Keynote address: Creative music technologies for enriching later-life.

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Abstract

In this paper I explore the potential for creative music technologies to enrich opportunities for wellbeing and creativity in later-life. I will address the question of what may be the underpinning theoretical principles that could frame the design and use of later-life creative music technologies. There is a small but growing body of research suggesting that older people, even those with complex needs, are capable of, and interested in using music technologies. Using some examples of practice, I will highlight the multiple and significant benefits that may be derived from receptive or active creative music-making supported by a range of music technologies. Speaking from the perspective of a 'digital immigrant' for whom digital music technologies represent a landscape that can feel unfamiliar and even bewildering, I nonetheless argue in favour of the crucial importance of exploiting opportunities to use creative digital technologies to support continued playful, exploratory, and joyful musical experience.

Empathy & Rhythmic Entrainment during Children's Musical Interaction: Cognitive & Motor-emotional Approaches.

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Abstract

During their musical interaction, children are required to imitate each other, adapt their musical performance and finally, attain social rhythmic

entrainment between each other which means the temporal interpersonal coordination of their music-making. Recently, this demanding skill has been associated with empathy as children's musical synchronisation elicits individuals' emotional states, promotes affiliation (Kirschner & Tomasello, 2009) and enhances children's empathy (Rabinowitch et al., 2013). However, less attention has been paid to empathy's impact on rhythmic entrainment, as well as, the contribution of the content of musical interaction on this possible influence. The present exploratory study aimed to firstly, investigate how different levels of trait empathy can influence the temporal coordination and the affective connection between children during their musical interaction and secondly, how two different approaches to musical activities (cognitive vs. motor-emotional) contribute to empathy's possible impact on rhythmic entrainment. Descriptive analyses showed that higher empathy facilitates both the temporal and affective rhythmic entrainment of children. Also, activities which involve body movements and mutual interaction, contribute to this interpersonal coordination. This study contributes to a theoretical framework which suggests that empathy and social rhythmic entrainment are connected with each other via a continuous and bidirectional link.

Keywords

Empathy, Rhythmic entrainment, Children's musical interaction

Aims

To investigate: 1) how different levels of empathy influence rhythmic entrainment (temporal coordination & affective connection) of children during their musical interaction, 2) how two different approaches of musical activities (cognitive vs motor-emotional) contribute to empathy's impact on rhythmic entrainment.

Methods

The empathy questionnaire "Feeling -Thinking" by Garton & Gringart (2005) was given to 120 children from 3 different schools in the UK. According to their scores, four groups in each school were formed, two groups (A1 & A2) with children with high empathy and two groups (B1 & B2) with low empathy. Each group had four children from different classrooms to ensure that children would not know each other. Groups A1 & B1 participated in the cognitive approach and A2 & B2 took part in the motor-emotional approach of musical activities. Every experiment lasted 20 minutes. A pre-test examined and ensure that all participants had similar personal rhythmic skills. During experiments, participants performed on electronic drum pads (Yamaha DTX Version 2.0). Both approaches had the same number of stages. In the cognitive approach, children performed on their claves remaining on their chairs without further body movements. In the motor-emotional approach, children stood up, used body movements and emotionally interacted with their peers. After their interaction, children performed together, trying to be synchronised with each other. Their performing was recorded and analysed via FL studio software. Temporal entrainment was measured as the mean value of divergences between participants' tapping. Affective entrainment was calculated from children's answers on an affective questionnaire.

Outcome(s)

The small number of groups precluded the use of inferential statistics. Descriptive analyses indicated that groups with high empathy were better entrained than groups with low empathy. In addition, groups that participated in the cognitive approach of activities were less entrained than groups in the motor-emotional approach. Same results were stated for the affective entrainment of groups. However, an interaction between empathy and the approach of activities could not be supported; thus, we do not know whether the motor-emotional approach actually contributed to empathy's impact or enhanced rhythmic entrainment itself.

Conclusion

To my knowledge, this is the first empirical study which directly explores the impact of empathy as a personality trait on temporal and affective rhythmic entrainment of primary school children during their musical interaction. In addition, this is the first study that was intended to explore the role of musical activities content in children's interaction and its contributions to empathy's aforementioned impact. The use of descriptive statistics and the small sample size precludes definitive conclusions; however, this study attained an effective exploration of this fruitful research field and offered valuable details regarding the measurement of social rhythmic entrainment in joint settings and the possible practical challenges with schools. The results indicated that empathy may facilitate children be temporally and affectively entrained with their peers during their musical interaction. In addition, the importance of motor-emotional approach of musical activities was pointed out, offering valuable details about the implication of such an approach. The interpretation of the results highlighted the importance of simulation and perception action processes during children's musical coordination and the reflection on this study's limitations pointed out possible hazards that should be avoided by future studies.It is clear that the real interaction of children in their school environment during the experiments and the choices that were made to be adapted to last-minute changes by schools provide researchers with important information about investigations that are less laboratory achieving more realistic results. Finally, the theoretical suggestion of a bidirectional link between trait empathy and social rhythmic entrainment during children's musical interaction attained the integration of evidence from relevant studies and offered a fruitful model that can be used in future studies as a baseline to add further modulating factors and mechanisms underlying this continuous relationship. Although it remains highly speculative, it is hoped to be used as an appropriate theoretical framework for future empirical studies. I hope that the present

paper serves as an impetus for future exploration of children's interaction, musical behaviour and empathy.

Acknowledgements

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References

Garton, A. F., & Gringart, E. (2005). The Development of a Scale to Measure Empathy in 8-and 9-Year Old Children. Australian Journal of Educational & Developmental Psychology, 5, 17-25.

Novembre, G., Ticini, L. F., Schütz-Bosbach, S., & Keller, P. E. (2013). Motor simulation and the coordination of self and other in real-time joint action. Social cognitive and affective neuroscience, 9(8), 1062-1068.

Rabinowitch, T. C., Cross, I., & Burnard, P. (2013). Long-term musical group interaction has a positive influence on empathy in children. Psychology of Music, 41(4), 484-498.

Investigating the role of social media in supporting parents and teachers of students with Down Syndrome: Focus on early intervention services in Saudi Arabia.

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Abstract

The number of social media users amongst special education teachers and parents of children with Down Syndrome (DS) is increasing annually (Mirza, 2013). However, there are no qualitative studies which testify to

the true nature of the interaction between teachers and parents when using social media, nor the role of social media in supporting and assisting parents and teachers with regards to the children's educational needs in KSA (AlMagushi, 2007; Alkhamis & Asalawi, 2007). Therefore, this ongoing study aims to identify the role of social media in supporting parents and teachers of DS students, with a special emphasis on early intervention services in KSA. By bridging the knowledge gap on social media and special education in KSA and presenting socially relevant and applied information on the topic, this research provides a theoretical and practical base for the establishment of appropriate and effective programmes between the ministries of Information and Special Education in particular. A qualitative approach was selected because it was the most suitable approach for exploring the participants' experiences, which could not be determined through scientific tests. Interviewing, chosen as the research instrument, allowed the researcher to obtain a detailed understanding of the topic linked to the study objectives. Initially, a pilot study was conducted at the Daycare Center in May 2016. Its aim was to examine and refine the methodology and assess whether the questions were understood with the potential for re-drafting them, if necessary. The main study consists of five teachers and five mothers with experience of using social media and with links to the Daycare Center. Thematic Analysis has been chosen for analysing the findings because it is a flexible method that allows themes to emerge from the data. Results of the current study are still in the initial stages.

Keywords

Social media, Down Syndrome, Early Intervention Services

Aims

This study aims at identifying the role of social media in supporting mothers and teachers while working with children with Down Syndrome (DS) especially during the provision of early intervention services in KSA.

Methods

Qualitative research methods

Acknowledgements

I would like to thank grateful my supervisor Dr. Evangelos Himonides for his efforts, advice, and support.

References

Alkhamis, H. & Asalawi, A. (2007). Informational needs of disability and how to satisfy the media. A field study on a sample of disabled people in the Kingdom of Saudi Arabia. Paper presented at the Seminar of the Gulf Disability Society (7). Gulf Disability Society, in cooperation with the National Foundation for Disabled Services, Bahrain.

AlMagushi, A. (2007). The role of the media in the service of disability issues. Paper presented at the Seminar of the Gulf Disability Society (7). Gulf Disability Society, in cooperation with the National Foundation for Disabled Services, Bahrain.

Merza, H. (2013). System of Early Intervention Services: An analytical look at the reality of the future and the ambition to services in the Kingdom of Saudi Arabia as a model. Paper presented at the Forum XIII of the Gulf Disability Society. Manama, Bahrain.

Assessing reflective writing in Higher Music Education performance modules: Issues and Challenges.

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Abstract

Reflective practice was introduced into higher education as a means of self-assessment over 25 years ago and in some disciplines, such as medicine, engineering and teacher training, it plays a key role in students' personal and professional development. Such reflective practice, drawing on Schön (1983) and Ghaye (2010) may be a seen as a 'good thing', as Boud (2010, p.25) reports. He goes on to warn against self-assessment in the name of reflection which may degenerate into a kind of tick-box exercise. There is a paradox here: if guidelines for reflective practice become too prescriptive, personal learning journeys may be inhibited by cue-conscious writing, rather than encouraging students to ask themselves how they are practising and performing and develop self-critical insights into their learning behaviours. Research carried out at the University of Liverpool since 2013 into reflective practice with undergraduate and masters classical and popular music performance students suggests that reflection supports and may accelerate musical learning (Esslin-Peard et al. 2015). However, that finding is predicated upon the assumption that the assessment of self-reflective essays, which are written by students who review the entries in their practice diaries or reflective journals, is consistent and accurate between markers and moderators. Drawing upon marks for reflective essays written since 2012, we suggest that the current marking regime produces consistent results. Recent research with Chinese MMus performance students as Esslin-Peard and Shorrocks (2017) report has prompted faculty staff to revisit guidelines for reflective practice for students and mark schemes in order to make it easier for students who do not have English as a first language to come to terms with reflective practice. This paper presents a new model for marking reflective writing, based upon Phases of Reflective Practice, in order to prompt discussion amongst music educators about maximising the effec-

tiveness of written reflection as part of higher music education performance courses.

Keywords

Reflective Practice, Performance, Assessment

Aims

In this paper, we pose the following research questions: What framework(s) can be used to assess reflective writing? How can these frameworks be aligned with university mark schemes? Does formal summative assessment of essays destroy or endanger the individual process of self-discovery described in a reflective essay?

Methods

Data are drawn from reflective essays submitted by undergraduate students in the years 2011-2015 and the marks awarded for these essays. In order to understand the trends in marking over a four year period of research, a quantitative analysis of marks for classical and popular musicians is presented, supplemented by qualitative data from the reflective essays which may be used to explain the socio-cultural and individual factors which may influence students' reflections.

Outcome(s)

Analysis of the data shows a general trend of marks increasing between the first and second years of study, with a decline in marks for third year essays. We examine qualitative data from the reflective essays to attempt to find reasons for this decline and consider the benefits and disadvantages of mark schemes which have been used.

Implications

In light of the use of reflective writing in music education in tertiary institutions such as the University of Liverpool, the University of Surrey, the University of York and Westminster University in the UK, in addition to the Queensland Conservatorium at Griffith University in Australia amongst others, this longitudinal consideration of reflective practice in classical and popular music performance courses highlights the need to find a way to balance students' personal learning journeys with institutional frameworks for assessment. Whilst it is desirable to encourage self-agency in individual and group musical learning, the findings of this research project illustrate that staff involved in reflective practice should be reflective themselves and regularly review guidelines for students and reflective assessment criteria. Models for reflective practice in music education will differ according to institution and the nature of curricula.

References

Boud, D. (2010). Relocating reflection in the context of practice. In H. Bradbury, N. Frost, S.Kilminster and M. Zukas, (Eds.), Beyond Reflective Practice, pp. 25–36. Abindgon: Routledge.

Esslin-Peard, M., Shorrocks, T., and Welch, G., F. (2015). The Art of Practice – Understanding the process of musical maturation through reflection. In A. Niessen and J. Knigge, (Eds.), Theoretische Rahmung und Theoriebildung in der Musikpädagogischen Forschung. [Theory Framework and Development in Music Education Research], Musikpädagogischen Forschung, (36), pp. 125-145. Münster/New York: Waxmann Verlag. ISBN: 978-3-8309-3313-7

Esslin-Peard, M., and Shorrocks, T. (2017). Using reflection to develop insights into musical practice and performance: A pilot study with Chinese M Mus students. In S. Clark, E. King, G. Marshall, H. Prior and E. Himonides, (Eds). Musical Cultures Conference/SEMPRE Conference Proceedings, pp. 50-69. Malvern, Victoria: ISME. ISBN: 978-0-9942055-8-9

Educamus. An online platform with integrated software for pre-service music training of non-music Chilean Primary teachers.

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Abstract

This work in progress describes the construction of EducaMus and its components.

Keywords

pre-service music training , music technology, massive open online courses

Aims

Nowadays, music is a compulsory curricular subject in the Chilean educational system, to which it has been assigned two hours of classes per week. Approximately 102,000 teachers, 56% of the total, are working at Primary Schools. Of these, only 2.25% have formal music instruction (Ministry of Education of Chile, 2015). The rest of the teachers have to teach music at Primary Education level, but teachers lack both specialized music and music didactic competences. Formation to achieve these competences should occur during their pre-service teacher training in order to successfully offer music classes at the level of Primary Education,

but few Chilean universities have implemented this subject and the corresponding training for this career. Furthermore, there are not enough institutional or private offers for in-service training music courses. Finally, full-time teachers engage in their profession for 42 hours per week, making it difficult for them to attend extended in-service music courses. As a consequence of these facts, even when music is highly regarded, as in the Chilean Primary education curricular design, it remains unsystematically approached by teachers with neither music training nor an initial formation in music pedagogy. In order to cover this educational shortcoming, we have developed EducaMus, an online platform intended to host massive open courses (MOOC) devoted to pre-service music training of general teachers in the Chilean educational system. At this moment, EducaMus includes a software solution for this goal called Music Training for General Teachers (Formación Musical para Profesores de Ed. Básica), which has software embedded and associated for real-time music practice and assessment.

Methods

Construction of EducaMus has followed the model of design science research methodology as a framework, with its corresponding process elements: 1) problem identification, which detects needs and constructs a theoretical framework; 2) construction, responsible for development, analysis, experimentation, and observation; and 3) evaluation, providing for testing and for designing the first public version (Peffers, Tuunanen, Rothenberger, & Chatterjee, 2007).

Outcome(s)

This is a work in progress that describes EducaMus and its components. At the moment, it is in the validation process, so no results are shown.

Characteristics

The novelty of this course consists in the integration of associated software – namely Cantus -software for real-time training of singing intonation- (Pérez-Gil, Tejada, Morant & Pérez, 2016), Tactus,- that facilitate tapping rhythm activities (Tejada, Pérez-Gil & Pérez, 2011) and Musipuzzles – software for the ordering of structural musical elements. These activities are assessed in real-time by the computer. This proves beneficial for the pupils, who get an immediate evaluation of their performing, and for music teachers, as well, because assessment is one of the most time-consuming and complicated tasks in music-education. Other software for training are some flash modules embedded in the platform.

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References

Ministry of Education of Chile (2015). Base de Datos, Docentes y Cargos, 2015. Unidad de Estadísticas, Centro de Estudios, División de Planificación y Presupuesto, Ministry of Education of Chile. Retrieved from https://goo.gl/JhU9mT

Peffers, K., Tuunanen, T., Rothenberger, M. & Chatterjee, S. (2007). A Design Science Research Methodology for Information Systems Research. Journal of Management Information Systems, vol. 24, no. 3, pp. 45–77.

Pérez-Gil, M., Tejada, J., Morant, R. y Pérez, A. (2016). Cantus. Construction and evaluation of a software for real-time vocal music training and musical intonation assessment for music education. Journal of Music, Technology and Education vol.9, no. 2, pp. 125-144. DOI: 10.1386/jmte.9.2.125_1

Timbre perception by the initiatory five partials' (dB) .

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Abstract

According to Vuust et al. (2012), the characteristics of the style of music played by musicians influence their perceptual skills and the brain processing of sound features embedded in music. Results from Garner et al. (2015) showed that training benefits are dissociable for the brain events that reflect distinct sensorimotor processing stages. Beside perceptual skills and training benefits, selective attention to a specific object in auditory memory does benefit human performance not by simply reducing memory load, but by actively engaging complementary neural resources to sharpen the precision of the task-relevant object in memory (Lim et al. 2015). These results deduce a possibility of timbre perception. In our previous studies, in a given piano and conditions (same pitch and similar loudness), the timbre might be discriminated in partials and waveforms (Li, 2014 & Cai, 2015). This research assumed that partials' analysis -- the initiatory part of the envelope -- and subjective sensation work in piano timbre perception. Two experiments were employed. The first experiment is Audacity investigation, which used the software Audacity to analyze four pianists' recorded samples. Then a serial behavior experiments with listening and choosing tasks were carried out. The result proved the assumption in piano sound perception, however, the correlation between single sound and the sentence is still unclear.

Keywords

timbre, utility, partials

Aims

To examine whether partials' analysis and subjective sensation work in timbre perception.

Methods

Audacity analysis and behavior experiments

Outcome(s)

Partials' analysis work in piano timbre perception of single sounds, which appears as five initiatory partials(dB) of Standard Deviation analysis.

Discussion

Why is the correlation between single sound and the sentence indistinct? A possibility of disaccord between sound and sentence of timbre perception might be caused by (1) two different processing of top-down or bottom-up; (2) the examined single sound is not the accent of the sentence.

References

Vuust, P., Brattico, E., Seppänen, M., Näätänen, R. & Tervaniemi, M. (2012). Practiced musical style shapes auditory skills. Annals of the New York Academy of Sciences, 1252, 139-146.

Garner, K., Matthews, N., Remington, R.& Dux, P. (2015). Transferability of Training Benefits Differs across Neural Events: Evidence from ERPs. Journal of Cognitive Neuroscience, 27(10), 2079-2094.

Lim, S., Wöstmann, M.& Obleser, J. (2015). Selective Attention to Auditory Memory Neurally Enhances Perceptual Precision. The Journal of Neuroscience, 35(49), 16094-16104.

Li, Q. (2014). Discussion on the Differences of Piano Sound in Various Locations of a Concert Hall : A Case Study in Small Hall of Southwest University. MA thesis of Southwest University.

The role of reflective practice in learning a second instrument ab initio in adulthood: a pilot study with Chinese M Mus students in higher education.

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Abstract

Recent research carried out into reflective practice with undergraduate classical and popular music performance students suggests that reflection supports and stimulates musical learning as Esslin-Peard et al. (2015) and Carey et al. (2017) report. This research has been extended to include the development of reflective practice with MMus students from the Chinese mainland, as Esslin-Peard and Shorrocks (2017) describe. In this new pilot project the focus is upon three Chinese MMus students who learnt a string instrument ab initio in the last four months of their study in the UK. It is unusual to find a study exploring the experiences of postgraduate musicians seeking to study an instrument ab initio. Adults may be motivated to learn an instrument for many different reasons as Roulston et al. (2015) describe; however, the 15 adults in this study could be described as amateur musicians and there is no evidence that they

were drawing upon any experiences of reflective practice. The three Chinese MMus students with piano as their first study received 12 weeks of group instruction from a specialist string tutor and then performed at the RMA conference in September 2017 as part of a workshop on reflective practice and performance. Professional string players who witnessed their public rehearsal and performance commented on their proficiency and the progress that had been achieved with regard to technique, intonation and musical intention in such a short time. This paper draws upon semi-structured interviews with the three students and a professional violinist in order to understand the process of musical learning for students who had already developed skills in reflective practice through their MMus course.

Keywords

Reflective Practice, Musical learning ab initio, Performance

Aims

In this paper, we pose the following research questions: To what extent did these students master techniques in reflective practice for their principal study instrument? How have they transferred these skills to learning a new instrument? What are the outcomes of adopting reflective practice in learning a second instrument?

Methods

Data are drawn from the reflective essays written by the three students about their practice, rehearsal and performance behaviours from their masters module and from a semi-structured group interview. In addition, semi-structured interviews were conducted with two professional string players, one of whom had taught the Chinese students. An Interpretative Phenomenological Analysis was conducted to identify main themes in

this qualitative data, with a focus on allowing both students and teachers to report upon their experiences in their own words.

