young children's Musicality, songs for children

Introduction

Throughout human history and across all cultures, individuals have produced and enjoyed music. Music can also be linked into various curriculum and instruction models to increase learning. For example, songs to develop physical coordination, teach phonics, provide opportunities for creative dramatics, contribute to a greater understanding and appreciation of people, places, and cultures, and bring new

meanings to the study of history (Bowles 1998).

Music education in the preschool periods not only enables the child to experience and enjoy music, and to relax in it, but also helps develop the child's music abilities, skills and knowledge (Bowles, 1998). Music activities present an independent form of expressing oneself through music; encourage a liking for sound playing and movements. They develop perception abilities and increase their span of attention, develop motor skills, verbal communication and social behavior. The level of expressing interest in music activities and the level of development of music abilities are closely linked with the child's first experiences in music (Temmerman, 2000). For this reason, it is important that children are offered a variety of musical experiences beginning, at least, in the preschool period so that they can form a positive relationship towards music.

Music is a developmentally appropriate and socially engaging way to learn. Music effectively engages children because it is a natural and enjoyable part of their everyday lives. Children hear music or sing while with adults or other children, for example, watching television, riding in the car, at school and as part of bedtime rituals.

Children create songs and music naturally during play with others, for example in the bathtub, 4-year-old, Levi, (all names have been changed to protect confidentiality) changes the words to a song he learned at preschool. Instead of "Swimming, swimming, in the swimming pool," his version recalls "Swimming, swimming, in the Lake George" during a family trip.

Some children entering an early childhood program come with some experiences in music and sometimes do have well defined musical preferences. For example, they come with responses to musical sounds from television, radio, voices, and elsewhere from their environment. At times, children imitate or "tag on" to the end of songs as they copy what they hear being sung, lag behind a bit, and add on the end of the song.

Music activities are flexible teaching tools that provide enjoyable opportunities for socialization (Gfeller, 1983). Sometimes children's introduction to music usually occurs in a social context, singing with family and family friends (O'Neill, 2002). This social context widens even further when the early childhood teacher enters their young lives.

During the process of enculturation (i.e., learning the values and practices of a particular culture, North et. al. 2000), children develop their personal tastes in many things including music. The music that they hear the most is likely to become what they like the best. So, it follows that what the teachers and parents listen to the most will probably also become the children's favorites. If an adult obviously enjoys music and actively participates in it, whether expert or not, children will respond heartily and creatively.

Within the social and culturally contexts of Kenyans, they view song as the characteristic medium of musical expression playing an important role in the lives of the people from birth to death (Akuno, 2005; Zake, 1986). For example, all Kenyan communities have songs marking the human life cycle- for birth including lullabies, circumcision (or alternative puberty rites among those who do not practice circumcision), marriage, war, work, death and funeral, and many others describing virtually every life

activity. Within the context of formal education, Andang'o's (2007) investigation into the use of music in Kenyan Early Childhood Education centres reveal that most teachers teach music all the time.

In the United States, Americans tend to view music not only as a pre-lingual skill, but also as a natural bridge to integrate other subjects. For example, mathematical concepts can be explored with children through use of beat, meter, and duration of sounds, rhythmic patterns and tempo. This works well because of children's natural interest in and intuitive knowledge of musical patterns and rhythms (Shilling, 2002).

In Kenya and the United States, parents engage in music making through singing songs to calm infants and in literacy activities more frequently with toddlers, thus supplicating music with literacy (Custodero, Britto, & Brooks-Gunn, 2003).

Learning about music from varied countries can help teachers to reflect on music from a variety of ethnic cultures, balanced with American folk music, western art music and African traditional music, which should historically and traditionally serve as core of music programs (Moore, 1992). It exposes children to the art form of music- its structure and elements, its musical characteristics, styles, forms and genres, as they relate to human expression. It seeks to acquaint students with the roles that music has played throughout time and across cultures. Music can be the focal point for understanding cultural heritage, discovering one's roots, and expressing an arrangement of emotions and desires.

Through music, students can acquire an appreciation for differences among them and enjoy the commonalities they share. Perhaps music, of all the arts, best captures the essence of people and provides opportunities for others to share in the uniqueness. It further exposes them to a variety of musical sounds and techniques performed on instruments and with the voice.

Further learning music within two different contexts, is an approach to instruction that aids children in becoming familiar with music of the world and notably African society (Kenya) and American society (the United States). This enhances infusion of cultural instruction, music, dance, games, art and attitudes, values, customs and feelings of people (Moore, 1992).

Music, being a universal language central to every culture of the world, has been used to entertain, communicate, educate, inspire, and instill a sense of social and communal understanding (Crowley, 1992). All children are born with natural musical ability which varies from child to child (Custodero et al, 2003). For example, rhyme, rhythm, song and movement have historically been used as powerful teaching tools that have infused the values, mores and customs of cultures and societies. Music universally reduces mental fatigue, calms tension, focuses thinking, and greatly impacts creativity and sensitivity. Listening to music also stimulates the release of endorphins which are produced in the brain to relieve pain and produce a euphoric state.

Since music simply makes learning easy and fun, it forms a natural bridge to literacy development, builds self-esteem and creates a sense of inclusion and collaboration, and encourage an exciting learning environment full of rich language and positive emotion, the evidence is clear that educators can achieve far greater success in teaching through the strategic use of music.

Research evidence now suggests that the musical arts are central to the cognitive processes and dramatically impact the functions and systems responsible for all learning.

Methodology and Process

A qualitative research design was selected for this study because it is systematic, yet it is a flexible way to explore "naturally occurring, ordinary events in natural settings, so that we have a strong handle on what 'real life' is like" (Miles & Huberman, 1994, p. 10). This methodology also allows for responsive design modifications "if we come across interesting circumstances or if theories that arise in the initial round of the investigation merit taking a sidetrack from the original plan" (Brantlinger, Jimenez, Klinger, Pugach, & Richardson, 2005, p. 198). One overarching goal of this study was to provide a comprehensive coverage of preschool teachers' perceptions at preschools purposely selected (Stake, 2005, p. 445)

Target Population

The research involved preschool teachers carrying out educational programs in preschool classrooms of children ages 3-5 years. Eight purposively sampled preschool settings, were selected, with 4 settings drawn from US (mid-west state, large city) and another 4 settings in Kenya (comparative mid -west city). A total of 8 preschool teachers participated, concentrating on 1 teacher per school, although in some preschools, more than 1 teacher was more than ready to participate.

The participating preschools from United States were a university-based program serving children with special needs; a preschool program serving children who live with challenges of low income and poverty; a private, for-profit preschool enrolling children from more affluent economic levels; and a child development center/preschool, serving children who were typically developing. While the ones in Kenya were, pre-school, which is a university based program serving the university and its neighborhood, preschool serving children who live with challenges of low income and poverty, a private, for profit preschool, and a child development centre/ preschool serving children who are typically developing.

Data Collection and Analysis

Data were collected using a participant-observer field-based approach (Bogdan & Biklen, 1998). Observations, interviews both written and oral using voice recordings, field notes and digital camera and video footage of teachers and musical instruments form the basis for this research. Children were not captured with audio or video tapping.

Data were analyzed through the constant comparative method (Glaser and Strauss, 1967 cited in Maykut and Morehouse, 1994) to uncover common themes that arose from the observations, interviews, field notes and digital coverage. Also used were modified analytic induction (Bogdan & Biklen, 1998; Miles & Huberman, 1994) and content analysis (Patton, 2002) to analyze and interpret the data. Together these approaches allowed for an ongoing, flexible, and recursive process that involved searching for patterns, integrating and synthesizing emerging themes, seeking additional data to support or challenge the findings, and eventually distilling meanings.

Trustworthiness and Authenticity

Several techniques enhanced the trustworthiness and authenticity of this study. First, data were triangulated by type/theme, source/participant and method (Lincoln & Guba, 2002; Miles & Huberman, 1994). Specifically, data were gathered in a multitude of informal and formal settings and from participants with diverse cultural and language backgrounds. Although more than required participants were willing to participate in this study, deliberate steps were taken to ensure that participants out of focus of this study were avoided. Such voluntary participants included program directors, assistant teachers, and paraprofessionals.

Second, careful consideration was given to capturing participants' answers to questions in both oral and written forms. The use of teacher interview questions gathered by both oral and written form, assisted in ensuring the accuracy of the interviewees' words.

Third, the use of digital camera pictures of instruments used in the preschool classrooms endeavored to capture the information first hand, as well as being described from the participants. This additional use of technology aided the researcher in arriving at answers to specific research questions.

Fourth, the use of field notes in conjunction with audio tapes yielded a contextually situated data set consisting of thick, rich descriptions and direct quotations infused throughout the presentation of this study's findings (Denzin, 2004; Fontana & Frey, 2005; Silverman, 2003).

Fifth, the participants were given multiple opportunities to offer feedback through face-to-face meetings, emails, reminder notes, and phone calls on whether interpretations were reasonable and valid (Brantlinger, Jimenez, Klinger, Pugach, & Richardson, 2005).

Discussion Of Results

As to music scheduling, Kenyan counterparts seem to be more flexible to the use of music at any time during their lessons, this is a strong point that could be recommended to our US counterparts to embrace this practice.

There needs to be more of a child centered approach that allows children to discover the potential in their voices and in their bodies as they respond to musical cues and discover various ways of singing and moving to music.

The vigorous participation of the Kenyan teachers in songs, games and dances, prompts some reflection on the common American practice of watching children at play. There is a need for some greater adult involvement in physical activities with young children.

As to the content of instruction, there needs to be a progressive plan for professional development in terms of setting realistic goals in conjunction with classroom teachers in the two countries. The US teacher's practices are still far from those suggested by the national standards, while Kenyan practices are also below expectations as laid down by K.IE objectives.

Looking back at the research and its application to date, it seems music education and early childhood

professionals might need new models of collaboration and partnerships in order to improve the educative practices.

We need to develop a strategic, long-term plan for proactive change, based on what we have read from professionals in this investigation. Where the US teachers need to embrace Kenyan practices, let them do so, where Kenyans need to change to add value to their practices, let them embrace that.

The US participants' responses indicated that traditional fundamental music skills--singing and playing instruments--were not often used or considered useful by these teachers; instead, teachers valued experiences that involved pedagogical strategies directly applicable to teaching. I should suggest that in addition to what is learned in college methods courses, previous exposure and training prior to formal teacher education preparation might provide impetus for preschool teachers to incorporate music skills into their teaching, rather than what they learn in college methods courses.

There needs to be more workshops/in-service training especially on how to handle music in our classrooms. This would go a long way in strengthening our practices especially to teachers either with no formal training in music or who are not "talented" in music. None of the US participants mentioned any idea about MENC or having attained workshop by Music together, Music Garten, or Kinder music. Exposure to these various types of trainings could boost preschool teacher knowledge of implementing music within preschool classrooms.

The use of music specialists in the classrooms is a great resource that is worth trying, however, how many schools will not choose to spend an extra penny on that. The suggestion is to strengthen our teacher training programs so that teachers are well equipped with musical skills.

The use of instrumentalists comes into play with the children in schools and is highly recommended here. The enthusiasm by which children surround these instruments as they shake their bodies, nod their heads and dance to their tune, remains a great way of tapping their young talents.

The area of creating music, composing songs, poems, narratives, riddles and singing using a natural voice remains an area that needs to be explored by our US teachers.

There needs to be some emphasis on language heritage and music in multiculturalism. Versatility in speaking different languages and exposure to ethnic children's songs must be seen as an asset and duly used. More research in this area would hopefully provide convincing evidence to stakeholders.

There is a need for the provision of appropriate resources for music teaching. Apparently, the focus of this study did not include the role of directors of the programs or governments in providing the resources, but there needs to be some concern over resources if the teacher's practices are to improve.

The background soft soothing music coming from the CD player in the US classrooms is something that needs to be "lauded" and embraced by our Kenyan counterparts.

This study provides four musical avenues that can be used to enhance music use within preschool

programs. These include the influences of the parents, the church, the school and the music festivals in the development of the child's musical talents.

Finally, there needs to be some collaboration between Kenya and US in order to learn from each other more in terms of cultural diversity, languages and the use of musical instruments and costumes. There is need for further study in this area that imperatively examines the current state of music education in preschools from a national perspective - that is, with a national sample of NAEYC-accredited preschools, and using the National Standards as guidelines for best practices.

References

Akuno, E. (2005). *Issues in music education in Kenya.* Nairobi, Kenya: Emak.

Andang'o, E. (2007). Music and movement in Kenyan preschools: Implications for music education in Kenya. *Paper presented at the fifth research in music education conference at the university of Exeter.* United Kingdom.

Bogdan, R., & Biklen, S. (1998). *Qualitative research for education* (3rd ed). Allyn and Bacon. Bowles, C. (1998). Music activity preferences of elementary students. *Journal of Research in Music Education, 46*(2), 193-207.

Brantlinger, E., Jimenez, R., Klinger, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children, 71*, 195-207.

Crowley, S. (1992). *The amazing power of music.* AARP.

Custodero, L., Britto, P., & Brooks-Gunn, J. (2003). Music lives: A collective portrait of American parents and their young children. *Applied Developmental Psychology, 24*, 553-572.

Denzin, N. (2004). The art and politics of interpretation. In S. N. Hesse-Biber, & P. Leavy (Eds), *Approaches to qualitative research: A reader on theory and practice* (pp. 447-472). Oxford University Press.

Fontana, A., & Frey, J. (2005). The interview: From neutral stance to political involvement. In N. Denzin, & Y. Lincoln (Eds.), *The SAGE handbook of qualitative research,* (3rd ed) (pp. 695-727). Sage.

Gfeller, K. (1983). Musical mnemonics as an aid to retention with normal and learning-disabled students. *Journal of Music Therapy*, *20*(4), 179-189.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory.* Aldine

Lincoln, Y., & Guba, E. (2002). Judging the quality of case study reports. In A. M. Huberman & M. B. Miles (Eds.), *The qualitative researcher's companion* (pp. 205-215). Sage.

Maykut, P., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide.* The Falmer Press

Miles, M., & Huberman, A. (1994). *Qualitative data analysis: An expanded sourcebook (2nd ed).* Sage. Moore, J. (1992). A multicultural curriculum for the middle school. *General Music Today, 3*, 21-23.

North, A., Hargreaves, D., & O'Neill, S. (2000). The importance of music to a dolescence. *British Journal of Educational Psychology, 70*, 255-272

O'Neill, S. (2002). Young people and music participation project: Practitioner report and summary of findings: Retrieved September, 25, 2005, University of Keele http://www.keele.ac.uk/depts/ps/ESRC.

Patton, M. (2002). *Qualitative evaluation and research methods (2nd ed).* Sage.

Shiiling, W. (2002). Mathematics,music and movement:Exploring concepts and connections. *Early*

Childhood Education Journal, 29(3), 179-184.
Silverman, D. (2003). Analyzing talk and text. In N. K. Denzin & Y Lincoln (Eds.), *Collecting and interpreting qualitative materials* (2nd ed*)* (pp. 340-362). Sage.
Stake, R. (2005). Qualitative case studies. In N. K. Denzin, & Y. S. Lincoln (Eds.), *The SAGE Handbook of qualitative research*(3rd ed) (pp. 443-466). Sage.
Zake, G. (1986). *Folk music of Kenya.* Uzima.

Choosing efficient eye and body movement feature to enhance machine learning prediction of musical attainment

Mina Sano, Tokoha University, Japan

Abstract

This study investigates a possibility of simultaneous analysis of both eye movement and body movement to extract feature quantities of machine learning to assess developmental degree of musical expression in early childhood. It is difficult to objectively measure developmental degree of child's proficiency of musical expression without observing each child's behavior in detail because the perception of various musical elements in early childhood is related to his body movement. Therefore, the author quantitatively analyzed the movement analysis results by 3D motion capture in order to clarify the body movements in the musical expressions of early childhood children. After that, in order to capture how each child judges his next action, the author focused on eye movements and carried out eye tracking during musical expression. Feature quantities applying to machine learning were extracted from quantitative analysis of the above results to predict the developmental degree of musical expression. If the prediction accuracy were high, by using machine learning, less experienced teachers could enhance educational efficiency to certain levels which experienced teachers could attain.

In this study, the author aims to improve prediction accuracy of machine learning by focusing on eye movements data and body movements at the same time. 3-year-old, 4-year-old, and 5-year-old children (n=43) at two child facilities participated in the data capture of both eye movement and body movement during musical expression. Simultaneous analysis of eye movement and body movement during musical expression was conducted by synchronizing the eye tracking system and motion capture system with TTL signals. Each child participated in the simultaneous analysis by attaching a motion tracker to the measurement site of the body and wearing a glasses-type eye tracker. Feature quantities were extracted from the results of a three-way of ANOVA based on acquired data of the simultaneous analysis, and applied to machine learning to improve the prediction accuracy of developmental degree in musical expression.

As a result, the prediction accuracy of developmental degree of musical expression was more precisely in both body movement data and eye movement data included in feature quantities than only body movement data as feature quantities, when several classifiers such as NN (Neural Network model) applying to machine learning. The result shows a validity of simultaneous analysis of both eye movement and body movement to extract feature quantities of machine learning to assess developmental degree of musical expression in early childhood and would contribute for future development of music education.

Keywords: feature quantities, body movement in musical expression, eye movement, quantitative analysis, machine learning, prediction accuracy.

Introduction

A child often performs musical expression with his body movement. Previous research indicates that

maturity of music education affects body movement behavior as expressions. During performing expressions, the child watches other children and a teacher or a piano accompaniment when singing a song. It is apparent that children are exposed to auditory information as well as visual information. Perception of visual information should influence behavioral consequences of the children in early childhood when they devise their own musical expressions. It will be necessary to investigate to verify the characteristic changes of eye movement as well as an analysis of body movement in musical expression in early childhood.

The author quantitatively analyzed body movement in musical expression in early childhood using MVN system as 3D motion capture and verified a close relationship between the recognition of musical elements and body movements (Sano, 2018). Characteristic changes such as the increase of the moving average acceleration of hands and pelvis were observed as well as differences by age and facility according to the advance of recognition of musical elements in early childhood. The author captured the developmental characteristics of musical expression in early childhood utilizing the motion capture technique and devised an evaluation method of developmental process by machine learning (Fernandez-Delgado, et al., 2014).

In educational field applying 3D motion capture, research on the results of analysis regarding specific movement of traditional Japanese dance and sawing, mainly for adults, and the development of learning support methods can be seen (Ando et al., 2012; Sato et al., 2010). Regarding of research of music and movement, reaction to sounds by adults (Burger, 2013), viewing experiments and video analysis on the relationship between performers' movements and expressions (Dahl & Friberg, 2007; Thompson & Luck, 2012). However, these studies do not capture musical expression in the process of music practice for young children. Machine learning methods are also used in the field of education, such as behavior recognition and individual recognition methods in everyday life (Kodama et al., 2015; Takada et al., 2012), and learning support for elementary school students such as exercise (Matsumoto et al., 2014). There have been no reports of research using machine learning for musical expression in young children.

The author conducted machine learning by using feature quantities of movement contributed by characteristic changes, and derived a discrimination model of musical expression in early childhood by acquiring a constant classification accuracy (Sano, 2019; 2020). Since further feature quantities based on these research results are necessary, the author focused on the eye movements during musical expression in early childhood. In previous research, quantitative analysis were observed in eye movement regarding recognition of letters, and eye movement how affected the judgement of recognition function (Higuchi et al., 2019; Watabe et al., 2019; Kusunoki et al., 2017; Mpofu, 2016; Seong-un Kim, 2016; Moreno-Estevaa et al., 2018; Reumont & Budke, 2020; Valtakari et al., 2021). An analysis of eye movement of the line of sight of craftsmen during forging work is also observed in those research (Kitajima et al., 2017). Regarding research using eye trackers in the field of music, eye movement during rhythm listening and music reading (Plöchl et al., 2017; Lörch et al., 2017; Fusase, 2017), and the gaze behavior of musical instrument players (Vandemoortele et al., 2017), eye-hand synchronization when playing musical instruments (Marandola, 2017), differences in reading and listening to melodies between music professionals and non-musicians (Drai-Zerbib & Baccino 2018; Puutinen, 2018) and other research reports are presented. In those studies, attention is mainly paid to

the line of sight of the participant looking at the display. Investigations such as eye contact enhancing music conducting skills have also been carried out (Orman, et al., 2017; Orman, 2016). Another study (Burger et al., 2018) attempted to analyze responses to music using a combination of eye tracking and motion capture, but the subjects of the study were adults (Fink et al., 2019).

The author thought of capturing changes in eye movement during musical expression in early childhood using a wearable system eye tracker in the form of glasses. Eye movements captured by an eye tracker are roughly divided into saccade and fixation. The movement of the eyeball can be quantified by the moving average velocity (angular velocity) and the moving distance (magnitude of angle). For that purpose, the author focused on the saccade at the time of musical expression, and tried to find an effective feature quantity. For this reason, the author conducted eye tracking during singing and quantitatively analyzed those results (Sano, 2021; 2022).

Furthermore, the author tried to conduct a simultaneous analysis of eye movement and body movement in musical expression to explore more effective feature quantities. In related fields, the simultaneous analysis of body movement and eye movement have been conducted for adults such as a study that analyzed the movements and eye movements of people skilled in a specific technique (Nishina et al., 2013), investigation of conditions that promote visual interaction during duo performance (Bishopa et al., 2019), a research showing that factors such as musical characteristics influence music- induced movements (Burger et al., 2013), and synchronization of eye movement and head and neck movement in the field of physical therapy (Miyasaka et al., 2007) and a research of sign language with synchronized motion capture and eye tracking data (Jantunen, et al. 2020). In previous studies, simultaneous analysis of eye movement and body movement has not been applied to the musical expression of early childhood children in this way.

Purpose of this study

This study aims to statistically analyze the result of simultaneous analysis of eye movement and body movement in order to derive more effective feature quantities and applying to machine learning to classify developmental degree of musical expression which contribute to the musical development in early childhood.

Method of this study

In this study, the author activates the device in order of analysis of movement and eye tracking, connects the MVN system as 3D motion capture to the Tobii Glasses 3 as eye tracking system with a cable by using TTL signals in order to synchronize both those systems. From captured data, kinetics of body parts and gaze / saccades of eyes are extracted and statistically processed. Analysis focused on effectiveness of eye movement data as visual information which complements body movement data to evaluate developmental degrees of children.

MVN system as 3D motion capture

MVN system is a light weight and compact device which provides less constrained environment for even small sized children. MVN motion capture data include seventeen measurement points of body parts such as the pelvis, head, right shoulder, right hand, and right foot. The children's movement in

musical expression were measured one by one during playing the piano accompaniment. In this system, each motion sensor is attached to each of 17 body measurement sites on the participant's child. A computer is activated, wirelessly communicates with the motion sensor, the participant child is calibrated by measurements of height and foot size, and analysis of body movement is carried out in real time in 60Hz by 1/60 second time frame.

Tobii glass3 as eye tracking system

Tobii glass 3 is a glasses-type eye tracker of a wearable device. A participant child put on Tobii glass 3 like as glasses is calibrated while being fixed with a strap, and his eye movement is quantitatively analyzed on PC and audio and video are recorded in 50Hz by 1/50 second time frame, at the same time.

Numbers of participant children, Date and time of measurement

3-year-old, 4-year-old, and 5-year-old children participated in the simultaneous analysis of eye movement and body movement in musical expression (S child facility: n=17, T child facility: n=26). Each participant child expressed his own image using body movement when singing songs such as “Yamano onngakuka” (Lyrics: Shisen Mizuta, German folk song) and “Darumasan” (Japanese children's song).Those measurement days were June 14th and June 28th (10:00 ~ 12:30, 13:30 ~ 15:30) in 2022 year.

Quantitative analysis of the acquired data by synchronization of analysis of eye movement and analysis of body movement

The items of calculated data for eye movement are the number of occurrences of saccades, the moving average velocity of saccades, the average size of saccades, the total moving distance of saccades, the time until the first saccade occurs, the moving average velocity and magnitude when the first occurs saccade. Calculated data items for analysis of movement are the moving distance of the pelvis, head, right shoulder, right hand and right leg, the moving average velocity, the moving average acceleration, and smoothness of movement. Concerning the acquired data of eye movement and body movement, a three-way ANOVA (non-repeated two standards as melody, non-repeated two standards as facilities and non-repeated three standards as ages) was applied in order to find out statistically significant difference between relevant measures.

This study was approved by the research ethics committee review of the author's affiliation because the participants were early childhood children, a parental consent form was submitted.

Results

As a result of three-way analysis of variance on all of the above calculated data based on eye movement and body movement by simultaneous analysis, it was verified that the number of occurrences of saccades, the total moving distance of saccades (degrees), the moving distance of right hand, and the moving average acceleration of right hand showed average value of characteristic measures shown as Table 1.

Table 1 Average values of characteristic measures of eye movement and body movement by simultaneous analysis

Facility	Song	Age	the number of occurrences of saccades	the total moving distance of saccades (degree)	The moving distance of right hand (m)	The moving average acceleration of right hand (m/s^2)
S facility	Yamano Ongakuka (n=17)	3-year-old ($\bar{X}$)	27.600	191.104	7.403	3.922
		SD	5.320	47.682	2.7760	1.780
		4-year-old ($\bar{X}$)	23.714	155.076	10.284	4.988
		SD	11.221	80.753	2.101	1.136
		5-year-old ($\bar{X}$)	19.600	153.838	10.276	5.150
		SD	14.258	125.793	1.899	1.233
	Darumasan (n=17)	3-year-old ($\bar{X}$)	15.800	130.912	3.465	3.638
		SD	18.089	170.843	0.9598	0.789
		4-year-old ($\bar{X}$)	14.286	85.873	4.358	4.682
		SD	14.373	87.162	1.135	1.075
		5-year-old ($\bar{X}$)	16.400	120.134	2.715	2.850
		SD	10.015	60.270	1.746	2.162
T facility	Yamano Ongakuka (n=26)	3-year-old ($\bar{X}$)	24.778	176.152	6.184	3.187
		SD	10.710	86.648	2.389	1.267
		4-year-old ($\bar{X}$)	37.800	287.904	5.772	3.557
		SD	14.642	114.695	1.174	0.905
		5-year-old ($\bar{X}$)	41.429	344.019	4.590	2.425
		SD	12.327	142.780	2.634	1.499
	Darumasan (n=26)	3-year-old ($\bar{X}$)	16.333	109.967	0.589	0.690
		SD	5.148	68.893	0.383	0.411
		4-year-old ($\bar{X}$)	21.7	185.668	1.2751	1.3335
		SD	7.63108	95.19717	0.72961	0.7298
		5-year-old ($\bar{X}$)	26.8571	252.4714	1.1144	1.0578
		SD	16.6676	155.315	1.01749	0.70504

Characteristics based on the results regarding analysis of eye movement

The author extracted the number of occurrences of saccades, the moving average velocity (angular velocity), the moving distance (magnitude of total angle), the moving average angular velocity of the first saccade, and the first saccade magnitude (angle) were analyzed. The author examined whether there are statistical differences in these data depending on child facility, age, bright /dark melody.

The numbers of occurrences of saccade

As a result of three-way ANOVA for these acquired data, a main effect between subjects of the test showed a statistically significant difference (child facility factor ($F(1,74) = 10.137$, $p < .005$), melody factor $F(1,74) = 15.435$, $p < .005$). As a result of multiple comparison test by Bonferroni's method, 4-year-old and 5-year-old children significantly showed in T facility larger than S facility when singing “Yamano onngakuka”. In T facility, 4-year-old and 5-year-old children significantly showed the number of occurrences of saccade more when singing “Yamano ongakuka” than “Darumasan”.

The total moving distance of saccade

The total moving distance is represented by the sum of the angles moved (degree). As a result of three-way ANOVA for these acquired data, a main effect between subjects of the test showed a statistically significant difference (child facility factor ($F(1,74) = 13.034$, $p < .005$), melody factor $F(1,74) = 8.653$, $p < .005$). As a result of multiple comparison test by Bonferroni's method, 4-year- old and 5-year-old

children when singing “Yamano ongakuka” significantly showed larger distance in T facility than S facility.

Results of quantitative analysis regarding body movement in musical expression

As a result of analysis of movement regarding 17 body parts for measurement in musical expression, a statistically significance was observed in 11 items shown as below table 2.

The moving distance of right hand

As a result of three-way ANOVA for these acquired data, a main effect between subjects of the test showed a statistically significant difference (melody factor $F(1,74) = 191.218$, $p < .005$), child facility factor ($F(1,74) = 71.698$, $p < .005$)). As a result of multiple comparison test by Bonferroni's method, 3-year-old, 4-year-old, and 5-year-old children significantly showed larger distances when singing in bright melody than dark melody. 4-year-old and 5-year-old children when singing in a bright melody significantly showed larger distances in S facility than T facility as well as 3-year-old and 4-year-old children when singing a dark melody. 4-year-old and 5-year-old children significantly showed larger distances of right hand when singing a bright melody than 3-year-old children in S facility.

Those participant children more largely moved their right hands when singing “Yamano ongakuka” as a bright melody than “Darumasan” as a dark melody in both S and T facilities.

Although some differences between the child facilities were observed, the children while singing “Yamano ongakuka" as a bright melody more largely moved right hand than “Darumasan” as a dark melody. The children used their right hands to express images related to the content of the lyrics, as if anthropomorphic animals were playing musical instruments.

Table 2. The average value of measurement items as a result of analysis of movement in musical expression

Song Tonality	Facility	Age	The moving distance of pelvis	The moving distance of head	The moving distance of right shoulder	The moving distance of right hand	The moving average velocity of pelvis	The moving average velocity of head	The moving average velocity of right shoulder	The moving average velocity of right hand	The moving average acceleration of pelvis	The moving average acceleration of right shoulder	The moving average acceleration of right hand	N
Yamano ongakuka major key	S facility	3-year-old ($\bar{x}$)	0.974	1.353	1.1804	7.4029	0.0604	0.0792	0.0731	0.3775	0.6503	0.7634	3.9223	5
		SD	0.1015	0.27634	0.24635	2.77601	0.01729	0.03682	0.03325	0.10056	0.18391	0.22615	1.77958	
		4-year-old ($\bar{x}$)	0.9177	1.2117	1.0411	10.2835	0.0581	0.0677	0.065	0.4971	0.8458	0.9599	4.9877	7
		SD	0.53965	0.44181	0.43755	2.10113	0.04318	0.02857	0.03506	0.0897	0.69716	0.52541	1.13605	
		5-year-old ($\bar{x}$)	0.7656	1.24	1.0556	10.2761	0.0333	0.0429	0.0424	0.4572	0.3904	0.6425	5.1504	5
		SD	0.14269	0.20106	0.13632	1.89949	0.00495	0.00237	0.00629	0.12992	0.16115	0.16383	1.23255	
	T facility	3-year-old ($\bar{x}$)	0.7471	1.1628	0.8608	6.1839	0.0413	0.0402	0.0394	0.3018	0.6344	0.4513	3.1869	9
		SD	0.32676	0.67008	0.2415	2.38925	0.01656	0.01021	0.00605	0.116	0.42842	0.10981	1.26675	
		4-year-old ($\bar{x}$)	0.7351	0.989	0.8067	5.7722	0.0316	0.0515	0.0406	0.3208	0.4692	0.5198	3.5568	10
		SD	0.23623	0.17953	0.18916	1.17352	0.01196	0.01981	0.00895	0.06431	0.20035	0.11165	0.90464	
		5-year-old ($\bar{x}$)	0.5957	0.9214	0.7048	4.5899	0.0319	0.048	0.034	0.2331	0.4587	0.3606	2.4245	7
		SD	0.22754	0.40378	0.24174	2.63442	0.01082	0.03065	0.01088	0.1377	0.14625	0.16813	1.49881	
Darumasan minor key	S facility	3-year-old ($\bar{x}$)	0.5615	0.7175	0.607	3.4652	0.0431	0.0547	0.0492	0.3031	0.7962	0.6833	3.638	5
		SD	0.08023	0.03622	0.02911	0.95983	0.00584	0.01827	0.00556	0.06606	0.2491	0.22864	0.78855	
		4-year-old ($\bar{x}$)	0.6608	0.8041	0.6782	4.3583	0.0675	0.0678	0.0636	0.3611	1.1757	1.0249	4.6816	7
		SD	0.44148	0.41806	0.33747	1.13466	0.05884	0.03868	0.03575	0.08292	1.00776	0.56108	1.0751	
		5-year-old ($\bar{x}$)	0.5135	0.6372	0.5369	2.7154	0.0436	0.034	0.0327	0.2086	0.8462	0.3841	2.8501	5
		SD	0.23624	0.21332	0.17174	1.74577	0.02455	0.0078	0.00808	0.15528	0.68142	0.23064	2.16243	
	T facility	3-year-old ($\bar{x}$)	0.2474	0.2854	0.2459	0.5889	0.0201	0.0234	0.0211	0.0552	0.2553	0.2316	0.6898	9
		SD	0.13953	0.09708	0.09145	0.38291	0.01186	0.00792	0.00783	0.02423	0.22652	0.13139	0.41109	
		4-year-old ($\bar{x}$)	0.3592	0.4445	0.3717	1.2751	0.0268	0.0487	0.0295	0.1258	0.3382	0.3298	1.3335	10
		SD	0.14629	0.11766	0.09289	0.72961	0.0099	0.03121	0.00647	0.06539	0.20141	0.16421	0.7298	
		5-year-old ($\bar{x}$)	0.2089	0.3379	0.2357	1.1144	0.0224	0.0318	0.0217	0.1314	0.3417	0.2338	1.0578	7
		SD	0.09896	0.18024	0.09536	1.01749	0.00868	0.01245	0.0067	0.10176	0.17006	0.09735	0.70504	

The moving average acceleration of right hand

As a result of three-way ANOVA for these acquired data, a main effect between subjects of the test showed a statistically significant difference (melody factor (F(1, 74)=34.131, p<.005), child facility factor (F(1, 74)=71.355, p<.005)). As a result of multiple comparison test by Bonferroni's method, 5-year-old children in S facility, and 3-year-old, 4-year-old, and 5-year-old children in T facility when singing a bright melody significantly showed larger acceleration than dark melody. 4-year-old and 5-year-old children when singing a bright melody and 3-year-old, 4-year-old and 5-year-old children when singing a dark melody significantly showed larger acceleration in S facility than T facility.

Applying Affective Feature Quantities to Machine Learning

In this study, the author used several kinds of classifiers for machine learning method such as Support Vector Machine and neural networks (NN) as Multilayer perceptron (MLP). 31 cases were used as training input of classifiers. 12 cases were used for output to evaluate classification accuracy with regard to respective feature quantities. Developmental degree of musical expression classified into three levels of high, middle and low by way of video observation for 31 cases when participant children singing “Yamano ongakuka” as a bright melody.

As a result, the classification accuracy was 42% when MLP-NN as classifiers was used for machine learning based on feature quantities of body movement. The classification accuracy was 58% when MLP-NN as classifiers was used for machine learning by feature quantities of both body movement and eye movement based on simultaneous analysis.

Discussion

Those above results showed characteristics of eye movement and body movement in musical expression in simultaneous analysis and a result of machine learning using feature quantities of both body movement and eye movement based on simultaneous analysis showed higher classifier accuracy than feature quantities of only body movement.

Concerning eye movement when children presented musical expression, the numbers of occurrences of saccade and the total moving distance of saccade were characteristic. As a result of three-way ANOVA, a statistically significant difference was observed in child facility factor and melody factor, and 4-year-old and 5-year-old children significantly showed the number of occurrences of saccade more when singing “Yamano ongakuka” than “Darumasan” in T facility.
Concerning characteristics of body movement in musical expression, in synchronization of analysis of eye movement and analysis of movement in musical expression, the moving distance of right hand and the moving average acceleration as feature quantities of movement were more contributed to development of musical expression than other feature quantities of movement.

Specifically, concerning the moving distance of right hand, 3-year-old, 4-year-old and 5-year-old children significantly showed larger moving distance when singing a bright melody than a dark melody in both S facility and T facility. Concerning the moving average acceleration of right hand, 5-year-old children in S facility and 3-year-old, 4-year-old, and 5-year-old children in T facility significantly showed larger moving acceleration when singing a bright melody than dark melody.
The classification accuracy was 58% when MLP-NN as classifiers was used for machine learning by feature quantities of both body movement and eye movement based on simultaneous analysis.

Conclusion

In this study, the author simultaneously analyzed eye movement and body movement in musical expression and focused on the results of measurement items which showed a statistically significant difference. As a result, it was verified that both eye movement showed larger data such as total moving distance of saccade and numbers of saccade as body movement such as the moving distance of right hand and the moving acceleration of right hand became larger. The participant children understood the contents of the lyrics of “Yamano ongakuka” and expressed the movements of anthropomorphic animals appearing and playing musical instruments based on their own images. It was verified that the bright melody tends to induce body movement more easily.

Furthermore, the author conducted a machine learning using more effective feature quantities extracted based on the above results of quantitative analysis of synchronization of eye movement with body movement in musical expression in order to improve a classification accuracy regarding developmental degree of musical expression in early childhood. As a result of machine learning using the MLP (NN) classifier, compared to using feature quantities extracted from only body movement, the classification accuracy was improved using feature quantities based on simultaneous analysis of eye movements and body movements. The results of this study will contribute to music education by helping to determine the developmental level of musical expression and provide more appropriate musical experiences for individual children in early childhood.

Acknowledgements

This work was supported by JSPS KAKENHI Grant Number 21K02369.

References

Ando, A. & Sumikawa, Y. (2012). Development and functional evaluation of teaching materials for observing sawing motion using motion capture and virtual space, *Journal of the Japan Society for Educational Technology*, *36*(2), 103-110. https://doi.org/10.15077/ jjet.KJ00008274459

Bishopa, L., Cancino-Chacón, C., &d Goebl, W. (2019). Eye gaze as a means of giving and seeking information during musical interaction, *Consciousness and Cognition*, *68*, 73-96. https://doi.org/10.1016/j.concog.2019.01.002

Burger, B. (2013). Move the way you feel: Effects of musical features, perceived emotions, and personality on music-induced movement. Department of Music, University of Jyväskylä.

Burger, B., Thompson, M., Saarikallio, S., Luck, G., & Toiviainen, P. (2013). Influences of rhythm and timbre related musical features on characteristics of music induced movement, *Frontiers in Psychology*, *4*(183, 1-9.

Burger, B., Puupponen, A., & Jantunen, T. (2018). Synchronizing eye tracking and optical motion capture: How to bring them together, *Journal of Eye Movement*, *11*(2) 1-16.

Dahl, S., & Friberg, A. (2007). Visual perception of expressiveness in musicians' body movements. *Music Perception*, *24*, 433–454. https://doi.org/10.1525/mp.2007.24.5.433

Drai-Zerbib, V. & Baccino, T. (2018). Cross-modal music integration in expert memory: Evidence from eye-movements. *Journal of Eye Movement Research*, *11*(2),4. doi: 10.16910/jemr.11.2.4

Fernandez-Delgado, M., Cernadas, E., Barro, S., & Amorim, D. (2014). Do we need hundreds of classifiers to solve real world classification problems? *Journal of Machine Learning Research*, *15*(90), 3133−3181.

Fink, L., Lange, E., & Groner, R. (2018). The application of eye-tracking in music research, *Journal of Eye Movement Research*, *11*(2). doi: 10.16910/jemr.11.2.1

Fusase, E. (2017). In "Childcare Expression Technology" Music I Consideration of specialized skills-line of sight when playing the piano: Through the difference in behavioral proficiency, *Nagoya Yanagishiro Junior College Lab Bulletin of Research*, (39), 313-331.

Higuchi, H., Okumura, Y., & Kobayashi, T. (2019). Development of toddler's hiragana-sound knowledge: An eye-tracking study, *IEICE technical report*, *118*(437) 83-88.

Jantunen, T., Puupponen, A., & Burger, P. (2020). What Comes First: Combining Motion Capture and Eye Tracking Data to Study the Order of Articulators in Constructed Action in Sign Language Narratives, *Proceedings of the 12th Language Resources and Evaluation Conference*, 6003–6007. https://aclanthology.org/2020.lrec-1.735

Kitajima, H., Nakatani, Y., Ogura, A., Hamada, H. & Nanami, N. (2017). Eye Movement Analysis of Japanese Sewing Scissors Craftsman, International Conference on Applied Human Factors and Ergonomics, AHFE 2017: Advances in Physical Ergonomics and Human Factors, pp. 479-490.

Kim, Seong-un, Lim, Sung-man, Kim, Eun-ae & Yang, Il-ho. (2016). An Analysis of Eye Movement and Cognitive Load about the Editorial Design in Elementary Science Textbook, *Universal Journal of Educational Research*, *4*(3), 570-575, https://doi.org/10.13189/ujer.2016.040314

Kodama, U., Oba, N., & Ishi, N. (2015). Examination of behavior recognition method in general living environment using machine learning, *IEICE technical report*, *114*(502), 73-78.

Kusunoki, K., Ozawa, W., & Kanemori, Y. (2017). Evaluation of Immigrant Children's Impediments in

Reading Japanese. *Comparative Analysis on Reading Horizontal and Vertical Writing Texts, 6*(0), 7-8.

Lörch, L., Fehringer, B., & Münzer, S. (2017). Reading music. How tonality and notation influence music reading experts' eye movements, pupil dilation and performance in a pattern matching task. *Conference on Music & Eye-Tracking, 2017, Max Planck Institute for Empirical Aesthetics*, p.17.

Marandola, F. (2017). Eye-Hand synchronisation and interpersonal interaction in xylophone performance: A comparison between African and Western percussionists, *Conference on Music & Eye-Tracking, 2017, Max Planck Institute for Empirical Aesthetics*, p. 18.

Matumoto, A., Mikami, H., Kawamura, H., & Kojima, A. (2014). Examination of form classification method for supporting motor learning of elementary school students who performed motion analysis using image processing and machine learning techniques, *Video Information Media Society Technical Report*, *38,* 51(0), 9-12.

Moreno-Estevaa, E., White, S., Woodc, J., & Blackc, A. (2019). Application of mathematical and machine learning techniques to analyze eye tracking data enabling better understanding of children's visual cognitive behaviours, *Frontline Learning Research*, *6*(3) Special issue: 72- 84. https://doi.org/10.14786/flr.v6i3.365

Mpofu, B. (2016). University Students Use of Computers and Mobile Devices for Learning and their Reading Speed on Different Platforms, *Universal Journal of Educational Research*, *4*(4), 926-932. https://doi.org/10.13189/ujer.2016.040430

Myasaka, T., Sugihara, T., & Tanaka, T. (2008). Synchronous analysis system of eye-head and neck movements for evaluation of unilateral spatial neglect, *Physical Therapy Supplement*, 2007(0), B1129-B1129.

Nishina, M., Kume, M., Yoshida, T., Takai, Y., & Goto, A. (2013). Process Division of Soldering Work by Skilled Workers and Cooperative Relationship between Motions and Eye Movements in Making Metal Fittings of Flags, *Journal of Science of Labour*, *89*(1), 1-11.

Orman, K. (2016). Effect of Virtual Reality Exposure and Aural Stimuli on Eye Contact, Directional Focus, and Focus of Attention of Novice Wind Band Conductors, *International Journal of Music Education*, *34*(3), 263-270.

Orman, K., Price, H., & Russell, R. (2017). Feasibility of Using an Augmented Immersive Virtual Reality Learning Environment to Enhance Music Conducting Skills, *Journal of Music Teacher Education*, *27*(1), 24-35.

Plöchl, M., & Obleser, J. (2017). Do auditory rhythms influence eye movement statistics? *Conference on Music & Eye-Tracking, 2017, Max Planck Institute for Empirical Aesthetics*, p. 19.

Puurtinen, M. (2018). Learning on the job: Rethinks and realizations about eye tracking in music-reading studies, Frontline Learning Research, 6(3) 148-161.

Remount, F., & Budke, A. (2020). Strategies for Successful Learning with Geographical Comics: An Eye-Tracking Study with Young Learners, *Education Sciences*, *10*, 293, doi:10.3390/educsci10100293

Sano, M. (2019). Predicting developmental degrees of music expression in early childhood by machine learning classifiers with 3D motion captured body movement data, *Journal of Educational Research and Reviews (International)*, *7*(7) 155-168.

Sano, M. (2020). Verification of a classification prediction method for the development of musical expression in early childhood using a machine learning method based on 3D motion capture data, *Advances in Social Sciences Research Journal (International)*, *7*(9) 338-358.

Sano, M. (2021). Quantitative Analysis of Eye Movements during Singing of Early Childhood Children, *Research Journal of Education*, *7*(3) 125-140.

Sano, M. (2022). Characteristics of Eye Movements during Musical Expression in Early Childhood by Tonality: Through Quantitative Analysis by Eye Tracking, *Frontiers in Education Technology*, *5*(2) 67-93.

Sato, K., Kaiga, T., & Watabe, S. (2010). Utilization of motion capture to support the mastery of dance, *Journal of the Japan Society for Educational Technology*, *34*, 133 - 136.

Takada, K., Kitasuka, T., & Aritugi, M. (2012). Examination of personal identification method by gait using markerless motion capture device, *Research Report Entertainment Computing*（EC）2012, 1-7.

Thompson, M., & Luck, G. (2012). Exploring relationships between pianists' body movements, their expressive intentions, and structural elements of the music. *Musicae Scientiae*, *16*, 19–40. https://doi.org/10.1177/1029864911423457

Valtakari, N., Hooge1, I., & Viktorsson, C., & Nyström, P., Falck-Ytter, T., & Hessels, R. (2021). Eye tracking in human interaction: Possibilities and limitations, *Behavior Research Methods*, 53, 1592–1608. https://doi.org/10.3758/s13428-020-01517-x/ Published online: 6 January 2021

Vandemoortele, S., Feyaerts, K., Reybrouck, M., De Bièvre, G., Brône, G., & De Baets, T. (2018). Gazing at the partner in musical trios: amobileeye-trackingstudy. *Journal of Eye Movement Research*, *11*(2), 6. DOI: 10.16910/jemr.11.2.6

Watabe, M., Matumura, A., & Uda, N. (2019). An attempt to extract children's tastes from gaze movements and facial expressions in storytelling of picture books, *Proceedings of the 81st National Convention*, 2019(1), 563-564.

The transmission of knowledge in the orchestral conducting act: study of active brain regions during eye contact communication

Adeline Stervinou & Marco Toledo Nascimento, Federal University of Ceará – Sobral, Brazil

Abstract

Studies point to the importance of the conductor's gaze in communicating with the musicians during the practice of a work with orchestra (Johnson et al., 2003; Whitaker, 2011; Poggi et al., 2020), but there are no studies that deal with the transmission of knowledge through this medium. This research aims, based on knowledge in the areas of music education, cognition and neurocognition, to establish relationships between the conductor's gaze and brain activity towards the musicians during the performance of musical works. To do this, we will carry out two series of original tests with the conductor performing with the Ceará Federal University Symphony Orchestra in Sobral (Brazil). One series will be carried out without the orchestra musicians present and the other with the orchestra members. These two series of tests will be designed to enable the team to gain familiarity with the device to be acquired and thus identify the regions of the brain most in demand in the context of communication through the gaze during the transmission of knowledge. The device in question is the fNIRS Pioneer from Plux, which uses Functional Near Infrared Spectrography (fNIRS) technology to observe the relationship between gaze and brain activity during communication. The analysis of the results obtained from these tests, carried out using the software supplied with the device, will allow us to identify the regions of the brain most in demand in the context of communication through the gaze present in the transmission of knowledge within an orchestra and thus help university teachers and conductors in training in the development of their orchestral practices.

Keywords: orchestral conducting, gaze, fNIRS.

Context

Studies in the field of cognition have long emphasized the importance of facial expressions in nonverbal communication and human interactions (Harper et al., 1978; Malandro & Baker, 1983). Others report that conductors who use nonverbal behaviors such as expressive gestures, varied facial expressions, and frequent eye contact are considered more positively by university students compared to conductors who do not use such behaviors, whether in instrumental contexts (Morrison et al., 2009) or choral contexts (Morrison & Selvey, 2014; Nápoles, 2012). Several studies also demonstrate the importance of eye contact between the conductor and musicians (Whitaker, 2011), emphasizing young musicians' preference for conductors who establish visual communication during rehearsals (Johnson et al., 2003). In a recent study, Poggi et al. (2020) propose the coding of conductors' facial expressions and gazes during the performance of a musical piece, where researchers develop a list that categorizes the gestures used by conductors, as well as their meanings (Poggi et al., 2020). In this publication, the authors present the results of three studies that address the topic of musicians' and conductors' bodily communication, all of which highlight the importance of eye contact and facial expressions in conducting. It is important to note that these studies were not conducted in an ecological environment, meaning they were not carried out in a real context but rather through video analysis and interviews with experts.

Research using fNIRS technology primarily focuses on measuring participants' cognitive load during specific tasks, such as airplane take off by pilots (Antoine et al., 2022) or surgical procedures performed by surgeons (Daglius Dias et al., 2018). Consulting these references, we realize that orchestral conducting also requires mental effort necessary to lead the performance of musical works (Stervinou et al., 2022). This effort, depending on the cognitive demand of the piece, could generate a higher cognitive workload due to the numerous pieces of information that need to be processed simultaneously during conducting. With this in mind, we believe it would be interesting to use fNIRS technology combined with an eye-tracker to obtain more information about the conductor's brain activity during musical performances. Some studies combine eye-tracking techniques with fNIRS to explore the relationship between gaze and brain activity. This method allows for the identification of cortical responses to a wide range of stimuli in an alert state (Almajidy et al., 2019; Yücel et al., 2021) during musical presentations (Balardin et al., 2017; Vanzella et al., 2019). Regarding the communication between conductor and musicians, the combination of these two devices will allow for establishing connections between gaze and brain activity during the execution of a musical piece to explain, from a neurocognitive perspective, the importance of gaze in this context.

Thus, this research emerged from the latent lack of studies that, despite highlighting the importance of eye contact communication during orchestral conducting, do not explain the reasons, do not establish the relationship with brain activity, and do not emphasize its utilities, besides the fact that these studies were not conducted in real rehearsal or performance contexts.

The lack of specific references in the fields of music education and cognition justifies our interest in developing research that can explain the importance of the conductor's gaze in the execution of musical works. In the study mentioned above by Poggi et al. (2020), the authors point out two references that use eye-tracking techniques in musical performance situations (Vandemoortele et al., 2018; Fink et al., 2018). However, we did not find references on the use of eye-tracking or fNIRS techniques related to orchestral conducting. Considering the aim of explaining the importance of gaze in the communication between the conductor and musicians through the observation of brain activity, the use of an eye-tracker combined with fNIRS appears to be the most suitable approach to determine, in a real context, the importance of conductor communication during the musicians' musical performance based on the conductor's eye movements during the study of works. This equipment is not yet widely available in Brazil and have not been the subject of research in the field of music education in the country.

We realize that in order to address the communication between the conductor and musicians in musical performance through gaze and assist conductors in their studies, we need to draw from other areas of knowledge such as cognition and new technologies. Thus, this research will contribute both to science in a broader sense and to music education by proposing new teaching strategies and methodologies to enhance the performance of conductors/teachers.

Inquiring

Based on the previously discussed reflection, we have noticed that eye contact communication is considered one of the fundamental elements in the conductor's performance and the execution of members in a university orchestra. However, the consulted authors do not establish a connection between eye contact communication and the transmission of knowledge from the conductor to the

musicians. Therefore, the guiding question of this research would be: from a neurocognitive perspective, how does eye contact communication influence the transmission of knowledge in the act of orchestral conducting?

The general objective of this research is to establish relationships between eye contact and the conductor's brain activity towards the musicians during the performance of musical works. To achieve this objective, we propose the following specific objectives:

- Explain, from a neurocognitive perspective, the importance of eye contact in this context through two experiments.
- Define the visual communication strategies used by conductors.
- Identify the brain activity related to the visual communication factors of the conductor that influence the transmission of knowledge within an orchestra.

Methodology

To achieve these objectives, we will build upon the results of the literature review conducted by our laboratory, which indicated that no research specifically addresses the case of orchestral conducting, and no research focuses on the role of eye contact and brain activity in action during a real-life situation. Therefore, it will be necessary to develop two original experimental protocols adapted to our context to analyze the data obtained and provide answers to our guiding question.

Equipment

The experiment will be based on the use of an eye tracker, a technical device that allows for the collection of temporal and spatial data on the conductor's gaze (positions and duration of fixations, saccades, and pupil dilation) and the fNIRS technology. Data collection with the two equipment will be conducted during the performance of two musical pieces. For this purpose, we intend to use the Pupil Invisible eye tracker and fNIRS Pioneer devices.

This eye tracker model takes the form of glasses equipped with cameras that measure eye movements and directions during conducting to determine where the conductor directs their attention, for how long, and observe which musical aspects are associated with these actions. Our expectation is that using this equipment will allow us to determine the factors that justify the importance of eye contact in the conductor's communicative process with the musicians. The temporal and spatial precision of this eye tracker, as well as its ease of use and installation, will enable the precise and comprehensive capture of the conductor's gaze without disrupting their conducting activity. This stage will also raise awareness among conductors about the use of eye contact in communication with musicians and demonstrate its importance in conducting.

Before designing the experiment, a handling phase of the eye tracker device will be conducted to conceive the tests and master the programs to be used for data collection. It will also be necessary to calibrate the eye tracker by defining the spatial perimeter of analysis, as well as specific points of interest (sheet music, musicians' faces or instruments, groups of musicians, etc.). Next, a pilot test will be conducted with a conductor to assess the functioning of the equipment and software in order to adjust the study before the actual experiment (Hulley, 2007). The conditions for conducting the pilot test will be determined based on the use of the device. In this pre-test phase, participants will also be asked to watch a video of an orchestra performing to test the equipment and associated program.

In Figure 1, we present the eye tracker to be used, the Pupil Invisible model from Pupil Labs, and the Companion device.

Figure 1. Pupil Invisible and Companion device

Site da Pupil Labs https://docs.pupil-labs.com/invisible/explainers/glasses-and-companion-device/

The Companion device is a hardware device very similar to a smartphone that will be dedicated to running the Pupil Invisible Companion application. It will be connected/tuned to work specifically with this glasses model (Pupil Invisible), fully controlling its various functions (https://docs.pupil-labs.com/invisible/explainers/glasses-and-companion-device/).

In addition to the previously mentioned eye tracker, the Near-Infrared Spectroscopy (fNIRS) technique will be used for this experiment, using the fNIRS Pioneer device from Plux (Figure 2).

Figure 2. Plux's Pioneer fNIRS device https://www.pluxbiosignals.com/products/fnirs-pioneer

The fNIRS technique:
employs infrared light, transported through an optical fibre, which irradiates light onto the scalp of the person under examination. The light emitted by the sources propagates through the skull and is captured by the detectors, drawing a banana-shaped curve on the superficial structure of the cortex. Then, changes in the reflection of the light are measured, with the possibility of

distinguishing between levels of oxygenated and deoxygenated blood. This is possible because activation of a specific area of the brain during the performance of a certain function requires an increase in the supply of oxygen and glucose. The haemoglobin present in the blood absorbs the light, allowing the fNIRS detectors to capture changes in the intensity of the reflected light. (Schere et al., 2009, p. 59)

The combination of the fNIRS technique with the eye tracker will allow us, in our context, to emphasize the importance of gaze in the communication between the conductor and the musicians by observing their activity during the performance of instrumental pieces.

Tests

To familiarize ourselves with the device and obtain answers to our guiding question, in addition to conducting readings on the subject, we will carry out a series of tests using the eye-tracker and the fNIRS Pioneer with the conductor acting as the Federal University of Ceará. A first series of tests will be conducted without the orchestra to test the device, handle it, and learn both the data collection and the treatment of results using the equipment and software (Hulley, 2007).

Next, a second series of tests will be conducted with the orchestra to observe the brain regions most involved in eye communication. The participating conductor will wear the device during the performance of musical excerpts. Each excerpt will have a duration between 20 and 30 seconds. This requirement arose after reading studies showing that in the use of the fNIRS device in a musical context, the excerpts should have a duration between 15 and 30 seconds (Ferreri et al., 2013; Bigliassi et al., 2015; Vanzella et al., 2019; Heinze et al., 2019; Jeong et al., 2018). This can be explained by the fact that when there is exposure to a stimulus, the observed area becomes more activated, and after about 6 seconds, this same area begins to be more irrigated and detected by the device (Buxton, 2009, p. 373).

Therefore, the musical excerpts used for our study should have a sufficient duration to consider the reaction time until blood irrigation in order to obtain significant results. Knowing this, a series of 10 excerpts will be selected for the experiment. Each excerpt will be unique and different from the others, and they can be repeated to observe the communication strategies used by the conductors and the associated brain response. Each excerpt should include elements that induce the use of visual communication and require particular attention from the orchestra members, such as different musicians' entrances during the piece, fermatas for the entire orchestra, sudden dynamics changes, etc.

Results analysis

Quantitative analysis

The data from both devices will be collected during the performance of the excerpts by the conductors and musicians. The Pupil Invisible glasses include a series of sensors that provide different types of data. Some data is available in real-time using the elements present in the glasses, while others are computed in the Pupil Cloud after the experiment is conducted. It is possible to calculate the number of fixations and saccades during the observation of a specific scene or situation, record the observed scenes from the Scene Camera, accurately pinpoint where the person is looking, record audio from the scenes, etc. The data collected with the elements included in the glasses is stored in the Pupil Invisible

Companion and can be processed with the Pupil Cloud, a data calculation and analysis tool provided by Pupil Labs. For example, fixations can be processed with the Pupil Cloud after loading the recordings. Regarding the fNIRS, different studies indicate that the experiment should include rest periods to allow for more precise data collection (Richter, 2018; Mandrick, 2013; Heinze et al., 2019; Vanzella et al., 2019). For this reason, 40-second intervals will be added between each played excerpt. During the rest periods, participants will be instructed to remain relaxed and not consciously control their mental activity in any specific way (Mandrick, 2013) and simply wait without doing anything.

By using these data analysis methods, we will obtain results that can be interpreted in relation to the guiding question and the objectives of this research.