Outcome(s)

The three students in this pilot study had been awarded firsts for their reflective essays, based upon practice diaries describing their individual practice at the end of the first semester and had further developed their abilities to critically analyse their practice and pedagogic behaviours as piano teachers in the second semester. Their interviews reveal that they had continued to use practice diaries when learning violin and viola, which helped them to identify and address problems effectively. A professional violinist who rehearsed with the three students reported, 'the impression I have got having heard you play is that you are learning faster'. In addition, the students themselves reported that they were able to transfer learning strategies that they had acquired from analysing their practice on their principal study, the piano. Thus they were able to identify problems of posture, bowing, left-hand positions and intonation more quickly. This suggests that the process of keeping a practice diary and writing self-critical reflective essay may not only be useful for musical learning at the time this was a course requirement, but may also lead to continued application of reflective practice for future musical learning.

Implications

This pilot study points towards the value of reflective practice in musical learning with experienced music students who are starting a new instrument ab initio. The students also commented in interview that they thought it was important for the teacher to keep a practice diary documenting what they would do with their students and how their students were progressing in their instrumental studies. Further research is required to identify to what extent this is true for a larger sample of students. It would also be valuable to explore to what extent the relationship between the students and their instrumental teacher plays a role in

their success, particularly with Chinese students. Further small-scale studies will continue to identify patterns and trends in reflective practice and musical learning with MMus students from the Chinese mainland.

References

Carey, G., Harrison, S., and Dwyer, R. (2017). Encouraging reflective practice in conservatoire students: a pathway to autonomous learning. Music Education Research, 19 (1), pp. 99-110.

Esslin-Peard, M., and Shorrocks, T. (2017). Using reflection to develop insights into musical practice and performance: A pilot study with Chinese M Mus students. In S. Clark, E. King, G. Marshall, H. Prior and E. Himonides, (Eds). Musical Cultures Conference/SEMPRE Conference Proceedings, pp. 50-69. Malvern, Victoria: ISME. ISBN: 978-0-9942055-8-9

Esslin-Peard, M., Shorrocks, T., and Welch, G., F. (2015). The Art of Practice – Understanding the process of musical maturation through reflection. In A. Niessen and J. Knigge, (Eds.), Theoretische Rahmung und Theoriebildung in der Musikpädagogischen Forschung. [Theory Framework and Development in Music Education Research], Musikpädagogischen Forschung, (36), pp. 125-145. Münster/New York: Waxmann Verlag. ISBN: 978-3-8309-3313-7

Big data analytics in mobile practicing: using artificial intelligence (AI) music application to practice scales and arpeggios in a virtual learning environment.

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Abstract

Abstract This pilot study investigates the possibility of using mobile devices to facilitate the practising of scales and arpeggios. The AI music application was designed in 2016 by an engineer/musician. This application enables students to practise, record themselves, view their mistakes and prepare exams based on the Associated Board of the Royal Schools of Music's scales and arpeggios syllabus for five instruments (violin, flute, clarinet, trumpet and saxophone). This study a) examines the progress of learners who use application to practise scales and arpeggios; b) observes how elementary learners perceive mobile practising in a virtual learning environment and c) proposes a blended learning model that uses mobile practising with the support of artificial intelligence. The big data of user's practice record was collected and analysed after eight weeks of mobile practicing through the database of the AI applications.

Keywords

big data analytics, Mobile practising, artificial intelligence application

Aims

The purpose of this study is to investigate the possibility of using mobile learning to enhance scale practising. Learning progress was observed through the database of the application to see whether the frequency of user logins to the program and achievements in scale learning were correlated using big data analytics. Issues such as self-regulated practice, self-efficacy and musical memory were addressed through a survey of the users. The blended learning of scales and arpeggios was studied through teacher interviews. This study asks how this application can solve issues in classroom and studio pedagogy such as time limitations and the monitoring of practice.

Methods

Methodology In this study, data were collected from three sources: 1) an online survey, 2) big data analytics and 3) individual interviews with studio teachers.

Outcome(s)

This study has two major findings. The first is that a substantial result is recorded at the beginner level (Grade 1), with a mean score difference of 13.2 for all five instruments. The second is that users who practised more than 1,000 times in 8 weeks had the most substantial result, with a mean score difference of 11.56.

Discussions and implications

Traditional practising versus mobile practising The traditional way of practising scales and arpeggios mainly relies on the instrument teacher to demonstrate the fingering and articulation during private lessons or instrument classes. Students may forget the instructions and then practise in their own way at home. Sometimes students practise something incorrectly or contrary to the instruction of the teachers. The teachers, however, must wait for the next lesson to check whether students have practised well. There is no doubt that scales and arpeggios are the foundation of classical music. Effective practising is therefore crucial. AI in music education The use of AI has changed our daily lives, including music education. Students can listen to demonstration recordings and see the fingering on the screens of their mobile devices. AI can provide comments and immediate feedback to improve students' practice at home or elsewhere. The pre-exam mode can provide marks and comments to help students prepare for their ABRSM instrument exams, which can save time for instructors. Therefore, instrument instructors can spend more time teaching style and technique. Blended learning and studio pedagogy The use of blended learning can prevent errors in practising. This can save teaching time and allow the teacher to monitor students' progress in practising. However, teachers have commented that

when users have too many records in the application, delays are caused by the process of rendering the audio signals from the application's server. If this technical issue causes users to lose patience, they may choose to practise in the traditional way. Therefore, the usefulness of blended learning relies heavily on the technical capabilities of the application. Big data analytics The big data analytics has been widely used in the different sectors such as business, engineering, public health, education to collect users' behaviours in cloud-based analytics. In music education, with the support of AI applications, studio teachers can apply analytics and get significant values to uncover insights and trends in music practicing such as how many times and how long students should practice to gain significant progress in scales and arpeggios. Studio teachers can trace down the record of practice in audio format to check why students are not performing well. Students can have a more systematic way of learning in practicing their instruments with the AI applications. The big data analytics can inform studio teachers to have a better decision-making on which scales or arpeggios may need more attention and increases the efficiency for checking every scales during the private lessons.

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References

Chen, J. (2015). Mobile learning: Using application Auralbook to learn aural skills. International Journal of Music Education, 33, 244-259.

Franke, J. (2013). Violin scales: Strategies for improving intonation. American String Teacher, May, 63(2), 74-75.

Johnson, L., Levine, A., Smith, R., & Stone, S. (2010). 2010 Horizon Report. Austin, TX: New Media Consortium.

Training effects of tempo stability and chord uniformity.

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Abstract

Pianism is a general topic in education but less be verified in some details. This paper focused on tempo stability and chord uniformity to examine effects of two kinds of training. Tempo stability means performing rhythm and beat stably in a given tempo.Using sonic visualiser, 20 amateur piano students (7-15 years, 11 years on average) were examined by IOI-bar of two sentences' melody after a week training. They are randomly divided into four groups - all used metronome include group A, group B fixed fingering, group C added practice of changing rhythm, group D added both fixed fingering and practice of changing rhythm. The results show that the best effect is the fixed fingering; the second is changing rhythm; group D, both fixed fingering and practice of changing rhythm, is third; the last is no stated training skill. Chord uniformity means all notes make very simultaneous sounds at the same time. 16 amateur piano students (6-13 years, 10 years on average) were examined by Onsets'(secs) Standard Deviation of the earliest and latest sound of a chord with four notes after a week training in two different ways. The group using fixed hand pattern show the best effect. These results proved effects of piano training skills of fixed fingering, practice of changing rhythm and fixed hand pattern. Such skills benefit education efficiency.

Keywords

fixed fingering, changing rhythm, fixed hand pattern

Aims

To enhance efficiency of piano training.

Methods

Behavior experiments

Outcome(s)

Piano training skills of fixed fingering, practice of changing rhythm and fixed hand pattern benefit education.

Discussion

The unsettled issue is how employ these skills in creative performance. Here, two problems need be discussed. Firstly, whether fixed fingering and hand pattern influence performers' attention? Secondly, whether changing rhythm disturbs or reduces the imagination? These questions will be explored in future.

References

Goebl, W., Bresin, R. & Fujinaga, I. (2014). Perception of touch quality in piano tones. The Journal of the Acoustical Society of America, 136(5), 2839–2850.

Cai, X. (2015). On the Discussion of Controllable Factor of Piano Touching Technology Affecting Acoustical Quality Change. MA thesis of Southwest University.

The Theory of Musical Equilibration and the Use of Stimulus Chords in Romantic Lieder.

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Abstract

BACKGROUND: One of the most interesting questions that confronts researchers in music psychology involves how music is perceived emotionally. This area was overlooked for many years; it was not until recently that neuroresearch discovered promising new insights. Other approaches that focus on research into emotions (such as the work of Cooke, Sloboda, Juslin and Gabrielsson) have also revealed new perspectives in the field. However, there is still a gap when it comes to specifying and systematically depicting the emotional effects of musical harmonies and intervals. This may be due to the fact that there have been contradictory findings which have served as an obstacle to systematically analyzing the emotional impact of harmonies. Ernst Kurth and other music theorists describe forces which they have perceived in music, but their insights do not create any indication of a link to the emotional effects of music.

MAIN CONTRIBUTION: In the first part of this presentation, the authors will explain the central premise of the Theory of Musical Equilibration: Music can not directly elicit emotions. Instead it communicates processes of the will which the listener identifies with and then interprets emotionally. This insight leads to the possibility of explaining the emotional characters of musical harmonies. The second part of this presentation is about empirical research: In 1996 the authors began conducting surveys to learn how children judged the effects of chords. They used these data as the basis for a wide-scale study they called The Rocky Test. The Rocky

Test is a preference test which presents a musical fairy tale featuring various scenes with emotional content, such as feelings of comfort, despair, courage or weightlessness. This test has been held with over 2100 participants on four continents, predominantly with school groups of different ages. Another test called the Basic Test was held with 23 children and college students. The pieces used in the Basic Test were musical selections which had been reduced to their harmonic essence; they involved only a minimal number of additional parameters such as tempo and volume. The third part of this presentation will demonstrate the emotional effects of chords in the literature of music. The authors researched the repertoire of classical music and film scores to compare the use of musical harmonies in the literature (focusing on the use of stimulus chords in lieder from the Romantic period) with the results of the tests.

IMPLICATIONS: The logical background of the Theory of Musical Equilibration has its roots in Ernst Kurth's descriptions of music and potential energy. Here you can find an area in which Ernst Kurth can clearly be disproven: It is not possible to identify potential energy with the senses, and it is not possible to imagine identifying potential energy with the senses, or else the energy (in reality or in imagination) would not be potential. The idea of identifying potential energy with the senses is as inconceivable as the idea of a triangular square. But then what is it that Ernst Kurth describes? Physics can answer this question: anyone who describes identifying potential energy with the senses is actually describing the process of identifying a will directed against the unfolding of the assumed potential energy. This applies both to physical potential energy and to any idea of potential energy. When Ernst Kurth describes a force in a B note that urges forward into a C note, he actually means that he identifies with an anonymous will directed against the rising up of the B into the C. He imagines that he would be someone who does not want the B to ascend into a C. The insight of this principle forms the basis of the Theory of Musical

Equilibration, and provides a way to describe and explain the emotional impact of musical harmonies.

Keywords

Theory of Musical Equilibration, musical harmonies, emotions

Aims

One objective of this presentation is to demonstrate that musical harmonies can be linked to emotional content in a dimension that goes beyond subjective assessments. This will be showed by means of tests about people's preferences for certain chords in terms of their emotional effects. It will also be demonstrated by examples from musical literature; here, the authors focus on the songs from the Romantic era which also reinforce the manner in which lyrics and harmonies complement each other. Furthermore, the authors will show the correlation between the Theory of Musical Equilibration and the results of the tests they conducted with over 2100 participants on four continents. The Theory describes and explains the emotional characters of musical harmonies. Furthermore, the authors will discuss Ernst Kurth and other music theorists' writings about forces in music and re-interpret them in such a way that their statements can be reconciled with the basic hypothesis of the Theory of Musical Equilibration. Furthermore, this presentation will expound upon the Theory of Musical Equilibration as an ideal system for depicting the emotional effects of musical harmonies; it resolves the contradictions which emerged during earlier attempts to address this question.

Methods

In the thesis "Das musikalische Raumphänomen", Ernst Kurth's comparison of music and potential energy was revised and replaced by a new interpretation of this context by explaining that people identify with processes of the will. The authors also designed two preference tests which

they conducted on a total of 2100 subjects. Between 1997 and 2011, over 2100 participants at German schools in Europe, Asia, Australia and South America took part in studies on the Theory of Musical Equilibration. These tests confirmed the context between musical harmonies and their emotional character. In the tests, the authors asked children of different ages to share their spontaneous responses to different chords. Furthermore, the authors researched the repertoire of classical music and film scores to find parallels which confirm their theoretical and empirical findings.

Outcome(s)

The tests with over 2100 participants on four continents correlate with the theoretical premises of the Theory of Musical Equilibration. The authors also researched the repertoire of classical music and film scores to compare the use of musical harmonies in the literature with the results of the tests. The results of this research showed a correlation with the premise of the Theory of Musical Equilibration. The logical conclusions of the revised descriptions by Ernst Kurth and other music theorists lead to the premise of the Theory of Musical Equilibration.

Epilogue

These studies can open up a fruitful re-orientation across all spheres of musical analysis and psychology of music. They make it possible to articulate and explain psychological processes, bringing them out of the stigmatized fog of the inexplicable.

References

Cooke, D. (1959/2001). The Language of Music. Oxford: Oxford University Press.

Juslin, P.N., & Sloboda, J.A. (2001/2008). Music and Emotion: Theory and Research. Oxford: Oxford University Press.

Gabrielsson, A. & Bradbury, R. (2011) Strong Experiences with Music: Music is Much More than Music. Oxford University Press.

Use of secondary data as a rich source of information on music education and the use of music internationally.

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Abstract

Use of secondary data as a rich source of information on music education and the use of music internationally. Technological advances in the ways data are handled and stored online mean that a rich source of information is readily available to music researchers without the need to gather new data. Bonneville-Roussy, Rentfrow, Xu & Potter (2013) were amongst the first to take advantage of these newly available datasets through the survey of musical habits and preferences of more than 250,000 individuals worldwide. In the present paper, I present various databases, either open access or available upon request, that are helpful in answering questions related to the use of music in everyday life, the values and functions of music cross-nationally, and the state of music education worldwide. The first example of readily available data is the European Social Survey (http://www.europeansocialsurvey.org), that has gathered, since 2002, information on various subjects important to European citizens, including music (N > 30,000 individuals every two years). This survey includes representative samples of adults in 28 European countries. For instance, ESS includes data on the number of hours spent on various media, and specific questions about music listening. The second example takes its source from OECD data through the Programme for International Student Assessment (PISA) survey (http://www.oecd.org/pisa/aboutpisa/) that has assessed, every three years, more than 500,000 students aged 15 years old worldwide. Data on

music include students' musical consumption and habits, as well as information about the availability of musical instruments and music lessons in schools. This database allows us to get an overview of the musical habits of young people worldwide. The last example draws from the Department for Education of England (DfE, https://data.gov.uk/publisher/department-for-education) that stores population data on attainment in core subjects, including music, of all of the pupils who have studied in England, from preschool through to University. This database is not open-access but offers a rich source of longitudinal information on pupils' attainment in music, as well as the proportion of pupils who choose music as a study choice, from age 12 through to university. This paper concludes that, even with sharp cuts in funding for music research, technological advances allow music researchers to find valuable information on the musical habits of populations worldwide, through the use of secondary data analysis of pre-existing cross-national surveys.

Keywords

Secondary data, Musical habits, Music education

References

Bonneville-Roussy, A., Rentfrow, P. J., Xu, M. K., & Potter, J. (2013). Music through the ages: Trends in musical engagement and preferences from adolescence through middle adulthood. Journal of Personality and Social Psychology, 105, 703–17. doi:10.1037/a0033770

Performing Sicilianos: An Analytical and Interpretative Approach to the Concerto for Violin and Orchestra, Op. 51 by Yorgos Sicilianos.

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Abstract

Yorgos Sicilianos (1920–2005), originally a proponent of Greece's National School Movement, over a period of 30 years experimented with atonal neoclassical styles, the twelve-tone method and integral serialism and sought solutions to problems of form and structure. After 1980 he concluded that the term ‘post-diatonic music' best described his compositional style, which by then drew inspiration from literary works to give form and meaning to his music. This paper investigates and analyses the compositional influences, process and technique of Sicilianos's Concerto for Violin and Orchestra (1987), and provides an interpretative approach by giving due consideration to the extent to which the analysis informs a performance of the piece. The analysis reveals critical structural parameters that not only impact the subjective aspects of interpretation, but also determine practical matters of performance. The Concerto is the eighth work in his mature compositional period (1980–2005) and it exemplifies this later style. It is inspired by Samuel Beckett's play That Time (1976), whose content and structure Sicilianos uses for the organisation of the Concerto's pitch and form. Giving consideration to the roles of the author/composer and performer, as defined in post-modern and post-structural theory, and using various analytical approaches, this paper attempts to provide practical guidance towards the preparation and performance of the Concerto for Violin and Orchestra, Op. 51, to aid future performers in interpreting the work with fidelity to its composer's vision.

Keywords

Sicilianos, Performance, Analysis

Aims

To investigate and analyse the compositional influences, process and technique of Sicilianos's Concerto for Violin and Orchestra (1987), and

provide an interpretative approach by giving due consideration to the extent to which the analysis informs a performance of the piece.

Methods

The juxtaposition of a literary analysis (primarily psychoanalytic and reader-response criticism) of the Beckett play with a musical analysis of the Sicilianos Concerto.

Outcome(s)

The provision of practical guidance towards the preparation and performance of the Concerto for Violin and Orchestra, Op. 51, to aid future performers in interpreting the work with fidelity to its composer's vision.

Performative and Aesthetic Considerations

Through numerous examples and references, the analysis of the Concerto presented the relationships between the soloist and the orchestra and its members not only musically, but also conceptually. This means that the exact words that inspired Sicilianos to musically transfer Beckett's "deep metaphysical anguish" were assigned on an almost note-by-note basis. Furthermore, the musical relationships that these concepts created were highlighted, so that future performers can understand the meaning of the musical material that they perform. A paradigm can be found in the analysis and commentary on the fourth section of the first movement (beginning at bar 63), where I have illustrated that the short duet between the first clarinet and solo violin is a musical retelling of the scene at the edge of the little wood described by the B voice in the play. Here Sicilianos anthropomorphises the clarinet and solo violin, which play the role of the boy and girl. Finally, because it demonstrates these roles and conversations, the analysis provides insights into the textural and timbral aspect of the Concerto–these aspects performing a structurally significant role according to the composer–that would otherwise not have

been apparent due to the ever-fluid relationship of the solo and orchestral parts in this composition.

Learning narratives pave way to modify computer compositional strategies.

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Abstract

A 21st century secondary school music classroom incorporates music and computer technology where composing in Key Stage Three (ages 11-14) now predominantly use this technology. However, compositional strategies tend to remain embedded in traditional compositional values and often exclude pupils' perspectives. I will present initial findings from my doctoral research and focus on the learning narratives of the participants offering an unseen perspective to their encountered and collaborative compositional stages. Four sequential lessons were observed where field notes and Camtasia video footage captured the pupils' collaborative work. Each lessons data was reviewed and silent compositional interactions were selected as integral to eliciting pupils' perspectives during four interviews. Pupils' interview responses provided transcripts for thematic and multimodal interactional analysis. Framing analysis from a musical and multimodal stance places pupils' learning narratives at the forefront to ‘what really goes on in music lessons' where much of their learning occurs in silence and is invisible to the teacher. Results indicate there is potential to explore an alternate theoretical or learning model to computer composition that considers pupils' experiences and a further necessity to re-examine teaching strategies. These will be outlined in the presentation.

Keywords

computer compositional strategies, multimodal, learning narratives

Aims

Drawing on literature that directly references music technology and composition Folkestad, Lindstrom and Hargreaves (1998); Mellor (2008) and Savage (2005) provide useful learning models for how music technology and composition can be perceived in a music classroom setting. Simply put they discuss, '…compositional strategies, not to structures in music itself' (Folkestad et al., 1998, p83). It is these compositional strategies that this paper and my presentation will focus on by exploring how the pupils' learning narratives of computer composition, in the secondary school music classroom, offer an unseen perspective to their encountered and collaborative compositional stages. To briefly outline these three compositional strategies, Mellor (2008, p458) looked at the process of computer composition and suggested composing consists of five thematic interactions which are: construction, replay, editing, mouse movement or inactivity for more than 4 seconds and errors using the program. Whereas a complementary model offered by Folkestad, Lindstrom and Hargreaves (1998) provided a visual insight to individuals' compositional preferences highlighting findings from their on-screen interactions. That is, how an individual uses the visual mode of the computer program to compose horizontally or vertically. Savage (2005) conceptualised towards a three-staged learning model comprising of selection, structure and evaluation. In a music classroom much of the computer compositional learning occurs in silence and this learning is often invisible to the teacher. I am suggesting that by foregrounding learning narratives, generated from the participants' experiences, will add to any current computer compositional models as research seeks to explore and reveal those silent compositional interactions.

Methods

Camtasia™ —a computer screen capture program— was used to capture and record two pupils' conversations, music and their computer work of four sequential music lessons. Eye gazes, facial expressions and upper body movements were captured using the internal camera on the schools computer and an additional smaller camera offered a different visual perspective and videoed pupils' interactions with the computer, musical equipment and each other. Researcher lesson observation notes were made which identified potential silent episodes to further explore. Directly after the observation the Camtasia data was extracted from the schools system to a secured external hard drive. Both sources of video data were merged to provide one continuous video document of each lesson. From this a reviewing process commenced where up to three silent episodes (each a minimum of 10 seconds long with no upper limit) were selected and used in the individual interviews to explore decisions behind their compositional stages and multimodal processes. Four informal one-to-one interviews occurred post observation where the participants were invited to discuss their music work and asked to recollect their experiences. There was minimal interview question preparation as the chosen silent episodes, on Camtasia, were the primary focus for discussion. These were reviewed individually. Questions were based on their responses and comments to what happened in the lesson and to what they viewed. Audio recordings of these conversations were transcribed for purposes of thematic and multimodal interactional analysis.

Outcome(s)

Results reported will refer to the Camtasia footage of silent episodes, transcripts of pupils' interview responses and field notes. Thematic analysis generated five main musical themes which were - rudiments, composition stage, reasoning, musical understanding and confusion. The learning narratives detail the participants' individual and collaborative experiences of computer composition. The task was shaped through traditional composition methods (Swanwick and Tillman, 1986) and findings

from my doctoral research recognised the pupils' computer composing experiences included: notating scales, rhythms and leitmotifs onto manuscript paper. Composition involved and assumed a particular knowledge and understanding of cultural language associated with the pupils' prior learning. Despite working collaboratively, the pupils' experience and understanding of whole task and sequence to various compositional stages differed. This goes beyond the function of 'each pupil having their own role' and perhaps signifies the limitations in how the technical and musical vocabulary could support their learning. What the latter has provided is an in-depth gateway to mapping these different compositional stages.

Discussion

Mellor (2008) and Folkestad et als., (1998) compositional models are generated from the visual or on-screen monitor as a means to categorise the individuals' processes of computer composition. They restrict their attention to one mode and a limited element of that mode. The visual mode outlined here does not incorporate the use of icons, colours, words, pictures or symbols that embodies the multimodal framework as described by Kress and van Leeuwen (2001). Savages' (2005) three-staged learning model focused on musical processes within composition, namely creation and manipulation of sound. The model shares similarities to the four stages of creativity: preparation, incubation, illumination and verification although this is not my focus here. Kress and van Leeuwen (2001) however, would dismiss the idea of observing modes in isolation from others as effective communication requires more than one mode i.e. sound and action. Foregrounding a single mode is not consistent with the assumptions of multimodality although presenting interaction and meaning-making between two modes is acceptable. These models alone are insufficient in verifying pupils' multimodal or compositional learning experiences in the music classroom. Thereby, exploring alternative compositional strategies based on pupils' narratives seeks to provide a learning

model that links composition with their multimodal interactions – making the invisible, visible.

Acknowledgements

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References

Folkestad, G., Hargreaves, D.J. and Lindström, B. (1998). Compositional Strategies in Computer-Based Music-Making. British Journal of Music Education, 15(1), 83. Retrieved from: DOI: 10.1017/S0265051700003788

Kress, G., & Leeuwen, T. v. (2001). Multimodal discourse: The modes and media of contemporary communication London: Hodder Education.

Mellor, L. (2008). Creativity, originality, identity: investigating computer-based composition in the secondary school. Music Education Research, 10(4), 451-472. Retrieved from: http://ezproxy.bathspa.ac.uk:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=aph&AN=35581955&site=eds-live

An Exploration of Using Music in Religious Education Class for Values Education.

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Abstract

This paper explores why music should be included in religious education (RE) classes for educational purposes. Within a philosophical/theological

perspective, it is based on what is the relationship between religious values/emotions and music. By starting with the premises that music can express emotions/values; this study argues that, with the feeling element in religion, music has significance to express religious emotions through which values and knowledge might be transferred. Then, the question of how music can hold a value as being an emotional stimulant is evaluated in terms of its educational benefits.

Keywords

religious education, music, emotion

Aims

The main aim is to show why RE should use music considering its emotional capacity.

Methods

Case Study on Church's Musical Experience Semi-Structured Interviews with Teachers and Policy Makers

Outcome(s)

Drawing on literature focusing on the current situation for RE in theory and state education, it is argued that not only RE is a suitable environment for applying music, but also music serves many opportunities for RE through emotions.

Implementation for Educational Settings

This study is fundamentally about why music should be further included RE. My interest on this topic is based on my observations within several churches in Glasgow, as being a guest from a different culture and having a RE background. At first glance, my understandings were that if people were so affected by the musical parts of the services they must have

learnt something more than music which are religious concepts, notions, and values that might be considered as aims of RE. Then, my question has evolved into ‘if people can learn through music in church services, why should RE not apply music more?'. The answer suggested in this study leans on the relationship between emotions (particularly religious) and music within philosophical/theological perspective. In this perspective, it is stated that to what extent music can convey religious values (Plato, 1961; Carr, 2009), by, with the feeling element in religion, showing what is the significance of music to express emotions (Otto, 1973; Yob, 1995a). This frame is rather fruitful to make a bridge between the role of music in relation to this feeling and to convey emotions and values (Pugmire, 2006; Jorgensen, 2011; Argyle, 2000). Once it is apprehended how music induces emotions, then the question is how music can hold a value as being an emotional stimulant. This is studied within several perspectives (Sloboda and Juslin, 2001) such as ‘correspondences between certain musical structures and moral features in Plato' (Nettleship, 1937), ‘the effect of music on moral emotions and behaviour' (Kivy, 2009), and ‘the impacts of music on moral judgments' (Seidel and Prinz, 2013). Now that music can evoke emotions, the next step is the interrogation of what is its educational value. While, arts-based pedagogical strategies become a substantial part of learning (Nathan, 2008); music can provide several facilities for RE such as religious expression (Yob, 1995b). Church musical experience is referred in this research as a case study to identify what can be learnt from it within the semi-structured interviews. To accomplish it, the interviews are conducted with those who have responsibility for the musical side of church services. The first finding is the positive relationship between church staff's interests in music and their musical applications. The interviewees believe that the music is the important part of the church services which can convey notions and values for teaching religious concepts. As music can refer moral aims (Alperson and Carroll, 2008), church music may be considered as an element for its own communication and education. However, this is not a

coincidence. Music cannot be deemed successful in church services, unless it bears certain kind of values in worship services. Even clergy tend to choose and control the music in church services; there is a need to understand the correlation between what are the expectations on music for the congregation and the criteria of music for its suitability, in terms of people's needs. According to diversity within and through the congregation, the interviewees accept that there will be different comprehensions about music and its role in church (Lebaka, 2015). Overall, when several considerations are applied, music may be helpful for people to change their mentality or to uphold their understandings (Kreutz et al, 2004).
The final question for this is how to implement the outcomes of the first two chapters, and why these findings can be transferred into RE classes. The discussion starts with the explanation of the current situation. Though teachers have been using music in their RE classes, its level is not on what is desired. Even interviewees thought that teachers are personally qualified to use music in their class, there is no reason to think that they got enough musical training to use it. As a suggestion, it might be said that RE teacher education must include more musical training sessions. The interviewees believe that there is not enough evidence showing the strong relation between young pupils' moral apprehensions and their musical preferences, even if it can be seen for older ages (S1). However, the role of music for RE should be considered for values acquisition (Muldma and Kiilu, 2012). Therefore, RE should employ music to elicit intended moral development, because of its emotional and communicative qualities (Kırmızı et al, 2014). According to the interviews, there is an uncertainty on how the proper musical resources will be found. It can be said that it is entirely subject to teachers' enthusiasm. A teacher must be, of course, diligent, yet, there is a need for institutional support to generate a widespread basis for all classes. This is also another related question over the way in which teachers decide what kind of music is suitable for RE. If ‘the child first' (Hesser, 1949) is accepted as the first step, the features of the music for RE will be determined in terms of educational

principals. The interviewees are also substantially aware of the different backgrounds, whether students' or parents', that might lead to different response within RE class against ‘religious' music. It is noteworthy to state that these kind of differences are evaluated by the interviewees not only for their negative consequences but also with possibilities plurality creates. The method to employ music in RE class within diversity will be more important (Hoffman, 2011) than the nature of the music. A variety of backgrounds may lead to different reflections and experiences as well to the extent that the personal concerns of individuals will be satisfied. The last step for the present study, which requires further investigations, is in what ways music and music instructions contribute to RE. Around the nine concepts that that have been introduced – investigation, interpretation, reflection, empathy, evaluation, analysis, synthesis, application, and expression – music should be considered as a supporter for better RE. To sum up, in this study, music is a vehicle not the purpose of RE. In such a way for future projections, it is possible to create a more dazzling environment for RE in terms of raising the gaining of both individuals and society. There is still a demand for the well-organised system. It would be too easy if a piece of music were enough to create the stronger learning climate for RE than it was. In order to reach the benefits mentioned in this study, that there must be a proper class environment, teaching mentality, students' familiarity with the method, curriculum developments, and satisfactory musical instructions clearly explains why there is a huge demand for further research on this subject.

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References

Alperson, P., and Carroll, N. (2008). Music, mind, and morality: arousing the body politic. The Journal of Aesthetic Education, 42, 1-15.

Stern. J. (2004). Marking time: using music to create inclusive religious education and inclusive schools. Support for Learning, 19(3), 107-113.

Carr, D. (2009). Narrative and emotion in music: seeking wisdom and truth in music education. Research Studies in Music Education, 31(1), 93-95.

Implementing service-learning in higher education: a music education experience at a residence for the elderly.

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Abstract

This study presents the results of a research study aimed to observe the impact of a service-learning music project with older adults. A group of Music Education students at the Faculty of Education of Segovia (University of Valladolid – Spain) participated in this project during the first term of the 2017/2018 school period. The service-learning project used music as a vehicle for building skills and values related to social and democratic citizenship that contributed to the development, well-being and social integration of seniors. Qualitative approaches have been used for data collection using the following tools and techniques: participant observa-

tion, reflective diary and interviews. The informers for this research study were a group of 30 students at the BA in Education undergraduate degree, three lecturers in charge of the module and the service-learning project and 40 older adults hospitalised at the Hermanitas de los Pobres' elderly residence in Segovia. From the objectives and data analysis, four categories emerged: (a) Music as a tool for the development of social and democratic citizenship. (b) Students acquisition of civic, ethic and social values. (c) Contribution to the development, well-being and social and community integration of older adults. (d) Transference of the acquired learning to personal and professional student's development. The findings suggest that the service-learning experience has enhanced values such as students' civic engagement with a vulnerable and socially set aside group as the older adults, intergenerational exchange, respect for the differences, compassion and community service. Students have also developed soft skills such as patience, empathy and peers respect and technical skills related with the design, development and evaluation of socio-educative projects using music as a vehicle for the transmission of social and civic values.

Keywords

Music Education , Service-Learning, Citizenship

Aims

1. To identify students' insights related to the role of music as a vehicle for developing a socially engaged citizenship. 2. To analyse the degree of university students' achievement of social and civic competency participating in a learning-service project as part of the Music Education module. 3. To examine improvements in well-being and development, as well as in social and community integration of a group of older people participating in a music service-learning experience. 4. To identify the impact of learnings on the personal and professional development of university students.

Methods

Qualitative methods have been used for this research. For the data collection, participant observations, an individual reflective diary for each student and interviews were used. The informers for this research study were 30 students from the BA in Education undergraduate degree that each week wrote a text in their online reflective diary (Otienoh, 2009; Boenink et al., 2004; Moon, 2006, 2010), three lecturers in charge of the module and the service-learning project that each week conducted a participant observation and registered the data in a field diary (Stake,1995) and and 40 older adults hospitalised at the Hermanitas de los Pobres' elderly residence in Segovia (Spain) that participated in a group interview (Taylor y Bogdan, 1990). Four categories emerged from the objectives and data analysis, and the data was used for content analysis (Leech & Onwuegbuzle, 2007): (a) Music as a tool for the development of social and democratic citizenship. (b) Students acquisition of civic, ethic and social values. (c) Contribution to the development, well-being and social and community integration of older adults. (d) Transference of the acquired learning to personal and professional student's development.

Outcome(s)

The research outcomes are related to the four analysis categories: (a) Music as a tool for the development of social and democratic citizenship. Students value music as an essential tool for promoting communication among participants of different ages and gender. Music is a tool for developing social and cultural values such as respect, tolerance, inclusion and cooperation. (b) Students acquisition of civic, ethic and social values. Students acknowledge their civic engagement throughout the acquisition of ethic responsibility with a group of older people socially set aside and the recognition of this group as a model of life experience, respecting and tolerating their abilities and needs. (c) Contribution to the development, well-being and social and community integration of older adults.

The student's participation through this music project has generated benefits such us aural memory or evocation of individual musical histories, self-concept and self-esteem, as well as a feeling of satisfaction and dignity recovery. (d) Transference of the acquired learning to personal and professional student's development. All students think the experience has contributed to increasing their patience, they have also learnt to respect the pace and skill diversity of older adults, and they have developed their critical thinking and reflective skills. They have also increased their knowledge of folk and popular music and have developed some necessary teaching skills.

Discussion

The purpose of this research project was to observe the impact of a service-learning music project with older adults. The main findings were broadly in line with other recent studies. Music education research has indicated that engaging in music activities has a range of benefits which contribute to overall well-being as well as to social cohesion (Hays, 2005; Hallam et al., 2009), as it has been observed in this study. The students' positive comments about this experience corroborate the findings of other researchers that used music as the primary resource for service-learning projects (Barnes, 2002; Reynolds et al., 2005; Bartolome, 2013) who found that service-learning participants react favourably to their experiences. Future research is necessary to examine differences between perceptions of different groups of students who participate in a service-learning music education with older adult experience. Further studies designed to explore the effects of service-learning experiences on preservice teachers' personal and professional growth and continued community service would further assist music teacher educators with making decisions about future projects.

References

Bartolome, S. (2013). Growing Through Service. Exploring the Impact of a Service-Learning Experience on Preservice Educators. Journal of Music Teacher Education, 23(1), 79-91.

Hays, T. (2005). Well-being in later life through music. Australasian Journal of Ageing, 24(1), 28-32

Moon, J. (2006). Learning journals: A handbook for reflective practice and professional development. London/New York: Routledge.

Staff and student perceptions of, and experiences in, University Music modules being delivered in collaborative lecture theatres.

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Abstract

The traditional lecture and its efficacy in promoting student learning and engagement has been much debated in the tertiary education pedagogic literature (Bligh, 1998). Collaborative approaches that seek to promote more active learning and the idea of flipped learning, which often intersects with discussions about the use of podcasts or other digital technologies, are often cited as potential alternatives to the traditional lecture. Research into student opinions and the pedagogic benefits of the use of technologies like podcasts has largely been conducted using quantitative methods and produced conflicting findings (Heilsen, 2010). Relatively little research on this topic has been conducted in the Humanities specifically (Bauer & Haynie, 2017). However, the potential benefits of collaborative learning approaches in various higher music education contexts have been identified (Gaunt & Westerlund, 2013). Against this broader pedagogic climate, the University of Leeds recently converted three traditional tiered lecture theatres into collaborative spaces, replacing the rows of seating with pods that enable small groups of students to sit

around a table. Each pod contains microphones and lighting to facilitate plenary discussion and a ThinkPad, which provides online access and software to support collaborative activities. Dual projection capabilities allow staff to project two sources to the front of the room including the pod ThinkPad screens. Therefore, the physical affordances of the lecture theatre space complement the digital technology in the room, and together these seek to promote active and collaborative learning as an alternative to the traditional lecture. This paper will present the findings from exploratory interviews conducted with students who attended Music modules that were delivered in these collaborative lecture theatres. Alongside separate interviews with the staff who delivered these modules, the student interviews are the first phase of longitudinal case study research that will document and evaluate the embedding of the collaborative lecture theatres in these Music modules.

Keywords

Collaborative learning, Collaborative lecture theatres, Tertiary music education

Aims

The primary aim of the broader research project is to better understand how the collaborative lecture theatres and their technologies influence the experiences and engagement of Music students, and the experiences and practice of Music staff. The three Music modules currently being delivered in these spaces have different designs: one is more traditional in structure; and the other two are flipped and require students to undertake preparatory work listening to podcasts before each class. The modules seek to develop a range of skills and contain different content across the areas of music aesthetics, analysis and psychology. As a set the modules support the exploration of secondary research questions surrounding the efficacy of the collaborative lecture spaces and their technologies in the context of flipped and non-flipped modules, and in relation to dif-

ferent subject matter. The specific aim of this paper is to report the findings from the initial student interviews, focusing on data that illustrate participants' responses to the digital technologies in the lecture theatres and other technology, such as podcasts, used within the modules.

Methods

In this initial stage of the research, semi-structured interviews were conducted with four staff who teach the music aesthetics and psychology modules that are delivered in the collaborative lecture theatres, and four students who attend these modules and a music analysis module that is also delivered in this space. Questions in the student interview schedule interrogated: participants' perceptions of, and engagement with, the content and structure of each module; their uses of, and experiences with, the collaborative lecture theatre space and technologies in each module; and their enjoyment of the teaching approach and opinions about its perceived impact on their learning. The interviews were transcribed and are currently undergoing Thematic Analysis as outlined by Braun & Clarke (2006) in order to extract themes that characterise the data set at a broader level.

Outcome(s)

To reflect the rich and sometimes seemingly contradictory responses, this paper will focus on outcomes from the student interviews. Analysis is ongoing but this paper will particularly present ideas emerging from the data that relate to students' perceptions of the lecture theatre technology and the benefits it can bring in terms of: facilitating their engagement and participation in collaborative learning activities; and developing their confidence. The challenges that they perceive surrounding the technology and its impact on collaborative learning will also be discussed. Most participants described particular challenges when working with podcasted materials in the flipped modules, and the subsequent impact of ineffective preparation on collaborative activities within the classes them-

selves. As such, students' broader digital literacy skills will be considered in the discussion.

Discussion

Data suggest a nuanced impact of the collaborative lecture theatre technology on students' experiences. For example, participants described the opportunity for work produced on the ThinkPads to be projected to the whole class as promoting participation by providing an alternative way for those who are less confident about sharing verbally in a large group context to contribute their ideas; however, participants also acknowledged that only having one ThinkPad per pod could challenge participation in terms of all of the group being able to see the screen or type up responses. Comments surrounding engagement with podcasts suggest that further consideration should also be given to how to best support students and develop their confidence when working with digital learning resources. The longitudinal nature of this research project means that findings from these initial interviews can support staff working in the collaborative lecture theatres as they reflect on their practice. Similarly, the impact of any amendments to class design and delivery based on these findings can be considered at future data collection points, supporting further reflection by identifying good practice to facilitate even more effective use of the collaborative lecture theatres and their technologies.

Acknowledgements

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References

Bauer, A., & Haynie, A. (2017). How do you foster deeper disciplinary learning within the ‘flipped' classroom? New Directions for Learning and Teaching, 151, 31-44.

Bligh, D. (1998). What's the use of lectures? Exeter: Intellect Ltd.

Braun V. & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101.

Gaunt, H., & Westerlund, H. (eds) (2013). Collaborative Learning in Higher Music Education. Farnham: Ashgate.

Heilesen, S.B. (2010). What is the academic efficacy of podcasting? Computers and Education, 55(3), 1063-1068

Analysis of tempo variation in the 20th and 21st centuries recordings of Johannes Brahms's Sonata for pianoforte and violin op. 78.