Considerations

With the completion of this research, we hope to establish connections between the gaze and the brain activity of the conductor towards the musicians during the performance of musical works, thus explaining, from a neurocognitive perspective, the importance of gaze in the transmission of knowledge within an orchestra. These results will be an important starting point for our field and will potentially assist university professors and aspiring conductors in the development of their orchestral practices. We hope that, through the work carried out by the team members, this research will encourage the development of studies related to music education and cognitive sciences in the state of Ceará. Consequently, we aim to expand the research line of "Cognition and Music Education" within the Cognition and Music Laboratory at UFC Campus de Sobral, with the goal of enhancing the training of undergraduate and graduate students to conduct research in the field of cognitive sciences, opening up new research areas in the region, including literature review in the field and the handling of specific equipment.

References

Almajidy, R. J., Mankodiya, K., Abtahi, M., & Hofmann, U. (2019). A newcomer's guide to functional Near Infrared Spectroscopy experiments. Ieee Reviews. In *Biomedical Engineering*, 1–1. Doi:10.1109/Rbme.2019.2944351

Antoine, M., Ben Abdessalem, H., & Frasson, C. (2022). Cognitive Workload Assessment of Aircraft Pilots. *Journal of Behavioral and Brain Science. 12*, 474-484.

Balardin, J. B., Zimeo Morais, G. A., Furucho, R. A., Trambaiolli, L., Vanzella, P., Biazoli, C., & Sato, J. R. (2017). Imaging brain function with functional near-infrared spectroscopy. In Unconstrained Environments. *Frontiers in Human Neuroscience, 11.* Doi:10.3389/Fnhum.2017.00258

Bigliassi, M., León-Domínguez, U., & Altimari, L. R. (2015). How does the prefrontal cortex "listen" to classical and techno music? A Functional Near-Infrared Spectroscopy (fNIRS) study. *Psychology & Neuroscience, 8*(2), 246–256. Https://Doi.Org/10.1037/H0101064

Buxton, R. (2009). Design and analysis of bold experiments. In *Introduction to functional magnetic resonance imaging: principles and techniques* (pp. 368-399). Cambridge University Press. Doi:10.1017/Cbo9780511605505.019

Daglius Dias, R., Ngo-Howard, M., Boskovski, M., Zenati, M. & Yule, S. (2018). Systematic review of measurement tools to assess surgeons' intraoperative cognitive workload. *British Journal of Surgery, 105.*

Ferreri, L., Aucouturier, J-J., Muthalib, M., Bigand, E., & Bugaiska, A. (2013). Music improves verbal

memory encoding while decreasing prefrontal cortex activity: an fNIRS Study. Frontiers. In *Human Neuroscience, 7*, Article 779, 1-9. Https://Doi.Org/10.3389/Fnhum.2013.00779

Fink, L.K., Lange, E.B., & Groner, R. (2018). The application of eye-tracking in music research. *Journal of Eye Movement Research, 11*, 1-4.

Harper, R. G., Wiens, A. N., & Matarazzo, J. D. (1978). *Nonverbal communication: The state of the art.* John Wiley.

Heinze, R., Vanzella, P., Zimeo Morais, G.A., & Sato, J.R. (2019). Hand motor learning in a musical context and prefrontal cortex hemodynamic response: a Functional Near-Infrared Spectroscopy (fNIRS) Study. *Cognitive Process. 20*(4), 507-513. Doi: 10.1007/S10339-019-00925-Y. Epub. Pmid: 31385142.

Hulley, S. B. (2007). *Designing clinical research*. Lippincott Williams; Wilkins.

Jeong, E., Ryu, H., & Shin, Jh. (2018). High oxygen exchange to music indicates auditory distractibility in acquired brain injury: an fNIRS study with a vector-based phase analysis. *Sci Rep 8*, 16737. Https://Doi.Org/10.1038/S41598-018-35172-2

Johnson, C. M., Fredrickson, W. E., Achey, C. A., & Gentry, G. R. (2003). The effect of nonverbal elements of conducting on the overall evaluation of student and professional conductors. *Journal of Band Research, 38*(2), 64–79.

Malandro, L. A., Baker, L. L. (1983). *Nonverbal communication*. Random house.

Mandrick, K., Derosiere, G., Dray, G., Coulon, D., Micallef, J. P., & Perrey, S. (2013). Prefrontal cortex activity during motor tasks with additional mental load requiring attentional demand: a Near-Infrared Spectroscopy Study. *Neuroscience Research, 76*(3), 156-162.

Morrison, S. J., Price, H. E., Geiger, C., & Cornacchio, R. (2009). The effect of conductor expressivity on ensemble performance evaluation. *Journal of Research in Music Education, 57,* 37–49.

Morrison, S. J., & Selvey, J. D. (2014). The effect of conductor expressivity on choral ensemble evaluation. *Bulletin of The Council for Research in Music Education, 199*, 7–18.

Nápoles, J. (2012). The influences of presentation modes and conducting gestures on the perceptions of expressive choral performance of high school musicians attending a summer choral camp. *International Journal of Music Education*. 2013; 31(3):321-330.

Poggi, I., Ranieri, L., Leone, Y., & Ansani, A. (2020). The power of gaze in music. Leonard Bernstein's conducting eyes. *Multimodal Technologies and Interaction, 4,* 20, 1-22.

Richter, H. O., Forsman, M., Elcadi, G. H., Brautaset, R., Marsh, J. E., & Zetterberg, C. (2018). Prefrontal cortex oxygenation evoked by convergence load under conflicting stimulus-to-accommodation and stimulus-to-vergence eye-movements measured by NIRS. *Frontiers In Human Neuroscience, 12,* 298.

Scherer, L. C., Kahlaoui, K., & Ansaldo, A. I. (2009). Espectrografia Funcional de Infravermelho Próximo (fNIRS): a técnica e sua aplicação em estudos da linguagem. *Neuropsicologia Latinoamericana, 1*(1), 57-62. Recuperado em 06 de outubro de 2023, de http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S2075-94792009000100007&lng=pt&tlng=pt.

Stervinou, A., Pinheiro Lima, H., Paiva Barbosa, K. K., & Lima Chaves, L. (2022). Carga cognitiva de trabalho na performance orquestral: uma revisão integrativa de literatura. *Revista Música*, 22, (2238-7625), 203-217.

Vandemoortele, S., Feyaerts, K., Reybrouck, M., De Bièvre, G., Brône, G., & De Baets, T. (2018).Gazing at the partner in musical trios: A mobile eye-tracking study. *J. Eye Mov. Res., 11*,

1–13.
Vanzella, P., Balardin, J. B., Furucho, R. A., Zimeo Morais, G. A., Braun Janzen, T., Sammler, D., & Sato, J. R. (2019). fNIRS responses in professional violinists while playing duets: evidence for distinct leader and follower roles at the brain level. *Frontiers in Psychology, 10.* Doi:10.3389/Fpsyg.2019.00164
Whitaker, J. A. (2011). High School Band students' and directors' perceptions of verbal and nonverbal teaching behaviors. *Journal of Research in Music Education, 59*, 273–389.
Yücel, M. A., Lühmann, A. V., Scholkmann, F., Gervain, J., Dan, I., Ayaz, H., Boas, D., Cooper, R. J., Culver, J., Elwell, C. E., Eggebrecht, A., Franceschini, M. A., Grova, C., Homae, F., Lesage, F., Obrig, H., Tachtsidis, I., Tak, S., Tong, Y., Torricelli, A., & Wolf, M. (2021). Best practices for fNIRS publications. *Neurophotonics, 8*(1), 012101. Https://Doi.Org/10.1117/1.Nph.8.1.012101.

Improvisation Learning for Teacher Trainees with Hearing Impairment: Insights from Learner and Instructor Reflections

Daisuke Terauchi & Seishiro Sakai, Hiroshima University, Japan

Abstract:

Traditionally, in Japanese primary teacher training programs, classes aimed at improving skills for playing and singing songs on keyboard instruments have mainly focused on existing songs, but they have not emphasized the approach in which students create music on their own using an improvisational method. However, in FY2022, when teacher trainees with hearing impairment (Sakai) enrolled in a class taught by Terauchi, it was determined that the curriculum would be re-designed with an emphasis on improvisation, allowing students to create music based on their own auditory perception. This study aims to discuss the significance of improvisation learning for a student with hearing impairment. To this end, this study reports and reviews the 2022 class by the teacher in charge of the "Music in Elementary Education" class in the elementary education teacher training program and the student with hearing impairment. We used practical reports and reflections to conclude that we needed not only to address the challenges arising from his hearing impairment but also to acknowledge the significance of tailoring the learning content to align with his unique musical values. Moreover, improvisation was proposed as a suitable approach for fostering music creation that authentically reflects students' individual musical values.

Keywords: teacher training program, hearing impairment, elementary music education, keyboard instrument education, improvisation

Introduction

This study discusses "Music in Elementary Education," a subject offered in the Elementary Education Teacher Training Course at Hiroshima University in Japan in the academic year 2022. Terauchi was an instructor of this subject, and Sakai was a student. This course aimed to improve students' keyboard and singing skills. However, because Sakai had hearing impairment, it was necessary to create a curriculum that differed from that of the other students. One feature of the curriculum for Sakai was its emphasis on improvisation. Thus, through reflections on the planning and implementation of this class, this study examined the significance of learning improvisation for students wanting to become teachers.

Learner's Background

In October 2022, Sakai was a second-year student in a Special Needs Education Teacher Training Course at the Faculty of Education at Hiroshima University in Japan and was interested in becoming a special-needs school teacher.

Disability

He was born with sensorineural hearing loss, with a hearing level of approximately 70 dB on both sides. He wears hearing aids daily. Without a hearing aid, he can only perceive loud sounds spoken directly into his ears. With this aid, he typically understands one-on-one conversations in quiet settings. In noisy environments, he might miss or misunderstand spoken words. Hence, his hearing ability is highly

influenced by the environment. Notably, challenges arise in musical activities that mix diverse sounds such as instruments and singing voices.

First, comprehending song lyrics is challenging because of the mixing of various sounds. Next, it is difficult to sing a pitch that matches the voice being heard. In situations where individuals sing with others, he is often unable to recognize the pitch of the notes he sings. The recognition of pitches and chords was verified while playing the piano during discussions with Terauchi before Sakai started taking the "Music in Elementary Education" course. Here, we describe the results of a brief verification conducted by Terauchi and Sakai, which consider the learning contents and activities in "Music in Elementary Education". This was not performed under strict conditions, as it was not intended to be precise.

After verifying the results with a piano, distinguishing the difference in pitch between two notes in any register was found to be difficult when the interval was narrower than perfect 4th. In cases where the interval is narrower than approximately a fourth, he recognizes that the two notes have almost the same pitch. However, when the pitch difference was wider than a perfect fifth interval, he recognized the difference in pitch between the two notes. Moreover, recognizing the chord timbres is difficult. For example, he cannot perceive any difference in mood in chord progression with the base notes between I-IV-V-I in C major (C-F- G-C) and I-IV-V-I in C minor (Cm-Fm-G-Cm) on the piano. However, it was possible to grasp the rhythm.[13]

Previous Engagement with Music

While many hearing individuals relish music, Sakai seldom chooses to listen to it as his hobby. He does not have favorite musicians or songs. However, he has scattered impressions of sound effects from TV and mobile games. He is averse to singing because of his disability and is reluctant to sing songs with friends, for example, while performing karaoke. Alternatively, he plays instruments without significant difficulty.

During music classes in elementary and junior high school, he interacted with instruments, such as the recorder and guitar, and experienced no issues while practicing them. However, he was not aware of the pitch produced by the instrument. Auditory information focused on the grasping rhythm. Furthermore, the sense of finger movement and visual information obtained from musical scores and other sources played an important role.

Outline of "Music in Elementary Education" and Learning Contents in the Academic Year 2022

Outline of the Course

The "Music in Elementary Education" course usually focuses on acquiring the skills of singing with accompaniment using keyboard instruments. There are 16 students. One graduate student serves as a Teaching Assistant (TA) to provide instructional support.

[13] Based on five papers published between 1987 and 1998, Hayashida (2015) suggested that among rhythm, melody, and harmony, rhythm was most easily perceived by those with severe hearing impairments (p. 227).

In past years, Terauchi has focused on two types of studies:

1. to improve students' skills in playing and singing songs notated in staff notation, focusing on 24 songs called "Common Materials," in the Courses of Study; and
2. to improve the skill to play numbers such as pop songs and songs in textbooks using a lead sheet including only lyrics and chord symbols. The course's accomplishments are showcased in two in- class concerts held throughout the term.

The above information details Terauchi's class structure. Through discussions between Terauchi and Sakai before the start of the class, Terauchi realized that it was necessary not only to support the difficulties and inconveniences caused by hearing impairment but also to modify the curriculum to suit Sakai.

The Curriculum for Sakai

The curriculum for Sakai was based on four aspects: characteristics as part of the elementary education teacher training curriculum, future career goals, disability, and interests. Terauchi formulated the curriculum by balancing these factors and outlined four learning areas with their specific weights (Table 1). Learning Content 1 and 2 were the same as in previous years, as described in the previous section. However, the curriculum for Sakai placed less emphasis on these contents. Learning Content 3 is improvisation. Until the academic year 2021, little emphasis was placed on this activity in class. However, Terauchi decided to emphasize it as he expected improvisation to be of great significance to Sakai.

Solo improvisation was introduced for two reasons. First, Terauchi wanted to encourage Sakai to play with greater awareness of the sounds produced. As described in the Previous Engagement with Music section, Sakai played instruments in elementary and junior high school without much regard for the pitch of the notes he was playing, relying instead on rhythm, finger movements, and visual information from musical scores.

To encourage Sakai to be more attentive to the sounds he was creating, Sakai needed to use sounds that were easy for him to hear. Second, solo improvisation allows individuals to create music that reflects their musical values. The music created by Sakai, based on his sense of values and hearing conditions, is expected to differ in conception and musical quality from music created by people with normal hearing.

The reasons for setting up collaborative improvisation activities are as follows. First, Sakai expressed interest in piano duet improvisation. Second, Sakai mentioned teaching in special needs schools as a possible future career path. Improvisational expression is formally included in the elementary school music curriculum (Ministry of Education, Culture, Sports, Science and Technology, 2017); particularly in the case of special needs classes and schools, where students with diverse characteristics are enrolled, the skill of improvising with others has even greater significance than in regular schools and classes.[14]

[14] Nagasugi and Wakanabe (2021) stated that improvisational music expression is suitable for promoting active participation by using performance styles that match children's disabilities. Furthermore, Araki and Kinoshita (2022) reported on the

In addition to the piano, a mouth harp was used for both solo and collaborative improvisations. There are two reasons for this. First, the mouth harp is played directly by contacting the teeth, and Terauchi expected the sound to be easily recognized through bone conduction.[15] Second, Sakai had no difficulty grasping rhythm. As the mouth harp places a higher emphasis on rhythm than pitch, this instrument was less affected by Sakai's disability.

Learning Content 4 is not described here because it has little relation to the purpose of this study. The next section reports on Sakai's actual learning, focusing on improvisation.

Report and Reflection on the Practice of Improvisation

Report on the Practice of Improvisation

The first two months focused on mouth harp improvisation, and the third and later months focused on piano improvisation. In class, Sakai improvised on the mouth harp and piano, both solo and collaboratively with the instructor and the TA. During piano improvisation, Sakai played with the instructor and with other students in four- or six-hand improvisational pieces. He also improvised with the TA based on impressions from The Scream by Edvard Munch.

Approximately two months into the course, Sakai performed a mouth harp solo improvisation at an interim concert. Two months later, he performed a solo piano improvisation at a final concert.

Learner Reflections

The mouth harp was the first instrument Sakai had used, and he realized that it considerably differed from the recorder and other instruments that he had used in the past. With the instruments used thus far, it was important to learn the physical movements, such as hand and finger movements, to reproduce the existing music piece. However, while playing the mouth harp, he was more conscious of the tone through bone conduction via the teeth. Performing with this awareness allowed him to enjoy the sensation of connecting with the music, but it also made him feel tired. Furthermore, he describes his observations regarding the potential of the mouth harp as a learning material in special needs education. He can produce various expressions with the mouth harp by changing his mouth shape, tongue position, and breaths.

Such an exploration could also be connected to autonomous learning activities, known as Jiritsu-Katsudo in Japanese, for hearing-impaired students. Sakuta et al. (2018) mention content that makes students aware of breathing, vocalization, pronunciation, flexibility, and promotion of the speech organs, as well as mouth shape and tongue position during vocal exercises as an example of an instruction that relates music classes to autonomous activities. Sakai felt that playing the mouth harp could be positioned as an activity that relates autonomous activities to music classes as a fun way to raise awareness of mouth shape and tongue position.

practice of piano duets in which the instructor played accompanied by a cycle chord while the learner performed free improvisation in a special support school for children with physical disabilities. There are also many practical reports focusing on improvisational expressions by students in the field of special needs education (e.g., Oka, 2015).

[15] Several studies have focused on hearing through bone conduction from teeth (e.g., Muramatsu et al., 2011; Ozer et al., 2002). Additionally, Ears & Hearing UK developed hearing aids that utilize bone conduction from the teeth.

Regarding the piano, in solo improvisation, Sakai performed with an awareness of the pitch and strength of the sounds, mainly using the range of notes that he could comfortably feel (C2-G6). When improvising his music, he was mainly conscious of the changes in rhythm and strength of the keys played. In particular, memories of impressive sound effects that he had heard repeatedly on TV or in mobile games were sometimes actively referred to when creating rhythms.

In class piano duets or trios, it was interesting to note that the mood and length of improvisation varied among co-players. However, the mixture of sounds from all the players caused confusion, making music creation challenging.

In these duets or trios, he often felt differences in each musicality because of the differences in the recognition of sound intensity between people with normal hearing and him. Even when he played with awareness of the weakest sound, he could perceive in the post-performance reflection that the performance was generally louder (fewer soft sounds) for people with normal hearing. Furthermore, in the improvisation with the TA based on the painting, because they had a small discussion about the scene intended to be expressed before the performance, he felt as if he could verbalize the music.

The self-evaluation of the performance results differed between performances. Reflecting on the self-evaluation perspectives, more emphasis seems to have been placed on rhythm and tempo than on pitch or harmony.

Instructor Reflections

In this section, Terauchi, as an instructor, reflects on Sakai's learning. Terauchi stated the precondition that he could not experience how Sakai's improvisations sounded to his ears. Therefore, Terauchi needed to ask Sakai about the intentions behind his improvisations after each performance and emphasized that his feedback was based on how it sounded to his normal-hearing ear. After each performance, Sakai briefly verbalized what he emphasized and how he tried to realize his musical intentions. It seemed interesting for the other students with normal hearing.

The musical results of each performance were Impressive, with a sense of Intentionality and ingenuity. In the mouth harp performance, Sakai showed creativity in varying the density and rhythm of the notes, and in interweaving and contrasting regular and irregular beat sections. In the piano performance, Sakai combined single notes, chords, clusters, and glissandos, and demonstrated creativity in the density, tempo, and dynamics of the notes. Additionally, when performing with others on any instrument, he instantly grasped his collaborator's characteristics of playing with either similar or contrasting textures, demonstrating a strong awareness of their musical relationships.

Furthermore, as discussed in the Learner Reflections section, Sakai plans to connect music class learning with autonomous activities by playing the mouth harp and exploring whether mouth harps can truly be used for autonomous activities, which is an interesting idea from a special-needs education perspective. This outcome was unexpected to Terauchi.

Discussion and Final thoughts

In “Music in Elementary Education” in 2022, Terauchi strongly felt the need to address not only the challenges arising from his hearing impairment but also to acknowledge the significance of tailoring the learning content to align with his unique musical values. One of the reasons for this belief is his perception of the diversity of musical values. While the Courses of Study express musical values in terms of “goodness,” “interest,” and “beauty,” these values differ among individuals, regardless of impairment. However, for people with hearing impairments, musical values may be more diverse because of the differences in the way they perceive sound.

In principle, preexisting music is transmitted from people with normal hearing to other people with normal hearing. Many people with hearing impairments find value in such music. However, as Sakai was not familiar with “Common Materials” or pop songs, it was more important to work on creating his music—that he felt was “good,” “interesting,” and “beautiful”—than to listen or play to pre-existing music. The improvised performances presented by Sakai in the class concerts were all music containing these features and did not resemble “Common Materials” or pop songs. Sakai’s reflections on his improvisations discussed in the previous section show that he explored and confronted his senses and sensibilities and determined whether he found them enjoyable. This indicates that Sakai positioned improvisation as a self-exploring activity. Improvisation is an activity of expression for others, such as an audience, and of exploring one’s senses and sensibilities (e.g., Nachmanovitch, 1991; Sarath, 1996).

Improvisation is considered a suitable way to improve performance skills without difficulty. This is because performing while listening to his own sound and creating his own music is more appropriate for performing at a level of difficulty that matches his skills, rather than relying solely on rhythm, finger movement sensation, and visual information obtained from music scores, as Sakai did in elementary and junior high school. Moreover, Sakai struggled to sing with accompaniment. Attempting to improve performance through pre-existing music, as peers do, could skew the enjoyment–effort ratio and effort–skill balance.

Among the practices and research in special needs education, certain approaches assume that the objective for individuals with hearing impairments aligns with that for those with normal hearing. For example, Suenari (2014) states “even if a student has a very severe hearing loss, the teaching of music should be the same as that for a student with normal hearing” (p. 164). Furthermore, Yamamoto (2019) states that “the ensemble in which everyone was perfectly aligned unfolded” as an outcome obtained by devising support (pp. 50–51). Although we deeply admire the ingenuity of instructors’ support for children in these practices, when considering a curriculum for learners with disabilities, it is necessary to consider the goals and the learning process to reach them from a different perspective than that of learners with normal hearing, rather than setting the same general goals as those for normal learners, as symbolized by the *ensemble*.

This study discussed the significance of setting appropriate learning content for learners with hearing impairments based not only on the presence or absence and degree of disability but also on the learner’s musical values and significance of improvisation. However, these principles are not limited to learners with disabilities.

The traditional emphasis in the elementary school teacher-training curriculum has been on improving performance skills in keyboard instruments as a class subject. However, considering the diversification of learning content and activities in elementary music courses based on the Courses of Study and textbooks and the increasing use of alternative methods (e.g., guitar, recording media, and automatic accompaniment) to accompany singing, teachers' keyboard skills have become relatively less important.

One limitation of this study is its reliance on a single case study. Nevertheless, given that the exploration of learning improvisation for students with hearing impairment by researchers (as stakeholders both instructor and learner) remains relatively uncharted, we anticipate that our class practice, the findings, and discourse will offer valuable insights for enhancing practices within the field of music education. As mentioned above, improvisational expression is officially included in elementary music courses (Ministry of Education, Culture, Sports, Science and Technology, 2017). This is significant in that the self-exploratory experience serves as a foundation for music activities in school education, in which students explore their own *goodness*, *interest*, and *beauty*. In the future, Terauchi plans to restructure the curriculum of "Music in Elementary Education" to position solo and duet improvisation more actively.

Acknowledgments

We would like to thank the Teaching Assistant and all the students who participated in these classes.

Appendix

This paper was jointly reviewed by Terauchi and Sakai, with Terauchi writing Chapters of Introduction, Outline of "Music in Elementary Education" and Learning Contents in the Academic Year 2022, Sections of Instructor Reflections of the Chapter Report and Reflection on the Practice of Improvisation, Discussion and Final thoughts, and Sakai, writing Chapter of Learner's Background, Sections of Report on the Practice of Improvisation and Learner Reflections of the Chapter Report and Reflection on the Practice of Improvisation.

References

Araki, T., & Kinoshita, K. (2022). [Improvisational creative activities using piano at special needs schools for physically disabled students] Shitai Fujiyu Tokubetsu Shien Gakko ni okeru Piano wo Mochiita Sokkyo-teki na Sosaku Katsudo (in Japanese). *Japanese Journal of Music Education Practice, 20*, 121–130.

Ears & Hearing UK. (n.d.). About the Soundbite. Ears & Hearing UK. Date retrieved August 14, 2023. https://earsandhearinguk.com/ear/deafness/treatments-surgical/implants/bone-conduction-devices/hearing-implants-soundbite/

Hayashida, M. (2015). Accuracy of rhythm reproduction by students with hearing impairments: Analysis based on factors of rhythm patterns, addition of stress accent, and music appreciation time in everyday life. *The Japan Journal of Logopedics and Phoniatrics*, *56*(3), 226–235.

Ministry of Education, Culture, Sports, Science and Technology, Japan. (2017). [The exposition of the courses of study (music)] Shogakko Gakushu Shido Yoryo (Heisei 29 nen Kokuji) Kaisetsu Ongaku hen (in Japanese). http://www.mext.go.jp/component/a_menu/education/micro_detail/

icsFiles/afieldfile/2019/03/18/1387017_007.pdf.
Muramatsu, M., Kurosawa, J., Oikawa, Y., & Yamasaki, Y. (2011). [Communication aid focusing on bone conduction through teeth] Ha wo Kaishita Kotsu-Dendo ni Chakumoku Shita Communication Aid (in Japanese). *The 2011 Autumn meeting of the Acoustical Society of Japan*, 1533–1534.
Nachmanovitch, S. (1991). *Free play: Improvisation in life and art*. Jeremy P. Tarcher/Putnam.
Nagasugi, R., & Wakanabe, K. (2021). Improvisational activities of musical expression in children with disabilities: Percussionist–led workshops in special–needs classes. *Japanese Journal of Qualitative Psychology*, *20*, 243–249.
Oka, H. (2015). [Music making in special needs schools: relationships between instrumental characteristics and developmental characteristics of students] Tokubetsu Shien Gakko ni okeru Ongaku Zukuri: Gakki no Tokucho to Seito no Hattatsu-teki Tokucho tono Kanren (in Japanese). *Japanese Journal of Music Education Practice, 12*(2), 108–119.
Ozer, E., Adelman, C., Freeman, S., & Sohmer, H. (2002). Bone conduction hearing on the teeth of the lower jaw. *Journal of Basic and Clinical Physiology and Pharmacology*, *13*(2), 89–96.
Sakuta, K., Yuasa, T., & Kato, Y. (2018). An examination of approaches to music education class in the elementary department of school for the deaf: Questionnaire for the teacher in charge of music class. *The Japanese Journal of Special Needs Education Research*, *12*, 83–94.
Sarath, E. (1996). A new look at improvisation. *Journal of Music Theory*, *40*(1), 1–38.
Suenari, T. (2014). [Practice of music education in schools for the deaf: fostering children who “listen with their eyes, ears, and hearts”] Rougakko ni okeru Ongaku Kyoiku no Jissen: “Me de, Mimi de, Kokoro de Kiku” Kodomotachi wo Sodateru (in Japanese). *Japanese Journal of Music Education Practice, 11*(2), 154–156.
Yamamoto, K. (2019). [Developing foundational skills for deaf children to actively learn in music education] Chokaku-Shogaiji ga Ongaku-ka de Shutai-teki ni Gakushu suru tame no Kiso-teki na Chikara no Ikusei (in Japanese). [*34th Tosho Educational Award Winning Paper Collection*] Dai 34 kai Tosho Kyoiku-sho Nyusho Ronbun-shu (in Japanese) (pp. 44–51). Tokyo Shoseki Chuo Kyoiku Kenkyujo.

Table 1. Curriculum setting for “Music in Elementary Education” in 2022

	For other students	For Sakai
Learning Content 1	Singing with accompaniment of 24 songs called “Common Materials” (based on staff notation) Proportion of the content in the overall learning: Heavy	To understand the 24 songs called “Common Materials” Proportion of the content in the overall learning: Light
Learning Content 2	Singing accompanied by songs other than the 24 songs called “Common Materials”	Experiencing various musical instruments Proportion of the content in the overall learning: Light
Learning Content 3	Improvisation on piano or mouth harp (solo) Proportion of the content in the overall learning: Heavy Improvisation on piano or mouth harp (duo or more) Proportion of the content in the overall learning: Heavy	
Learning Content 4	To reflect on their relationships with music and think about music culture (the relationship between music and people) through discussions in the class. Proportion of the content in the overall learning: Light	

Utilizing technology to bridge a cross-curricular education lesson involving science, music, and visual art classes

Lisa Tokie, Kunitachi College of Music, Japan

Abstract

The author conducted a field survey to determine what music production software schools in countries outside Japan utilize. Many foreign schools the author visited used software from the German company Ableton. The software, called Ableton Live, is a digital audio workstation. Despite its versatile sounds and intuitive creation process, the author is unaware of Japanese schools that use this software.

The author decided to introduce a simpler free version of the Ableton software in a junior high school class in Japan. It is a cross-curricular STEAM Education class. In Japan, STEAM Education lessons often do not incorporate music activities. However, the author designed this class to use technology as a bridge between the music, science, and visual art classes. The aim of the lecture was to encourage students to apply their strengths and interests in one or more of these classes to help them discover new ideas and improve in subjects where they may not be as proficient.

The author analyzed a 50-minute lesson called Science and Music. The author planned the lesson which was taught by a science teacher at F Junior High School. It involved two second-grade classes of 35 and 36 students. In these classes, students used the free version of the Ableton software, which consists of 16 drum, bass, chord, and melody patterns, to create music to be incorporated with animated images symbolizing an atom or molecule. Classmates consulted each other during the creation activity.

After the students completed the activity, the author analyzed the students' opinions they had written both before and after the class. About 20% of the students who, before the lesson, stated that they were not good at science wrote afterward that they had become interested in it. Likewise, about 25% of the students who had written that they were not good at music gave positive feedback after completing the assignment.