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Abstract

This paper investigates the variation of tempo among various recorded performances of the first phrase of Johannes Brahms's Sonata for pianoforte and violin op. 78. 45 recordings of the Sonata (from the first known in 1931 to the most recent ones in 2017) have been examined using computational musicology tools. The ‘reversed conducting' technique has been employed in Sonic Visualiser software to measure the tempo and several statistical instruments have been used for the analysis. The study has revealed a statistically significant correlation between the tempo and the date of recording. Hence, it appears that the tempo chosen by musicians decreases gradually throughout the century from an average of 50

BPM per dotted minim in the 1930s to 42 BPM in the 2010s. Moreover, a similar tendency has been observed regarding the date of birth of the violinist. These results are in line with the written sources from the beginning of the 20th century. They provide insightful information regarding performance of the Sonata and have been applied to the author's violinistic practice. They also propose statistically confirmed insights into the study of the performance practice history.

Keywords

Computational musicology, Performance practice history, Brahms's violin Sonata

Aims

The last 40 years have shown increasing interest in the study of performance practice of the late 19th century music (e.g. [1], [3], [4], [5]). The recent and growing field of computational musicology offers tools to analyse historical recordings that help to enrich the knowledge on this period (e.g. [2]). The following paper examines the tempo of the first movement of Johannes Brahms's Sonata for pianoforte and violin op. 78 using computational musicology tools. It analyses the tempo in 45 different interpretations recorded from 1931 (first known recording) to 2017, a material that has not yet been much under study. The primary aim of the study is to expand the knowledge about the late 19th century performance practice by applying statistical models and comparing the findings with existing research. Based on the outcomes, the paper draws practical conclusions that can be applied to the performance of the Sonata. The second aim of this study is to investigate the variation of tempo throughout the 20th and the beginning of the 21st centuries.

Methods

In order to analyse the tempo in the opening phrase of Brahms's Sonata for pianoforte and violin op. 78 (Figure 1), 45 recordings were selected (Table 1). While all the recordings that could be found for years 1930-1960 were used for the analysis, the numerous recordings available in the subsequent years required application of certain criteria: fame of a violinist (assuming greater potential influence of famous players on the general musical taste of their times) and the accessibility of the data. Moreover, the study focused on mainstream recordings and thus a few existing interpretations on the historical instruments were not taken into account. The process of data collecting was done using Sonic Visualiser, a software for viewing and analysing the contents of music audio files. The 'reversed conducting' technique, developed by the CHARM centre, allowed measuring the length of every dotted minim in BPM (beats per minute) in the opening phrase of every recording. The general tempo was calculated as an average of all the dotted minims of the phrase, since the tempo of the first measure was particularly different from the rest of the piece. Some statistical tools were employed to analyse the data. Firstly, the box-and-whisker plot was used to find the outliers; one recording (Kagan/Richter - 61,97 BPM) was excluded from the analysis as being significantly faster. Several linear regression models were built for different variables and the significance of the Pearson correlation coefficient was tested with the Student's t-distribution.

Outcome(s)

The study revealed that the tempo of the Sonata's first phrase is decreasing throughout the years. This was identified with a statistically significant correlation between tempo of the analysed phrase and date of the recording (Figure 2). The tempo can be plotted as a linear trend line, decreasing around 1 BPM point by dotted minim per decade, from 50 BPM in 1930s to 42 BPM in 2010. It is important to note that the written sources from the beginning of the 20th century propose tempo 54-56 BPM [1], which appear to be in accordance with the obtained correlation,

back-extrapolated to years before 1931 (the Sonata was premiered in 1879). What is more, a similar correlation can be observed for the tempo and violinist's date of birth. The study, however, revealed no significant correlation between the tempo and violinist's age.

Discussion

The decrease of tempo observed in the study has a significant impact on the character of the first movement of Brahms's Sonata. From our personal point of view as a violinist-performer, this movement played with a faster tempo corresponds better to the 19th century performance style described by researchers, for example to a less frequent and less intense usage of vibrato, an application of natural harmonics or a greater rhythmical freedom. In the case of this piece, these techniques appear to be more appropriate for a tempo around 50-54 BPM per dotted minim than for 42-46 BPM. The results of the study provide considerable insights into the 20th and 21st centuries history of performance practice. They suggest that both education of a violinist (represented in the correlation model by his date of birth) and fashion (represented by date of the recording) influence musician's choice of tempo in a similar way. What is more, the observed tendency remains stable during the analysed period, with no radical turning point. The above observations provide a statistically proven argument that the primary performance tradition did not remain unchanged throughout 20th and the beginning of 21st century but was rather transformed gradually by the following generations. Nevertheless, further research is required to find out what are the reasons of this variation of tempo choice, whether it was caused by evolution of instrumental facture, modified performance style or any other impactful event. The research might go even beyond the scope of the analysed Sonata and investigate the tendencies of tempo choice in other musical pieces.

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References

Brown, C. & Da Costa, N. P. (2015). Performing Practice Commentary. In Brahms, J., Sonate in G für Violine und Klavier op. 78, Bärenreiter Kassel, Bärenreiter.

Leech-Wilkinson, D. (2009). The Changing Sound of Music: Approaches to Studying Recorded Musical Performances, London, CHARM. Retrieved from http://www.charm.rhul.ac.uk.html

Milsom, D. (2003). Theory and Practice in Late Nineteenth-century Violin Performance: An examination of Style in Performance, 1850-1900, Aldershot, Ashgate.

Sherman, B. D. & Musgrave M. (2003). Performing Brahms: Early Evidence of Performance Style, Cambridge, Cambridge University Press.

Wilson, R. (2014). Style and Interpretation in the Nineteenth-Century German Violin School with Particular Reference to the Three Sonatas for Pianoforte and violin by Johannes Brahms. Retrieved from http://hdl.handle.net/2123/12947

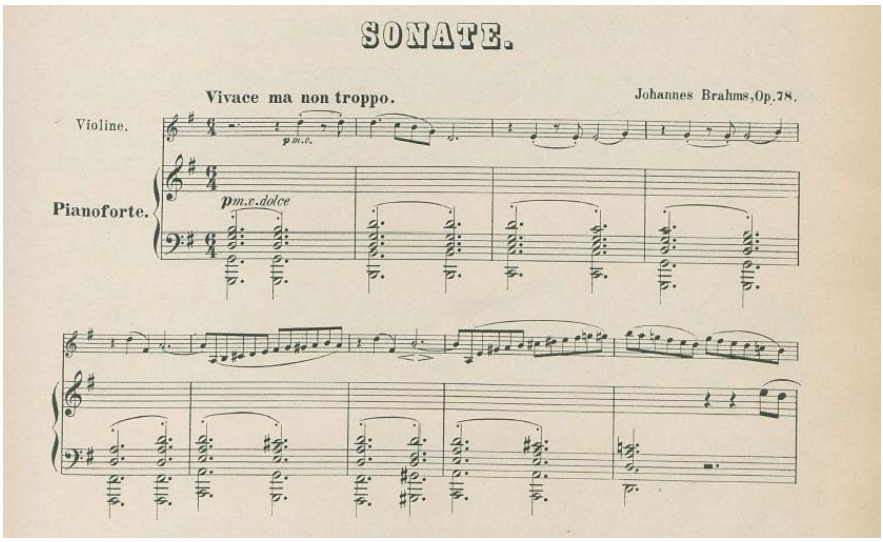

Figure 1: First phrase of Johannes Brahms's Sonata for pianoforte and violin op. 78 – first edition (Simrock, Berlin, 1879).

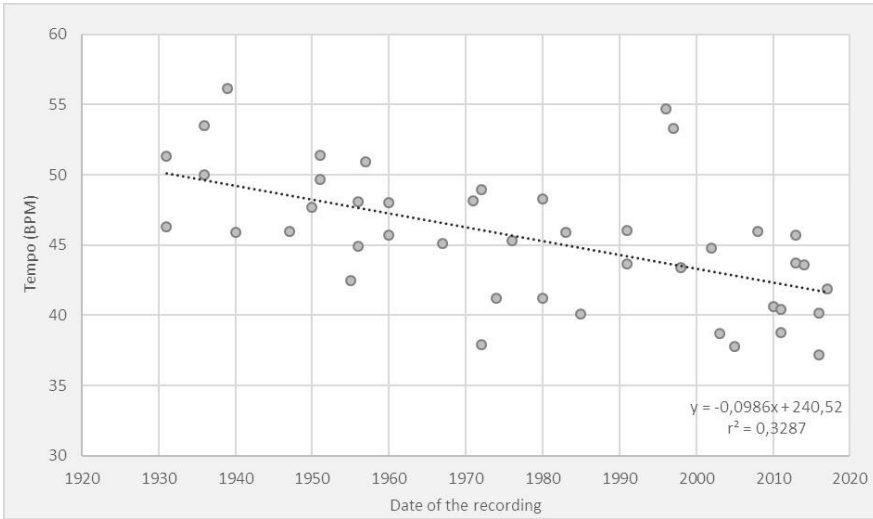

Figure 2: Correlation between tempo of the first phrase and date of the recording.

Violinist	Pianist	Date of the recording	Date of the birth (violinist)	Tempo
Toscha Seidel	Arthur Loesser	1931	1889	46,34
Adolf Busch	Rudolf Serkin	1931	1891	51,35
Adolf Busch	Rudolf Serkin	1936	1891	50,01
Jascha Heifetz	Emanuel Bay	1936	1901	53,50
Emil Telmányi	Georg Vásárhelyi	1939	1892	56,14
Yehudi Menuhin	Hephzibah Menuhin	1940	1916	45,90
Georg Kulenkampff	Georg Solti	1947	1898	46,00
Roman Totenberg	Leonard Shure	1950	1911	47,68
Albert Spalding	Ernö Dohnányi	1951	1888	49,66
Joseph Szigeti	Mieczysław Horszowski	1951	1892	51,38
Leonid Kogan	Andrei Mytnik	1955	1924	42,44
Szymon Goldberg	Artur Balsam	1956	1903	48,08
Yehudi Menuhin	Louis Kentner	1956	1916	44,92
David Oistrakh	Lev Oborin	1957	1908	50,93
Henryk Szeryng	Arthur Rubinstein	1960	1918	48,03
Isaac Stern	Alexander Zakin	1960	1920	45,70
Josef Suk	Julius Katchen	1967	1929	45,13
Christian Ferras	Pierre Barbizet	1971	1933	48,12
Johanna Martzy	István Hajdu	1972	1924	48,96
Yong Uck Kim	Karl Engel	1972	1947	37,88
Pinchas Zukerman	Daniel Barenboim	1974	1948	41,20
Arthur Grumiaux	György Sebök	1976	1921	45,28
Yuzuko Horigome	Jean-Claude Vanden Eynden	1980	1957	41,22
Ida Haendel	Ronald Turini	1980	1928	48,31
Anne-Sophie Mutter	Alexis Weissenberg	1983	1963	45,89
Itzhak Perlman	Vladimir Ashkenazy	1985	1945	40,06
Oleg Kagan	Sviatoslav Richter	1985	1946	61,97
Augustin Dumay	Maria Joao Pires	1991	1949	43,67
Rudolf Koelman	Antoine Oomen	1991	1959	46,03
Pamela Frank	Peter Serkin	1996	1967	54,71
Viktoria Mullova	Piotr Anderszewski	1997	1959	53,32
Kyung-Wha Chung	Peter Frankl	1998	1948	43,40
Ilya Kaler	Alexander Peskanov	2002	1963	44,79
Shlomo Mintz	Itamar Golan	2003	1957	38,73
Maxim Vengerov	Vag Papian	2005	1976	37,81
Ida Haendel	Walter DeLehunt	2008	1928	46,00
Anne-Sophie Mutter	Alexis Weissenberg	2010	1963	40,60
Dora Schwarzberg	Tamara Atschba	2011	1946	38,77
Arabella Steinbacher	Robert Kulek	2011	1981	40,43
Leonidas Kavakos	Yuja Wang	2013	1967	45,70
Sergey Khachatryan	Lusine Khachatryan	2013	1985	43,73
Augustin Dumay	Louis Lortie	2014	1949	43,60
Gary Levinson	Walter Ponce	2016	1964	37,19
Christian Tetzlaff	Lars Vogt	2016	1966	40,14
Vadim Gluzman	Angela Yoffe	2017	1973	41,86

Table 1: List of analysed recordings with tempo of the first phrase.

Touch the sound: tangible interface for children music learning and sound experimentation.

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Abstract

"Touch the sound" is a music learning and sound experimenting system for children, composed by a technological tool (a tablet based interface which uses a series of physical and tangible elements for music and sound interaction) and a learning APP based on the IMLS (intelligent Music Learning System) project. We discuss the pedagogical motivations for this tool, as well as the concept and design process of the whole system.

Keywords

music learning, tangible interface, music experimentation

Aims

The main objective of the Touch Sound Project is to create a music and sound learning tool, designed specifically for children, based on the in-

teraction between physical and tangible elements (plastic pieces that children can organize and move inside a two-axis space) and a tablet based APP. As part of this main objective, three additional aims have been considered: 1) Create a resource based on accessible technology, in order to reduce the digital exclusion that technology may cause (García Ruiz et al., 2014). 2) Develop a learning tool that, from the experience with the IMLS system (Cuadrado, 2015), enhances the contact with the musical language through direct experimentation, promoting an informal learning approach supported by technology (Himonides and Purves, 201; Charisi and Rinta, 2014). 3) Design a system that is as close as possible to children understanding of the association between a music element or a sound parameter and its visual representation through a picture or an icon.

Methods

The design process has involved different stages, as well as the collaboration between music educators, graphic designers, programmers and children. The stages of the design process have been the following: 1) Analysis of the effectiveness of IMLS system and the possibilities of converting the system into a technological resource: the system is based on the use of rectangular plastic pieces, where the length corresponds to the duration of a musical figure, while the colour of each piece identifies the tone of the musical note. From this point, it was found interesting to design a system that could recognize each piece, and its position in a sequence, and playback the corresponding sound for each pitch and duration note. 2) Research on technological options and approaches for tool development: different software and hardware approaches were considered, from web based tools to low level programming, always with the idea of developing a technological accessible tool. After several analysis and consultations with experts, it was decided to develop an Android based tool, using computer vision and a fiducial marker system to identify the pieces and generate the sound and music according to different parame-

ters. 3) Fiducial markers development: according to the second sub-objective of the project, it was decided to carry out a field study to define the markers that were best associated by children to different sound parameters and musical elements, apart from the pitch and duration dimensions, which had already been defined and tested in the IMLS system development. After consulting three experts on music teaching, an especial questionnaire was designed, proposing children to choose between three different pictures to represent the sound they were listening, adding a fourth option for children to draw an additional picture to represent each parameter. A series of audio files were produced to represent each sound parameter. 180 children, from 6 to 12 years, fulfilled the questionnaire. The picture that would be the marker for each parameter or sound source was selected according to the most chosen option for each question. 4) Programming and testing: the programming tasks were carried out in collaboration with the company Kometasoft, while for the user tests different teachers and children participated.

Outcome(s)

The first version of the system has been developed, resulting in two different learning apps: - Sound experimentation: application designed to experiment with continuous variation of different sound parameters (pitch, volume, timbre, texture, etc.), according to the marker of each different plastic piece and the position and movement of the pieces in a XY axis. - Music language learning: application designed to build rhythmic and melodic sequences.

Discussion

In general terms, the aims of the project have been achieved during the design and development process: - The system has been developed to run in basic range Android tablets, making the tool accessible for a large community of children and educators. - The two developed learning APPS are founded in the direct interaction of children. While the first one

is focused in the specific experimentation with different sound and musical parameters, the second one proposes a methodology for learning musical language that starts with children's creation of rhythmic and melodic patterns, to arrive to a visual representation of this sound creation. - Although the field study carried on to define the fiducial markers used does not guarantee that these markers may be "universal", this approach is closer to the visual perception and representation of children, and can be seen as a way to involve children in the creation of a personal way to represent musical parameters. At present moment, the two developed applications are being tested in different Primary education classes, with positive feedback. Also, different pedagogic activities are being developed to maximize the learning possibilities of "Touch the sound". In the programming side, the resource is being further developed to track children use of the APPs and analyse the learning process of every child.

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References

Cuadrado, F. (2015). Intelligent Music Learning System. Spain Intellectual Property Register: 201599900351883.

Charissi, V. and Rinta, T. (2014). ‘Children's musical and social behaviours in the context of music-making activities supported by digital tools: Examples from a pilot study in the United Kingdom', Journal of Music, Technology & Education, 7:1, pp. 39–58.

García-Ruiz, R.; Ramírez-García, A. and Rodríguez-Rosell, M. (2014). Media literacy Education for a New Prosumer Citizenship, Comunicar, n 43, V. XXII, 15-23.

Stretching time in audiovisual media: Influences of playback technology and music on perceived emotion and induced arousal.

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Abstract

The advent of new media technology augmented human perception and cognition. As an example, popular streaming channels list numerous film clips that distort the timing dimension for such experiences. While accelerating time for moving objects and larger scenes offers the viewer an impression of processes that would otherwise go beyond the temporal integration in human memory systems, slowing down makes very fast processes such as explosions visible – a phenomenon known as "bullet time" in filmmaking. Slow-motion video clips are typically underlined by emotionally expressive music. In this paper, we analysed the effects of such videos on perceived emotional qualities and arousal as measured via peripheral physiological responses and changes in pupillary size.

Keywords

playback speed, pupillary response, physiological measures

Aims

Based on theories that suggest links between experiences of distorted time and increased cognitive as well as physiological processes, we investigated the effects of auditory and visual information in slow-motion excerpts from three different video genres. We hypothesized that slow motion has an impact on perceived arousal, valence and induced arousal, and that music modulates these processes.

Methods

Using a multimodal repeated-measures design, we asked 46 participants (mean age: 23.59, SD = 4.31 years) to watch slow-motion (SloMo) excerpts showing human movements taken from a total of nine movie, dance and sport clips (duration: 16–40 s) in versions with or without music. Excerpts were presented with E-prime both in original slow motion and in accelerated versions to match real-time motion (modified and tested in a pilot study). Participants' physiological responses in terms of heart rate, Galvanic skin response and respiration rate were recorded with a Nexus biofeedback system, and changes in their pupillary sizes with an eye-tracking system (SMI). Following each stimulus, participants judged the perceived valence and arousal of each clip.

Outcome(s)

Results reveal that slow-motion scenes compared to adapted real-time scenes led to systematic underestimations of duration ($p < .001$). While arousal was perceived to be higher in real-time excerpts as compared to SloMo excerpts ($p < .001$), valence was judged higher in SloMo ($p < .01$). The presence of music in audiovisual excerpts increased perceived arousal and valence (both $p < .01$). Sports and movie excerpts were more arousing than the ballet excerpts, which, in contrast, received higher valence ratings (all $p < .001$). Induced physiological arousal was higher in audiovisual conditions, indicating that the presence of music increased arousal in terms of skin conductance, heart rate and respiration rate changes (all $p < .01$), irrespective of the three video genres. Respiration

rate was the only physiological measure that was higher in real-time motion compared to SloMo ($p < .05$). Changes in pupil diameter were recorded for all factors. Viewers had larger pupil diameters for adapted real-time sequences ($p < .001$) and for excerpts including music ($p < .001$). As expected, participants' pupils changed according to genre, and post-hoc analyses show that sports scenes led to highest pupil size, followed by films and ballet scenes (all $p < .001$).

Conclusions

Our results provide new insights into the impact of stretched time on induced arousal and perceived emotion. Despite the different visual material presented in the videos excerpts from movies, sports and dance genres, slow motion was perceived to be higher in valence but lower in arousal. Music strongly influenced induced arousal in all physiological measures and is thus an effective means of enhancing emotional experiences of slow motion. In this way, we argue that slow-motion videos may simulate heightened psychological states where time seems to pass more slowly.

References

Rogers, S. (2013). Truth, lies, and meaning in slow motion images. In A. P. Shimamura (Ed.), Psychocinematics. Exploring cognition at the movies (pp. 146–164). Oxford: Oxford University Press.

Gingras, B., Marin, M.M., Puig-Waldmüller, E., & Fitch, W.T. (2015). The eye is listening: Music-induced arousal and individual differences predict pupillary responses. Frontiers in Human Neuroscience, 9:619.

Technology-enhanced assessment and feedback of drummers' tempo accuracy.

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Abstract

A paradigm employing commercial music hardware and software and custom analyses was assembled allowing drummers to synchronize with a piece of popular music then continue the beat solo, allowing for measurement and feedback of their tempo maintenance abilities. 44 drummers and percussionists completed the test, finding that drummers struggled with the task and tended to slow, contradicting existing literature. Implications for pedagogical applications are discussed.

Keywords

Performance, Tempo, Assessment

Aims

Technology has long been associated with music via tempo and the metronomic devices used to indicate, standardize, and train musical timekeeping. While an important skill for all musicians, timekeeping is particularly salient for drummers and percussionists. In the general population, accuracy of sensorimotor synchronization and tempo maintenance has traditionally been examined using a simplified task in which a participant taps a single finger along to a metronomic tone, then continues the pattern after the stimulus is stopped. Repeated studies have found that participants generally increase in tempo following removal of the metronome (e.g Binetti et al 2010). Musicians have shown an increased ability

to maintain beat continuation in tapping and circle drawing paradigms compared with controls (Braun Janzen et al 2014), and percussionists in particular have been found to have superior synchronization and continuation tapping tasks compared with other musicians, skills that generalize to rhythmic reproduction tasks (Cameron & Grahn 2014). How these skills generalize to real-world performance tasks remains unclear, thus the aim of the present study was to (1) develop a technology-enhanced method to deliver, measure, and assess a synchronization-continuation task using a full drum kit and excerpt of real musical material; (2) determine the degree to which drummers sped or slowed when synchronizing with slow and fast stimuli; (3) determine predictors of success in this task; and (4) examine potential pedagogical applications for such methods and tools.

Methods

Participants were 44 drummers and percussions (85% male, mean age = 25.5 years [SD = 9.9, range = 16-52]) enrolled at the Royal College of Music or attending its Festival of Percussion. Participants had a wide range of drumming experience, ranging from 1 to 36 years (M = 13.7, SD = 8.5) with 42% reporting undergraduate or postgraduate training. Two popular music works in common time were chosen as stimuli: one fast (Queen's Don't Stop Me Now; 157.2 bpm) and one slow (Michael Jackson's Earth Song; 69.1 bpm). Audio files were imported into Logic Pro 9.1.8, manually examined for a 16-bar period of metronomically consistent time, and synchronized with a metronome. A linear fade to silence was inserted over the first two beats of the ninth bar in both tracks. After eight bars of silence, volume was immediately restored at the downbeat of bar 17 to provide participants with immediate feedback on their relative success for the purpose of the festival event. Thus, the measurement of accumulated asynchrony was taken at the downbeat of bar 16, after 7 bars of silence, to avoid contamination of the final score. After a survey of demographics, experience, familiarity with the musical stimuli, and self-

reported self-efficacy, participants listened to the excerpts via noise-cancelling headphones in the (randomized) order in which they would be tested. They then tapped from memory eight beats of the tracks' tempi on a keyboard spacebar and completed a short online synchronization/continuation test, tapping the same spacebar to a digitized bass drum at 120 bpm. After a self-report of state anxiety, they sat at a Roland V-Drum electronic drum kit and were instructed that, following a four-beat count-in, they were to synchronise to the track for eight bars, the music would fade out and they would be on their own for eight bars, then the music would return on the 17th downbeat. They were instructed to play whatever pattern they desired, that their only task was to synchronize with and maintain the tempo. After completing the task with the first track they immediately proceeded to the second following the same procedure. The audio signal was fed to a MacBook Pro via a Roland Edirol UA-25EX USB interface, where recording and playback were synchronized within Logic. Output was routed through a Samson S-phone headphone mixer/amplifier to two sets of noise cancelling headphones worn by the researcher and the participant.

Outcome(s)

Across the performances there was a tendency to slow. This effect was more pronounced in the fast track, where the median drummer finished 0.42 beats (SD = 0.58) after the correct mark, significantly later than the median 0.12 beats in the slow track (SD = 1.03; $Z = -2.39$, $p < .05$, $r = .25$; see Figure 1A) These scores were also compared as absolute values, with any negative scores converted to positive to track absolute displacement from the target downbeat, regardless of whether drummers sped or slowed. The difference was non significant (see Figure 1B), indicating that that the median degree to which participants missed the target was relative to the tempo of the track (approximately half of one beat). This outcome was highlighted by the significant difference in overall asynchrony accumulation when measured in real time (seconds), with an absolute

median deviation of 0.18 seconds (SD = 0.16) in the fast track versus 0.47 seconds (SD = 0.57) in the slow track ($Z = -4.67$, $p < .001$, $r = .50$; see Figure 1D). No predictors of overall tempo displacement were found, where correlations with indicators of age, experience, stimulus familiarity, self-efficacy, anxiety, tempo memory, and success on the simplified tapping test were less than .1 (Kendall's Tau) and non-significant. No order effect was found, and success in one task was found to mildly predict success in the other ($r = .24$, $p < .05$). Advanced beat-detection algorithms were employed in which extreme increases of signal energy, typical of strong percussive attacks, were isolated using short-term Fourier transforms (Duxbury et al. 2003). From this, note onsets were extracted and compared to the fixed metronomic tempo of the original track (see Figure 2). Further analyses of the real-time data are ongoing and investigating patterns in participants' tempo deviations; preliminary analyses of the continuous data have suggested a subset of performers that reach a new, relatively stable tempo plateau after a consistent amount of time (see Figure 3).

Discussion

That drummers tended to slow in the continuation task contradicts the standard literature in which participants speed in simplified measurement scenarios. Further work will examine whether this is due to the increased complexity of the stimulus or the task, an as yet unknown quality of the testing paradigm, or perhaps a higher-order decision process (e.g. overcompensatory avoidance of an assumed tendency to speed). While the lack of predictive correlation for task success is not itself definite proof of a non-effect, the complete lack of correlation with experience was striking, especially given the variability in experience and accumulated asynchronies. This study also highlighted the potential for technology-enhanced assessment and feedback of tempo in pedagogical settings. Anecdotally, the majority of the drummers reacted with surprise to the degree to which their timing was inaccurate after only eight bars. When

asked whether they had sped or slowed, many were unable to provide an answer or were incorrect in this basic self-assessment. Furthermore, while an electronic kit was used for testing, signal processing focused on the audio output (as opposed to digital MIDI signals) allowing for generalization of the method to a standard acoustic instrument and microphone. A continuation of the technology is now in development that will automate the task and the resulting feedback, allowing drummers and teachers to employ the tool to assess and diagnose tempo accuracy in more naturalistic settings and determine whether repeated use can improve tempo maintenance skills.

Acknowledgements

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References

Binetti, N., Siegler, I. A., Bueti, D., & Doricchi, F. (2010). Time in motion: Effects of whole-body rotatory accelerations on timekeeping processes. Neuropsychologia, 48(6), 1842–1852. https://doi.org/10.1016/j.neuropsychologia.2010.03.009

Braun Janzen, T., Thompson, W. F., Ammirante, P., & Ranvaud, R. (2014). Timing skills and expertise: discrete and continuous timed movements among musicians and athletes. Frontiers in Psychology, 5. https://doi.org/10.3389/fpsyg.2014.01482

Cameron, D. J., & Grahn, J. A. (2014). Enhanced timing abilities in percussionists generalize to rhythms without a musical beat. Frontiers in Human Neuroscience, 8. https://doi.org/10.3389/fnhum.2014.01003

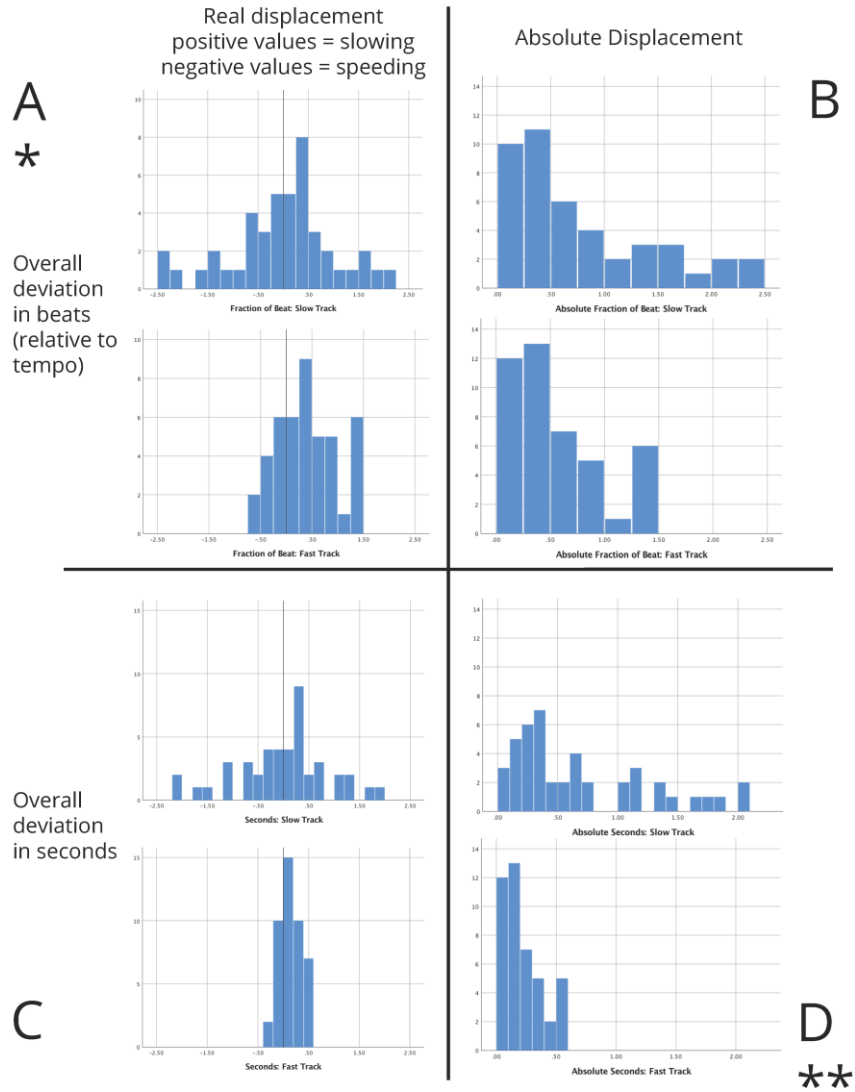

Figure 1: Relative, real, and absolute differences from the target down-beat for the fast and slow track. Significant non-parametric differences were found in comparisons A (* $p < .05$) and D (** $p < .001$).

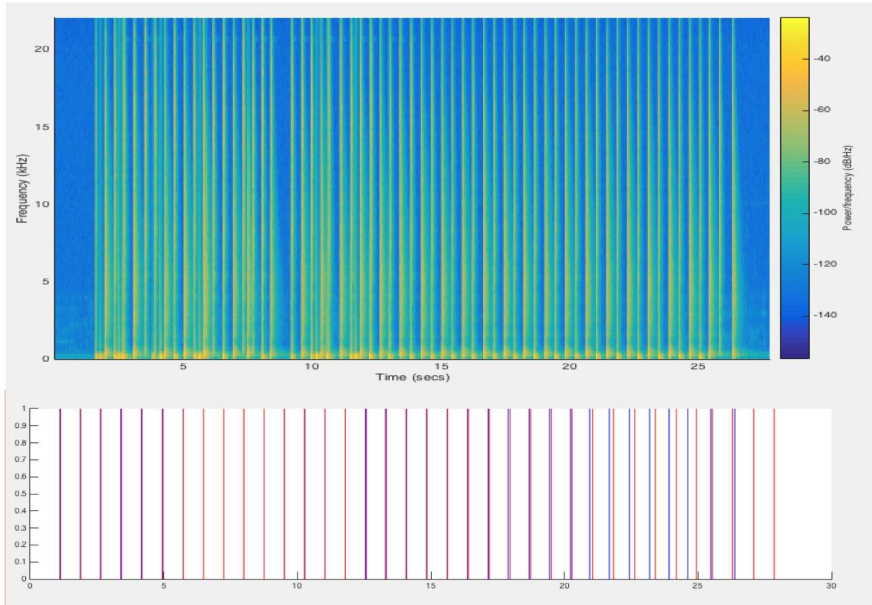

Figure 2: Spectrographic analysis of one of the performances, followed by beat onsets of the participant (red) contrasted with onsets of the of the original track (blue).

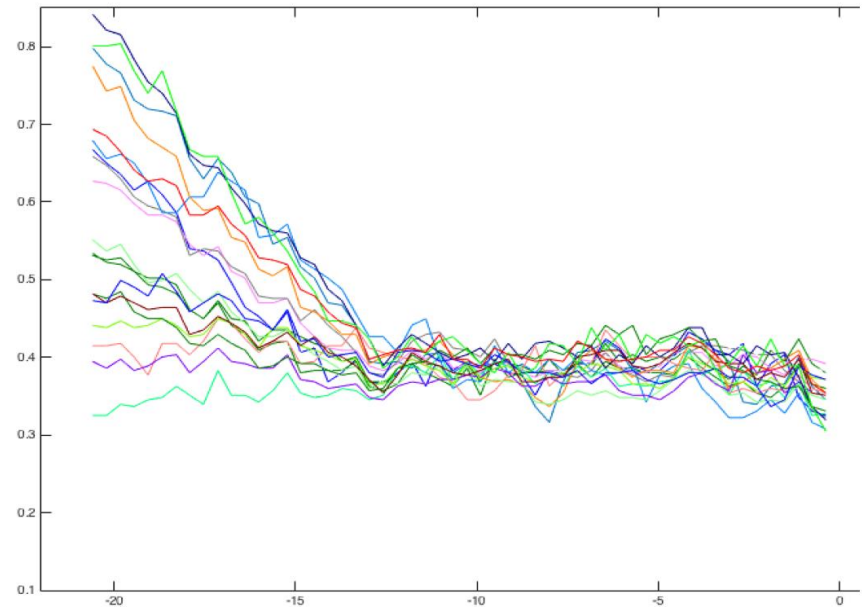

Figure 3: A subset of 20 participants' tempo deviations beginning at the point of solo performance, normalized to their concluding tempo, demonstrating a fixed amount of time in which they slow down to then maintain a new tempo.

T-Shaped Music Tech Curriculums: Preparing Music Technology Students for the 21st-century Creative and Technology Workforce

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Abstract

This paper documents and communicates efforts to cultivate T-shaped professionals within music technology curriculums in higher education. In addition to teaching the requisite music and music technology competencies that are necessary for a successful career in music technology fields, music technology programs are also poised, without too much additional overhead, to teach transdisciplinary competencies within the music tech curriculum. This allows students to branch out and find employment in information technology fields, in addition to music technology fields. For more than a decade, the University of Nebraska at Omaha has deployed a music technology curriculum that graduates T-shaped professionals. Graduates from the program find employment in diverse fields ranging from music to information technology. This paper and presentation outlines aspects of the curriculum that prepare students to be T-shaped professionals.

Keywords

interdisciplinary , information, technology

Aims

Dr. Phil Gardner from Michigan State's Collegiate Employment Research Institute, points to work and writings from Jim Spohrer from IBM Labs and serial tech entrepreneur Judy Estrin regarding the orientation of professionals in the current information technology workforce who are not only surviving but who are also thriving. Spohrer identifies these technology professionals as T-shaped professionals. T-shaped professionals possess deep skills and knowledge in one discipline and one system, but also have broad skills and knowledge in many related pertinent disciplines and systems. More importantly, the T-shaped professional possesses transdisciplinary competencies, such as programming, communication, problem solving, analytical thinking, Agile/Scrum, and creativity/ideation, which allow them to cogently integrate their deep skill/knowledge sets with other disciplines, in the pursuit of solving com-

plex problems. Curiously, the concept of a T-professional is not new. Daniel Pink described similar traits as part of six metaphoric senses in the early 21st century and the work of experimental technology-mediated Intermedia artists of the 1970s are also echoed in the T-shaped model. In addition, a handful of academic programs in American higher education had long-established programs that, although named differently, recognized the value of musically T-shaped professionals, especially musically-oriented technology professionals, and educated their students as such. These institutions include Indiana University Purdue University at Indianapolis and University of Nebraska at Omaha, which will be the case study described in this paper. These institutions instill deep knowledge and skill in core music technology disciplines and systems, broad skill and knowledge in a variety of disciplines and systems, and the transdisciplinary competencies to cogently connect a variety of disciplines and systems.

Methods

The curriculums that instill deep competencies in music technology are well-developed and long established, although much work does still need to be pioneered in terms of pedagogy, diversity, and sustainability. Programs such as the music technology program at the University of Nebraska at Omaha, not only train students to achieve a high level in the music technology field, the program also instills transdisciplinary competencies in pursuit of graduating T-shaped professionals. Several of these transdisciplinary competencies are covered in this section.

Programming terminology and concepts: Max/MSP (and in some cases, Pd), is one of the primary technology platforms used in the music technology programs at the University of Nebraska at Omaha. In addition to deep learning Max, electronic composition, acoustics, and digital audio, students also learn, through Max, several information technology basic

concepts including object-oriented programming principles (such as encapsulation and abstraction), program logic, conditional statements, control flow,, data structures, retrieval, networking, software development lifecycles, and human-computer interaction.

Creativity: Creative processes for composing electronic music (fixed media, interactive, and multimedia) are also the same creative processes that are taught to information technology students. Many creative processes are employed by the technology start-up entrepreneurial communities as well as larger companies who are invested in intrapreneurship. These creative processes are documented in detail in Michael Michalko's Thinkertoys, which is a handbook of creative thinking techniques. One of the more widespread creativity techniques used in information technology is a lateral thinking approach called S.C.A.M.P.E.R. and it has many parallels with a theme-and-variation creative process in music. Although it is a lateral technique, S.C.A.M.P.E.R. also has provisions for free association ideation and synthesis techniques (not in the computer music community's use of the word synthesis, but rather in the creative community's use of the word).

Emotional Resonance: One of the most important aspects of new product design and development is the incorporation of emotional resonance in design. Emotional resonance is nothing new, as we have had the FCB grid since the 1980s, laddering techniques since the 1960s, and Design Thinking and new ethnographic approaches to informing the design process have incorporated elements of recognizing and leveraging emotional resonance. This area is where musicians, especially technology-mediated musicians, can organically excel, as musicians make emotional communication (independent of implementation) the primary driver of their raison d'être. As obvious as it may be, information technology emotional

design and musical emotional messaging have very similar aims, and tapping into those similarities allows a music technologist to provide valuable insight into the development of new products and services in the information technology areas, although it is acknowledged that artists draw their sources for emotional resonance independently of requisite qualitative research that would normally be applied by their information technology counterparts.

Systems Thinking: One of the most important transdisciplinary competencies in information science is the ability to view and work with large systems. This includes the ability to understand a system's inner workings and details and how they combine to serve the purposes of the larger system. This is important in both the design of a new product or service and in the analysis of a system, product, or service when it has to be refined, updated, and upgraded. Students learn this sensibility when studying Max, if instructors point out the parallels.

Outcome(s)

Although many students from the University of Nebraska win traditional jobs in the music technology field, others from the UNO program also go into information technology fields working for companies like TPG Telemedia, ConAgra, Guild Media, 3-D Robotics, Inc., Mutual of Omaha, SkyVue, Northrup Grumnan, and Boys Town Medical Center.

Rationale

No one in the field of music would ever concede the importance of the intrinsic value of music, and make that importance secondary or even subservient to another discipline. However, no one should discount the value of a musician/music technologist as a T-shaped professional and the value that they can provide to other disciplines. With the UNO pro-

gram as a proven case study, in a music technology curriculum, T-shaped professionals can be easily cultivated, and thereby adding more value to the music curriculum as well as the other disciplines to which music technology can connect.

Acknowledgements

University of Nebraska at Omaha, School of Interdisciplinary Informatics, School of Music

References

Gardner, Phil (December 13, 2017). Collegiate Employment Research Institute: T-shaped Professionals. Retrieved from http://www.ceri.msu.edu/t-shaped-professionals/ .

Maddock, G., Uriarte, L., & Brown, P. (2011). Brand New, Solving the Innovation Paradox. Hoboken, NJ: John Wiley & Sons Ltd.

Michalko, M. (2006). ThinkerToys (Second Ed.). Berkeley, CA: Ten Speed Press.

Pink, Daniel H (2006). A Whole New Mind. New York: Penguin Group.

The Role of Indian Music in Meditation and Spirituality.

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Abstract

Listening to classical music has been found to increase heart rate variability which is a measure of cardiac autonomic balance and is indicative of greater resilience and less stress (Umemura & Honda, 1998; White, 1999). As music helps to reduce tension, listening to music while meditating can help tune the mind and accomplish an altered state. However, very few studies have systematically explored the impact and role of Indian music in meditation despite the fact that it is still widely practiced and even promoted by Spiritual organizations such as The Isha Foundation and The Art of Living Foundation. The present study systematically examines the role of Indian music in mediation and spirituality. Qualitative interviews of 20 participants were taken and analyzed for the kind of meditative music used and spiritual and meditative experience. Data is indicative of the supportive role of Indian music in accomplishment of spirituality and meditation.