With the help of the music production software, most students completed the project without relying on musical knowledge or performance skills. Student feedback indicated that the cross-curricular STEAM approach deepened their interest in music, science, and art.
Further, as a byproduct of the cross-curricular activities, the teacher testified that he was able to broaden his teaching methods. He also said that the cross-curricular approach widened his understanding of his students' variety of expressions.

Keywords: Cross-curricular education, music production software, creation activity, student feedback

Background of the Study

The author, who attended the ISME 2022 July conference as an oral presenter, discussed the use of technology in classrooms with other participants. From the exchange of information with the overseas

presenters, the author learned that, while, in Japan, free music creation software, primarily GarageBand and Song Maker, are used in public and private schools, many teachers in New Zealand and the United Kingdom use a music production software by a German company called Ableton.

Teachers in Japan rarely use the Ableton software as it is not free and has more complicated functions than the free software suggested by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). However, according to the teachers who use it, the Ableton software is more intuitive than GarageBand and Song Maker and produces more diverse sounds.

During a research visit to junior high schools in New Zealand and the United Kingdom, the author witnessed students using the Ableton software in their music classes. These students appeared lively as they proactively created danceable sounds such as those heard in dance clubs. The author believes that the sounds achievable using the Ableton software seemed richer in tone than those created using the free software available to Japanese teachers.

Reported Work Objectives of the Study

Based on the overseas field research

The author began a field survey of music classes in three countries to learn how teachers utilized music production software overseas. First, in September of 2022, the author traveled to Auckland and Christchurch, New Zealand. There they discovered that all the schools used Ableton software.

After that, in February 2023, they visited eight elementary and junior high schools in Singapore. There, teachers primarily used free software such as BandLab and GarageBand. Here, as in Japan, teachers rarely used Ableton software.

Finally, in March and April of 2023, we visited three secondary schools in the suburbs of London, England. There, we discovered that teachers primarily used Ableton Live, as in New Zealand.

Free software produced by Ableton

After finishing the survey, the author created a lesson plan using Ableton software. However, due to budget limitations, instead of the more expensive Ableton Live, commonly used in the London schools we visited, we chose the music creation program used by Chisnallwood Junior High School in Christchurch, New Zealand
(See Note). The author chose it because students could access it for free using tablet computers and other devices used in Japanese elementary and junior high schools.

Method

The author and teachers of the cross-curricular lesson titled the 50-minute class "Atomic and Molecular Modeling Featuring Ableton Production Software.” In the lesson plan, the students would choose one atom or molecule of interest and study its characteristics in detail during the first 20 minutes of the class. After that, they would draw images or, using available software, make audiovisual presentations connected to their choice. In the final portion of the class, they would compose background music to accompany their images or animations.

During the class, the science teacher asked, “What sounds should be used to create the image of an atom or a molecule, and what combination of the four musical elements should be chosen to embody that image?” Students were then told to choose their answers from various sound options provided by music-producing software. By doing so, the authors believed that students would gain a deeper understanding of the science involved.

To compose the background music, students used music production software. Most students used the Ableton software. However, one student chose to create her work using GarageBand. Of the students who used the Ableton software, the teacher asked the students to select sounds from the four available elements of music provided by the software. These included various drum, bass, chord, and melody patterns.

The teachers also asked the students to comment on their musical selections and to write their opinions about the musical production software. Using a Cloud service called Microsoft Forms, students and teachers could view all the comments.

Comments by Student A

About her musical selections, Student A wrote, “I chose the second drum pattern for titanium because I wanted it to be cheerful and bright because titanium was found in a river in England. I chose the first bass pattern to create a foreign feeling. I chose the fourth chord pattern because it also had a foreign feel. I chose not to use one of the melody patterns because melodies do not fit the rap style I wanted to incorporate.”

Student A also wrote, “With GarageBand, you have to make music from scratch, so you need a lot of knowledge, but I thought (the Ableton software) was great because you could create your rhythm and sound combinations just by listening to the available selections.

Comments by Student B

Student B wrote about her musical selections, “I chose antimony. It is highly toxic and designated as a harmful substance, so I selected the first drum pattern as it had a hard feel. I chose the fourth bass pattern because of its somewhat distorted sound, like it was performed on the surface of a beautiful piece of metal. I chose the third chord pattern because the sound was high and gave me the impression of sparkling metal. (See Figure 1.)

She further noted, "One possible origin of the word antimony, there are various theories, comes from the Greek, "anti-monos," which means "not lonely,” so I chose Melody No. 3 because I felt it expressed the unique beauty of semi-metals, which are crystalline, shining, and translucent. I also thought the mysterious feeling was perfect.”

Student B continued, “My impression of the Ableton music creation app is that it was interesting to create *cool* music by pushing buttons and making choices. You can find the sound you like and create your music by selecting it!"

Comments by Student C
Student C chose zinc. She wrote, "As zinc is heavy, I chose a drum sound that accentuated that fact. For the bass sound, I wanted it to have a sense of stability that matches the heavy feeling of zinc."

She chose not to use any of the chords or melodies. She felt that the chord sounds did not match the heavy sounds of the drum and bass sound. As for the melody, she felt the selections were too light and poppy.

As for the software, she wrote, "It was very easy to use. I was very impressed by how much the rhythm and musical structure could be changed just by changing the combination of the blocks. This kind of functionality is very fresh, so I felt a connection to the music production aspect of the project."

Theory
The author's cross-disciplinary class is based on Digital Taxonomy, a modern version of Learning and Education in the Creative Society (Tanaka 2020). It also builds on Papert's theory that creation is essential to learning. It incorporates music, science, technology, and art. The author placed the most important value on student discoveries and creations, including audiovisual productions and musical compositions.

Seymour Papert, whose educational theories are built on those of Piaget's, emphasized the experience of creation, calling it "constructionism." He stated that learners construct mental models to understand the world but must then manifest them into "objects-to-think-with" to complete the process. (Papert, 1980).

Takashi Iba, expanding on Piaget's and Papert's ideas, said that "learning by creating," which goes one step further than "learning by doing," will be the central learning method in the creative society of the future (Iba, 2019). This class follows the idea that creation is essential for student learning.

In Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Economy, Trade and Industry (METI) created a "Future Classrooms" project (METI, 2020) (MEXT, 2021). The program combines the efficient acquisition of knowledge with the cultivation of the ability to identify creative challenges and solutions, with a focus on the three pillars of individually optimized learning, integration of liberal arts and science (STEAM) and solutions to societal challenges, to achieve "Future Classrooms" designed for proactive learning

Result of the Study
After the class, the author analyzed the students' works. However. of the 71 students in the two classes, only 38 students uploaded their creative works onto Microsoft Forums. The author attributed the lack of submissions from most of the 32 students to time constraints. Some students only completed one of the two creative projects. Also, the teachers believe a few students did not wish to share their projects with the class.

This cross-curricular class included the study of elemental symbols in science, the study of musical elements in music, and the study of creative arts and design in art (See Figure 2). The use of software is taught in technology and home economics. However, as students were already proficient in the technologies used in the cross-curricular class, technology and home economics class were not included in the lesson planning.

The author analyzed the visual presentations and their musical accompaniments in terms of their degree of completion. She placed the students in the following categories:

- Students who superimposed the image of the background of the elements on the music.
- Students who superimposed the image of the elements on the music.
- Students who chose the sound module based on whether they liked it.
- Students who understood the four elements of music (rhythm, bass, harmony, and melody).
- Students who showed awareness of the effects of the overlap of the four elements of music.
- Students who tried to match the meaning of the images with that of the music.
- Students who selected sounds only as background music.
- Students who successfully combined music and visual imagery.
- Students who could not finish the project during the available time.
- Students who could explain their creations using musical terminology.
- Students who used existing forms of music, such as rap, as a model for their creations.
- Students who created music passively and without musical intention.
- Differences in the level of work depending on the ability to create images.
- Differences in the level of student creativity.
- Differences in abilities to perceive sound.

The author noted that the software allowed students to improvise, leading to awareness and knowledge. The author sees this as a strength of the Ableton music creation support software. The quality of the musical works, she noted, was no longer dependent on existing knowledge and experience levels.

After the students completed the activity, the author analyzed student opinions written both before and after the class. About 20% of the students who, before the lesson, stated that they were not good at science wrote afterward that they had become interested in it. Likewise, about 25% of the students who had written that they were not good at music gave positive feedback after completing the assignment.

According to the science teacher in charge of the project, one of the students, who was not very good at science but had a keen interest in music and art, became interested in atoms and molecules while working on his audiovisual presentation and background music. Likewise, he noted that another student, who was not good at music or art, worked very hard to create an audiovisual presentation and background music that matched the ideas and concepts he learned in science class. In this respect, he noted, the class was a success.

The feedback written by the students after the completion of the project indicated that the cross-curricular activities successfully increased their interest levels in science and their motivation to learn. Further, the author believes that the results of this project can be duplicated with other subjects.

Effectiveness of Cross-Curricular and Other Approaches

The science teacher conducted this cross-curricular class alone. When this program is repeated during the coming school year, the author plans to include teachers from the music, art, and technology departments. The author believes that this greater level of teacher participation will provide more assistance to students and improve student outcomes.

The author found that during this one-hour class, students with a higher level of knowledge and skill in video production were able to complete their tasks, leading to an improvement in their knowledge of science and music, respectively. However, some students with fewer existing skills had difficulty completing the work on time.

In addition, the author discovered that music production software that allows students to instinctively select pre-existing musical sounds is easier for students with beginner-level abilities. This allows students to complete more work in a shorter period of time, increasing the chances of student success.

However, even though this software reduces the choices students need to make, some students will still need extra help to complete the tasks. Teachers should factor this into their plans so that students who might have difficulties with one or more aspects of the lesson get the help they need. The goals are to help all students grow intellectually and to improve their motivation.

In the past, only students with excellent performance skills could participate in music creation lessons, but in the future, through the advent of new technologies and teaching methods, all students, regardless of their skills or musical knowledge, will be able to engage in musical activities that make the most of their individual sensitivities.

To paraphrase Steve Jobs, technology married with liberal arts and the humanities yields results that make the heart sing (Asahi Newspaper, 2012). With adequate planning by teachers, technology can be the glue that binds cross-curricular lessons and allows students to expand their areas of expertise and improve their enthusiasm levels. The author believes this study is a blueprint for future cross-curricular programs in Japan.

Acknowledgment

The author would like to express special thanks to the F Junior High School teachers who supported this research.

References

Asahi Newspaper (2012). What did Steve Jobs mean by “Technology married with Liberal Arts” in his last speech? https://english.stackexchange.com/questions/65292/what-did-steve-jobs-mean-by-technology-married-with-liberal-arts-in-his-last-s

Iba, T. (Ed.) (2019). Creative Learning: Learning and Education in the Creative Society, Keio University Press, Tokyo, pp. 30-45.

Ministry of Economy, Trade and Industry, METI, (2020). Project for Promotion of Cooperation between Learning and Society, "Classroom of the Future" project to create places for learning, Final Report, Tokyo

Ministry of Education, Culture, Sports, Science and Technology, MEXT, (2021). EDU-Port Japan. https://www.eduport.mext.go.jp/en/journal/needs-seeds-en/meti-future-classroom-digika/

Papert, S. (1980). Mindstorms. Children, Computers, and Powerful Ideas, Basic Books, INC. Tanaka, K. (2020). Creative Learning in the Era of One Person, One Machine (Digital Taxonomy). https://www.thinglink.com/scene/1396626860061753347

Note

Ableton music software (free version), Get started making music. https://learningmusic.ableton.com/

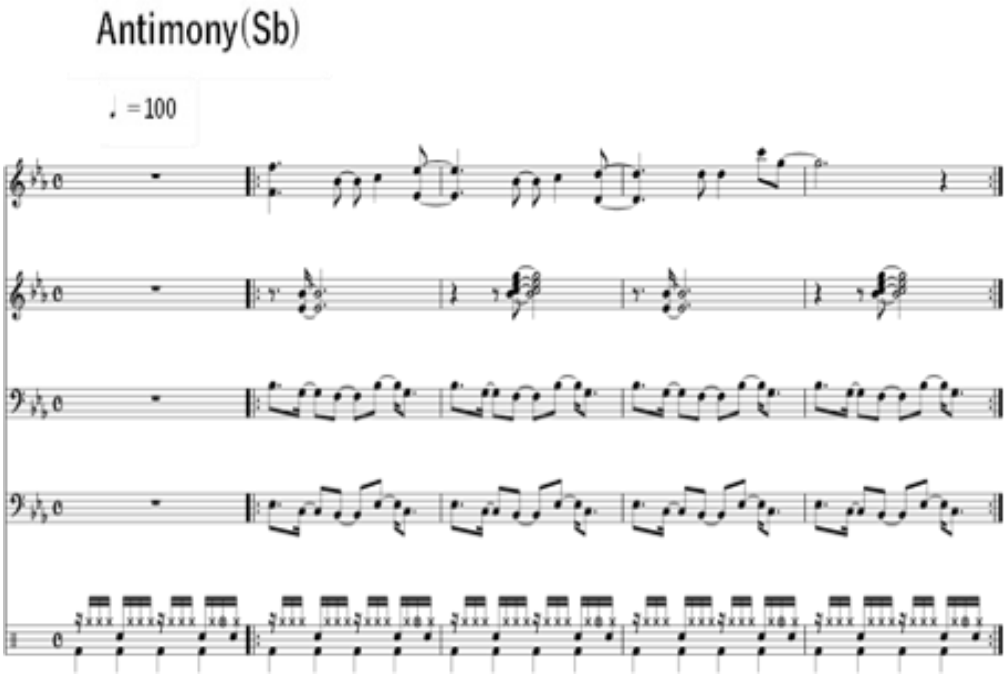


Figure 1. Student's work composed by music creation software (Transliteration into musical notes was done by the author)

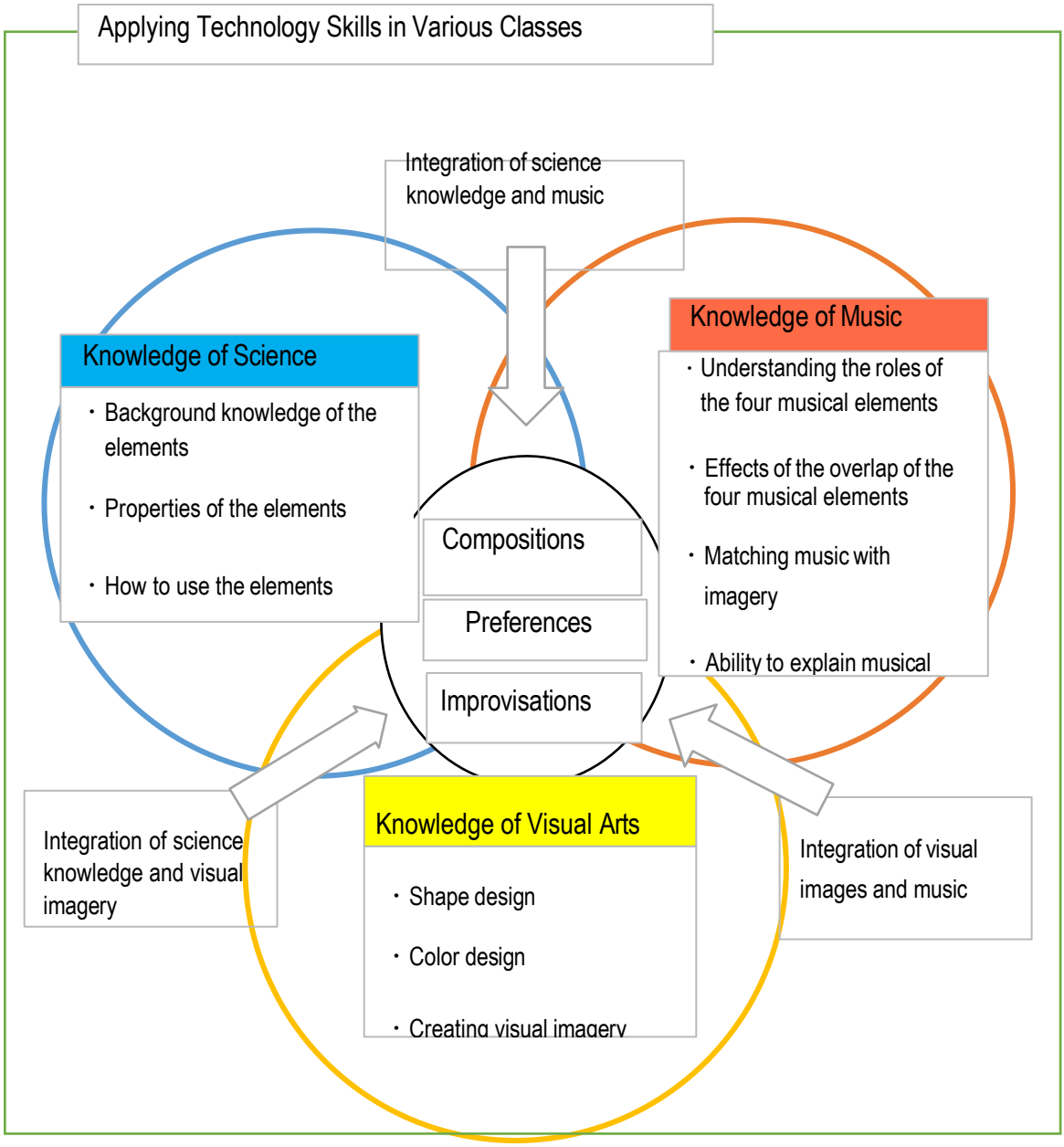


Figure 2. Content of the cross-curricular lesson plan

Learning music by playing an instrument: self-regulated learning for instrumental music education - validation of the theoretical framework

Marco Antonio Toledo Nascimento & Adeline Stervinou, Federal University of Ceará at Sobral, Brazil

Abstract

A new transposition of the self-regulated learning model for reading "learning by reading" (Cartier, 2007) to learning a musical instrument is being proposed (Nascimento, 2022). After developing the theoretical foundations for the creation of a self-regulated learning model aimed at "learning music by playing a musical instrument", it is necessary to validate the theoretical model through empirical studies, as well as reproducing the model in context, in this case amateur music bands. Thus, the project in question aims to validate the model in four music bands, one in the state of Ceará, one in the state of Minas Gerais and two in Canada, as well as to reproduce the model in loco to be carried out in an amateur music band in a university extension project in Sobral, Ceará. The research methodology for the empirical foundations adopted the precepts of speculative research (Van Der Maren, 1996). It is hoped that this research will propose a model of self-regulated learning that can be applied to the teaching of musical instruments in Brazilian music bands, fully meeting all the aspects of this theoretical construct and capable of contributing to the formation of 21st century citizens who are protagonists of their learning.

Keywords: self-regulated learning; instrumental didactics; learning protagonism; wind band

Self-regulated learning

Self-regulated learning is currently one of the main educational goals, gaining prominence in the member countries of the Organization for Economic Cooperation and Development (OECD) and in the implementation of the Program for International Student Assessment (PISA) (Famose & Margnes, 2016). Defined as "the process by which individuals activate, guide, monitor and take responsibility for their own learning" (Boruchovitch & Gomes, 2019, p. 9), self-regulated learning acts as the main factor in the acquisition of the key competence "learning to learn". If developed during schooling, self-regulated learning can give students the ability to be the protagonists of their own learning, an ability that has been shown to be fundamental in all segments of schooling, especially in countries facing educational problems, such as Brazil (Boruchovitch & Gomes, 2019). In a recent publication, Ganda and Boruchovitch highlight evidence of the positive impact on student learning of intervention programs in self-regulated learning at national and international level over the last 15 years. However, the vast majority of these studies are predominantly about foreign language learning (Ganda & Boruchovitch, 2019).

Self-regulated learning and music

The approach chosen by the research on music and self-regulated learning was that established by the sociocognitivist theoretical current, more precisely the Social Cognitive Theory developed by Albert Bandura (Bandura, 2007). In 1991 Bandura developed the theoretical framework that underpins studies

of self-regulation of learning from a socio-cognitive perspective, called the Social Cognitive Theory of Self-Regulation (Bandura, 1991). Among the followers who have most influenced the educational field are Zimmerman, Schunk and Pajares (Azzi, 2015). This Bandura-based approach understands that self-regulated learning develops itself in a cyclical and multidimensional process that has three main phases: planning, execution and evaluation (Zimmerman & Schunk, 2011).
Updating the evidence already found by Azzi in 2015, we found that studies in the field of music on self-regulated learning, both in Brazil and abroad, are theoretically based essentially on texts by Zimmerman or by him and his collaborators.

International Francophone Education and Formation Research Network (REF)

On the other hand, we see that the International Francophone Education and Training Research Network (REF) brings together researchers from Belgium, France, Quebec and Switzerland, who bring together various theoretical perspectives (socio-cognitive, cognitivist, phenomenological and socio-historical), thus developing a fruitful space where self-regulated learning is studied in multiple dimensions.

Among the authors of the REF, we highlight the researcher Sylvie Cartier, who has developed a model of learning through reading, encompassing what she calls "multimodal" aspects, i.e. other resources in addition to texts such as graphics, figures, photographs, as well as the technological resources available in recent years (Cartier & Martel, 2020; Cartier et al. 2019).

This text presents a research project that proposes a transposition of Sylvie Cartier's "learning by reading" model for learning musical instruments.

How could the "Learning by reading" model (Cartier, 2007) be transposed into a "Learning by playing an instrument" model?

The twelve-month period (January to December 2022) spent as a guest researcher at the Faculty of Education of the University of Montreal working in collaboration with Professor Sylvie Cartier allowed me to develop the theoretical foundations for the creation of a self-regulated learning model aimed at "learning music by playing a musical instrument". The aim of developing these theoretical foundations was to deepen our knowledge of the learning model developed by Sylvie Cartier, "Learning by reading", by understanding and identifying the problems related to students learning musical instruments in a context of learning music through Transfer (Van Der Maren, 1996). We emphasize that the context chosen for the research was the learning situation of amateur wind bands.

Method for the theoretical foundation: in the case of the production of a theoretical statement (Learning by playing an instrument) from another theoretical statement (Learning by reading), Van Der Maren defines this production as speculative research (Van Der Maren, 1996). Thus, this part of the research was organized into two lines of simultaneous and reciprocal actions, carried out in 2022 during the period I spent as a visiting researcher:

a) the concepts of self-regulated learning were discussed in depth, drawing on the theoretical statements and practical results of the work of Sylvie Cartier and her collaborators. In this part, we

mainly used three data collection procedures: a literature review (systematic analysis of the work of Sylvie Cartier and collaborators), the collection of statements by Sylvie Cartier, as well as consultation of any references used in the author's conceptual framework, and
b) a relationship was made between the appropriation obtained in the first line of action and my own experience as an instrument teacher and music education researcher.

In order to speculate on the possibilities of applying the "learning by reading" model to music education, the conceptual analysis procedure (Van Der Maren, 1996) was chosen as the mode of analysis. For Van Der Maren, conceptual analysis aims to "identify the meaning and possibilities of application of a concept or notion, identifying the constituents of the semantic field of this concept or notion and its interactions with other fields" (Van Der Maren, 1996, p. 139).

In the first phase of the analysis, the history of the development of the model was recorded, in this case the model developed by Sylvie Cartier, focusing on representative extracts from its historical evolution. The aim is to take ownership of its first steps, get to know its first reference authors, as well as identify the significant transformations between its original use and contemporary uses.

The second phase of analysis aimed to compare the relationships between the various theoretical occurrences of Sylvie Cartier's model by different authors or by the author in different contexts. For Van Dar Maren (1996), these theoretical occurrences can be important passages or excerpts from theoretical discourses in which the pivotal concept(s) are used.
The conceptual analysis of this phase identified, through total immersion in the "learning by reading" model, comparisons with other models of self-regulated learning, as well as verifying the intention or understanding of the concept and what its extension or scope is. The results formed the basis for producing a first version of the "Learning by playing an instrument in a wind band" model.

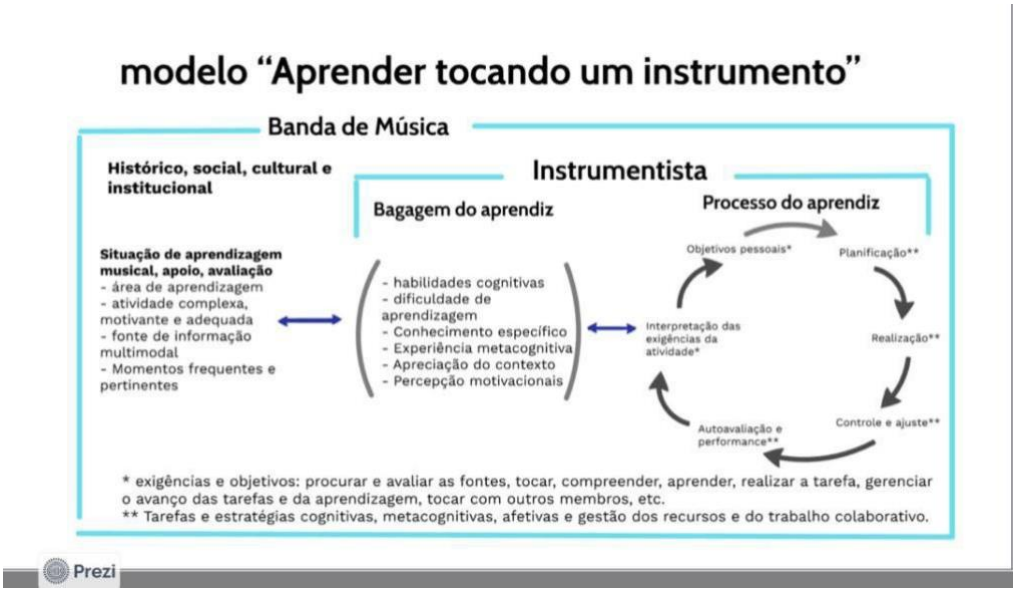


Figure 1. graphical representation of the model in the context of Brazilian music amateur wind bands (Nascimento, in press, adapted from Cartier, 1997, 2000, 2007, 2016 and 2023).

Based on the Learning by Reading model (Cartier, 1997), the Learning by Playing a Musical Instrument model is a dynamic process of practicing a musical instrument and self-regulated learning, made up of cognitive, metacognitive and motivational aspects, directed towards a goal, originating from the individual's background and situated in a specific musical context with varied sources of complex learning information to be carried out. This construct is made up of twenty-three components, divided into two main categories: a) historical, cultural and institutional, and b) Individual.
This type of model is specific to a particular learning situation. In our case, it was developed for the learning situation of amateur music bands (Nascimento, 2012).

After the conceptual framework has been validated by peers (logical validation), empirical validation in a learning context is required Van der Maren (1996). Logical verification takes place through analysis of the theoretical model by experts in the field who give their opinions on the theory. The theoretical model "learning by playing an instrument in a wind band" was analyzed and validated by 4 experts in the field (Canadian and Brazilian).

Empirical validation of the conceptual framework in the context of instrumental music learning

Research goals

General objective: to determine the veracity of the Transfer of the "learning by reading" model to the context of musical learning context in an amateur wind band.
Specific goals:

1. To verify through observation the presence of the conceptual framework in a new area of application
2. To verify through a pilot study the didactic feasibility of self-regulated learning through the "Learning by playing an instrument in a wind band" model.

Methodology

According to Van der Maren (1996), empiricist validation aims to determine whether or not the Transfer is true (transposition of the theoretical model). The author stipulates two epistemological currents for this verification, namely: Confirmation (or Corroboration) and Refutation. Confirmation consists of demonstrating that if we apply the thesis extracted from the theory to a new area of application, the hypothesis deduced in the form of an observable conditional prediction will be verified. Verification by Refutation, on the other hand, consists of isolating one or more of its statements from the theory in order to demonstrate that it does not apply in a generalized way. This latter verification model, paradoxically, looks for non-significant results (Van Der Maren, 1996, p. 204). To verify the empirical validity of the method, we chose validation by Confirmation.

Data collection procedure (specific goals 1)
In the search for elements to confirm the established theoretical model, non-participant observation is being carried out in four music bands, two in Brazil and two in Canada. This systematic observation of each band's practice began in May this year and will continue until the end of November, seven months

later, with the aim of identifying elements of the Context or of the band's Learners linked to the Learning Situation (Nascimento, 2012), which can be classified in one of the Elements of the Conceptual Framework established.

Data is collected through audiovisual recordings of each band's rehearsals by at least one camera positioned in a strategic location that can capture audio and video of the participants in good conditions. After each rehearsal, the video is uploaded by the band's conductor to the Cloud of the author's research group.

The criteria for recruiting the bands were:

- The bands declared their interest in taking part in the research by signing the Informed Consent Form (ICF);
- The bands proved that they had been active for more than a year and that they held at least one rehearsal a week during the data collection period;
- Each band has at least 15 members;
- The bands have proven that they have an audiovisual recording system with high resolution images that can be used during rehearsals, and
- All the conductors involved must have at least 5 years' experience as conductors of amateur wind bands.

Data analysis (specific goals 1)

The recorded videos are being viewed on a high-resolution monitor and analyzed using VideoTag editing software (created and kindly provided by Prof. Dr. Pascal Gaillard - University of Toulouse - France). It will structure a grid with markings for each camera, if more than one camera is used simultaneously. File identification and time stamping will be carried out.

The analysis of the videos follows quantitative procedures in categories and subcategories formed through the set of self-regulation components found in the theoretical model, namely: prior knowledge, emotions, perceptions of competence and control, perception of the value of the activity, interpretation of the demands of the activity, personal goals, learning self-regulation strategies (planning, control, adjustment, self-assessment), motivation management strategies, metacognition, among others (Cartier, Arseneault and Guertin-Baril, 2017, p. 38).