Keywords

Indian Classical Music, Meditation, Spirituality

Aims

India is a land of music. Music is the essence of its philosophy and culture. Music in India is generally divided into three broad categories: Classical music (shastriya sangeet), light classical music (bhav sangeet) and folk music (deshi sangeet). Indian classical music is further divided into Hindustani music (north-indian music) and Carnatic music (south-indian music). Hindustani music has two main forms: Khyal and Drupad. A fairly large Persian influence can be observed in Hindustani music with regard to ragas, style of presentation and the instruments used. In contrast to Hindustani music, Carnatic music has a faster tempo, shorter frequency and is more structured. Ragas form the core of the Indian classical music. The Sanskrit word literally means colour or hue. Ragas have notes arranged in a particular order and each raga has at least five notes. This is more like a framework and can be improvised by the musician. The

unique thing about the Indian classical music is that each raga is considered suitable for a specific season, mood and time of the day. The entire year is categorized into six musical seasons: summer (May and June), rainy season (July and August), autumn (September and October), winter (January and February), spring (March and April). Bhairava raga, Megha raga, Panchama raga, Sri raga, and Vasanta/Basanta raga are associated with each of the mentioned seasons respectively. Also, as per the Indian classical tradition, the day is divided into eighet 'pahars' of three hours each. Depending on the pahars, the ragas were classified round the clock. Ragas are also associated or said to induce specific moods in their listeners. . Ragas can enkindle the nine rasas or emotions — among them the overriding ones are, detachment and melancholic solitude (vairagya), love (shringar), heroic (veer) compassion (karun). Some recent studies have also found evidence for the mood inducing qualities of the ragas. Mathur et. al. (2015) accounted that ragas educe an array of emotional responses in their listeners straddling from happy to sad and from calm to tensed. Since ancient times musical chants have been a tool of spiritualism and a vehicle of piety. The spiritual value of the Indian classical music dates back to the vedic age when it was orally handed down to by the gurus (teacher) to the shishya (student). The art of Indian classical music was divided into vocal music (geet) and instrumental music (vadya). To accompany vocal music different types of musical instruments were used such as ban (a kind of veena, nadi (flute) and karkari (like a lyre). Even the greatest epics of the time, Ramayana and Mahabharata, have mentions of various musical instruments. Since ancient times, Hindus have used music for curative purposes. Raga Chikitsa, an ancient manuscript, dealt with the therapeutic effects of raga. One of the most celebrated poet of the classical period (100 A.D.- 1200 A. D.), Jayadev, gave the famous Geet Govinda which consists of ecstatic songs of devotion to Lord Krishna. The sufi and Persian influence on the Indian classical music increased with the incoming of the Muslim invaders during the medieval period (1200 A.D.- 1800 A.D.). The celebrated musician of the time, Amir Khusro,

wrote a number of songs in the extolment of his religious preceptor, Hazarat Nizammuddin. It was during the medieval period that the devotional songs became very popular and the Bhakti Movement (love and worship of God) gathered impulse. . Tulsidas, Kabir (1440-1518), Chaitanaya Mahaprabhu (1486-1533) and Soordas composed many hymnal compositions, commonly known as bhajans, which were sung in temples and homes alike. The Sikh Gurus (1469-1708) composed several hymns called Shabads that are sung in classical ragas to this date. This sacred music called Gurmat Sangeet or Kirtan. There are nine traditional stages of bhakti thayt are as follows: Sunan (Hearing to the Holy Word), Kirtan (Singing of the praises of God), Simaran (Remembrance of the Lord), Pooja (Love-worship of the deity or God), Pad-sevan (Surrender of the self at the Lord's feet), Vandhana (Supplication to the Lord), Dasabhava (Considering oneself as the Lord's servant and obeying His commands), Maitri Bhava (Real friendship with the Lord and total dependence on Him) and Atam-nivedan : (Surrendering oneself to the Lord as an act of total dedication). Although kirtan is considered to be the second stage, the Sikh Gurus gave it domination over the other forms of devotion as a valued mode of Sikh worship. According to Guru Amardas, there is no need of self-mortification, celibacy, penance, austerity and pilgrimage in the modern age which is called the Dark Age or Kalyuga. The singing of the Lord's Name is the only righteous deed that can lead to the path of fulfilment. Sacred music has an inner aspect and an outer aspect. The outer side is the arrangement of notes and words. The inner aspect of this music is its orphic process by which it opens the panorama of inner consciousness and brings inner joy and peace. Hazrat Inayat Khan, master of Sufism and an Indian classical musician, suggested that music can prove helpful in achieving meditative state (Schoenberg, 1950). There have been few studies examining the role and impact of music on meditation and spirituality. Taylor and Frances (1958) point out that the emotional state of music can be altered through music. Sound vibrations and music can alter the frequency of our brainwaves and can have a di-

rect impact on our mind and body. Music appeals to the limbic system which is crucial to emotions and sensations (Murrock, 2005). As music tends to attract our attention and hence can help in improving the focus of the mind and support meditation practices. Listening to classical music has been found to increase heart rate variability which is a measure of cardiac autonomic balance and is indicative of greater resilience and less stress (Umemura & Honda, 1998; White, 1999). As music helps to reduce tension, listening to music while meditating can help tune the mind and accomplish an altered state. Mihaly Csikszentmihalyi (1990) emphasizes on the need of an outer stimulation as keeping an order in mind from within is difficult. Hence music can prove supportive in meditative practices. Very few studies have systematically explored the impact and role of Indian music in meditation despite the fact that it is still widely practiced and even promoted by Spiritual organizations such as The Isha Foundation and The Art of Living Foundation. The present study systematically examines the role of Indian music in mediation and spirituality.

Methods

The present study used a qualitative narrative interviewing method to answer the research questions. A total of 20 daily music practitioners participated in this study. Narrative interviews centered around their music preferences, types of meditation experiences and spiritual beliefs and experiences. Thematic content analysis of the data was carried out to explore participants' experiences about music, meditation and spirituality.

Outcome(s)

Thematic content analysis of the narratives have indicated interesting trends related to the role of music in eliciting mediation experiences. The daily practice of music is closely linked with heightened spiritual experiences. Participants with continuous practice of Indian classical music have reported experiences of joy and effervescence.

Impact

The results of this study are of extreme importance. The findings are indicative of the underlying mechanism linking music and health. It could be speculated from the above findings that music impacts health by enhancing the mediation and spiritual experiences. However, these are only speculations and needs to be verified by future studies linking music, meditation, spirituality and health.

References

Irving, A. T. & Frances, P. (1958). Current Theory and Research in the Effects of Music on Behavior. Journal of Aesthetics, 17, 251-258.

Mathur, A., Vijayakumar, S., Chakrabarty, B. & Singh, N.C. (2015). Emotional responses to Hindustani raga music: the role of musical structure. Frontiers in Psychology, 6.

Csikszentmihalyi, M. (1990). Flow: The Psychology of Optimal Experience. New York: Harper and Row.

Impact of Indian classical music on depression: exploring the mechanisms.

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Abstract

There are strong evidences that young people's involvement in music impacts their mood and lives. Studies have shown that individual's selection of music affects their mood and vice-versa. Depressed people have

been shown to choose music that result in rumination which further results in increased depression. The present study was carried out to investigate the beneficial effect of music in treating depression. In addition the study also tried to investigate the underlying mechanism between the relationship of music and depression. A total of 12 clinically depressed participants were randomly divided into two groups. One group leveled as experimental group received information about classical Indian music and raagas and its impact on mood and emotion. They were further required to listen to a music CD that compiled selected pieces of Indian classical music regularly for 15 days. The second group termed as control group was also given the same information about the relationship between music, mood and emotion and were asked to listen to the classical music of their choice regularly for 15 days. After 15 days they were evaluated by the clinical psychologists for their depressive experiences and were interviewed personally to understand their experiences related to music. The result revealed a significant impact of Indian classical music on depression. The participants in experimental group had significant reduction in their depressive symptoms as confirmed by the clinical psychologist. They also reported in their interviews that they "felt better" and "enjoyed" listening to the music. They reported a general positive affective state and experienced "positive images" in contrast to their previously held "negative images" about world and about themselves. The control group, in contrast, had only minor improvement in their depressive symptoms. They reported to choose music pieces congruent to their mood states and experienced a vicious circle of negative mood and negative music leading to depression. The results of this study are of extreme importance. They not only confirm the findings of previous studies but also go beyond to indicate the underlying mechanism between the relationship of music and mental health of young people. It indicate that right piece of music might alter the negative images routed into ruminative thinking into the positive ones which in turn results into more positive affective states. The results are particularly important be-

cause for young people music is a reliable tool to make them feel better. However, these results inform us that individuals are needed to be informed the importance of right kind of music.

Keywords

Indian Classical Music, Depression, Positive Imagery

Aims

Traces of Indian Classical music can be found in antiquity. Its origins are rooted in ancient scriptures, Vedas and traditions. It can be further classified into Hindustani classical music (North-Indian music) and Carnatic music (South-Indian music). Ragas are the integral part of Hindustani (Indian) Classical Music. Every raga is founded on a particular mood and the same mood can be induced in the listener. Ragas can evoke the nine emotions or rasas — the preponderant ones being, peace (shanti), love (shringar), detachment and melancholic solitude (vairagya). The Sanskrit word ‘raag' means hue or colour denoting a variety of moods and effects on the listeners. Raga Bilawal, Bhairav, Bhupali and Bhim Palasi are of the ‘shant' or serene nature. Raga Vihag and raga Desh are of the ‘karun' or sad and compassionate nature. Mathur et. al. (2015) reported that ragas elicit a gamut of emotional responses in their listeners ranging from calm to tensed and from happy to sad. In a study 30 westerners who were culturally unfamiliar to the music form, were asked to listen to Indian Classical music. Despite the cultural unfamiliarity, the listeners were sensitive to the emotion being expressed in the ragas (Bakwill and Thompson, 1999). The definite tones of ragas, can stimulate definite moods and sentiments by working in connection with different humors or elements. The mood-shaping calibres of Hindustani ragas have also been documented in ancient Indian performing arts treatise such as the 'Natya Shastra' by Sage Bharat. Raga chikitsa, an ancient manuscript, dealt with the therapeutic effects of raga. Since ancient times, music has been utilized for enhancement of well being and to reduce pain and suffering. It is omni-

present in all human cultures. Music may have different effects depending on the differences in the listener's characteristics, age, culture, musical aptitude, medical conditions and experience. Also, differences in the means of delivery of music (headphones, recorded versus live, open air, speaker), elements of music (pitch, rhythm, tempo, melody, harmony), setting (group or alone) and participation (active versus passive) plays a great role in music influence. One of the earliest documented therapeutic use of music is in the sixth century BC (Radhakishnan, 1991). The kind of music preferred is influenced to a great degree by the individual choice and culture. However, certain types of music have been reported to have consistent physiological effects (McCraty et. al, 1998). Listening to classical music was found to decrease anxiety in contrast to grunge or rock music, which was found to increase hostility, sadness, tension and fatigue. Various researches have explored the ways in which music and music therapy can benefit patients psychologically as well as physiologically. Listening to classical music has been found to increase heart rate variability which is a measure of cardiac autonomic balance and is indicative of greater resilience and less stress (Umemura & Honda, 1998; White, 1999). Listening to classical music is also beneficial for premature infants. Among premature infants, listening to classical music has been reported to decrease the number of episodes of oxygen desaturation, increase weight gain, increase non-nutritive sucking and decrease distressed behaviours. These help in reducing the time of hospital stay (Collins & Kuck, 1991; Caine, 1991; Standley & Moore, 1995; Standley, 1998, 2002). Classical music has also been found to significantly decrease vocalizations in patients with dementia (Julie & Margo, 1994). In a more recent study, the impact of classical music was examined among well functioning psychiatric outpatients (Blonde, 2010). Anxiety was found to be reduced among all the participants. Classical relaxation music has also been found to reduce the frequency of agitation and confusion among persons with alzheimer's disease and related disorders (Gerdner, 2000). Music therapy has also been found to be effective with depression patients (Maratos et.

al., 2008). Indian music therapy combines ancient healing practices and musical traditions and integrates them with the recent modifications derived on the basis of the modern day practice and the current clinical studies undertaken (Sundar, 2007). The literature presented above confirms that individual's selection of music affects their mood and vice-versa. Depressed people have been shown to choose music that result in rumination which further results in increased depression. The present study was carried out to investigate the beneficial effect of music in treating depression. In addition the study also tried to investigate the underlying mechanism between the relationship of music and depression.

Methods

A total of 12 clinically depressed participants were randomly divided into two groups. One group leveled as experimental group received information about classical Indian music and raagas and its impact on mood and emotion. They were further required to listen to a music CD that compiled selected pieces of Indian classical music regularly for 15 days. The second group termed as control group was also given the same information about the relationship between music, mood and emotion and were asked to listen to the classical music of their choice regularly for 15 days. After 15 days they were evaluated by the clinical psychologists for their depressive experiences and were interviewed personally to understand their experiences related to music.

Outcome(s)

The result revealed a significant impact of Indian classical music on depression. The participants in experimental group had significant reduction in their depressive symptoms as confirmed by the clinical psychologist. They also reported in their interviews that they "felt better" and "enjoyed" listening to the music. They reported a general positive affective state and experienced "positive images" in contrast to their previously held "negative images" about world and about themselves. The

control group, in contrast, had only minor improvement in their depressive symptoms. They reported to choose music pieces congruent to their mood states and experienced a vicious circle of negative mood and negative music leading to depression.

Action/ Impact

The results of this study are of extreme importance. They not only confirm the findings of previous studies but also go beyond to indicate the underlying mechanism between the relationship of music and mental health of young people. It indicate that right piece of music might alter the negative images routed into ruminative thinking into the positive ones which in turn results into more positive affective states. The results are particularly important because for young people music is a reliable tool to make them feel better. However, these results inform us that individuals are needed to be informed the importance of right kind of music.

References

Radhakishnan, G. (1991). Music Therapy - A Review. Health Bulletin, 49(3), 195-199.

Bonde, L. O. (2010). Music as support and challenge: Group music and imagery with psychiatric outpatients. In Jahbuch, M. (Ed) Music Therapy Annual (Vol. 6). "Imaginationen in der Musiktehrapie/Imagery in Music Therapy." Berlin: Deutsche Musiktherapeutische Gesellschaft.

Maratos, A., Gold, C., Wang, X. & Crawford, M. (2008). Music therapy for depression. Cochrane Database of systematic reviews, 1

The mode models as a way to comprehend the non-European musical culture (the example of Azerbaijani modes).

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Abstract

Azerbaijani modes are considered as a cognitive model in the genres of traditional music and in composer creativity. The application of European notation for Azerbaijani modes is examined by comparing the values of the intervals of Azerbaijani modes with the boundaries of zones of melodic intervals determined by the experiments of Nikolai Garbuzov. The mode models on the basis of their macro-schemata are developed and proposed.

Keywords

musical ear, cognitive musicology, orientalism

Aims

Many European people, including even the musicians, hear only some common oriental intonation in the music of East. They do not recognize the Eastern modes and match them with major or minor. Marina Frolova-Walker arguing Uzeir Gajibekov's Keroglu forced to admit: "What we hear is the minor subdominant in a major key plus the alternation of tonic major-minor, another cliche of exoticism. While it is possible that a native Azerbaijani might detect in Keroglu … national characteristics, westerners are unlikely to share this perception" (Frolova-Walker,1998). Meanwhile, Azerbaijani music, both in traditional genres and composer's works, is based on a coherent system of Azerbaijani modes. The aim of the research is to open this system to European ear.

Methods

The cognitive approach that combines transdisciplinarity and anthropocentrism is applied. A holistic and comprehensive analysis of contemporary intonation system of Azerbaijani modes is conducted. Azerbaijani

modes are studied simultaneously from the perspective of several disciplines (psychoacoustics, informatics, ethnomusicology and musicology including theory of modes, theory of musical ear) and taking into account the differences of musical perception and thinking of traditional and European musicians. It allows to present Azerbaijani modes as a historically evolving lively intonation system in a holistic combination of their pitch structure, characteristic intonations, auditory perception and ear development.

Outcome(s)

Non-temperament intervals of Azerbaijani modes are compared with the Nikolai Garbuzov' pitch zones of melodic intervals (Garbuzov, 1948). The results of analysis detected that all the intervals of Azerbaijani modes are correlated with the Garbuzov' zones (Aliyeva, 2015). It means that European notation, and 12-tone equal temperament are applicable to Azerbaijani modes. The functional relationship of the degrees of modes are more informative than their exact tuning which usually is the fundamental basis for the study of modal harmonies and their classification. This conclusion allows to distinguish macro-intonational schemata of modes (related to the functional relationships) and micro-intonational schemata (associated with the nuances of traditional performance and in-zone intonations). These are macro-intonational schemata that allow to recognize Azerbaijani modes in European genres under the 12-tone equal temperament, while their micro-intonational schemata preserves the authenticity tuning in Azerbaijani traditional music (Aliyeva, 2015). The distinction of the Azerbaijani modes from major (or minor) depends on the meaning-making of musician. So, the mode, that European ear recognizes as major can be rast, or segah, or chargah; Azerbaijani modes shur, bayati-shiraz, shushtar, humayun can be identified as minor. Thus, in respect of Azerbaijani modes, we can highlight the traditional and Eurocentric meaning-making, and the third, which is a flexible combination of the first two. The models of the main Azerbaijani modes (rast, shur,

segah, shushter, chahargah, bayati-shiraz, humayun) on the basis of their macro-intonational schemata are created. The models contain necessary and sufficient information for reliable identification of the mode. They unify the most typical intonational and metro-ritmical features of each mode in this way helping to identify the mode in a musical composition. The models reflect the regularity of modes in Azerbaijani music; they are laconic, rhythmically defined and easily remembered because of the emotional coloring.

Implications

A Practical Guide for Studying Azerbaijani Modes and Developing Modal Hearing on the basis of the models has been published (Aliyeva, 2010). The models are grouped on the basis of the same tonic, and located in chromatic order from each tone of 12-step chromatic scale. With such grouping, when there are all seven modes with the same key on one page, it is easier to observe intonational features of each mode, which also helps to determine a mode in a musical work. If we want to determine the mode, we should choose the model with the corresponding tonic (maya), which matches this musical fragment. For the formation and development of modal hearing, it is recommended to fulfill each example following the corresponding model. In the corresponding sections (RAST. SHUR. SEGAH. SHUSHTAR. CHAHARGAH. BAYATI-SHIRAZ. HUMAYUN.), the Guide offers over 70 musical examples for the mode-definition systemized by modes. The Guide also suggests musical examples for self mode-definition, answers to all of which can be found in the corresponding sections. Such method can be also proposed and used as a path to comprehend of other non-European musical culture.

References

Aliyeva, I. H. (2010). A Practical Guide for Studying Azerbaijani Modes and Developing Modal Hearing. Baku, Azerbaijan: Adiloğlu.

Aliyeva, I. H. (2015). The Contemporary Intonational System of Azerbaijani Modes (Cognitive Approach). In Proceedings of the IV International musicological symposium "Space of Mugam" (Baku, Azerbaijan, 2015), pp.39-49. Baku: "Şərq-Qərb"

Frolova-Walker, M. (1998). "National in Form, Socialist in Content": Musical Nation-Building in the Soviet Republics. Journal of the American Musicological Society, 51(2), 331–371.

Garbuzov, N. A. (1948). The zonal nature of the human aural perception (in Russian), Moscow-Leningrad: Izdatelstvo Akademii Nauk SSSR.

The 'gendered collegiate musicality' - Performance opportunities and musical training in the historically male-oriented Oxford collegiate choral tradition.

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Abstract

This paper aims at observing the perceptions of choral members in choirs associated with Oxford colleges and halls and linked to University of Oxford towards issues related to gender politics, exclusiveness and gender-based discrimination in terms of musical training and performance and musical training opportunities. The methodological approach of this study was based on grounded theory and data collection consisted of in-depth, semi-structured individual interviews with 10 choir members from 7 choirs within Oxford University; 5 focus group interviews with choir members (6-10 individuals in each group) and a paper-based survey. Findings indicate that tendencies towards aesthetic aspects and preservation of the all-male choirs (and therefore the justification of systematic gender-based discrimination) indicate a deeply rooted resistance to change towards further inclusion and gender equality to obtain musical

training and performance opportunities. Secondly, the preservation of the unique sound of the boy trebles and countertenors is viewed as a cultural phenomenon. Participants were critical towards the status of the all-male voice choirs in the three choral foundations (Christ Church College, Magdalen College and New College), demonstrating controversial perspectives with the issues of preservation on the one hand and social inclusion and gender-based equality in terms of performance and musical training opportunities on the other.

Keywords

collegiate choral tradition, gender politics and discrimination, musical training opportunities

Aims

This paper aims at observing the perceptions of choral members in choirs associated with Oxford colleges and halls and linked to University of Oxford towards issues related to gender politics, exclusiveness and gender-based discrimination in terms of musical training and performance and musical training opportunities.

Methods

The methodological approach of this study was based on grounded theory, which consists of systematic collection and analysis of empirical data to construct theories ‘grounded' in the data themselves – hence, the analysis of the data generates the concepts constructed. Instead of defining and writing a massive literature review, the researcher starts by going out in the field to collect data (Charmaz, 2006; Glaser & Strauss, 1967). This approach is specifically useful when little previous literature and research exist on the topic itself. Data collection consisted of in-depth, semi-structured individual interviews with 10 choir members from 7 choirs within Oxford University; 5 focus group interviews with choir

members (6-10 individuals in each group) and a paper-based survey (Gable, 1994; Schwartz, Groves and Schuman, 1998) which was distributed during tea-breaks at rehearsals and respondents handed in their answers at the end of the tea-break.

Outcome(s)

Women's participation within the collegiate choirs of Oxford is historically a relatively new phenomenon. In addition, choristerships were not available to young girls within the Cathedrals of the Church of England until in the late 1990s. The presence of women and young girls has started some controversial, yet interesting debates that were evident in the data : Firstly, the issue of aesthetics and preservation of the all-male choirs and therefore the justification of systematic gender-based discrimination, based on the historic tradition. Secondly, the preservation of the unique sound of the boy trebles and countertenors as a cultural phenomenon and the fear of eliminating that particular sound by mixing boys and girls and that boys might refrain from choral participation if mixed with girls (see also Ashley, 2009). Participants were critical towards the status of the all-male voice choirs in the three choral foundations (Christ Church College, Magdalen College and New College), demonstrating controversial perspectives with the issues of preservation on the one hand and social inclusion and gender-based equality in terms of performance and musical training opportunities on the other. Furthermore, findings indicated a deep, systematic resistance towards change, and that women and girls should be provided with equal opportunities in other venues than the choral foundations and that the tradition of all-male voice choirs should be preserved.

Originality of the project

The gender-based exclusion of women and girls in the three choral foundations is still a topic of political debate. Despite that fact, these issues have received limited scholarly attention and no academic publication

can be found that deals with gender issues within the collegiate choral context. Present literature on Oxford choirs seems to be very scarce and primarily of historical nature. Alan Mould's work, The English Chorister (2007) provides an invaluable insight into 1400 years of history of choristers (boys who sing in cathedral and chapel choirs) and includes historical references and narratives from some of the Oxford colleges, particularly Magdalen College, New College and Christ Church College. Clive Burgess and Martin Heale's book The Late Medieval English College and its Context is of same category and portraits the characteristics of the academic live in Medieval England. Further historical writings are doubtless in biographies and autobiographies of Oxford alumni, as well in obituaries. Of other references, it is worth mentioning William Tuckwell's works Reminiscences of Oxford (1900) and Old Magdalen Days (1914) and Roy Judge's article ‘May morning and Magdalen College, Oxford' (1986).

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References

Welch, G. & Howard, D. M. (2002). Gendered Voice in the Cathedral Choir. Psychology of Music, 30, 102-120.

Freer, P. K. (2009). Boys' Descriptions of their experience in choral music. Research Studies in Music Education, 31, 142 - 160.

Burgess, C. & Heale, M. (2008). The late Medieval English College and its context. Boydell & Brewer Ltd.

Hacking, disability, and music education.

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Abstract

In this paper presentation we will discuss our preliminary results of an ethnographic study on Monthly Music Hackathon New York City (MMHNYC). MMHNYC is a recurring non-competitive event where coders, software\hardware designers, educators, and musicians gather to engage in the process of hacking; this simply means that participants form small groups and work together to try and come up with a solution to a problem in a very short space of time (~7 hours). Of particular interest to our research team is how participants at these events conceptualize "disability in music" and how, if at all, they design for disabled persons. Our preliminary findings suggest that the ethos and processes of hacking observed at MMHNYC could benefit music education practices by making them more accessible and inclusive to a diverse population of learners.

Keywords

disability, hacking, music education

Aims

The goal of this study is to examine ways to make music education practices more accessible and inclusive for people who identify as being disabled in music-making contexts. Underpinned by the belief that the field of music education needs to move away from the medical model of disability (disability as an individual "problem") (Lubet, 2010), the researchers subscribe to the social model rooted in Disability Studies (Howe et al., 2016), by problematizing the music-making contexts that lead to people's experiences of disability (Bell, 2017). To this end, we examined ways that

technology can be used and instruments can be created or changed through the process of hacking to fit the needs of those experiencing disability in music. Monthly Music Hackathon NYC is a reoccurring non-competitive event where coders, software\hardware designers, educators, and musicians gather to engage in the process of hacking; this simply means that participants form small groups and work together to try and come up with a solution to a problem in a very short space of time (~7 hours). Oftentimes the problems tackled at these hackathons relate to mitigating disability experiences in music. One of the main aims of this study is to observe the process of hacking at Monthly Music Hackathon NYC events in order to gain insight into ways that people can work together and use technology to make music education more accessible and inclusive. This study also aims to try and better understand how people who design music-making interfaces conceptualize "hacking," "disability," and "hacking disability in music."

Methods

An ethnographic case study approach was used for this research project. The principal investigator and three research assistants attended Monthly Music Hackathon NYC events that focused on creating new musical instruments. The research team used camcorders to videotape groups engaged in the process of hacking. These groups were filmed throughout the day in order to capture and observe the process of hacking from the brainstorming stage through to the prototype and presentation stage. Members of the research team chose to either film one group continuously throughout the day or check in with multiple groups creating shorter clips of each group as they progressed throughout the day. In addition, participants were invited to take part in an audio-recorded one-to-one interview to answer questions regarding how they conceptualize "hacking," "disability," and "hacking disability in music." Following data collection, the "thick description" analysis procedure (Goldman, 2007) was used to observe and analyze the videos. The videos were viewed

multiple times and the significant events in the videos were transcribed, which included writing out dialogue and a thick description of the actions that occurred. A thick description explains the intentions, context, and circumstances surrounding every action rather than just simply describing the facts about what is occurring in the videos (Denzin, 1998). The interviews were also transcribed, and then all the transcripts were coded for salient themes. Finally, the interview and video data were compared in order to examine similarities and dissimilarities.

Outcome(s)

The video-based observations reveal that there are several stages involved in the hacking process. First there is the planning/brainstorming stage when groups discuss their ideas and the possibilities they could explore. Sometimes groups take the time to discuss what they already know or tools they have already created that may be beneficial for the project at hand. Then, groups start making final decisions about how they are going to design their prototype. Once those decisions are made, groups get to work and start coding or creating their prototype. Following, groups test out their prototype to see if it functions properly. If there are any issues with the prototype, groups try to problem solve and use trial and error to get their prototype to work the way they want it to. When a group's prototype works as intended, the group starts to realize what they have achieved, and often experience joy as they test out their finished prototype. If there is time left, groups will start to brainstorm again and think of ways they can further improve their prototype. Groups can choose to sign up to present at any time throughout the day using the twitter link provided, but presenting is not mandatory. At the end of the event each group that signed up gets to present their prototype and explain the technology they have created. The presentations are very informal and relaxed. Some other minor stages of the hacking process that were observed include taking breaks, socializing/making friends, learning, teaching, and being inspired. Hacking is a unique way of prob-

lem solving and it gives people the opportunity to network and collaborate. People learn from each other and bring their unique talents and expertise together to create solutions and beneficial technologies.

Discussion

It is evident that disability in music can be hacked and music education can be made more accessible and inclusive through music hackathon events. Music hackathons could be implemented in schools, higher education, and in community contexts. Workshops that emulate the non-competitive hackathon environment could also be held to teach music educators about music-hacking practices, and how to implement such events in their respective communities. These workshops could also help to make more music educators aware of the benefits of trying to make their tools more accessible and inclusive to students who experience disability in music.

Acknowledgements

Social Sciences and Humanities Research Council of Canada

References

Lubet, A. (2010). Music, Disability, and Society. Philadelphia: Temple University Press.

Howe, B., Jensen-Moulton, S., Lerner, N., & Straus, J. (2016). "Introduction: Disability Studies in Music, Music in Disability Studies." In B. Howe, S. Jensen-Moulton, N. Lerner, & J. Straus (Eds.), The Oxford handbook of music and disability studies (pp. 1-11). New York: Oxford University Press.

Bell, A.P. (2017). (dis)Ability and Music Education: Paralympian Patrick Anderson and the Experience of Disability in Music. Action, Criticism, and Theory for Music Education, 16(3), 108–128. doi:10.22176/act16.3.108 http://act.maydaygroup.org/articles/Bell16_3.pdf

Biomedical music protocols benefit children with special needs.

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Abstract

Children with special needs typically have a wide variety of sensorimotor, speech, and/or cognition challenges. Many of these children respond positively to the use of biomedical music techniques directed to assist with such conditions as autism, cerebral palsy, or Attention Deficit Disorder. These methodologies (originally developed at the Center for Biomedical Research in Music at Colorado State University) are completely unlike traditional music therapyies, which isare based mainly on social science. Biomedical music protocols are scientifically researched and evidence-based; they have opened a new paradigm of how music can improve the lives of persons with special needs.

The key component is the specific and directed use of rhythm, tailored for each individual. The body's central nervous system responds to basic rhythms even if areas of the brain are damaged destroyed from injury or compromised by disease or disorder. Since music is dual-hemispheric within the brain, rhythm and music can promote the redirection of neural growth to create new networks in non-compromised areas. Goals must be set at the outset for each individual's needs, using the TDM (Transformational Design Model). Through utilizing various techniques such as Rhythmic Auditory Stimulation for gait issues, Musical Attention Control Training for attention focus, and Melodic Intonation Therapy for helping nonverbal children utter their first words, these children can attain higher levels of performance and independence based on sen-

sorimotor, speech, or cognition outcomes. Many of these techniques are also extremely effective in inclusive classrooms with neuro-typically developing peers. Observable data can be collected to measure both pre and post performance outcomes for each individual; the result is that several of the techniques also lend themselves to the concept of automation.

This didactic conference session will include videos showing positive therapeutic results for children with autism who have utilized biomedical techniques. In addition, a brief demonstration of a newly designed web-based automation protocol of Musical Attention Control Training will be presented. Researchers, therapists, parents, educators, and musicians will benefit from seeing how rhythm and music can be intentionally directed to benefit this community of children with special needs.

Keywords

BiomedicalMusic, SpecialEducation, NeuroMusic

Aims

Biomedical music techniques will be utilized to assist in motor, speech, or cognition processes for special-needs children in educational and therapeutic settings. Some of these techniques are best applied in one-on-one sessions, but many lend themselves to group settings. These techniques stem from evidence-based research that indicates changes in the brain with continued and practiced use of rhythm.

Methods

The five-step TDM is utilized to determine the proper biomedical techniques to be implemented. The TDM steps are 1) Assessing condition, 2) Setting goals based on specific motor, speech, or cognition challenges, 3.)

Creating a therapeutic plan, 4.) Introducing music into therapeutic plan, and 5.) Removing the music, enabling the transfer of therapeutic learning into the real-world experience. Based on the TDM, the appropriate biomedical music technique will be applied in step 4 of the process. The music that will be the most effective for any child will be that which the child loves the most, be it "Twinkle, Twinkle, Little Star," Beethoven, or Taylor Swift. The most effective Mmusic utilized for successful he ttherapeutic outcomes will also echo the child's own functional tempo, generally mirrored in the individual's heart rate and which can be determined by observation of the number of beats per minute (cadence) the child is walking. (Typically, children have a functional tempo of 120 to 132 beats per minute.) In the case of a child with multiple challenges, there will be several goals and several different techniques in use. Observable data will be recorded in each session to show long-term progress. Examples of such data could be measurements of stride-length and cadence measurements for gait activities, capacity of focus for attention training, or video to collect visual data.

Outcome(s)

Measurable improvements (utilizing observable data measurements) based on the goals set in step 2 of the TDM will show long-term results. In many challenges, such as autism, stroke, or cerebral palsy, permanent long-term changes occur as a result of brain plasticity. This plasticity develops in response to the continued use of the external auditory stimulus provided by the beat in the music played or even to that of a simple metronome.

Implications

Neuroscience professionals acknowledge that music is a direct conduit to the brain; specific rhythm exercises in the form of biomedical music protocols can help redirect neural networks for persons with motor, speech, and cognition challenges. Ancient art forms indicate that music has exist-

ed for at least 100,000 years as an integral form of human communication. The brain originally created the music, and with continued interaction, brain plasticity occurs and continually evolves in the interaction with music. Neuro-music professionals are now beginning to understand the scientific properties of music's interactions in the brain and how this knowledge can be harnessed in order to revolutionize education and health care with the use of music.

References

Thaut, M., & Hoemberg, V. (Eds.). (2014). Handbook of Neurologic Music Therapy. Oxford, United Kingdom: Oxford University Press.

Thaut, M. (2005). Rhythm, Music, and the Brain: Scientific Foundations and Clinical Applications. New York and London: Routledge.

Thaut, M. (2002). A Scientific Model of Music in Therapy and Medicine. (3rd ed.). San Antonio: IMR Press, The University of Texas at San Antonio

The use of technological tools in the design of interuniversity musical projects by students.

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Abstract

The aim of this experience is to promote the participation of university students in the design of musical projects and to analyze the presence of emerging technological tools. To this end, a seminar was held with students and faculty members of different Spanish universities, resulting in the development of a project that aim to converge the artistic movement named Fluxus and the use of the application Boomerang form social media Instagram, that allows the capture of videos. The first results confirm that the students competently select and use multiple technological tools in designing artistic teaching projects.

Keywords

music education, technological tools, interuniversity experience

Aims

The project entitled "Collaborative networks for creative and artistic projects in music education" arises with the purpose of giving voice to students in the design of their own learning processes and seeks to promote the acquisition of skills in the development of interdisciplinary projects for Primary Education. It is intended that the beneficiaries improve their skills in the use of ICT and complement their training in entrepreneurship by attending meetings, seminars, lectures or networking The work that is addressed in this text aims to investigate about the technological tools that emerge when university students are responsible for designing in-

teruniversity musical projects. It arises from two fundamental topics; the first one includes the need to give students a leading role in their educational projects. According to Susinos and Ceballos (2012), the concept of ‘student voice' refers to school experiences with very variable pedagogical significances and meanings, and which are related, among other elements, to the commitment of the educational center, the degree of students' autonomy and the degree of involvement. In this case, the initiative emerged from the interest to get a real participation, taking fully into account students' opinions, so their role in designing the contents will be of greater relevance, closer to the Fielding's model (2007), named "student researchers". According to it, a large degree of autonomy and responsibility has been transferred to students to design the project and to decide how to implement and evaluate it. The second topic is based on the use of ICT, which a mandatory aspect that students need to include in the design of the project. Therefore, the selection, use and organization of sonic and visual elements will be developed through ICT, within a collaborative learning framework (Silva, 2007). Working in virtual environments will also have relevance, since they are not all in the same university.

Methods

The proposal has been carried out with students of the Bachelor's Degree in Primary and Early Childhood Education in four Spanish universities. A group of music lecturers from the participating universities enabled an exchange of a selected group of students from each university to jointly participate in a two days seminar. The seminar included different workshops dealing with group cohesion, musical experimentation and creation processes, and presentation of previous educational projects (Cabedo-Mas, Riaño-Galán & Berbel-Gómez, 2017) undertaken within the educational network named UniTICarte. Finally, using group discussion, the participating students determined the objectives and methodological principles of the project that had to be implemented in parallel by

the whole cohort of students in the four universities. A total of 362 students have participated in the project within their classrooms. The project designed was entitled Fluxboom: An interuniversity video art experience. Fluxboom comes from the union of two words: "Fluxus" and "Boomerang". "Fluxus" refers to the artistic movement developed during the 1960s and "Boomerang" refers to the application available from the social media Instagram, which allows capturing GIF-like animated video loops from photos. In each university students organized small working groups, in which each person had a role: group coordinator, database coordinator, visual composition responsible, musical composition responsible and a person in charge of registering and writing about the creative process. Together with the lecturers, the students who participated in the exchange experience were in charge of supervising other students from their universities. They decided to create a WhatsApp chat to communicate between the different universities to enable coordination. Fluxboom were designed to follow different steps: 1. Each student who participated had to record at least two boomerangs, including self-recording of gestures, faces, actions and different free creative videos. 2. A shared Google Drive account was used to upload and store the boomerang videos, to enable access to all the students in each university. 3. Each working group made a selection of the videos they used as the visual material to make their audiovisual montage, inspired by the artistic movement Fluxus and the principles of video art designing. They freely chose video editing programs such as Filmora, Movie Maker or iMovie, among others. 4. Subsequently, they work on the musical composition, which could be shaped of music from their own creation, using recordings of sonic materials from the environment, performing instruments and online resources. The students were encouraged to record and create their own library of sounds. The two main tools used to compose the soundtrack were: the free audio editor Audacity; and the collaborative sound creation system Soundcool, which allowed the creation of the soundtrack using tablets and mobile devices. 5. Finally, they edited the

entire audiovisual work merging the visual and sonic parts. The product had a length between 3 and 4 minutes. 6. Throughout the process, the students created portfolios where they gathered the reflections about the experience and the creative processes. The students who participated in the exchange were also responsible for preparing the rubrics to enable the students self and co-assessed their and other's videos. All the videos were shared on a shared Youtube channel.

Outcome(s)

The emerging technological tools and devices used included, among others: Instagram (application to record Boomerangs); Google Drive; Whatsapp; Filmora; Movie Maker; Imovie; Sound recorders; Mobile phones / tablets; Audacity; Soundcool; Youtube. The following link gives access to selected video created in the experience: https://youtu.be/xjYbl8bAnVw.

Epilogue

As music educators, reflecting on how to generate positive and engaging educational experiences to our students is one of our major concerns. In this regards, after concluding this project, we express the importance of giving voice to the students, so that they can participate on the definition of the contents and activities that are addressed within the classroom. In our experience, it favors their active participation in their own learning and promotes the practice of dialogic processes, necessary for the formation of a democratic citizenship. At the same time, when exploring the use of technology in the classroom, giving free voice to students can enhance the possibilities of introducing a wide range of tools and devices, often wider than the choice proposed by the teacher. As a result, we believe that music education of the 21st Century needs this type of initiatives to promote the students' autonomy and creativity.

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References

Cabedo-Mas, A., Riaño-Galán, M.E. & Berbel-Gómez, N. (2017). UniTICarte: Redes Colaborativas para el desarrollo de proyectos creativos en la formación de Maestros en la Universidad [Uniticarte: Collaborative Networks for the Development of Creative Projects in Teacher Training at University]. Dedica. Revista de Educação e Humanidades, 12, 119-129.

Fielding, M. (2007). On the Necessity of Radical State Education: Democracy and the Common School. Journal of Philosophy of Education, 41(4), 539-557.

Silva, J. (2007). Las interacciones en un entorno virtual de aprendizaje para la formación continua de docentes de enseñanza básica [Interactions in a virtual learning environment to the professional development of basic education teachers]. (Doctoral thesis). http://dialnet.unirioja.es/servlet/tesis?codigo=3991.

Susinos Rada, T., & Ceballos López, N. (2012). Voz del alumnado y presencia participativa en la vida escolar. Apuntes para una cartografía de la voz del alumnado en la mejora educativa [Student Voice and Participatory Presence in School Life. Notes for Mapping Student Voice in Educational Improvement], Revista de Educación, 359. Septiembre-diciembre 2012, pp. 24-44.

ICT competency: study about technological training with Soundcool in the master of secondary music education in the Universitat de València.

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Abstract

The subject of music in Compulsory Secondary Education continues to be taught in many schools in Valencia using traditional teaching methods. Although it is true that many teachers begin to introduce innovative teaching practices and Information and Communication Technologies (ICT), there are still resistance to their use and a lack of training on how to use them in a way that truly act as mediators of learning for the students. The main objective of this study is to know the technological formation of the students of the Master of Secondary music education in the Universitat de València and their opinion regarding the applicability of the ICT and, in particular, on the applicability of the educational software Soundcool, developed by the Universitat Politècnica de València to promote collaborative musical creation through mobile devices. To do this, an empirical research has been carried out, taking as sample 30 students who studied the Master during the 2016-2017 academic year. A training session on the Soundcool tool was carried out and data was collected before, during and after it. After the analysis of the results we concluded that there is still a lack of technological and pedagogical training of future Music teachers of Compulsory Secondary Education that is proved, among other things, by a clear resistance to the use of the Soundcool tool by the majority of subjects of the sample.