During the analysis of the videos, the researchers fill in a table with the area to number the image in which the accomplishment of some task (instrumental performances) correlates with the predetermined self-regulation components. These will be identified by numbers (subcategories) and colors (categories). The table is made up of a second section aimed at extracting relevant behaviors from the participant(s) during the rehearsal that corroborate the components of self-regulation (for example when the conductor makes a tuning correction, classified as an adjustment), as well as identifying the place in the video in minutes (3'45") where the behavior took place. At the end of the table there will be a column for calculating the frequency of appearance of each component.

In weekly meetings between the observers (5 research assistants), the main researcher and a collaborating researcher will check the insertion of the data into the respective categories, as well as discussing possible situations that do not fit the proposed theoretical model. The data will be compiled in an excel table which will provide the index of appearance of each component of the theoretical construct.

So far, no component of the construct has shown a zero or insignificant appearance in all the bands analyzed, thus validating Transfer.

Data collection procedure (specific goals 2)
For this stage of empirical verification, a pilot study will be carried out in a brass band, which will include an instrumental teaching proposal for a new group of musical instrument learners in a brass band based on self-regulated learning through the "playing an instrument in an amateur wind band" model.

The data collection procedures will, in principle, be developed according to the appropriation of work on Sylvie Cartier's model of self-regulated learning. The tools already developed by Sylvie Cartier and collaborators include a learning dossier, an interview guide and a performance evaluation questionnaire (Butler et al., 2011, Cartier, Butler & Buchard, 2010). The insertion of other data collection resources linked to the field of music will also be used, such as videos of participants' performances.

The context in which the experiment will take place is the Music Band of the Federal University of Ceará at Sobral Extension project coordinated by the first author. The project, which has existed since 2012, has almost all the instruments and accessories needed to set up a music band along the lines of the research.

The role of conductor and pedagogical coordinator will be developed by the first author of this article and the role of teachers will be exercised by the research assistants and the second author, all affiliated to music education research group PESQUISAMUS. The participants will be young people aged between 15 and 18 duly enrolled in secondary school in public schools in the state of Ceará.

The criteria for recruiting participants are:
- Declare an interest in taking part in the research by signing the Informed Consent Form (ICF). In the case of underage participants, a guardian must sign the ICF; - Be available to take part in rehearsals and instrument lessons at the extension project, and
- Participate in research activities, such as taking part in interviews, filling in forms and questionnaires, among others.

Data analysis (specific goals 2)
At this stage, the participants' self-regulated learning will be measured. This data will be condensed, analyzed and disseminated. The data analysis procedure will be carried out in various ways that will be refined during the course of this project. However, some of the analysis procedures already used in

self-regulated learning by Sylvie Cartier and collaborators can be replicated in this study (procedures 1, 2 and 3). We will also use a common analysis procedure in the field of music: the analysis of performance through videos (procedure 4).

1. Learning dossier: each week after the Banda do Norte rehearsal, participants will fill in a document detailing their own learning actions, motivation and commitment to musical practice. The content of these dossiers will be analyzed by the researcher and the fellows using content analysis (Bardin, 1977) where the coding of the units of analysis will qualitatively follow the categories and subcategories formed through the set of self-regulation components found in the theoretical model, namely: prior knowledge, emotions, perception of competence and control, perception of the value of the activity, interpretation of the demands of the activity, personal goals, learning self-regulation strategies (planning, control, adjustment, self-assessment), motivation management strategies, metacognition, the categories and subcategories looking for situations that characterize self-regulated learning (Cartier, Arseneault & Guertin-Baril, 2017, p. 38).

2. Performance evaluation questionnaire: made up of 22 main questions distributed over the course of an activity (beginning, middle and end) which quantitatively address the set of self-regulation components mentioned above.

3. Observation diaries: during classes and weekly rehearsals, observation diaries will be kept by the research assistants. The content of these diaries will be analyzed by the researcher and the fellows through content analysis, looking for situations that do not fit into the proposed theoretical model.

4. Participant performance videos: the participants' individual and collective performances will be recorded by a 4K professional camera. The videos will be analyzed by independent judges (conductors, musicians and band teachers). They will carry out a written analysis with the aim of verifying that the musical performance of the participants and the band itself took place in a manner equivalent to that developed in a learning situation in a brass band.

First results

The first results point to a validation of the theoretical model of self-regulated learning for musical instruments in brass bands with a small sample. These results in their entirety will be published in a digital book, thus enabling them to be widely disseminated to music band teachers and conductors throughout Brazil, as well as the undertaking of new studies, especially experimental studies with a large and wide sample, as well as longitudinal studies. In the future, the development of innovative pedagogical strategies for learning musical instruments in brass bands could contribute to music education throughout Brazil and the world.

Acknowledgements

These results in their entirety will be published These results in their entirety will be published This project would not have been possible without the generous financial support of the Ceará Foundation to

Support Scientific and Technological Development (FUNCAP). Many thanks to my undergraduate students Alícia Bezerra, Ana Livia de Sousa, Ícaro Fontenele, Iucas Costa, Maria Fabiana do Nascimento e Mário Cavalcante for accompanying me on this research project, as well as for carefully reading and revising this article.

References

Azzi, R. (2015). Autoregulação em Música: discussão à luz da teoria social cognitiva. Modus, 10(17), 9-19.

Bandura, A. (1991). Social cognitive theory of self-regulation. Organizational Behavior and Human Decision Processes, 50(1), 248-287.

Bandura, A. (2007). Auto-efficacité. De Boeck.

Boruchovitch, E. (2019). Apresentação. In Boruchovitch, E. & Gomes, M. (Eds), Aprendizagem autorregulada: como promovê-la no contexto educativo? (pp. 10-15). Vozes.

Cartier, S. (2007). Apprendre en lisant au primaire et au secondaire : Mieux comprendre et mieux intervenir. Édition CÉC.

Cartier, S. (2016). Presentation by Professor Sylvie Cartier Interview. Montreal University. https://www.youtube.com/watch?v=DBTEHGxndAY&feature=youtu.be.

Cartier, S. et al. (2017). Le soutien à l'apprentissage autoregulé: prise en compte du point de vue des élèves dans la situation d'apprentissage par la lecture. In L. M. Lopez e S. C. Cartier (Eds). Soutien à l'apprentissage autorégulé em contexte scolaire. University of Quebec Press. (pp. 29-51).

Cartier, S. & Butler, D. (2016). Comprendre et évaluer l'apprentissage autorégulé dans les activités complexes. In B. Noël et S. C. Cartier (Eds). De la métacognition à l'apprentissage autorégulé. De Boeck Supérieur.

Cartier et al. (2019). Soutien à l'apprentissage autorégulé en contexte de lecture multimodale en classe de français : apport de l'évaluation formative, Évaluer. Journal international de recherche en éducation et formation, 5(2), 29-46.

Cartier, S. & Berger, J.-.L. (2020). Les travaux du regroupement de cherchers sur l'apprentisssage autorégiué au Réseau international francophone de recherche en Éducation et en Formation. In Sylvie Cartier et Jean Louis Berger (Eds). Prendre en charge son apprentissage: l'apprentissage autorégulé à la lumière des contextes. (pp. 15-27). L'Harmattan.

Cartier, S. & Martel, V. (2020). Apprentissage autorégulé à la lumière d'un contexte : l'exemple de l'apprentissage par la lecture multimodale en classe de français. In Sylvie Cartier et Jean Louis Berger (Eds). Prendre en charge son apprentissage: l'apprentissage autorégulé à la lumière des contextes (pp. 49-65). L'Harmattan.

Famose, J.-.P. & Margnes, É. (2016). Apprendre à apprendre : la compétence clé pour s'affirmer et réussir à l'école. De Boeck Supérieur.

Ganda, D. & Boruchovitch, E. (2019). Como promover a autorregulação da aprendizagem de futuros professores. In Boruchovitch, E & Gomes, M (Eds), Aprendizagem autorregulada: como promovê-la no contexto educativo? (pp. 145-168). Vozes.

Nascimento, M. (2012). Situação de Educação e Métodos em Educação Utilizados pelas Bandas. In Botelho, Luiz & Rogerio, Pedro (Eds), Educação Musical: Campos de Pesquisa, Formação e Experiências (pp. 179-2011). Press Federal University of Ceará.

Nascimento, M. (2022). Learning music by playing an instrument: self-regulated learning for instrumental music education. Proceedings of the 35th Annual ISME World Conference (Virtual), 1(1), 264-270.

Nascimento, M. (in press). Aprender tocando um instrumento em banda de música: aprendizagem autorregulada para a educação musical instrumental – validação do quadro teórico em contexto (1ª Fase). Proceedings of the XIV Conferencia Regional Latinoamericana y VI Panamericana, International Society of Music Education, 1(1), 1-10.

Van der Maren, J.-.M. (1996). Méthodes de recherche pour l'éducation. [Online]. (2nd Ed.). https://papyrus.bib.umontreal.ca/xmlui/handle/1866/4688

Zimmerman, B. & Schunk, D. (2011). Handbook of self-regulation of learning and performance. Taylor & Francis.

Reconsidering Music Education from the Perspective of ICF: A Practical Study of Sound Education for Hearing Impaired Children

Sumie Tonosaki, Wayo Women's University, Japan

Abstract

Currently, the concept of the International Classification of Functioning, Disability and Health (ICF), which focuses on the relationship between society and the individual, is gaining ground in special needs education in Japan. The ICF emphasizes the importance of the individual and the environment surrounding the individual, and aims to redefine disability in the context of the relationship between the two and to eliminate the gap between the individual and the environment. In other words, by adjusting the environment according to individual characteristics, the gap is expected to be eliminated. This concept has recently become important in special support education in Japan.

Therefore, this study examines classroom practices conducted in special needs education from the perspective of environmental adjustment. The purpose of this project is to rethink music education in schools for the deaf by focusing on the practice of teaching music to children with hearing impairment. Specifically, the author implemented the Sound Education, an activity based on hearing to sound within a music class at a school for the deaf from April 2020 to March 2022, and observed and analyzed the transformation of the hearing impairment children's attitudes and awareness toward participating in the class and their interactions with other participants based on their practice. The Sound Education practice included an activity to make improvisational music using paper. Two students were studied: one in the first year of middle school and one in the second year of high school.

Observation of the practice showed that the two students, who had originally been uncomfortable communicating their opinions, were able to actively express their opinions about what kind of music they wanted to make during the sound education practice, and were able to participate in the activity through active communication. This suggests that the Sound Education has the potential to help individuals realize their full potential and, as a result, to improve their relationship with the environment that surrounds them. Although hearing impairment children are considered to be deaf, by providing them with opportunities to hearing the sounds, in other words, by adjusting their environment, each child will be able to actively engage with sound and make use of his or her individual abilities through the sounds.

Keywords: Sound Education, hearing impairment children, ICF, environment, creativity

Background

The goal of special support education in Japan is to "cultivate the knowledge, skills, attitudes, and habits necessary to improve and overcome the learning or living difficulties of children and students due to their disabilities and to promote their independence" (Ministry of Education, Culture, Sports, Science and Technology, 2017). In recent years, ideas focusing on the relationship between society and the individual have begun to be recognized in Japanese special needs education, and one of the most representative ideas is the International Classification of Functioning, Disability and Health (ICF). ICF,

adopted by World Health Organization in 2001, "attempts to classify, describe, and express everything from the functional status of life related to a person's health status to the social institutions and social resources that surround that person, using a method that combines letters and numbers" (World Health Organization, 2001). ICF is characterized by its emphasis on the importance of the individual and the environment surrounding the individual, and aims to redefine disability in the context of the relationship between the two and to eliminate the gap between the individual and the environment. For example, assume that there is a person named X. X has an injured leg, but is able to walk and is willing to walk. However, those around him stop him from walking because it is dangerous, and eventually he is forced to ride in a wheelchair. This is an example of an individual being influenced by the environment, which limits his or her activities. Thus, disability can be viewed not as a problem of the individual alone, but as something that results from the interaction between the physical and mental characteristics of the individual and society.

Problems & Purpose

Contrary to the previous examples, individuals may be able to demonstrate their abilities in an environment where their will is respected, and they can participate without being restricted in their activities. Since the concept of ICF is the foundation of special support education in Japan today, it can be seen that environmental adjustments have become important in special support education. Therefore, in this study, music education for hearing-impaired children will be examined from the perspective of environmental adjustment. Specifically, we will practice sound education, an activity based on listening to sound, and from the practice we will see the transformation in attitudes and awareness of class participation and the relationship between participants.

Methods

About Sound Education

Sound Education is a music education program that was invented by Canadian composer R. M. Schafer, in which the environment, people, and music interact with each other by listening to the sound environment and creating music based on inspiration from the sounds they hear. This program has no right/wrong answers and does not require advanced performance techniques, as the music is improvised on the spot through listening to the sounds. Hearing and creating are done back and forth, and the participants improvise and make music in the process. This program is included in "The Sound Search Book: Little Sound Education" (Schafer & Imada, 2009), a collection of sound education assignments for children, with 100 exercises. Seven exercises were practiced in the class, and this study picks up and analyzes the practice of one of them, "33. Making paper into a musical instrument". The activity of making paper into a musical instrument was based on the exercise by Schaeffer (2009) and consisted of an activity to realize that various sounds could be produced by changing actions such as tearing, rolling, and rubbing against paper, an activity to turn the paper, and finally making a work.

Analysis methods

This study will use ethnography as its research method, combining several techniques such as participant observation and interview surveys. Ethnography refers to "a method of investigation and research to understand from the inside the sites where people actually live, work, and act" (Oda, 2020). The author worked as a full-time teacher at X School for the Deaf in Aomori Prefecture for about two

years, from April 2020 to March 2022, and conducted participant observation while spending her daily life with teachers involved in the education of children with hearing impairment and children. In particular, the observation focused on three points:

1. the way children interacted with sound,
2. the way children said and did things, and
3. the way children interacted with others.

Participants

The details of the two study subjects are shown in Table 1:

Participant details

naming	**A**
grade in school	1st year of junior high school
Hearing aid device to be worn	Right: cochlear implant, Left: hearing aid
Average Hearing Level (When wearing a hearing aid)	31dB
Usual appearance and episodes: She often heard the sounds around and would talk about her favorite sounds. She told me that her favorite sound was the low, loud footsteps of a high school senior walking.	
naming	**B**
grade in school	2nd year of high school
Hearing aid device to be worn	Right: cochlear implant, Left: hearing aid
Average Hearing Level (When wearing a hearing aid)	22dB
Usual appearance and episodes: She hears well to sounds, responds to calls from about 5 meters back, and can hear what is being said. She was not good at relating to others and preferred to be alone.	

In addition to A, three other students were enrolled in the middle school, making a total of four students in the joint class. The other three students are referred to as C, D, and E. In the upper secondary school, one student was enrolled in addition to B, and a total of two students were teaching the class. The other one's name is F.

Results

Practice A

The author told the students to be aware of the fact that there is a beginning and an end to the music making process, and the activity began.

D: What kind of music do you want to make?

C: How about we split up into two groups at first? All: (nodding) Sounds good! Let's do it.

The pairs were determined by goo and par, and the pairs were A and C, and D and E. The pairs were then paired with each other, with their backs to each other. The pairs were about 3 meters away from each other and began to create, with their backs to each other and not looking at the other pair's

moves. Both pairs actually moved the paper as they discussed their work. In the pair A and D, D said, "Let's try to make the paper look nice. Don't make too much noise. Be gentle. Both of them carefully shook the paper from side to side and moved it up and down so as not to make loud noises. After some discussion, both pairs naturally gathered in the middle of the classroom and began discussing their next move.
D: What do you do when it comes to all of us? Do we all hold it? E: What if we give it to them?
D: (Nodding his head) Okay.
A: (Wrinkles between eyebrows, tilts head)
E: Let's try it together. You'll understand if you try.

A did not seem to understand how to do it, but when we all started to move the paper, she nodded his head and said, "Ah! and nodded her head, expressing her opinion about the movement.
A: I was wondering if I should do this when I hand it to you (raises her arm wide above his head). All: (observes A's movement and begins to imitate it)
D: That's good. Let's do this. Then, toward the end, why don't we all go around and get excited?

Although A is usually not good at expressing her opinions, in this activity, once she understood the content of the discussion and what needed to be done, she actively expressed her opinions. The other three participants also did not usually actively try to incorporate A's opinions, but in this situation, they agreed with A's opinions and incorporated them.

Next, at C's suggestion, the four of us turned clockwise while moving the paper up and down. Everyone seemed to like this movement, running and moving the paper up and down, laughing and spinning for about 10 minutes. After some time had passed, they began discussing how to end the song.
D: Let's decide at the end. I want to throw paper. All: (with big smiles) Great!
D: Let's raise it as high as we can. All: (throws the paper upward) A.C.: Fun!
E: It looks like the last one. E: It feels good.

After the performance, the four members high-fived each other, saying in unison, "That was so much fun! and high-fived each other.

Practice B
As a rule for music making, we set the students to be aware of the beginning and the end. When we started the activity, they stared at the paper in silence for a while. Silence reigned for a while; B tilted her head or sighed, but then picked up a piece of paper and began to move it.
F: What do you do?
B: Hmmm (puts his hand on his chin and thinks). F: Do you want to think about it while moving it? B: (nodding)
They each used a different sheet of paper and moved it silently. While they were separated, they

glanced at each other's movements sideways, and when F moved his arm up and down, B did the same. There was silence for a while, and after about seven minutes, F seemed to have a flash of inspiration and spoke to B, smiling.
F: Like this. Roll it up at the top and stretch it out at the bottom. B: (Smiles) Mm-hm.
F: Stretch and rebound. Bar. Woof. B: (Nodding broadly) Mm-hm.
F: Next, do this to each other. F: Next, we do this to each other, like this. B: Yes (doing the same movement as H).
F: Then, I let go and you do it solo (while turning). B: (Chuckling) Yes.
F: And then you do the "shoo" move. I do the same movement. B: Do you want to do the same thing as before?
F: Good idea. (Hand him the paper). B: Nice it.
F: Good. What do you want to do at the end? B: I want to lift it up and drop it.
F: Good. Let's try it.
F: Like this. What happens to the paper when you lift up your hand and let go of it at the top? B: Good. Let's try it.
F: Use your knees and arms as much as you can. Let's try it. B: Oh, sure. That's good.
B: Oh, that's good. Beautiful, beautiful.

The two willingly shared their opinions as the discussion proceeded. After the discussion, they presented their works. After the presentation, they looked at each other with smiles on their faces. F: I think the paper looks cleaner than in practice.
B: I know. It was really beautiful. The sound wasn't that loud either.
F: I don't know, it was a lot of fun. I can't explain it well. I don't know how to explain it. It felt good.
B: I know. I wonder what it is. It was great, wasn't it? The paper sticks to the paper. I mean, it felt good. It sure felt good, but maybe that's the right word. Also, maybe because the paper looked beautiful, I think the sound was beautiful, too.

They shared their impressions with each other. After the performance was over, they excitedly said, "That was fun," "Maybe we can make something better," and "I want to do it again.

Discussion

From the two people's appearance and the relationship between the participants, it can be said that listening to sound is an ability that everyone has, and that there are no right or wrong answers, and that each way of hearing is allowed, which is highly impartial. In addition, the participants communicated with each other without excluding anyone, creating a connection between individuals through the medium of sound. In the environment of listening to sound, they were also able to communicate their intentions to the people around them, which showed a change in their previous relationship with the

people around them. All of this suggests that the practice of sound education has the potential to help individuals achieve their full potential and, as a result, to improve their relationship with the environment that surrounds them. Although children with hearing impairment are considered to be deaf, by providing them with opportunities to hear the sounds, in other words, by adjusting their environment, each child will be able to actively engage with sound and make use of his or her individual abilities through sound.

Conclusion

Currently, special needs education in Japan is based on the ICF concept, which aims to eliminate problems in between by adjusting the individual and the environment surrounding the individual, and is working to provide education based on this concept. In order to achieve such an education, they have tried to rethink music education from the perspective of adjusting the environment. As a result of practicing sound education in an environment where children with hearing impairment, who are considered to be deaf, listen to sound, students who had previously felt uncomfortable interacting with their surroundings were able to express their own opinions, and their relationships with their surroundings changed. Sound education would be something that has the potential to have a more positive impact on the relationship between the individual and the environment through the medium of the sounds.

References

Ministry of Education, Culture, Sports, Science and Technology (2017). National Curriculum Standard for Elementary and Lower Secondary Department of Special Needs Education Schools.

Oda, T. (2020). *Introduction to Ethnography: Qualitative Research on the "Field"*. Shunjusha.

Schafer, R. M., & Imada, T. (2009). *A little sound education (second education).* Shunjusha.

World Health Organization (2001). International Classification of Functioning, Disability and Health.

Ecologies of music teachers' self-directed and digital learning (SDDL)

Angeliki Triantafyllaki, National and Kapodistrian University of Athens, Greece

Abstract

While teachers' self-directed learning has received some attention, its context is rapidly changing with greater than ever access to digital tools and environments previously unavailable. The aim of this ongoing, small-scale qualitative study is to capture experienced music teachers' stories of personal and self-directed learning *with* and *through* technology. Interview data is compared from the same sample of teachers at different time periods. Audio-recorded, narrative interviews, assisted by the visual prompt Rivers of Musical Experience (Burnard, 2012) allowed for initial experiences of SDDL to arise across a longer time period (between 2020-21). Follow-up, unstructured and qualitative interviews (2023) discussed and revisited teachers' understandings of current and past SDDL. Ethical issues were rigorously addressed at both data collection points. A number of key themes arose from the categorical content approach to the narrative analysis (Lieblich et al., 1998). The analysis highlighted *context dependent knowledge-creation approaches* to in-service teachers' SDDL, whereby teachers' creativity, critical reflection, and problem-solving strategies were developed with and through technology in particular circumstances. Results also uncovered the *learning ecologies of music teachers' SDDL beyond* the classroom, with strong emphasis on peer-to-peer learning and support, arising when engaging within digital communities. When comparing data sets for the same teachers, the analysis additionally highlighted the *sustainability of SDDL*, rendering it transferable and highly relevant to new circumstances. Distinct challenges and opportunities in mid- and late-career stages of music teachers' working lives when engaging with technology need to be addressed by providers of in-service professional development programmes.

Keywords: self-directed learning, experienced teachers, technology

Theoretical Background

Whether to hone their skills or advance their knowledge, explore new technologies for classroom use or prepare to teach new content, teachers are learning and adding to their professional knowledge base outside school hours and on their own accord. As a concept found in many 21st century learning frameworks, self-directed leaning (SDL) is a concept derived from adult learning theories that accommodates the idea that teachers formulate their own learning needs and consequently direct their learning (Louws et al., 2017). Though self-directed learning has since received much attention, its context is changing with greater than ever access to online learning, technology and information previously unavailable. In the digital age, characteristics of self-directed learners according to Mishra et al. (2013) are, increased use of technology, connecting with others online, sharing work and ideas online, conducting information searching to solve their own problems and initiating skill development on topics of interest. In this sense, within a digital realm, SDL seems to be as much linked to upper-level thinking skills such as creativity, problem-solving and critical thinking, as it is to wider contexts or "ecologies" of digital learning that are impacted by significant others (Soszyńsk, 2022).

With the swift emergence and development of digital technologies, new areas of knowledge are arising that require teachers to creatively carve new pathways for their own professional development and

learning (Partti et al., 2021). Teachers are required to infuse their teaching with both creativity and technology, rethink how they communicate and share ideas and take initiatives for their own learning in a variety of ways. Henriksen et al. (2016) discuss the reciprocal relation between a "systems" view of creativity and technology: "The field, the domain, the individual and their interconnections are transformed by content creation and creative technologies" and suggest that "technologies allow for new and creative pedagogical practices" but also that "educators must develop a creative mindset to teaching and learning" (p.31). New technologies may often initiate new *creative* learning opportunities. Yet, accounts exist of teachers mostly passive rather than intentional use of technology in the music classroom (Bannerman & O'Leary, 2021). The TPACK framework (Mishra & Koehler, 2006) is often employed as a lens through which to study music teachers' technological knowledge (TK) in combination to their pedagogical knowledge (PK) and content knowledge (CK), yet more often than not in pre-service rather than in-service teaching. Recent expansions of the model to include teacher personal beliefs and practices (Gall, 2016) and also accounting for in-service teacher agency and identity (Partti et al., 2021) when interacting with technology are more aligned with the scope of the current research. They further raise the need to explore in-service experienced music teachers' *self-directed and digital learning* (SDDL) when accounting for dramatic shifts and turns in the educational realm; for example those brought about by the rolling school closures of 2020-21 and the move to emergency, online teaching.

Methodology

This ongoing, qualitative and small-scale research investigation is comprised of two stages of data collection in 2021 and again 2023, aiming to (a) initially map experienced teachers' *self-directed and digital learning pathways* as they navigated the novel circumstances brought about by rolling school closures between Spring 2020 and Spring 2021 and (b) compare this dataset with how the same music teachers' understandings of their SDDL have since developed two years after the original study (in Summer, 2023). Hence, audio-recorded, narrative interviews allowed for initial experiences of SDDL to arise across a longer time period (between 2020-21). Follow-up, unstructured and qualitative interviews (2023) discussed and revisited teachers' understandings of current and past SDDL.

In lieu of the study's research questions, a narrative approach to data collection and analysis was employed as "first and foremost a way of thinking about experience" (Connelly & Clandinin, 2006, p. 375). Teachers' thought processes during empirical research studies are often made visible using visual prompts (Pope & Denicolo, 1996). In the initial data collection stage, the visual-based construct elicitation tool "Rivers of Music Experience" (Burnard, 2012; Taylor, 2011) was employed to represent and reconstruct significant events in music teachers' creative learning journeys, by asking teachers before the interviews to "visualize their learning journeys" during the rolling school closures and share with the researcher the visualizations during the interview. During the narrative interviews, the critical incident map that was prepared beforehand, served as a starting point for in-depth discussion around key challenge points, tensions and creative learning opportunities. Teachers were contacted with an information sheet outlining the broad aim of the study (music teachers' learning), the identity of the researcher, their role and time investment and ethical considerations. Teachers were informed of the audio-recording of interviews, their anonymity was assured, and the ways that the data would be managed were discussed. The interviews were held via zoom but were audio-recorded using an external digital device, producing mp3 audio files that were then saved to the author's PC (password

protected). Upon agreeing to participate, they were sent a consent form to sign and return to the researcher.

A pilot interview was held with two school music teachers in order to test the elicitation tool for ease of use and the content of the very broad interview themes; small adjustments were subsequently made. A semi-structured interview protocol guided each interview, including questions known to elicit storied accounts. The population of the study was primary and secondary state school music teachers. A purposive sampling strategy was employed that aimed to reach a small sample of experienced (>8 years) teachers who employed to a lesser or greater extent synchronous and asynchronous tools during the rolling school closures of 2020-21. Teachers were told they would be discussing their own "learning and experiences during the pandemic". The sample consented to be interviewed online after reading the information sheet and agreeing to invest some time to prepare their "river of experiences and learning" during the pandemic before the interview (see also Turner, 2011). The same group of teachers were interviewed in the Summer 2023. An unstructured interview protocol inquired into their SDDL since initial data collection. All recordings were transcribed verbatim. In addition to the interview transcripts, a research journal was kept throughout the process of data collection and thereafter data analysis, to support personal reflection and decision-making. A useful schema for narrative analysis developed by Lieblich et al. (1998) focuses on two broad approaches –holistic and categorical with four sub-dimensions of holistic content / holistic form and categorical content / categorical form. For the purposes of the current paper, *a holistic-content approach* is employed whereby the temporal experience of one participant-teacher is presented in detail across both points in time.

Maria's Story

Maria had been working as a substitute teacher in state schools for many years at the time of her interview in the Fall of 2021. She initially describes the abrupt school closures and the move to online teaching, continuing with her story of trial and error, as she sought to create new materials that would be suitable for the new and challenging circumstances of asynchronous, online teaching:

the reality soon knocked on our door and we received that email from the Ministry and the school and on the 18th the platforms were officially put to use, I mean these platforms existed for several years, but I wasn't familiar with them. And they just told us, these are the tools and let's use them and create our lessons and I did indeed start to upload some materials I'd already been working with two years ago. I was already trying to find new things I could use in class. I started by looking at channels with play along for boomwackers, and the problem with those was that they didn't have the rhythm values. So my aim was through the videos to practice rhythm values too. Looking at the musication channel I started thinking how nice it would be to have a video with both notes and the values. So the musication channel was the initiation, the start, but it was not quite what I wanted. So I started to experiment and create some videos.... how could I create it... and in the meantime, I had no programme for videos, I didn't know, I had no idea how to make it. So I started to experiment initially with power point, to see if it worked and if it didn't I would try to find another programme...and the logic was kinda moving image so as each part changed, so did the image. Around March I began to upload the videos and they were really simple at first. It was pure experimentation, so see if I could do the moving image thing, it was so basic at first, for my younger students...So, I began to work on it a bit more, to try to create more – I had in the meantime spent so many hours with power point and saw its setbacks and began to search and

try other programmes and see how I could create it, and it slowly became a priority. To create material that they could do at home with or without some asynchronous guidelines. And on the school homepage I uploaded some guidelines for them to visit the youtube channel, what they should be doing and what the logic was. In the video introduction at the beginning, they saw the guidelines and then they just had the rhythm to follow with claps or just tapping a pencil.

Maria's storied account is indicative of her trial-and-error approach to her personal learning through technology. The terms *experiment / (pure) experimentation* arise at several points in her re-telling of her River of Experience, during her initial online interview. While describing her experimental approach to creating new technological artefacts, Maria seems to employ a "problem-seeking" approach to solving the initial difficulties encountered when using technology, whereby, "interesting or challenging problems to be solved may not be initially apparent ...", nor "immediately solvable" (Ballantyne et al., 2020, p.39, 49). In her storied account, above, Maria repeats, "*the learning leap for these specific tools was great as I started from zero*" and again "*the leap was great- in these things – I started from scratch".* During her re-telling of her steep learning curve, she emphasises her "*strategy*" of note-keeping, which is linked to "*reflection*":

This river took me back to my lessons on the platform, and I just looked at my notes. For the first time in my teaching I began to take notes, all through the year, what I did in each class. I had a little notebook and just dotted down what happened in each class, to be able to remember it all. It was about reflection. And it's something teachers sometimes don't have, it's like a personal need. Of course, through your mistakes you learn. I am quite systematic in keeping notes - what's the problem, identifying it, keeping notes, I have all this time so many notes, more than those I'd kept throughout university during my student years.

Although accounts exist of teachers mostly "passive" rather than intentional use of technology, Maria opens a window into a reflexive way of thinking about her own learning that is personal yet social and contextual, ad hoc yet systematic and problem-seeking.

Knowledge creation approaches to using technology suggest that engaging with new technologies for educational purposes could allow for new and creative pedagogical practices to arise (Henriksen et al., 2016). Maria's SDDL was linked to creating something new, by re-purposing existing tools (musication channel) in her attempt to see "*how I could create it. to create material*". In her second and recent interview, two years after initial data collection, Maria's Technological Content Knowledge has settled on particular ways of creating and learning, some more formal than others:

regarding my own creation of materials I've just settled on what I use to create them, it's rather stable now, and they don't change. During the lockdown we had the VLE platforms- back
then I tried all of their tools and many are really useful for music teaching. Now I am taking a seminar that allows me to learn more about them. (My learning) has now shifted to taking part in seminars.

In the digital age, characteristics of self-directed learners according to Mishra et al. (2013) are increased use of technology, connecting with others online, sharing work and ideas online, conducting information searching to solve their own problems and initiating skill development on topics of interest. Maria's initial accounts of peer-to-peer support in online digital communities are telling of such connections:

It was like an explosion...ideas, inspiration, so many charismatic colleagues with skills in searching and some knowledge more or less, were sharing. And I think it was the first time, at least in our field of Music. We just helped each other. And this was so important, because the materials that eventually arose just came back to us as a kind of self-education eventually … This group just made everyone remember that we can overcome anything, the difficulties and the collaboration is not lost and we felt human again. We learnt through the group, it was like lifelong learning in this case.

It is interesting to draw on Maria's reflection on her SDDL as an outcome of collaborative learning that returns to the individual as "a kind of self-education" and "lifelong learning". In her second interview, she returns to the communal space of sharing ideas and materials:

This was really refreshing back then, because we really saw the sharing ... a large part of that group that was sharing materials then is still doing this. Perhaps not the mass of information but they are still sharing their ideas. And they are all useful. I am so glad this group is still going strong. It's a meeting point, you can express your ideas.

Implications – Conclusions

Teachers are by definition lifelong learners and music teachers are no exception. Lifelong learning is a key conceptual framework for strengthening employability, adaptability and responsiveness as it perceives learning as a "continuum" containing purposeful learning activity throughout a person's life, formal, non-formal and informal. Understanding experienced teachers' purposeful learning could help fill in the knowledge gap around mid- and late-career music teachers' learning and consider their learning needs. Whether to hone their skills or advance their knowledge, explore new technologies for classroom use or prepare to teach new content, music teachers are learning and adding to their professional knowledge base outside school hours and on their own accord or in collaboration with significant others. Implications regarding professional development opportunities arising from the current study may involve (a) creating opportunities for experienced teachers to apply, critically reflect on and self-direct their technological content knowledge, (b) raising awareness of their metacognitive strategies when creating new knowledge and understandings so that SDDL might be sustained across different time periods and contexts, and/or (c) creating a wide enough lens through which the ecologies of music teachers' SDDL may be accounted for and understood, within and beyond the workplace environment.

Acknowledgements

The author received no funding for the research study mentioned in this paper. She is indebted to the participating music teachers for their generosity and valuable time offered at both data collection points.

References

Ballantyne, J., Flynn, L., & Olm-Madden, T. (2020). Problem-seeking in teacher education: Empowering students to grapple with the complexities of the profession. *Australian Journal of Teacher Education, 45(5), 35-61. https://doi.org/https://doi.org/10.14221/ajte.2020v45n5.3*

Bannerman, J. K., & O'Leary, E. J. (2021). Digital natives unplugged: Challenging assumptions of preservice music educators' technological skills. *Journal of Music Teacher Education, 30*(2), 10-23. https://doi.org/10.1177/1057083720951462

Burnard, P. (2012). Rethinking creative teaching and teaching as research: Mapping the critical phases that mark times of change and choosing as learners and teachers of music, *Theory into Practice*, *51*(3), 167-178. https://doi.org/10.1080/00405841.2012.690312

Connelly, F. M. & Clandinin, D. J. (2006). Narrative inquiry. In J. Green, G. Camilli, & P. Elmore (Eds.), *Handbook of complementary methods in education research* (pp. 375–385). Lawrence Erlbaum.

Gall, M. (2016). TPACK and music teacher education. In A. King, E. Himonides, & A. Ruthmann (Eds.), *The Routledge companion to music, technology, and education* (pp. 305-318). Routledge.

Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing creativity and technology in 21st century education: A systemic view for change. *Educational Technology & Society, 19*(3), 27-37.

Lieblich, A., Tuval-Mashiach, R., & Zilber, T. (1998). *Narrative research: reading analysis, and interpretation*. Sage Publications.

Louws, M. S., Meirink, J. A., van Veen, K., & van Driel, J. H. (2017). Teachers' self-directed learning and teaching experience: What, how, and why teachers want to learn. *Teaching and Teacher Education, 66,* 171-183. https://doi.org/10.1016/j.tate.2017.04.004

Mishra, P., Fahnoe, C., Henriksen, D. & the Deep-Play Research Group (2013). Creativity, self-directed learning and the architecture of technology-rich environments. *TechTrends, 57(*1), 10-13. https://doi.org/10.1007/s11528-012-0623-z

Mishra, P., & Koehler M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record, 108*(6), 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Partti, H., Weber, J., & Rolle, C. (2022 [2021]). Learning a skill, or learning to learn? Supporting teachers' professional development in music education technology. *Journal of Music, Technology & Education,14*(2&3), 123-39. https://doi.org/10.1386/jmte_00037_1

Pope, M., & Denicolo, P. (1993). The art and science of constructivist research in teacher thinking, *Teaching and Teacher Education, 9*(5–6), 529-544. https://doi.org/10.1016/0742-051X(93)90036G.

Soszyński, P. (2022). Learning ecology of music teachers' TPACK. *Technology, Pedagogy and Education, 31*(1), 85–102. https://doi.org/10.1080/1475939X.2021.1968943

Taylor, A. (2011). Continuity, change and mature musical identity construction: Using 'Rivers of Musical Experience' to trace the musical lives of six mature-age keyboard players. *British Journal of Music Education, 28*(2), 195-212. doi:10.1017/S0265051711000076

Cross-pollinate to achieve an optimal parent-child relationship through music(al) interventions: What about entrainment and synchrony

Margré van Gestel, Zing en doe maar mee, The Netherlands

Abstract

Music education with young children aged 0–4. As a co-initiator I started this adventure in 1987. 35 years later, we gained a lot of experience with didactics, pedagogy, connecting music songs and movement to the development of young children and developing new song material. During this trajectory in music education and working with parent-child groups, the importance of the parent-child relationship for the well-being and development of young children became clear. After the course specialist Infant Mental Health, I came in contact with a group of music therapists developing the intervention 'Zing en Groei'. For me a wonderful opportunity to bring together the knowledge and skills from music education 0–4, the knowledge from Infant Mental health (IMH) and music therapy. But music education is not music therapy, and music therapy is not music education, and music in IMH interventions is an area yet to be developed. Here rose an opportunity to combine 'the best' of three disciplines and through deepening, inspiration and cross-pollination work together on a basis of renewed and shared knowledge and progressive insight to optimize the parent-child relationship.

In all three professional groups mentioned above terms are used, often with a slightly different meaning. In music therapy, synchronization, for example through drumming together, is an activity that is regularly used. Synchronization is also mentioned in the IMH (Infant Mental Health) literature. My question then was: 'Are we talking about the same thing?' In music therapy entrainment is used, but how does this relate to synchronization? What do we exactly mean by entrainment and why and how contributes entrainment to parent-child bonding? The integration of knowledge, experiences and techniques from the various disciplines raised questions. It started with an adventurous literature search in which many scientific studies became a source of information, which largely answered questions about entrainment and synchrony and cleared the way to connect the knowledge and experiences of three professional departments during the compilation of the music therapy methodology manual ‘Zing en Groei’ in The Netherlands.

Theory supported by scientific research provided progressive insight: we can add psychological, therapeutic, as well as didactic and pedagogical techniques and experiences to reach the ultimate goal: an optimal parent-child relationship through music(al) interventions.

Keywords: music education 0-4, music therapy, infant mental health, relationship parent-child, entrainment, synchrony

View on synchrony in parent-child relationship

The term synchronization in the Infant Mental Health literature is used in the context of attachment processes of parent and child (Stern, 1985) To investigate whether there are similarities or differences between the uses of the term synchronization in the different disciplines, I delved into scientific studies.

Synchrony in the parent-child relationship, in the period 1945–1975, has been conceptualized as an overarching process that coordinates the ongoing exchanges of sensory, hormonal, and physiological stimuli between parent and child during interactions, providing critical inputs to the growth and development of the young child.

From early pregnancy, mother and child prepare for coordinated interactions at birth through hormonal changes in the mother and the emergence of physiological oscillators in the fetus (Feldman, 2007). Optimal circadian rhythms (day and night rhythm) in the mother are important as her circadian clock, directly or indirectly via the melatonin rhythm, influences the developing foetus. Disturbed melatonin cycles have negative consequences for the maturing fetus, which can lead to psychological and behavioural problems in the newborn (Reiter, 2013). Already in the first hours after birth, we experience that baby and mother are 'biologically prepared' to enter into coordinated interactions.

Immediately after birth, mothers not only provided vocal and tactile stimulation for 65% of the periods when newborns were awake and alert, they also stared at the baby's face, used high-pitched voices, showed positive facial expressions, and affectionately touched the baby. After three months, the researchers observed specific behaviours in parent and child, such as looking at each other at the same time, vocalizing together, calming the baby appropriately, and coordinating affective touch as the baby faced them. Interactive miscoordination also occurred, of course, but was usually corrected in the next second. In mother-child pairs that showed high synchrony (simultaneous occurrence of events/actions) during free play, the heartbeats of mothers and babies were synchronized. This experience is likely to be internalized as an emotional sense of security that the child carries with him throughout his life. Synchrony is supported by attachment-related physiological (breathing and heart rate) and endocrine systems (hormones such as oxytocin) and relies on timekeeping mechanisms that maintain positive mood, social orientation, and attention to micro-level shifts in relational behaviour.

Three main aspects of nonverbal synchrony have been identified:

1. Gaze synchronization,
2. Affect synchronization,
3. 'Proto-conversation' the repetitive moments of vocal synchrony.

All three of these key aspects are building blocks of spoken language and fundamental to promoting security and attachment (Feldman et al., 2011).

Synchrony describes the intricate 'dance' that takes place during short, intense, playful interactions; it builds on familiarity with behaviour and the rhythms of interaction and shows the underlying temporal structure of interpersonal exchange between parent and child where the baby (usually) responds with excitement. These moments are markedly different from other everyday events in the lives of the baby and parent.

According to Leclère and co-researchers, synchrony comprises the following components:

1. A dyad: an interactive unit/system
2. Mutuality: the partners are mutually regulated/attuned to each other
3. Reciprocity: the partners show reciprocity, adaptation, flexibility and conformity/are equal to

each other
4. Rhythmic: the partners maintain balance in the system
5. Harmonic interaction: mother and child often share or experience similar behavioural states and affects
6. Maintenance of involvement: the partners experience long-term social involvement characterized by mutual attention and turn-taking (Leclère et al., 2014, p.7/34).

Synchronization in a child's earliest social interactions plays a crucial role in the development of affect regulation and later empathy (for a review of synchronization processes in parent-child interaction, see Feldman, 2007b). During the first year of life, synchrony is often intermodal, for example characterized by a mother's voice and a child's movements. As children grow older, synchrony can be characterized by more symmetrical modalities, more child initiation and turn-taking. A synchronous interaction should not be interpreted as a perfectly symmetrical timing exchange. Pauses and variations are important to enhance adaptation, creativity and stimulation (Leclère et al., 2014).

Entrainment

The Dutch physicist Christian Huygens discovered in 1666 that the pendulum frequencies of two clocks mounted on the same wall synchronized with each other at a common frequency, they started running in sync. This effect was called entrainment and could be seen as an adaptation process in which different resonant frequencies are gradually eliminated to zero until both moving bodies become synchronous. Decisive for entrainment is the common period of the swaying / inflecting movements of two bodies.

Because sound waves, which are most important for speech and music and other perceptual tasks, are based on periodic movements, movements that repeat themselves over equal periods of time, the auditory system (the entire processing system of sound information, from sound vibrations to awareness) is perfectly capable of detecting and constructing rhythmic sound patterns. Auditory rhythmic 'actions' as a coercive function to optimize all aspects of motor control. Rhythm influences the timing of movements, but also the activation and control of movement in space (Thaut et al., 2015).

Entrainment is the process by which two physical (or biological) systems are synchronized (become synchronized) through interaction with each other. However, the term entrainment not only describes 'the outcome': a perfect period and phase synchronization between two oscillators, but also the process of synchronization that can be observed when two or more systems emit periodic (at regular intervals) signals (Trost, 2017).

Trost and Vuilleumier (2013) speak of 'rhythmic entrainment' and describe the processes that take place in the brain when rhythmic aspects are perceived in music and how these processes can interact with the production of emotion. (See also later in this article e.g., evoking expectations and synchronization processes during pregnancy.) Trost and Vuilleumier distinguish, when discussing entrainment through music: perceptual entrainment, motor entrainment, physiological entrainment and social entrainment.

Perceptual entrainment: Most music is based on metrical structures. The perceptual systems (perception through the senses) perceive the order (the rhythm), and this creates (temporary) expectations. Expressive music also creates melodic and harmonic expectations. Meeting these expectations or disappointing those expectations can, according to Meyer (1956) and Huron (2006), arouse emotions. Perceptual entrainment is defined as the process by which auditory cues are integrated into a perception of periods. Perceptual entrainment can thus be regarded as the process required to perceive periodic information, such as the musical beat/rhythms (Trost, 2017).

Motor Entrainment: Several motor systems are activated when listening to metrical music. This can evoke an internal preparation of actions. The muscles and muscle groups are already 'turned on' and they are ready to move. This could explain the spontaneous movements when music is heard. In the context of the phenomenon of motor entrainment, the most frequently mentioned example is dancing together or tapping in time, clapping or stepping along, where the musical rhythm is used to synchronize movements (Trost, 2017). Another practical example of a common experience of synchronization of movements in a group of people is the synchronization of handclaps in a public (Kirschner & Tomasella, 2009).

Physiological entrainment: listening to music can cause changes in breathing and heart rate (for reviews see: Hodges, 2010). This autonomic physiological process by which biological rhythms, which are controlled by the sympathetic and parasympathetic branches of the autonomic nervous system, are dragged into and by externally perceived rhythms. This form of entrainment mainly involves respiratory and cardiac activity, which are often linked (Trost, 2017).

Social entrainment: Musical rituals in different cultures, for example musical trance through collective drumming or ecstatic dancing to music, evoke very strong emotional experiences. These experiences, with an important social component, can lead to a strong sense of connection with someone else or with other members of the group, who share these musical experiences. Social entrainment can also occur when listening to music or making music together in a group: motor actions of two or more people are coordinated. This interpersonal synchronization, characterized by periodic behaviours such as imitating a partner's attitudes or actions, is a well-known phenomenon. The result of these imitations is synchronized movements.

Wiltermuth and Heath (2009) showed that, independently of musical activities, acting in sync (for example, walking in time) with partners in a group increases cooperation between group members. Even seeing or simply hearing steps in bar or even on the afterbeat increased the sense of interpersonal connection (Miles et al., 2009). With social entrainment we refer to interpersonal synchronization processes in a social context caused by music. During music moments with young children and their parents, stepping together in time or playing together in time increases the group feeling.

Interactional synchrony and synchronous movement

The characteristic of a system (such as Huygens' clocks), but also the characteristics of cycles/systems/mechanisms in nature (seasons) and in living beings (such as humans), is that 'it is always looking' for a certain balance. New 'information' can temporarily unbalance a cycle or a system,

but a process is always set in motion through which this new 'information' can be absorbed and a new equilibrium can be created. Synchronization is therefore also a regulating mechanism in adapting/fitting new information into the existing system. The ability to move in synchrony with each other is called 'interactional synchronization' by Condon (1974 study). An example of this has already been found in very young babies, they appear to move simultaneously to the rhythm of the voice of the parent, making use of their entire body. In addition, Condon also speaks of self-synchronization, in which the different movements within a person (e.g. speech, pitch and hand gestures) follow the same rhythm (cited in Bosman, 2012, p. 24).
Interpersonal coordination as the umbrella term is defined by Bernieri and Rosenthal as the 'degree to which the behaviour in an interaction is synchronized in both timing and form', based on behavioural attunement and interactional synchrony (Bernieri & Rosenthal, 1991, p. 403).

Interactional synchrony, according to Hove and Risen, can be defined as interpersonal coordination of behaviour in the dimension of time, with similar or even different, but simultaneous movements or changes of attitudes (Hove & Risen, 2009). Research shows that humans respond to movements of an interacting partner. In empirical psychological research there is increasing evidence for the effects of synchronous movement on connectedness and cooperation. Basic synchronized activities such as synchronizing results in more cooperation and mutual consideration in group activities (Wiltermuth & Heath, 2009).
Core elements that promote bonding and cooperation have been described as synchronization, coordination and co-regulation of behaviour (Semin & Caccioppo, 2008).

Synchronization in music and dance

People all over the world actively participate in and enjoy music and dance activities, where the rhythm and pulse are basic elements that produce a positive experience. Eerola showed that children aged 2– 4 years, in whole-body dance movement activities, were able to follow the rhythm, synchronizing their movements with the music with increasing age (Eerola et al., 2009).

Retra (2010) writes in her thesis 'Music is movement': the point is that the road to synchronizing movements with a beat, during music education lessons of parents with children between 1.5 and 3 years old, will be paved with moments without synchronization, half synchronization and direct synchronization: a musical learning process. The following four elements relate to this process:

- a direct motion response: in tempo, a synchronized response
- a motion response that is ahead of the tempo: a response faster than the beat presented
- a delayed motion response (slower than the beat presented)
- a motion response that alternates in and out of tempo.

It has also been shown that within a group the degree of synchronization is greater. In the presence of a person playing the drums, even young children as young as 2.5 years old were able to adjust their drum tempo to a beat outside the range of their own spontaneous tempo (Kirschner & Tomasello, 2009). The authors suggest that collaborative drumming elicits a specific motivation to synchronize movements during that collaborative rhythmic activity, a phenomenon familiar to most people in the contexts of music and dance. Wiltermuth and Heath (2009) showed that synchrony in collective singing, with and without simultaneous movements, promotes collaboration and social cohesion. A result that

could partly explain the appeal of singing in a choir. Naturally, synchronization of body movements with music or with other people (both a conscious and unconscious process) is an effective central element in dance/movement therapy. Behrends (2012) has written that synchronous rhythmic movement results in a sense of well-being, relaxation and camaraderie in psychiatric patients, and that joining the dance circle strengthens relationships and aids in the process of resocialisation.
In Dutch music therapy the following description of synchrony is used: Synchronies are moments when two persons, during shared musical play, play with each other exactly at the same time in time. In music therapy interventions, synchronization can be a very common part of the meetings. In Bruscia's techniques (1987), synchronization is described as: “The therapist is doing what the client is doing at the same time. The actions coincide”.

Rhythmic entrainment in interventions

With regard to the application of rhythmic entrainment, it should be recognized that rhythmic entrainment and its effect on affect can be directly implemented in therapy (Trost, 2017). Moreover, music therapy that includes both passive listening and active motor involvement, and thus entrainment processes, has beneficial effects not only on motor skills, but also on the emotions of Parkinson's patients (Pacchetti et al., 2000). With regard to the different forms of rhythmic entrainment, they have in common that the music triggers synchronization behaviour in different biological rhythms and that this attunement to the periodicity of the musical rhythms has an affective component (Trost, 2017).

Interaction structure - attunement - entrainment - synchrony

Back to the relationship between parent and very young child. Bosman, professor at Radboud University in Nijmegen supervised research into the Emerging Body Language (EBL) methodology (Bosman et al., 2012). This body-oriented treatment method developed by Rutten-Saris and Heijligers speaks of interaction structures. The first interaction structure is called 'attunement' and this can be compared to Daniel Stern's 'affect attunement'. The five interaction structures are organized into layers:
Layer A: reconciliation (zero to two months),
Layer B: turn-taking (two to six months),
Layer C: exchange (seven to fourteen months), Layer D: play dialogue (14–24 months),
Layer E: task/theme (24 months and older).
According to Rutten-Saris and Heijligers (Bosman et al., 2012), the interaction structure 'attunement' looks like this: 'Being in each other's rhythm, with rhythmic pauses'. During the attunement in the rhythm, a sense of 'being together' arises, and during the break a sense of 'myself' arises. Both elements are necessary in healthy development. The baby learns how to be itself and how to be with others. From the first interaction structure arises turn-taking, the second interaction structure. This interaction structure has the form: 'Being in the same rhythm one after the other, with rhythmic pauses'. This means that one child is able, after the other, to make movements in the same rhythm as the other.

The first interaction structure is based on the principle of entrainment, the ability of one system to ‘take another system in tow'. This principle also appears to apply to living systems, such as humans, where our heart, comparable to the clockwork, determines the rhythm of our lives. From taking turns in each other's rhythm, the third structure arises with the possibility to add a small variation in the turn. You see this happen, for example, when two people take turns tapping the pen on the table. At first they repeat

each other's rhythm, until one of them adds another rhythm, creating a song 'by itself'. Verbal language plays an important role in the fourth and fifth interaction structure.

Conclusion

Many elements play a role in the bonding process between parent and child. Entrainment is one of them and is linked to the processes that ultimately lead to synchronization. If we look through the lens 'development of the young child', we see that the biological attunement (at the hormonal level and via the circadian rhythm) already takes place prenatally. After birth, attunement, turn-taking, interaction and dialogue are fundamental elements that, through the process of entrainment (perceptual, motor, physiological and social), produce synchronization on a physiological, emotional and psychological level. In the synchronous interaction between parent and child, the actions are not always synchronized, children fall in and out of the symmetrical timing exchange and that pauses and variations occur. We have to be aware that the 'labels' attached to the processes within various disciplines (and within streams of scientific research) are different.

Theory supported by scientific research can provide progressive insight. We add psychological, therapeutic, as well as didactic and pedagogical techniques and experiences. We have musical elements in abundance: rhythm, pulse, shape, affect, imitation, synchronization, mirroring, repetition, rhythmic basis, sharing an instrument / playing together on the same instrument. There are also plenty of musical play activities/interventions: songs, musical games, action songs, cuddling and massage play, playing with and on instruments and materials, dance and movement activities, working with sensory materials, etc. And through singing, playing, listening, moving and noting, we involve and reach both the child and the parent, which has an undeniable influence on the parent-child relationship.

Implications

How can we use the above knowledge and insights in music education, music therapy and IMH interventions? Which songs, tunes, improvisation, games, etc. do we choose that match the above findings? The next step: a practical article, with substantiation, as a suggestion box, in which a (practical) image is created for the teacher, therapist, psychologist, play therapist, music educator. In this way, theory and research can be linked to practice and cross-pollinate occurs to reach the ultimate goal: an optimal parent-child relationship through music(al) interventions.

References

Behrends, A., Müller, S., & Dziobek, I. (2012). Moving in and out of synchrony: A concept for a new intervention fostering empathy through interactional movement and dance. The Arts of Psychotherapy 39, 107-116, Germany

Bernieri, F. J., & Rosenthal, R. (1991). Interpersonal coordination: Behavior matching and interactional synchrony. In R. S. Feldman & B. Rimé (Eds.), Fundamentals of nonverbal behavior (pp. 401–432). Cambridge University Press

Bosman, A., Veen van- Graafstaal, S., & Heijligers, C. (2012). Onderzoek naar de methodiek Emerging Body Language Een eerste verkenning. pp. 11 en 24

Bruscia, K. E., (1987). Improvisational Models of Music Therapy. Springfield

Condon, W. S., & Sander, L. W. (1974). Synchrony demonstrated between movements of the neonate and adult speech. Child Development, 45, 456-462.

Eerola, T., Lartillot, O., & Toiviainen, P. (2009). Prediction of multidimensional emotional ratings in music from audio using multivariate regression models. In Proceedings of the Paper presented at the International Conference on Music Information Retrieval.

Feldman, R. (2007). Parent-Infant Synchrony Biological Foundations and development outcomes. Association of Psychological Science, 16(6), 340-345

Feldman, R., Magori-Cohen, R., Galili, G., Singer, M., & Louzoun, Y. (2011). Mother and infant coordinate heart rhythm through episodes of interaction synchrony. Infant Behavior Development 34, 569-577

Feldman, R. (2007b). Parent-infant synchrony and the construction of shared timing; physiological precursors, developmental outcomes, and risk conditions. Journal of Child Psychology and Psychiatry, 48(3–4), 329–354.

Hodges, D. A. (2010). Psycho-physiological measures. In P. N. Juslin & J. A. Sloboda (eds), Handbook of Music and Emotion: Theory, Research, Applications, (pp. 279–311). Oxford University Press.

Hove, M. J. & Risen, J. L. (2009). It's all in the timing: interpersonal synchrony increases affiliation. Soc. Cogn. 27(6), 949–960. http://dx.doi.org/10.1521/soco.2009.27.6.949 Huron, D. (2006). Sweet Anticipation. MIT Press.

Kirschner, S. &T omasello, M. (2009). Joint drumming: social context facilitates synchronization in preschool children. J. Exp. Child Psychol. 102(3), 299–314. http://dx.doi.org/10.1016/j.jecp.2008.07.005

Leclère, C., Viaux, S., Avril, M., Achard, C., Chetouani, M., Missonnier, S., & Cohen, D. (2014). Why Synchrony Matters during Mother-Child Interactions: A Systematic Review. PLoS ONE 9(12): e113571. https://doi.org/10.1371/journal.pone.0113571 pag 7/34

Meyer, L. B. (1956). Emotion and Meaning in Music. University of Chicago Press.

Miles, L. K., Nind, L. K., & Macrae, C. N. (2009). The rhythm of rapport: interpersonal synchrony and social perception. J. Exp. Soc. Psychol. 45(3), 585–589. https://doi.org/10.1016/j.jesp.2009.02.002

Pacchetti, C., Mancini, F., Aglieri, R., Fundarò, C., Martignoni, E., & Nappi, G. (2000). Active music therapy in Parkinson's Disease: an integrative method for motor and emotional rehabilitation. Psychosom. Med. 62(3), 386–393. https://dx.doi.org/ 10.1097/00006842-200005000-00012

Reiter, R. J., Tan, D.X., Korkmazz, A., & Rosales-Corral, S. A. (2013). Melatonin and stable circadian rhythms optimize maternal, placental and fetal physiology. Human Reproduction Update, 20(2), 293–307, 2014

Retra, J. (2010). Music is Movement: A Study into Developmental Aspects of Movement Representation of Musical Activities among Preschool Children in a Dutch Music Education Setting. Thesis University of Exceter.

Semin, G. S., & Caccioppo, J. T. (2008). Grounding social cognition. In G. S. Semin, & E. R. Smith (Eds.), Embodied grounding. Social, cognitive, affective, and neuroscientific approaches (pp. 119–147). Cambridge University Press.

Stern, D. N. (1985/2000). The interpersonal world of the infant. Basic Books.

Thaut, M., McIntosh, G., & Hoemberg, V. (2015). Neurological foundations of neurologic music theory: rhythmic entrainment and the motor system. https://doi.org/10.3389/fpsyg.2014.01185

Trost, W., & Vuilleumier, V. (2013). Rhythmic entrainment as a mechanism for emotion induction by music: a neurophysiological perspective. Research gate

Trost, W., Labbé, C., & Grandjean, D. (2017). Rhythmic entrainment as a musical affect induction

mechanism. Neuropsychologica 96 p. 96-110
Wiltermuth, S. S., Heath, C. (2009). Synchrony and cooperation. Psychol. Sci. 20(1), 1–5. https://doi.org/10.1111/j.1467-9280.2008.02253.x

An Exploratory Study of Wind Instrumentalists Gaze Behavior During Tuner Use

Yasumasa Yamaguchi, Sendai University, Japan

Abstract

This paper investigates the gaze behavior of wind instrumentalists during performances when a tuner is present on their music stands. Intonation stands as a pivotal element in achieving excellence in musical performances, notably within orchestral and concert band contexts. Tuners are frequently employed in the rehearsal processes of orchestras and concert bands, encompassing daily training and individual practice sessions, to provide pitch feedback and facilitate accurate intonation. This habit is widespread among Japanese wind instrumentalists, including junior high school students, high school students, and adult amateur players. While the use of tuners contributes to maintaining correct pitch, it can inadvertently lead to excessive focus on the tuner itself, potentially causing a diminished awareness of cues from conductors and metronomes. This study conducts comparative experiments to explore the impact of tuner use during musical performances. Leveraging advancements in eye-tracking technology, we collected gaze behavior data from wind instrumentalists during their musical performances. Specifically, we employed the Tobii Pro Glasses 3 to measure gaze duration and gaze frequency directed towards the metronome, enabling us to assess differences in gaze behavior under varying tuner conditions and task difficulties.

In the experiments, participants were tasked with playing their instruments in accordance with sheet music displayed on a tablet positioned on a music stand. During the experiment, they could get pitch feedback from the tuner which was placed next to the tablet. They were also instructed to maintain tempo alignment, which was displayed on a monitor in front of them. Subsequent to the experiments, we analyzed fixation data using Tobii Pro Lab. The effects of tuner usage were examined with two conditions: an easy performance task and a difficult performance task. Employing a multivariate analysis of variance (MANOVA), we evaluated tuner condition (Tuner or No Tuner) and difficulty level (Easy or Difficult) as independent variables, while total gaze duration and gaze frequency served as dependent variables. Our results revealed significant main effects for both tuner condition ($p<.001$, $\eta p2=0.64$) and difficulty level ($p<.005$, $\eta p2=0.45$). Specifically, we observed shorter total gaze duration when the tuner was utilized and longer gaze durations when participants performed less challenging tasks. Notably, the interaction between these factors did not yield statistical significance. These findings provide valuable insights into how tuner usage and task difficulty influence gaze patterns during musical performances, contributing to our understanding of musicians' visual attention dynamics in such contexts.

Key Words: eye tracking, musical performance, wind instrument

Introduction

Eye Tracking in Musical Activities

The use of eye tracking technology in musical activities, particularly during instrumental performances, has generated significant interest and discussion. This technology offers valuable insights into the

cognitive competencies of individuals, presenting an opportunity to delve deeper into their thought processes. In the realm of pedagogy, researchers aim to investigate students' competency performance and develop new teaching methods and guidelines by the analysis of eye-tracking (Haider & Frensch, 1999; Gegenfurtner et al., 2011). This approach finds applications in both music performance and education, encompassing a range of experiments such as sight-reading and ensemble performance assessments.

A seminal work in this domain was conducted by Drai-Zerbib et al. (2012), who conducted experiments involving sight-reading conditions, preliminary listening conditions, and fingering conditions, making comparisons between expert and non-expert performers. The outcomes of these experiments lent support to the theoretical framework proposed by Ericsson & Kintsch (1995), which posits that experienced performers exhibit greater flexibility and efficiency in cognitive processes, including the acquisition of visual information during their performances, driven by their extensive musical knowledge and experience. Notably, the majority of eye-tracking studies in musical performance have concentrated on piano performances, as highlighted by Puurtinen (2018).

In contrast, there has been a conspicuous dearth of research focused on the practical aspects of wind instrument performance. Playing a wind instrument entails fundamentally distinct cognitive processes compared to piano performance. Wind instrumentalists navigate additional complexities, such as the "Kreitman's listening loop" (2010), and frequently collaborate with other musicians and conductors. Unlike pianists, wind instrumentalists must manage their own intonation while simultaneously processing visual information. The recent advent of glasses-type and head-worn eye trackers, exemplified by technologies from Tobii and Pupil-Lab, has significantly expanded the scope of research in gaze behavior during musical performances.

One noteworthy exploration in this emerging area was undertaken by Vandemoortele et al. (2018), who conducted pioneering experiments focused on observing gaze behavior between ensemble partners during instrumental rehearsals and run-throughs. This research represents the cutting-edge in musical performance studies, shedding light on nonverbal communication dynamics in ensemble performances, irrespective of the instrument types involved. This introduction sets the stage for the present study, which endeavors to bridge the gap in the literature by examining gaze behavior in the context of wind instrument performance, exploring its nuances, and contributing to a deeper understanding of the cognitive processes involved.

Intonation of Wind Instrument

Within the domains of music education and the practical realm of musical instrument performance, achieving precise pitch accuracy holds a central and fundamental role. Morrison & Fyk (2002) assert that accurate pitch performance hinges on the mastery of three interconnected skills: (1) the ability to discern pitch differences, (2) the technical proficiency to create various pitches, and (3) the capacity to manipulate pitch accurately within the context of real musical performance scenarios. The significance of correct intonation is underscored not only for novice musicians but also for seasoned experts, particularly when participating in ensemble performances. However, instrumentalists must navigate a multifaceted visual landscape, which may include cues from a conductor, sheet music, and, notably, the tuner.

Given the paramount importance of intonation, it is not uncommon for novice and student instrumentalists to employ tuners as tools to obtain real-time feedback on pitch accuracy (Feldman et al., 2020). These tuners find their place on music stands, where instrumentalists intently focus on the tuner's pitch indicator during their performances. This practice is frequently observed, especially among beginner-level players and students within Japanese musical groups, such as concert bands (Yamaguchi, 2022).

This paper delves into the realm of gaze behavior during wind instrument performances, specifically when tuners, metronomes, and sheet music are concurrently in use. We endeavor to compare gaze movements during performances with and without tuners, employing the Tobii Pro Glasses 3 (hereafter referred to as Tobii Glasses 3, a wearable eye-tracking device manufactured by Tobii Technology) for data collection. This scenario, characterized by the presence of tuners during wind instrument performances, is prevalent among beginner-level players and students in Japanese musical ensembles, notably concert bands. While the use of tuners during performances has been noted to potentially hinder the reception of cues from metronomes and conductors, there exists a lack of empirical studies exploring this phenomenon in depth. This paper seeks to address this gap in the literature by investigating the implications of tuner use on gaze behavior and its potential consequences for the overall performance experience.

Method

Participants

The conducted experiment involved a sample of 23 student participants with an average age of 21.3 years (*SD*=1.52). Students were selected from national university's concert band and orchestra clubs. Their musical ability as wind instrumentalists was confirmed to be at an intermediate or advanced level. The instruments played by the participants were 5 clarinet players, 4 flute players, 3 french horn players, 2 trumpet players, 2 saxophone players, 2 trombone players, 2 euphonium players, 2 oboe player, and 1 bassoon player.

Procedure

The experiment was designed with two distinct conditions aimed at investigating the gaze behavior of wind instrumentalists during their performances. Participants were instructed to play their respective instruments in accordance with music sheets placed on the music stand positioned in front of them. The experiment consisted of a sequence comprising four blocks.

In Section 1 (Blocks A and B), participants performed solely with the aid of sheet music. In Section 2 (Blocks C and D), they performed with both sheet music and a conventional tuner positioned on the music stand. The order of these two sections was systematically counterbalanced across the participating instrumentalists.

In both blocks, participants were tasked with maintaining tempo alignment with a metronome, which was visually presented on a screen situated in front of them (Figure 1). Prior to commencing the main experiment, participants completed two example trials (basic and advanced) to familiarize themselves with the task. Additionally, the tablet displayed a gaze point at specific intervals between each of the

blocks to aid participants in recalibrating their gaze.

The performance task in Blocks A and C was categorized as the basic level, comprising exercises such as major scale practice and other routine exercises commonly found in instructional textbooks. Conversely, Blocks B and D encompassed the advanced level performance task, which was derived from Farkas's etude (1963). This etude involved the random arrangement of musical notes, intended to enhance the precision of the players' performance. The author modified this etude to accommodate a variety of instruments, considering the range considerations specific to each instrument category.

Equipment

As mentioned above, for the measurement of gaze, the Tobii Glasses 3 were utilized. Eye tracking is a method based on the corneal reflex method that measures a subject's gaze. The Tobii Glasses 3 record gaze data at a rate of 50Hz. A camera is embedded at the center of the Tobii Glasses 3, enabling the recording of the wearer's gaze. Measurement data can be analyzed using analysis software (Tobii Pro Lab). Due to its wearable nature, Tobii Glasses 3 are considered suitable for gaze measurement under conditions closely resembling practical scenarios in wind instrument performance contexts.

To present tempo cues via a metronome without the sound, a 23-inch display was positioned at a distance of 1.2 meters in front of the participants (approximately spanning a horizontal visual angle of 7.6 degrees and a vertical angle of 8.9 degrees). A 12-inch tablet device (Surface Pro 3) and a tuner were placed on a music stand positioned between the display and the participants. The position of the music stand was adjusted as needed by the participants, but it was generally set approximately 40 cm from the participants. Experimentally, musical scores were presented on the tablet device using the automatic slideshow feature of PowerPoint. The tablet device itself covers a horizontal visual angle of 35.2 degrees and a vertical angle of 23.8 degrees; however, since it displays single-row sheet music, the vertical angle is approximately 2.1 degrees. A YAMAHA TDM-70 tuner was employed (the portion displaying pitch corresponds to approximately 7.8 degrees in horizontal visual angle and 3.3 degrees in vertical visual angle).

Gaze Behavior Index

In this experiment, we defined fixation as gaze behavior which is less than 100 degree per seconds, and minimum of each retention time was 60ms. We defined the TOI (Time of Interest) from the start of performance to the end of performance for each block and set 4 TOI; “Tuner / Easy”, “Tuner / Difficult”, “No Tuner / Easy”, and “No Tuner / Difficult”. Furthermore, we defined the 23-inch display which project the metronome as the AOI (Area of Interest)

Results

Table 1 shows the mean and standard deviation of total duration of fixation and number of fixations. To investigate whether the gaze duration and gaze frequency towards the metronome varied based on the usage condition of the tuner and the difficulty level, a multivariate analysis of variance (MANOVA) was

conducted, with tuner condition (Tuner or No Tuner) and difficulty level (Easy or Difficult) as independent variables and total gaze duration and gaze frequency as dependent variables. The results revealed significant main effects for both the tuner condition (Wilks's Λ=0.36, $F(2,17)=14.82$, $p<.001$, $\eta p2=0.64$) and the difficulty level ($\Lambda=0.55$, $F(2,17)=6.88$, $p<.005$, $\eta p2=0.45$). The interaction between both factors was not significant ($\Lambda=0.84$, $F(2,17)=1.64$, ns., $\eta p2=0.16$). Then, univariate ANOVAs were conducted to assess the effects of tuner and difficulty level for each gaze behavior measure.

The results showed a significant main effect of tuner condition on total gaze duration ($F(1,18)=29.85$, $p<.001$, $\eta p2=0.62$), with shorter total gaze duration towards the metronome observed when the tuner was used compared to when it was not used. Additionally, a significant main effect of difficulty level ($F(1,18)=13.43$, $p<.005$, $\eta p2=0.43$) indicated longer gaze duration towards the metronome when participants were playing an easy piece compared to when playing a difficult piece. The interaction between both factors was not significant ($F(1,18)=2.92$, ns., $\eta p2=0.14$).

In terms of gaze frequency, a significant main effect of tuner condition ($F(1,18)=12.55$, $p<.005$, $\eta p2=0.41$) was observed, with fewer gaze instances towards the metronome when the tuner was used compared to when it was not used. Similarly, a significant main effect of difficulty level ($F(1,18)=13.94$, $p<.005$, $\eta p2=0.44$) indicated more gaze instances towards the metronome when participants were playing an easy piece compared to when playing a difficult piece. The interaction between both factors was not significant ($F(1,18)=1.45$, ns., $\eta p2=0.07$).

Furthermore, an analysis of participants' gaze patterns using Tobii Pro Lab revealed that, on the whole, participants allocated a substantial portion of their gaze time to the sheet music. Notably, during more challenging tasks, a significant number of participants appeared to concentrate exclusively on the sheet music. In the absence of the tuner and when presented with easier sheet music, participants frequently shifted their gaze between the metronome, particularly at critical moments such as the initiation of sound production, and the sheet music. However, in the condition where the tuner was employed, participants intermittently directed their attention towards the tuner to confirm pitch accuracy. Given the nature of pitch alignment tasks, the duration of gazes at the tuner tended to be longer than those directed at the metronome, which primarily pertains to momentary elements, such as the initiation of sound production. It is noteworthy that the order and frequency of gazes exhibited variations among participants. Nonetheless, a common gaze pattern emerged, characterized by transitions between the three focal elements: sheet music, tuner, and metronome. This nuanced interplay of gaze behavior underscores the complex visual attention dynamics at play during wind instrument performances, particularly when tuners are integrated into the performance setup.

Discussion

The results of the experiment unveiled a clear trend wherein participants, when utilizing the tuner, directed their gaze less frequently and for shorter durations towards the metronome compared to instances when the tuner remained unutilized. Furthermore, it was evident that during the execution of less demanding tasks, participants tended to allocate a greater proportion of their gaze time and exhibited a higher frequency of gazes directed at the metronome in contrast to when engaged in more challenging tasks. This observation implies that the presence of the tuner, which gives pitch feedback,

may elicit an increased inclination toward tuner-related gazes, potentially at the expense of reduced attention directed at the metronome. Additionally, the heightened focus on the metronome during easier tasks may be attributed to the inherent predictability of note sequences, affording participants the opportunity to reduce their reliance on visual engagement with the sheet music and, consequently, allocate more time to monitor the metronome.

It is crucial to acknowledge that the principal objective of this study was to gain insights into the practical behaviors of performers when incorporating a tuner onto their music stands. Consequently, the stimuli likely to capture participants' gaze naturally differed between conditions with tuner usage and those without. Consequently, participants' gaze patterns were characterized by transitions among three focal elements (sheet music, tuner, and metronome) when the tuner was in use and between two elements (sheet music and metronome) when it was not employed. Recognizing these nuances, future research endeavors should aim to establish more refined experimental conditions to explore the specific gaze patterns within each Area of Interest (AOI). Such an approach would provide a deeper understanding of the intricate dynamics of visual attention during musical performances, with the potential to uncover further insights into the influence of tuners on gaze behavior and its implications for musical performance.

References

Drai-Zerbib, V., Baccino, T., & Bigand, E. (2012). Sight-reading expertise: Cross-modality integration investigated using eye tracking. *Psychology of Music, 40*(2), 216–235. https://doi.org/10.1177/0305735610394710

Ericsson, K. A, & Kintsch, W. (1995). Long-term working memory. *Psychological Review, 102,* 211– 245.

Farkas, P. (1963). *The Art of French Horn Playing*. Van Nuys: Alfred Music.

Feldman, E., Contzius, A., Lutch, M., Bugaj, K. K., & Battisti, F. L. (2020). *Instrumental music education: Teaching with the musical and practical in harmony.* Routledge.

Gegenfurtner, A., Lehtinen, E., & Säljö, R. (2011). Expertise differences in the comprehension of visualizations: A meta-analysis of eye-tracking research in professional domains. *Educational Psychology Review, 23*(4), 523-552.

Haider, H., & Frensch, P. A. (1999). Eye movement during skill acquisition: more evidence for the information-reduction hypothesis. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 25*(1), 172.

Kreitman, E. (2010). *Teaching with an Open Heart*. Western Springs School of Talent Education.

Morrison, S., & Fyk, J. (2011). Intonation. In R. Parncutt & G. McPherson (eds), *The Science & Psychology of Music Performance: Creative Strategies for Teaching and Learning.* Oxford Academic

Puurtinen, M. (2018). Eye on music reading: A methodological review of studies from 1994 to 2017. *Journal of Eye Movement Research, 11*(2).

Vandemoortele, S., Feyaerts, K., Reybrouck, M., De Bièvre, G., Brône, G., & De Baets, T. (2018). Gazing at the partner in musical trios: a mobile eye-tracking study. *Journal of eye movement research, 11*(2), 10.16910/jemr.11.2.6. https://doi.org/10.16910/jemr.11.2.6

Yamaguchi, Y., Kawada, T., Nagahama, T., & Horita, T. (2022, June). A Pilot Study of the MVP Support System using Google Glass. In EdMedia+ Innovate Learning (pp. 17-28). Association for the Advancement of Computing in Education (AACE).

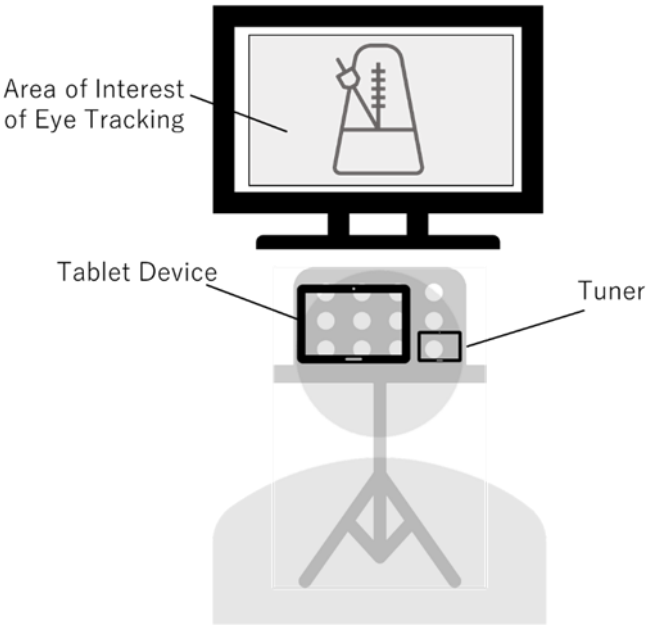


Figure 1. The image of the participants' perspective

Table 1. The summary of results

Condition	**Using Tuner**		**Not Using Tuner**	
Task Difficulty	Easy	Difficult	Easy	Difficult
Total duration of fixations (millisecond)	1965.42 (2867.41)	628.42 (880.19)	6041.42 (4522.40)	2886.26 (2739.77)
Total number of fixations	10.05 (14.15)	2.84 (3.83)	21.16 (19.76)	9.32 (11.28)

Leadership identity development in classical and jazz music: comparing life histories of eminent female musicians

Luna Xinlu Zheng, UCL Institute of Education, United Kingdom

Abstract

This paper aims at understanding the factors influencing the leadership identity development of two eminent female musicians (pseudonyms: Elena, Tinecia), as a conductor and a composer respectively, in classical and jazz music. They are also educational leaders in the higher music education institutes in the United Kingdom and the United States. Using theories of leadership identity, social identity, social stratification, and intersectionality, the paper revealed significant factors for the two female musicians' musical learning and professional development embedded in the formal and informal social structures in classical and jazz music. It examined and compared critical incidents and modal trajectories contributing to the leadership identity establishment in the life histories of both female musicians, and identified relevant issues in music education, industry, and wider societies inhibiting or facilitating women's leadership identity establishments and dynamics in music. The paper posited that leadership identities are multi-layered, subject to intersected social forces, and malleable throughout lives. It concluded with theoretical findings on leadership identity development in music and practical implications for music education and professional development.

Key words: leadership identity, life history research, intersectionality, cross-cultural comparison

Introduction

Across different cultures, "leaders are widely recognized as the proper focus for our attempts to understand the tides and shape of history" (Haslam et al., 2020, p. 1), so life histories of leaders enhance our understandings of leadership identity development in various social contexts, including art, technology, and education. Life history research recognises that "social and personal realities originate in the dialogical relationship between individuals and groups and the values and practices which characterise social worlds" (Goodson & Sikes, 2001, p. 112). This is accomplished by studying "the trajectory of our lives" in the past, which brings us to "a confrontation with identity" at the present where "private troubles and public issues collide" (Downs, 2016, p. 603). These issues serve as the foci of the life history research, e.g., to analyse the "critical incidents" (Patton, 2014, p. 404) and "modal trajectories" (Bourdieu, 1984, p. 110) of the two eminent female musicians' life histories. This paper focuses on the processes of their leadership identity establishment.

Theoretical framework

A person has multiple identities, each constructed in the interpersonal relation and collective membership of a social context (Worchel & Austin, 1986; Jenkins, 2008). This also applies to leadership identity which is more "ambiguous, dynamic, and contextual" compared to other identities (DeRue & Ashford, 2010, p. 630). Traditional theories on leadership perceived it as an individualistic trait of people "born with special gift or talent" (Howe, 2001, p. 76), which set "the minds and lives of leaders apart from those of others" (Haslam et al., 2020, p. 1). However, this did not consider "patterns of influence" for leadership identity or "social processes in its creation" (DeRue & Ashford, 2010, p.

630). Furthermore, traditional views focused on social contexts where the roles of leader and "subordinates" (p. 640) were "designated" (p. 635), and the field structure was "hierarchical" and "static" (p. 629); so other contexts were underexplored.

Contrarily, Haslam, Reicher, and Platow (2020) posited leadership identity as "grounded in leaders' capacity to embody and promote a psychology that they share with others" (p. 2). This entails a "tripartite" (DeRue & Ashford, 2010, p. 628) identification system including "individual internalisation", "relational recognition", and "collective endorsement" (p. 631). Individual internalisation refers to the self-recognition of the leadership, which does not establish the leadership identity unless coupled with "relational recognition" – "the adoption of reciprocal role identities as leader and follower" (p. 628). Leadership identity is constructed when "others take on a reciprocal follower identity" in groups whereas hierarchies and assigned positions do not guarantee relational recognition (p. 629). Further, when leader of a social group is supported and endorsed in the broader social environment, he or she achieves "collective endorsement" (p. 631). The tripartite identifications fulfil and "reinforce" leadership identity, making it "stronger and more stable" (DeRue & Ashford, 2010, p. 629).

Leadership identity is established through "leadership legitimacy" (William, 1986, p. 163), i.e., when follower "claims" leader and leader "grants" follower (DeRue & Ashford, 2010, p. 631). Both informal and formal social structures influence the legitimation of leadership identity in music. Informal structure includes "social stratification, status hierarchies, social networks, cultural norms and values, and sub-group leadership responsibilities" (p. 642), which can influence the musical learning and professional development of musicians (Wright, 2015). To analyse the informal structure in music, I use the concepts of schema, disposition, and habitus. Schema means musically-related social meaning and practice "inculcated and conserved in memory as knowledge" (Bourdieu, 1984, p. 67). It forms "patterns of behaviour consistent with previous experiences and future projections" (Wright, 2015, p. 81) and develop "habitual responses" (DeRue & Ashford, 2010, p. 636) in leadership actions and relations. Leadership-structure schema refers to one's conceptualisation of leadership within a social context, e.g., whether the leadership can be shared and "mutually enacted among group members" ("participative" leadership style), or there is "only one leader in a group" and "leader and follower identities are mutually exclusive" ("authoritative" leadership style) (Rue & Ashford, 2010, pp. 633 & 639).

Disposition means "schemes of perception, appreciation, and action" directing "social uses of objects" (Bourdieu, 1984, p. 570), e.g., how to play musical instruments or move the baton for conducting. Through musical learning and practices, the socialised dispositions become attached to the music "technical objects", constructing "habitus" in music fields (ibid., p. 29), for example, the ways for notation reading or improvisation (Burwell, 2023; Hultberg, 2010). In genres such as classical and jazz music, when dispositions are oriented toward capitals that privilege some social members, they become habitus embodied and transmitted in social relations and music groups. Habitus could be "engendered by history" and passed on across generations and cultures (Bourdieu, 1977, p. 82). For example, Perkins (2015) revealed that habitus can "shape the ways in which [beginning career] musicians view and experience their career preparation" (p. 102), while Sagiv and Hall (2015) identified habitus as constantly displayed in the bodily movements and cultural knowledge of the classical musicians, making explicit the "strict rules, demanding norms and conservative conventions" of the classical music field (p. 114). Formal social structure lies in schools, educational institutions, professional organisations, etc.,

manifested in curriculum, pedagogy, and the social conduct of gatekeepers that define and affirm "generalised expectations" of leadership in music (DeRue & Ashford, 2010, p. 640). These expectations originate from "implicit theories of leadership", i.e., other identities of the person that attach social meanings to the leadership identity (ibid.). When conflicting social meanings are integrated into the leadership identity, there might exist intersected inequalities. For example, legitimising leadership identity was challenging for leaders who were female and/or racial minorities in the United States because there were "evidence[s] of race and gender hierarchies in the legislature" (Wilson, 2013, p. 28; also, Crenshaw, 1989).

Both leadership-structure schema and implicit theories of leadership originate from social members' past experiences of leadership and "followership" (DeRue & Ashford, 2010, p. 637). If one has been used to experiencing the participative or authoritative leadership style, he or she might establish a corresponding image of leadership and develop conscious or unconscious "behavioural response patterns" (DeRue & Ashford, 2010, p. 636), forming "habitual responses enacted in future situations with minimal thought and effort" (ibid.). Therefore, studying the life histories of the two female musicians and leaders contributes an in-depth understanding of the factors embedded in the practices (schema, disposition, habitus) and (formal and informal) structures of the classical and jazz music fields, which have influenced their leadership identity establishment (Bourdieu, 1977, 1984; DeRue & Ashford, 2010; Perkins, 2015; Sagiv & Hall, 2015).

Data analysis

Elena (pseudonym) is an internationally renowned female classical music conductor. She is the leader of a reputed opera company and the conducting department of an esteemed music conservatoire in the United Kingdom.

Tinecia (pseudonym) is a world-famous female jazz drummer and composer. She has won various awards including the Grammys. She is the founder of a music institute in a well-known music college in the United States.

Childhood and adolescence

Elena's musical journey began with piano lessons at a young age, supported by her mixed-ethnic family. A large-scale music festival sparked her interest in a brass instrument, which she pursued at a new school that "had all [musical] instruments", after her family moved from a village to a city. Her music teacher introduced her to two youth orchestras, including a "prestigious" and "free-standing" one whose "more senior" members "came [to her home] and [they] rehearsed in the afternoon" until her mother made dinner for them before the concert. Elena's passion and dedication earned her a scholarship to study instrumental performance at a reputed conservatoire.

Elena's life experiences at childhood showed that the dispositions and supports of her family, teacher(s), and peer groups were her musical starting point (Baker & Green, 2017), while the youth orchestras provided initial social contexts where her leadership in music emerged. Constituted through

collaborative music making with peers, her initial leadership integrated social and cultural capitals and two dispositions: moving geographically and earning financial support. Thus, ethnic, social-relational, social-economic, and musical identities were integrated into the early development of Elena's leadership identity.

Tinecia, raised in a family of African-American musicians, was encouraged to play music from a young age because "the drums were there. My father played it, and my grandfather too". While she heard stories of students "in [all levels of] school[s] steered away from certain instruments and did not get solos or [other] opportunities", she avoided these biases through private tutoring by her family. After performing at a major jazz festival, she received a full scholarship to an elite music college, where she studied with first-class jazz musicians. She has released over ten albums.

Tinecia's family supported her to connect with expert musicians in jazz music, where the performance-based culture entailed "monolithic", "admiration-based", and chain-referral habitus and structure (Johansen, 2023, p. 7). This enabled her to master the "improvisation performance practices" (Lohmeyer, 2023, p. 12), which could to some extent offset the identity-based challenges in her leaning and working environment. For example, she "functioned well in a male-dominated space", and this meant that her mastery of the musical practices could earn her more equal and respectful professional relations with her male colleagues in jazz music. With these social and cultural capitals, Tinecia developed a strong followership identity and an initial (participative) leadership-structure schema.

As above, during childhood and adolescence, both Elena and Tinecia gained substantial social and cultural capitals before they entered the higher education, but with different approaches. Tinecia inherited the family's capitals and Elena earned them through cultivating relations with teachers and peers. These influenced their early forms of leadership-structure schema, which for Elena it comprised of sub-group leaderships in various music groups (DeRue & Ashford, 2010), and for Tinecia it consisted of close associations with master performers and "embodied expertise of jazz composers" (Burwell, 2023, p. 10). The different foundations of leadership-structure schema might have contributed to the different leadership identity development in the two female musicians' lives, as I continue to analyse their adulthood experiences.

Young adulthood

From mid-adolescence, Elena's instrument teacher was a "famous [and] virtuous" musician. She followed the teacher to a respected conservatoire but he left the teaching position soon after her enrolment. Without the teacher, but feeling "wanted the music so much", Elena "invit[ed] friends to come and play" in self-organized concerts and achieved "more or less success". Later she won a scholarship to study a postgraduate diploma in conducting at the same conservatory and met an Estonian conductor at a summer course. She asked him "how can I learn to conduct like you" and he recommended studying in Leningrad where he was trained. Although her parents concerned that "there was not a general picture of women naturally becoming conductors", they supported her living costs at her postgraduate study, believing that "somebody somewhere must think [she has] got potential".

The postgraduate curriculum let Elena feel in limbo "between being a student and [a] junior member of staff", with "more non-academic responsibilities" than she liked and less "intensive teaching". She

persuaded another conservatoire to include her “as [an] additional student” in a class led by a “wonderful conductor and musicologist”. With her peers, she followed the routine “in [typical European] music schools”, i.e., playing for each other from the score and took turns “conducting in the middle”. Following this pedagogy, Elena worried that she did not learn how to “move your hands and use the baton”.

Elena embodied dispositions to enter an elite music education institute and followed the famous musician as her teacher. Because the bias against a conductor’s innate ability — “all conductors are born not made” — prevailed in classical music, she conceptualised the field as hierarchical, thus endorsed a followership identity and authoritative leadership-structure schema. These were thwarted when her teacher discontinued the support, and she had to seek for peer-learning and support in music groups. This gained her relational recognition and fostered an emerging participative leadership-structure schema (DeRue & Ashford, 2010).

During the “two difficult years” of her postgraduate study, the support from Elena’s family and external institution somewhat offset the biases (against gender and innate ability), and the institutional barriers (curriculum and pedagogy). This maintained a strong followership identity for Elena, until she found the conducting class lacked diversity in student membership, then she decided to follow the advice of the Estonian conductor. She seemed to not believe that the classical music field could only be hierarchical, which motivated her to change to a different leadership-structure schema and enrolled in a conducting programme in the Soviet Union.

As a young female jazz drummer and producer, Tinecia realised that “people think more about keyboard players and melodic instrument players as producers and composers”. This originated from the historical “pitch-focused worldview” (Bauer et al., 2021, p. 8) that some instrumentalists, e.g., drummers, had inferior abilities to others. This bias intersected with biases against gender (she did not “always get the same respect [as her] male counterparts”) and other identities (she felt “a glass ceiling” for female producers) to hinder her leadership development. Tinecia co-produced early albums with renowned jazz musicians but was not the leading composer. Both young Tinecia and Elena maintained strong followership identities in both music fields, but because inequalities (biases against gender identity, innate ability, and institutional barriers), they developed leadership identities different from their precedents (e.g., other female musicians in my PhD study).

Leadership identity establishment

Elena did not learn the Russian language in advance since she was uncertain whether the application would be successful. But after arriving in the Soviet Union, she could join the Russian language course without taking the examinations mandatory for her fellow students from Soviet Satellite states) and enjoyed additional accesses (“surrounded by [peers] who wanted to try their English with an English speaker”). These gave her exemptions from the rules and provided her social and cultural capitals.

Originally assigned to “the father of a famous conductor” and “was not allowed to choose other teachers”, she managed to enter the class with “the head of the department” through a classmate at the language course. Within the “big conducting department” teachers used formal languages to communicate. Elena’s class worked with a “fully professional orchestra” regularly where she had “fifteen

minutes" to "try up with the orchestra"; and senior students had more time. The curriculum and pedagogy addressed individual needs of students and created an environment where "everybody knew exactly where they were" and a "real sense of building towards [conducting] with the orchestra". These satisfied Elena's learning needs and enhanced her leadership identities in both conducting and music education.

Among the few female conductors in both countries, Elena did not find being in the "men's world" an issue until she felt the difficulty to decide "what clothes [to] wear" for conducting. In Britain, "when men wear tailcoats, women would wear beautiful cocktail dresses [with] no sleeves and high heels [which] would be hopeless for conducting". This denoted that the social meanings of Elena's gender or social-economic identities could not align with her conductor identity. A fellow female conductor in the Soviet Union was "always smartly dressed [in] a suit with a skirt" which she could not identify with either (could not align with Elena's cultural identity). She also disliked the image of domestic female politician, i.e., "power dressing" with "enormous shoulders, highly tailored suites [and] skirts" (did not align with her political identity). Moreover, another female conductor wearing "tail suit" but Elena doubted whether she was "trying to be conducting like a man" (did not align with her gender identity).

Elena "used to wear a long skirt" until a concert master said, "If you wear skirts, I cannot see your knees, which I am in the pit looking at to see when to make the first upbeat". She said, "Good! I am wearing trousers from now on". However, this remained "a continuing issue for women conductors". As Elena's experiences evidenced, the gender, social-economic, cultural, and political norms have been contributing to the intersectional challenges for establishing women's professional images and identities in conducting. Therefore, her leadership identity in conducting integrated with her social-economic, gender, political, and cultural identities.

Tinecia identified several barriers for women to "evolve" in jazz. Apart from the aforementioned instrument-related biases in the "education system", social gender behaviours also created "chatters" and "micro-aggressions" to make young female musicians feeling "like minorities". Also, mentoring was inadequate especially if "successful [musicians], mostly men" do not mentor girls and young women. Thus, the intersection among the chain-referral culture and the gender- and race-based social divisions of labour (Johansen, 2023; Lohmeyer, 2023) "permeate all areas that [a musician] work", making Tinecia aware that "I was not helping in the way [to] address these issues". This awareness enhanced her leadership identity in music education, while her leadership in composition was not established until she "paid [for] [an album] and made it happen [by herself]". Tinecia called for "compassion for the whole [society]" instead of "only caring about [own] group"; and this showed a collective endorsement (DeRue & Ashford, 2010). Therefore, social-economic, gender, and cultural identities were integrated into Tinecia's leadership identity in both music education and composition.

Conclusion

The analysis above proved that leadership identities of both female musicians (Elena and Tinecia) arose from their experiences in multiple contexts and music fields, where social-economic, ethnic, gender, racial, cultural, and political identities were integrated and intersected. This intersectionality might cause indefinite leadership image, ambiguous leadership-structure schema, or unsuccessful leadership identity establishment. Tinecia's leadership identities in music composition and education

were formed in relational recognition (working with jazz experts), established with individual internalisation (self-initiated album), and enhanced through collective endorsement (founding and leading a music institute). Her two leadership identities were co-developed and highly compatible. Elena's leadership identities in music conducting and education started from relational recognition (learning with music peer-groups) to individual internalisation (leading the conducting department). Her experiences in the two social and cultural contexts with distinctive formal and informal structures did not facilitate collective endorsement since she could not identify a professional image with any female conductor or leader cross-culturally.

Therefore, the most accomplished leadership identity in music would achieve all three-levels of the tripartite identifications (DeRue & Ashford, 2010), and if there are multiple professional trajectories, different leadership identities need to be co-constructed throughout the different life contexts and keep its consistency and congruency. Furthermore, it is possible that the more diverse social and cultural contexts one had experienced, the more complex one's leadership identity can be (such as Elena); but whether the complexity could solidify or scatter the leadership identity remains uncertain.

Future research into the leadership of women and/or other minorities in orchestral and choral conducting, in classical or jazz compositions, in composition or production, etc., might be helpful to further understand the relations between field structure and leadership development in music. It is also worth studying the intersectionality among cultural, social-economic, leadership, and musical identities to obtain a more comprehensive picture of the relations and structures of different music fields and social/cultural contexts. Finally, the life histories of two female musicians informed the necessities to be aware of the intersected inequalities across music fields and to support students from minority backgrounds, as well as to consider the social meanings of leadership in accordance with the different cultural backgrounds of students in various music learning contexts.

Limitations

This paper could not have presented more detailed processes of the leadership identity development of the two female musicians, drawn on more original data, or included the life histories of other female musicians in my PhD study, due to the limited space. In addition, I have only illustrated and analysed parts of the life histories of the two female musicians, and my comparison between the two life histories was rather brief. More in-depth analysis and multiple layers of comparison could be considered for future life history studies in music.

Acknowledgement

The author declares no conflicts of interest to disclose.

References

Baker, D., & Green, L. (2017). Insights in sound: Visually impaired musicians' lives and learning (1 ed.). Routledge. https://doi.org/10.4324/9781315266060

Bauer, A., Cagney, L., & Mason, W. (2021). Introduction. In The Oxford handbook of spectral music (pp. C57.S51–C57.N25). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190633547.001.0001

Bourdieu, P. (1977). Outline of a theory of practice. Cambridge University Press. Bourdieu, P. (1984). Distinction: A social critique of the judgement of taste. Routledge.

Burwell, K. (2023). Structural features in classical and jazz studio lessons. International Journal of Music Education, 0(0), 1–12. https://doi.org/10.1177/02557614231196589

Crenshaw, K. (1989). Demarginalising the intersection of race and sex: A black feminist critique of anti-discrimination doctrine, feminist theory, and anti-racist politics. In University of Chicago legal forum (pp. 25–42). University of Chicago.

DeRue, D. S., & Ashford, S. J. (2010). Who will lead and who will follow? A social process of leadership identity construction in organizations. Academy of Management Review, 35(4), 627–647.

Downs, Y. (2016). The Ethics of researching something dear to my heart with others 'like me'. In I. Goodson, A. Antikainen, P. Sikes, & M. Andrews (Eds.), The Routledge international handbook on narrative and life history (pp. 458–469). Routledge. https://www.routledgehandbooks.com/doi/10.4324/9781315768199

Goodson, I., & Sikes, P. J. (2001). Life history research in educational settings: Learning from lives. Open University.

Haslam, S. A., Reicher, S. D., & Platow, M. J. (2020). The new psychology of leadership: Identity, influence and power. Taylor & Francis.

Howe, M. J. A. (2001). Genius explained. Cambridge University Press.

Hultberg, C. (2010). Making music or playing instruments: secondary students' use of cultural tools in aural- and notation-based instrumental learning and teaching. In M. S. Barrett (Ed.), A cultural psychology of music education (pp. 115–143). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199214389.003.0006

Jenkins, R. (2008). Social identity (3 ed.). Routledge.

Johansen, G. G. (2023). "Playing jazz is what she does": The impact of peer identification and mastery experiences on female jazz pupils' self-efficacy at Improbasen. Frontiers in Education. https://doi.org/10.3389/feduc.2022.1066341

Lohmeyer, A. (2023). Reading strategy differences between college choral, band, and jazz musicians: Evidence for musical multiliteracies. Psychology of Music, 51(5). https://doi.org/10.1177/03057356231155654

Patton, M. Q. (2014). Qualitative research & evaluation methods: integrating theory and practice. Sage Publications.

Perkins, R. (2015). Bourdieu applied in the analysis of conservatoire learning cultures. In P. Burnard, Y. H. Trulsson, & J. Soderman (Eds.), Bourdieu and the sociology of music education (pp. 99–111). Routledge.

Sagiv, D., & Hall, C. (2015). Producing a classical habitus: Reconsidering instrumental music teaching methods. In P. Burnard, Y. H. Trulsson, & J. Soderman (Eds.), Bourdieu and the sociology of music education (pp. 113–126). Routledge.

William, G. A. (1986). Justice in intergroup conflict. In S. Worchel & W. G. Austin (Eds.), Psychology of

intergroup relations (pp. 153–175). Nelson-Hall Publishers.
Wilson, A. R. (2013). Situating intersectionality: Politics, policy, and power. Palgrave Macmillan.
Worchel, S., & Austin, W. G. (1986). Psychology of intergroup relations. Nelson-Hall Publishers.
Wright, R. (2015). 'Now we're the musicians': Using Bourdieu's concepts of habitus, capital and field to analyse informal learning in Canadian music education. In P. Burnard, Y. H. Trulsson, & J. Soderman (Eds.), Bourdieu and the sociology of music education (pp. 79–97). Routledge.

Study on the Steady Beat Perception Based on the Dalcroze Teaching Method

Xueming Zheng, Fang Cao Di International School of FU LI Branch; Cong FU, BeiJing Institution of Education

Keywords: Dalcroze teaching method, steady beat perception, rhythmic sense, body rhythm, experimental study

With the deepening of the educational philosophy accompanying the new curriculum reform, music education in our country's primary and secondary schools emphasizes the fundamental concepts of focusing on student development and teaching tailored to students, gradually moving away from the traditional ‘teacher-centered and student-receiving educational mindset. Incorporating students' active participation with the objective environment and musical activities as significant educational methods has been drawing increasing attention from frontline educators. Musical practical activities are increasingly becoming an essential aspect of teaching. Throughout various links and processes in music teaching, rhythmic training, as a crucial part of aesthetic education for primary and secondary school students in China, receives considerable attention across different age groups. Foreign teaching methods offer instances for us to learn from.

As early as the 19th century, Dalcroze had noticed the close relationship between rhythm training and body kinesthesia. He believed, "Let the body act as a medium between sound and thought, becoming a tool for expression. The movement of the body is a sixth sense, which is the experience felt by muscular sensation. This includes the relationship between the strength of an action and its spatial position, the continuity and extension of the movement, and the relation between its preparation and performance. This muscular ability can be grasped by the mind because it requires the cooperation of all muscles, and rhythmic teaching requires the movement of the entire body(Xiu,1999).The Dalcroze teaching method, along with the philosophical content hidden between the body and music education, has sparked "a movement revolution" in China's music education sector—rhythmic training aimed at activity linkage, and musical ability training using body rhythm as the teaching method. Its rich academic achievements and rapid updates in teaching practices have gradually led to a new paradigm for rhythmic training.

Real-world issues indicate that students' lack of a stable sense of beat is one of the significant reasons for the disorderliness in regular teaching. Thus, it's evident that cultivating a good, stable sense of beat in students, as an urgent need for rhythm training, poses a crucial challenge for contemporary music education. Addressing this issue, this study selected two parallel fifth-grade classes from F School in Chaoyang District, Beijing, as research subjects, mainly focusing on three questions: How can the Dalcroze method be used to train a stable sense of beat? What are the effects of using the Dalcroze method to train a stable sense of beat? And, how does training a stable sense of beat impact the sense of rhythm?

Elucidation on the Relationship between Rhythmic Sense and Steady Beat

Perception Rhythmic Sense

Psychologists believe that rhythm sensation is the psychological effect people have towards rhythm, triggered by auditory cues that lead to rhythmic impulses in motor nerves. It is an instinctual, unconscious sensory impulse. On one hand, as a type of rhythmic motion, it consists of a rhythm pattern formed by a combination of many visible and tangible rhythms. On the other hand, it's a musical perceptual ability. This sense training is centered around the core of rhythm training, and musical perception and musical expression are always inseparable and mutually influential. Therefore, when training rhythm, establishing a good musical sense is an essential prerequisite for rhythm sensation training.

Steady Beat Perception

What exactly is a steady beat sensation? Up to now, the academic community has yet to provide a precise and comprehensive definition. We can further discuss it based on actual situations during training. First, a unit beat means that in music, time is divided into equal segments, each segment being a unit beat. Being able to maintain this unit beat consistently is a fundamental requirement for musical progression (Li, 2002). That is, to maintain a stable and uniform tempo, without getting increasingly faster or slower, and certainly not fluctuating rapidly between the two. This is the basic condition for performing music (Zheng, 2015). This is the fundamental beat sensation. Secondly, this unit beat in traditional Chinese music is called "ruler size" in terms of tempo. A beat is a measure of rhythm. Only with a relatively stable measure can we gauge the speed, density, and various changes in rhythm. Based on this, we understand the definition of steady beat sensation as: within a unit beat with a specified tempo, one can sustain its sensation and state consistently and prolong its duration. We can also comprehend that the steady beat sensation should be a theoretical research dimension focused on the music discipline but radiating into psychology. Therefore, when discussing music, we should pay attention to the changes in inner visual and auditory perceptions.

In a certain sense, understanding rhythm sense is a comprehensive musical training that encompasses rhythm cultivation. Therefore, we need to further clarify the starting point of rhythm sense training, that is, training in rhythm can achieve the purpose of cultivating rhythm sense. Understood from a practical teaching perspective, mastering rhythm fundamentally requires students to have a consistent and steady beat sensation. Hence, the training of a steady beat sensation is the foundation of rhythm sense and is also one of the important conditions affecting rhythm sense and even musicality.

Research Design

Research Methods and Process

This study mainly employs methods such as questionnaire surveys, interviews, quasi-experimental methods, and observation. The questionnaire survey primarily includes diagnostic tests: the diagnostic test questionnaire is used to investigate students' prior knowledge, facilitating personalized learning designs for students in the experimental group. In addition, the interview method aids in implementing the questionnaire survey. The quasi-experimental method is applied to provide different interventions for the control and experimental groups. The observation method involves recording classroom videos to reflect students' in-class behavior.

The research process of this experimental study is shown in Figure 1. The pre-test and classification is the starting and crucial step of this research. Through literature review and reading, the author found that the academic research perspective on stable beats is mainly based on comprehensive music training under the method of sight-singing and ear training. There's a lack of thematic, systematic, and progressive training. Based on this research status and problem, the author conducted a pre-test and survey for students. Next, the test data of the experimental group and the control group were organized and analyzed: firstly, to understand whether the two groups are at the same level, and secondly, to obtain the data of the experimental group and then further divide it into smaller study groups. Then, based on the rhythm training methods in Dalcroze's teaching method, we extracted training methods suitable for our students. The experimental group received targeted training based on this method, while the control group underwent conventional teaching without adopting the philosophy of Dalcroze's teaching method. After the teaching was completed, a post-test was conducted on both groups. Finally, the experimental data was processed and analyzed to draw conclusions.

Research Implementation

Implementation Subjects

This study selected two parallel fifth-grade classes from F Primary School in Beijing as the research subjects. Class A, with 39 students, served as the experimental group, while Class B, with 38 students, acted as the control group. In total, 77 students were involved in the research project.

Implementation Process

Before the experiment, both the experimental and control groups were given a pre-test. Students in the experimental group were further subdivided into study subgroups to ensure that the levels within each subgroup were comparable. The experimental plan was implemented in the experimental group, while the control group did not receive any experimental interventions and underwent regular class instruction. Both the experimental and control groups had the same number of class hours and were taught by the same teacher. Different intervention methods were used to assess the students' academic performance.

The learning process for the experimental group included three aspects:

Before the study began, students were asked to observe their daily lives and summarize the training methods they recognized in their learning experiences.

During the experimental learning phase, the teacher distributed learning task sheets (Table 2) for instructional intervention, guiding students to establish new learning connections based on their existing knowledge.

After the learning activities concluded, each student was monitored to allow them to reflect on and understand their learning journey about stable beat perception.

Basis of Learning Resource Design and Experimental Design

The Dalcroze teaching method has always emphasized "learning through movement", establishing a

close connection between music, auditory perception, emotion, body, and thought. In the article Rhythmic Movement, Sight-Singing, and Improvisation, Dalcroze lists three main areas of practice: rhythmic movement, sight-singing, and piano improvisation (Yang,2011). The 21 rhythmic training methods listed in Table 1 serve as the theoretical foundation and design source for the author's study on stable beat perception. These methods were reviewed, selected, and filtered in conjunction with the actual learning conditions of the students at the school.

Table 1. Basic Exercises of Dalcroze Rhythmic Movement

No.	Training Content
1	Muscle Relaxation and Breathing Exercises
2	Beats and Accents, Memorization of Rhythmic Patterns
3	Conceptualizing Rhythmic Patterns through Visual and Auditory Means
4	Understanding Rhythm through Muscular Sensations
5	Coordinating Spontaneous Strength and Restraint Exercises
6	Exercises to Focus Awareness and Develop Rhythmic Imagination
7	Maintaining Bodily Balance and Continuity of Movement
8	Exercises to Transition Between Different Rhythms
9	Training for Precise Timing Values
10	Subdivision of Timing Values
11	Reproducing Musical Rhythms through Body Movements
12	Separate Limb Coordination Exercises
13	Interruption or Restraint in Movement
hI	Doubling or Slowing Down Timing Values Exercises
15	Counterpoint Rhythms and Compound Rhythms Practice
16	Emphasis on Emotional Accents, Slight Dynamic Differences, Artistic Treatment of Rhythm, and Flexible Tempo
17	Rhythmic Notation Exercises
18	Improvisation Practices
19	Conducting and Performing Rhythmic Variations
20	Combination Performance of Bodily Rhythms

Based on the basic practice methods of Dalcroze's rhythmic movement, and the aforementioned concepts and dimensions of "stable beat perception," the author has divided the training methods in this study into stable beat perception training based on bodily instincts, and stable beat perception training based on inner auditory perception, as shown in Table 2.

Table 2. Steady Beat Training Based on Bodily Instinct and Inner Hearing

Training Based on Bodily Instinct for Steady Beat Perception	**Steady Beat Perception Training Based on Inner Auditory Sense**
Training Content	Training Content
Record the frequency of heartbeats and then imitate them with sound.	Loudly clap in a 4/4 beat: vocally read it out loud with the sound "Da".
	Softly clap in a 4/4 beat; vocally read it softly with the sound "Da".
Breathing in and out at a steady, even beat.	Pause the activity and engage in imagination.
Walking according to a consistent beat.	Clap on the first and third beat of a 4/4 rhythm: softly vocalize the first and third beat of a 4/4 rhythm with the sound "Da".
	Loudly clap in a 4/4 beat; vocally read it out loud with the sound "Da".

Evaluation of Experimental Design

This experimental study adopts a combination of objective and subjective evaluations, focusing mainly on quantitative evaluation, supplemented by qualitative evaluation (see Table 3). The evaluation method of this study is based on the core principles of the Dalcroze teaching method, paying attention to the actual achievements and physical and mental reflections of the students. Starting from the students' musical creation, it focuses on their comprehensive senses. The scoring items are based on time perception, spatial perception, musical practice ability, and musical expression ability. Time perception is mainly evaluated from the perspective of the immediacy of memory time, the accuracy of extended time, and the perception of volume intensity, primarily testing through the auditory sense.

Spatial perception is mainly evaluated from the perspective of body movement coordination, aesthetic bodily expression, and the harmony between body and mind, mainly based on kinesthetic observation. Musical practice ability is mainly evaluated from the perspectives of music observation and imitation, focusing on the final presentation effect of the students. Musical expression ability refers to the ability to describe using language, including body language and musical language. This study also uses interviews to interview students, comprehensively evaluating the students' various abilities.

Table 3. Experimental Evaluation Table

Element / Level	Time Perception (25 points)	Spatial Perception (25 points)	Musical Practice Ability (25 points)	Musical Expression Ability (25 points)	Physical Body Language Remarks	Psychological Language Remarks
Very Accurate						
Accurate						
Generally Accurate						
Inaccurate						

Data Analysis

Analysis of Pre-test and Post-test Scores between the Experimental Group and Control Group

No Significant Differences in Pre-test Scores Between the Experimental Group and Control Group From Table 4, it can be seen that this study uses the t-test to investigate the differences in stable beat sensation and rhythm sensation at the baseline of the two sample groups. It can be observed that, without any treatment to the samples, there are no significant differences in stable beat sensation and rhythm sensation between the experimental group and the control group ($p>0.05$).

Table 4. Analysis of t-test Results of Pre-test between Experimental and Control Groups

Items	Groups (Mean ± Standard Deviation)		*t*	*p*
	Pre-test for Experiment Group (n=39)	Pre-test for Control Group (n=37)		
Rhythmic Sense	8.33±2.02	8.43±1.80	-0.225	0.822
Steady Beat Sense	10.54±3.38	11.05±3.02	-0.700	0.486
Note:* $p<0.05$ ** $p<0.01$				

Analysis of Post-test Scores between Experimental and Control Group

This study used analysis of covariance (ANCOVA) to eliminate the interference of differences in the stable beat sensation between the experimental and control groups at the baseline level. As seen from Table 5, the ANCOVA indicated that there was a statistically significant difference in the post-test stable beat sensation between the control group and the experimental group ($P<0.05$). Further comparing the means of the two groups, it was observed that the post-test stable beat sensation in the experimental group (12.49 ± 2.83) was higher than that in the control group (11.38 ± 2.81).

Table 5. Covariance Analysis of Steady Beat Perception in the Post-test

Source of Variation	Square Sum	df	Mean Square	F	p
(Intercept)	45.504	1	45.504	17.899	0.000**
Post Steady Beat Training	190.006	1	190.006	74.737	0.000**
Baseline Level	402.856	1	402.856	158.459	0.000**
Residuals	185.590	73	2.542		
Note: R^2: 0.697； * p<0.05 ** p<0.01					

Similarly, from the analysis results of Table 6, it can be seen that there is a statistically significant difference in the post-test rhythm perception scores between the experimental group and the control group. Further analyzing the means of the two groups, compared to the control group (8.70 ± 1.61), the post-test rhythm perception of the experimental group (9.13 ± 1.64) is higher. This indicates that the change relative to the baseline in the experimental group is greater than that in the control group.

Table 6. Covariance Analysis of Rhythmic Sense in the Post-test

Source of Variation	Sum of Squares	df	Mean Square	F	p
(Intercept)	21.810	1	21.810	47.292	0.000**
Experimental Group VS Control Group	4.784	1	4.784	10.373	0.002**
Baseline Level	162.422	1	162.422	352.184	0.000**
Residuals	33.667	73	0.461		
Note: R^2: 0.831； * p<0.05 ** p<0.01					

Analysis of the Relationship Between Steady Beat Training and Rhythmic Sense in the Experimental Group and Control Group

Table 7. Regression Analysis of Steady Beat Perception and Rhythmic Sense

South of Variation	Unstandardized Coefficients		Standardized Coefficients	t	p	95% Confidence Interval	
	B	Standard Error	Beta			Lower Bound	Upper Bound
Constant	3.859	0.384	-	10.039	0.000**	3.106	4.613
Stable Beat Sense	0.422	0.033	0.726	12.911	0.000**	0.358	0.486
Note:* p<0.05 ** p<0.01； F(1,150)=166.704,p=0.000， R^2=0.526							

Here, by treating the stable beat perception as the independent variable (explanatory variable) and rhythm perception as the dependent variable (explained variable), the results in the table are obtained through linear regression analysis. From the table results, the overall model's \(R2 = 0.526\), which indicates that stable beat perception can explain 52.6% of the variation in rhythm perception. Additionally, the model's F-test (\(F = 166.704, p = 0.000\)) further indicates that stable beat perception definitely has an influencing relationship on rhythm perception.

Results and Discussion

This experimental research first explored the prerequisite for cultivating rhythm perception—the training of stable beat perception. By conducting experiments based on the Dalcroze teaching method, it demonstrated the necessity and effectiveness of training stable beat perception. Furthermore, it discussed the relationship between rhythm perception and stable beat perception, and validated this proposition through experiments. Based on these findings, the following conclusions are drawn:

The Dalcroze Teaching Method Aids in the Training of Steady Beat Perception

As shown by the experiment, on the premise that there were no significant differences in the pre-test scores between the experimental group and the control group, students in the experimental group demonstrated more significant progress and academic achievements after training focused on bodily instincts and inner auditory perception. This indicates that stable beat perception training, under the scope of the Dalcroze teaching method, significantly benefits students in mastering their musical abilities.

The Dalcroze teaching method emphasizes the movement in students' music learning process. It integrates activity with action, promotes emotional movement to induce physical movement, and thereby forms a connection between the individual and the music. The primary focus of this research

method is the inner feelings and changes within individual differences. In training for a stable beat perception, students start from their existing cognitive structures. They observe and associate to perceive the stability present in their daily lives, establishing daily rhythms (Zhang,2011). This creates a memory of thought and feeling in the heart, making the application to varied music intuitive and easy. The next focus is on students' physical participation.

Training of Steady Beat Perception is a Prerequisite for Learning Rhythmic Sense
According to the data from Table 7, the regression coefficient for stable beat perception is 0.422 ($P<0.05$). This further concludes that there is a significant positive correlation between stable beat perception and rhythm sense; that is, as the stable beat perception improves, rhythm sense also progresses, and vice versa.

From this, it can be seen that in rhythm training, besides training basic rhythms and beats as fundamental elements, the training of stable beat perception is an essential step included in the process. Furthermore, given the importance in rhythm training, stable beat perception should be prioritized. In music learning, abstract feelings and concrete cognitions revolve around each other. Both rhythm sense and stable beat perception emphasize a kind of inner auditory perception and understanding. Inner auditory activity is essentially the activation of various sound concepts in thought, including different pitches, rhythms, timbres, modes, tonalities, harmonies, and textures (Chen, 2006). These elements are realized through imagination in a silent state, which is the fundamental characteristic of inner listening.

Conclusion

The Dalcroze teaching method pays attention to the interactive relationship between the human body, sensations, and music. It integrates its teaching principles into the entire teaching process, both internally and externally from individuals. From philosophical and psychological perspectives, it breaks through Descartes mind-body dualism, deeply unifying the subject and object and applying it to music education. Dalcroze was among the pioneers who paid early attention to the intersection of cognitive psychology and music education and was a bold experimenter in music teaching.

At present, music education in primary and secondary schools in China has gradually focused on the application of bodily rhythm (postural rhythm) in the classroom. Its casual use in music lessons serves as a preliminary demonstration to stimulate students' interest in learning. However, we still face many questions, such as: when should it be applied during the lesson? In which musical segments should it be utilized? Which students are more suitable for it? Which types of lessons does it align most closely with? And so on. While foreign teaching methods and knowledge from cognitive science have enriched our music education theories, they also emphasize the need to integrate these insights into practice. The aforementioned experimental research on steady beat sensation is just one attempt, and related issues still require teachers to intensify systematic empirical research.

References

Chen, S. G. (2006). Inner Hearing in Music Activities. *Chinese Musicology, 01*,126-128.

Li, C. G. (2002). *General Textbooks of Basic Music Theory.* Beijing: Higher Education Press.

Yang, L. M. (2011). *Awareness of the people. Dalcroz Music Education Theory and Practice.* New edition. Shanghai Education Publishing House.

Xiu, H. L. & Luo, X. P. (1999). *General Theory of Music Aesthetics.* Shanghai Music Publishing House.

Zheng, Q. Y. (2015). An important part of rhythm training-shooting sense training. *Sea of Art, 09*, 94-96.

Zhang, Z. L. (2011). On the Unity of Body and Mind in ancient Chinese Philosophy. Z*hongzhou Journal,05*,149-154.