Keywords

ICT competency, music technology training, Soundcool

Aims

It's an undeniable fact that technology is part of society in the Western world and that its use is present in the daily life of most people. This circumstance has influenced the educational field and, for this reason, for some years now, the Information and Communication Technologies (ICT) have been incorporated in classrooms to favor the students' learning processes. However, the use of technologies in the classroom does not guarantee a transformation in the way students learn. According to Harris (2012) the emphasis for success in the introduction of ICT in educational processes must be put in the didactic methodology and not in the technology itself. To make sure that the pupils learn through the use of ICT, Trujillo (2012) indicates that teachers should favor learning situations that offer the student the opportunity to solve a problem, a question, a task in which they have to deploy all their knowledge, skills and attitudes to solve it. Therefore, it's logic that teacher practise methodologies that favor this type of learning situations in the classroom which must be linked to reality (they must be credible for those who take part in the situation), they must invite the students to interact with the environment and other people (inside and outside the formal educational space), and they must be meaningful experiences that aspire to be kept in the memory of students (Giráldez, 2015).

Methods

Empirical research using the Case Study method with a sample of 30 participants (N = 30) who studied the Master's Degree in Teacher Training in Secondary Education in the specialty of Music at the Universitat de València during the 2016-2017 school year. Information was collected before, during and after a training session on the Soundcool tool. The subjects took an online survey, so we could know their training experience and opinions on the applicability of ICT. During the training session the technique of non-participant observation was used. After the session, participants were sent another survey about the potentialities, problems and applicability of the Soundcool tool. We analysed the data obtained in

both survey and based the analysis on the recordings made during the training session and the notes collected in the field journal.

Outcome(s)

• PREVIOUS TRAINING AND OPINION ON THE APPLICABILITY OF ICT PREVIOUSLY TO THE TRAINING SESSION 66.66% of the participants had not received technological training before taking the Secondary Master. However, 100% considered that they had a good command of ICT. Most subjects think that ICT are applicable in the music classroom and that they help to develop creativity, musical skills and collaborative work. However, most subjects do not apply ICT in their music classes. The main arguments are lack of resources or training. Only some have experience applying ICT in their classes, however, this experience is limited to a use focused on the development of educational resources as support for their teaching explanations and not a use of ICT as a means to build knowledge by giving protagonism to students. On the other hand, when subjects were asked to assess their digital competence, in the previous questionnaire more than half of the sample claimed to have enough or a lot of skill. However, in Soundcool's explanatory workshop, the majority affirmed that they do not understand the technological-musical language and have little digital competence to practice as a teacher. In addition, in the second survey, the subjects were asked if they believed that the knowledge acquired in the Secondary Master's Degree had given them good digital competence and most of them answered negatively. • PERCEPTIONS AND OPINIONS ON THE SOUNDCOOL TOOL During the explanatory session of Soundcool, we detected some resistance to use the tool. In the session, most of the subjects showed little interest both in the technological aspects of Soundcool and in the pedagogical aspects that accompany the use of the tool. In addition, a lack of attention quite pronounced during the session was observed. The majority of subjects admitted not understanding the technological-musical language that was being used due to lack of technological training or familiarization with

musical technology. In the survey after the session, most of the subjects considered that it is a tool that does not have a simple presentation and that is not easy to manage. In addition, the students reflected that the tool supposes an additional effort for the teacher since it requires mastering certain technical skills and being accompanied by a collaborative teaching methodology different from the traditional master class. Despite this negative perception, they also felt that Soundcool is a cheap and useful tool to develop musical creativity based on sound.

Coda

Although it seems that a priori students are open to the application of ICT, there is still a lack of technological training. This is evidenced by the fact that, before the presentation of the Soundcool software, the lack of technological training itself causes the student's resistance towards learning their use and their applicability in the music subject. This allows us to affirm that the ICT competence of the subjects of the sample is still insufficient, which entails the necessity to raise educative improvements in the technological formation of the teaching staff so that future teachers acquire a formation of quality according to the skills of a music teacher of the XXI century.

References

Harris, J. (2012). Tecnología y calidad educativa. En Encuentro Internacional de Educación, Fundación Telefónica. Conferencia llevada a cabo en Santiago de Chile.

Trujillo, F. (2012). Propuestas para una escuela en el siglo XXI. Madrid: Los libros de la Catarata.

Giráldez, A.(2015). De los ordenadores a los dispositivos móviles. Barcelona: Graó.

Remembering the forgetting curve: A simulation and new explanation of the inverted-U preference trajectory for exposure to music.

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Abstract

This paper tests the validity of a novel function intended for automated music recommendation systems. The function uses repeated exposure information for a specific song in a music library and is based on a linear combination of Ebbinghaus forgetting curves. This linear combination produces an output for recommendation strength, termed freshness, which appears to encapsulate Berlyne's inverted-U model, having the effect of moderating exposures so that over-exposure is avoided. The function was tested using two simulations: one using fixed time increments between exposures, and the other using changing time increments between exposures. All simulations produced inverted-U trajectories. We therefore suggest that existing recommendation methods may benefit from the implementation of a parsimonious, inverted-U approach.

Keywords

music preference, automated recommendation, exposure

Aims

Music recommendation systems use a variety of methods intended to lure the user to a piece of music they are likely to wish to hear. These methods typically use similarity of features—such as audio content, metadata, user ratings, or demographic information—as their primary

components for recommendation (Celma, 2010). While such similarity-based approaches may suitable for the recommendation of mediums such as books, television shows and films in which consumption typically takes a minimum of several hours, if not days or weeks, music items can be consumed at a much quicker rate, and can at times involve successive, repeated listenings to the same item. As such, existing systems could better incorporate developments in the field of music psychology, such as those concerned with multiple exposures. We investigate a novel, potentially parsimonious realization of a psychologically plausible model of music preference. Our review of the literature identified one system, proposed by Hu and Ogihara (2011), that specifically incorporates elements concerned with successive exposures to music. The system in question contains a recommendation parameter referred to as freshness, which applies Ebbinghaus' (1913) forgetting curve of memory retention $R=e(-(t/S))$, where R is memory retention, S is the relative strength of memory, and t is time elapsed since the last exposure to the specific song. As time elapses, a song is more likely to be recommended due to its assumed increase in freshness. This system may therefore contain benefits in contextual recommendations to music over subsequent listenings. We additionally noted a potential similarity between a novel combination of forgetting curves and Berlyne's (1971) inverted-U model of preference, a well-established model for predicting preference. The model proposes that preference for a song will produce a more-or-less parabolic, inverted-U as a function of exposure. In this paper we report a discovery that by presenting the forgetting curve function in a particular way, we could reproduce the inverted-U curve. A recommendation system informed by the inverted-U in terms of exposure could recommend songs more regularly in early stages of familiarity, in order to push preference up towards the optimal point however these recommendations should become less frequent once the optimal point is reached (for details, see Chmiel & Schubert, 2017). The aim of the present study is to expand work by Hu

and Ogihara to discover a simple function that is psychologically plausible and able to model the inverted-U trajectory.

Methods

Our proposed function based on the forgetting curve presented as a linear combination is shown as $F(t,S) = e(-t/S) - e(-t/(S-1))$ in which S represents an exposure event to a song in an individual's personal library (a positive integer), and in which F is the 'freshness' (according to Hu and Ogihara) or 'favor' for a song k in a recommendation library. We tested the proposed F function through simulations with all possible coefficients set to arbitrary unit values, and varying t and S values accordingly. Two sets of simulations are presented. The first contains fixed increments of t, simulating the controlled laboratory setting where the music stimulus is exposed repeatedly after a fixed amount of time. A range of simulations, from small through to larger increments were tested for each simulation. A second simulation was conducted in which increments of t varied by different amounts: (1) increasing t values between subsequent exposures, (2) decreasing t values between subsequent exposures (until the timing between exposures becomes the same as the duration of the stimulus) and (3) random t increments (providing a potentially more realistic simulation of 'actual' listening habits).

Outcome(s)

The simulations are presented in Fig. 1 (set 1) and Fig. 2 (set 2). The first set of simulations demonstrates the clear emergence of the inverted-U curve for F, and so resemble preference responses predicted by the model. This pattern emerged regardless of the setting of the inter-stimulus time delay. For set 2, the inverted-U also emerged even when the time delays between exposures were not fixed. Polynomial curve fitting was applied to the three random inter-exposure time simulations, with the result producing an inverted-U trajectory in each case.

Discussion

The simulation of the proposed model confirms that it is possible to represent the finding that preference is related to exposure to a piece of music as an inverted-U using a psychologically plausible mathematical model of memory retention. This suggests that mathematical-biological models can provide new insights into how the somewhat mystical views on music preference can be represented in an objective manner, and utilized for quantifiable predictions and testable hypotheses. Future work will endeavour to use empirical data to discover the coefficients of the model, for example, in the simplest form of $F(t,S) = \alpha(e(-t/S)) - e(-t/(S-1))$ where α is the coefficient to be solved. The parsimony of the model also makes it a highly appealing candidate for sophisticated automated music recommendation systems that can track individual listening habits.

References

Berlyne, D. E. (1971). Aesthetics and psychobiology. New York: Appleton-Century-Crofts.

Celma, O. (2010). Music recommendation and discovery: The long tail, long fail, and long play in the digital music space. Berlin: Springer-Verlag.

Chmiel, A., & Schubert, E. (2017). Back to the inverted-U for music preference: A review of the literature. Psychology of Music, 45(6). 886-909.

Ebbinghaus, H. (1913). Memory: A contribution to experimental psychology. New York: Teacher's College.

Hu, Y., & Ogihara, M. (2011). Nextone Player: A music recommendation system based on user behavior. Proc. the 12th International Society for Music Information Retrieval Conference, Miami, Florida.

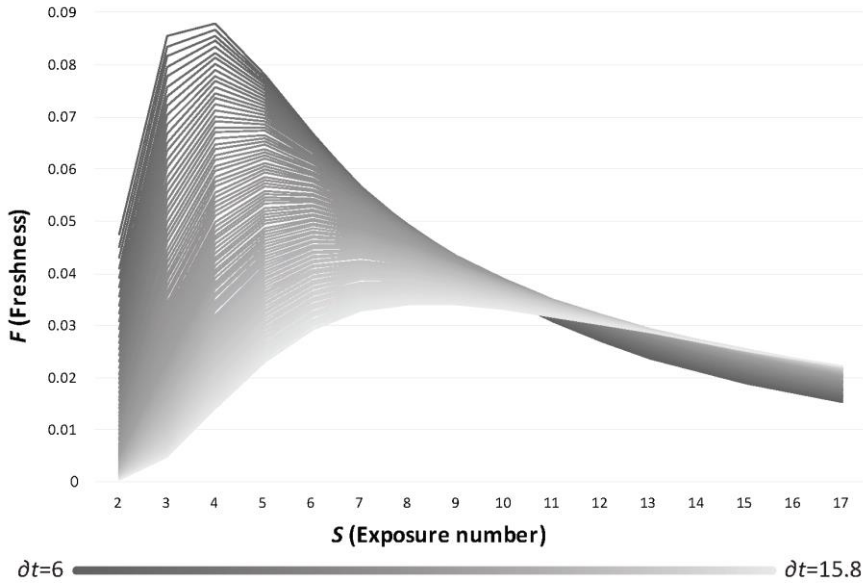

Figure 1: Plot of exposure-preference simulation with fixed interexposure time increments (t) incrementing by 0.1.

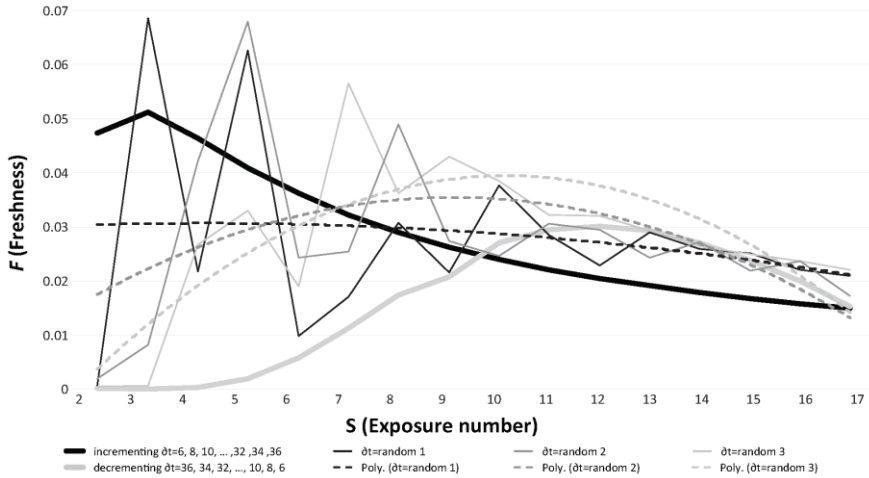

Figure 2: Plot of exposure-preference simulation with changing (incremented; decremented; random) interexposure time increments (t). Polynomial curve fitting has been applied to the three simulations with random time increments (shown with dashed lines).

Soundcool, music-visual creation through mobile devices for the development of multidisciplinary artistic creativity.

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Abstract

This paper proposes a workshop on the use of the free application Soundcool, a modular application for music education using smartphones, tablets and kinect developed by Universitat Politècnica de València (UPV) in collaboration with Universitat de València and Carnegie Mellon University. The application is free and its use intends to be completely inexpensive, using devices that the students can bring from their own such as smartphones, tablets and kinect, and running on just one computer or more if they are available. The workshop will consist on training the audience with the basics of the application, making some guided improvisations and giving ideas for the creation of the sound and music for a given visual stimulus.

Keywords

Soundcool, music education, creativity

Aims

The new schemes for human-computer interaction (HCI), such as the low-cost interface Kinect, tablets and smartphones are promising tools to improve the motivation and interest of students for developing their cognitive skills and to support the learning process. However, music education in many elementary or secondary level classes generally revolve around classical music and are oriented towards the acquisition of knowledge and skills related to traditional musical language and the conventional use of instruments like flute, piano, etc. The incorporation of new audiovisual technologies and interfaces in music production, where practically any sound material can be used, and in the students' daily life (smartphones, tablets, game console interfaces...) require us to extend

the usable universe to teach music if we want to motivate students and improve the learning process (Murillo-Ribes, Riaño-Galán, & Berbel-Gómez, 2018). Thus, the first objective of our project New Audiovisual Technologies and Interfaces for Music Education and Sound Creation, started in January 2013, was to implement a modular software system based on low cost interfaces such as tablets, smartphones and Kinect, named finally Soundcool, and a collaborative web creation system for music education (http://soundcool.org/es/). The aim of this workshop is to train the audience with the basics of the Soundcool application, making some guided improvisations and giving ideas for the creation of the sound and music for a given visual stimulus and the possibility of integrating other disciplines such as poetry, recitation, audiovisual, drawing, etc. (Berbel-Gómez, Murillo-Ribes, Sastre-Martínez, & Riaño-Galán, 2017).

Methods

Soundcool is a modular system which deals with the basic concepts of audio processing, which modules can be interconnected: record from any input device or from another module; play with the basic controls reverse, speed and loop; several basic effects such as feedback delay, panoramic, transposer and pitch shift; an audio routing module; a mixer with 8 inputs; a VST host module to be used with VST instruments and effects; a keyboard module to receive midi notes and controls from a smartphone/tablet via TouchOSC; a spectroscope module and oscilloscope module to visualize audio signals in the frequency and time domains; a sample player module to load and play up to 12 audio samples in one module; a direct input module to allow real time processing of the audio coming from the default input device (e.g.: a microphone); a filter module which provides 10 different filter modes; a signal generator module to create 6 kinds of waves such as sine wave, square wave, etc., and do synthesis by Frequency Modulation, Amplitude Modulation or Ring modulation; an envelope module to generate envelopes; a granular synthesis module to perform standard granular synthesis from a sample

buffer; and an audio module to configure audio in/out and MIDI devices. Most of them can be controlled by IOS or Android tablets/smartphones, and Kinect, with very simple and homogeneous interfaces. The teacher or students should setup the desired combination of modules and their connections in the computer or computers available in the classroom for each concrete activity. Then, each student can control one of the modules with his/her own smartphone/tablet or Kinect being placed in whichever place around the class the activity needs. There are input and output buttons in all the modules, and the connections are made by pressing an output button first and then an input button. An output can be connected to several inputs and each input has a disconnect button as well. As for the OSC communication between the computer and other mobile devices, all the devices must be connected to the same network and the sending address of the mobile devices must be set up to the IP address of the computer where the modules are being run. Additionally, the receiving port for each module can be configured to match it with the sending port of each mobile device so that each one can control a different module.

Outcome(s)

In this workshop we are going to do a creation work in which we will use an visual stimulus for the creation-improvisation. All the participants will have previously installed the application TouchOSC on their own android or IOS mobile devices and on this condition, TouchOSC layers will be distributed wirelessly. All the devices should be connected to the same wireless network and set up with the IP of the main computer where Soundcool is running. Finally, an OSC will be set in each device, so that it can control the modules of the system. Once we are done with the initial configuration, we will proceed to test that all the devices can properly communicate with the system. Afterwards, we will start an improvisation session to determine which sounds and effects adapt to the audiovisual stimulus better. To perform our piece we will need 15-20 devices. The

total duration of the workshop will be approximately 20 minutes, allowing the work with two or more groups of active people: at first all the audience will make all the technical steps to be ready for their participation. The necessities of the workshop are sound amplification and a projector, as the audience will use their own tablets and smartphones to participate.

Outcomes

This paper proposes a workshop on the use of the Soundcool application for music education developed by the authors and collaborators. The application and its objectives have been described and the proposed workshop has been designed for a duration of 20 minutes, consisting of an experience on music education and sound creation with group improvisation by the audience using their own tablets and smartphones.

Acknowledgements

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References

Berbel-Gómez, N., Murillo-Ribes, A., Sastre-Martínez, J., & Riaño-Galán, M.E. (2017). Sound Creation and Artistic Language Hybridization Through the Use of the Collaborative Creation System: Soundcool. TOJET: The Turkish Online Journal of Educational Technology – November 2017, 997-1009.

Murillo-Ribes, A., Riaño-Galán, M.E., & Berbel-Gómez, N. (2018). Perception of the use of 'Soundcool' as a proposal for intervention in the creation of sound and in the development of teaching competences. An exploratory study on pre-service teacher education. Psychology, Society, & Education (PSE), 10(1),127-146.

The Use of Online Software in Music Education.

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Abstract

Tutorial Syllabus – Study of topics related to the use of Information and Communication Technologies (ICT), through fee online software in the processes of teaching and learning music. Tutorial Objectives: General – At the end of the tutorial, the participants should be able to develop reflexive skills – through discussions and practical activities – about the processes concerning the use of free online software in the music classroom. Specific 1) Research several free online tools that can be used in the music classroom. 2) Develop critical thinking (based on the music education literature) about free online software and how they can be used in the music classroom. 3) Perform practical teaching/learning activities using free online software in the music classroom. Tutorial Topics: 1) Information and Communication Technologies/Cloud Computing. 2) Online Software. 3) Online Music Notation. 4) Online Audio Recording and MIDI Sequencing. 5) Online Musical Instruments. 6) Sharing and Management of Online Audio and Video Files. Methodology - The tutorial will be given in the form of a workshop in which the participants will do reflections, searches on the Internet and practical work on the use of free online tools in the music classroom. Tutorial Length - 4 hours Target Audience – Music teachers of any level. Participants do not need to have prior knowledge of any of the tools that will be used in the tutorial. Number of participants - Up to 40 participants. Technical Requirements: Each participant will need to bring its own computer with internet access.

Keywords

Online music software, ICT, Music Classroom

Aims

The participants should be able to develop reflexive skills – through discussions and practical activities – about the processes concerning the use of free online software in the music classroom.

Methods

Research on the Internet for free online music software; Practical teaching and learning activities with free online software; Reflexions based on the music education literature;

Outcome(s)

Besides the practical exercises, and reflexions based on the literature, participants will be asked to develop a final product based on the content covered in the tutorial

Final Remarks

It's hoped that based on the content covered in the tutorial, participants would be able to bring new ideas not only for teaching music using free online software, but also to research in the field of music education in general.

References

Bowman, J. (2014) Online Learning in Music. Foundations, Frameworks, and Practices. New York: Oxford University Press.

Gohn, D.M. (2009). Educação Musical a Distância: propostas para ensino e aprendizagem de percussão. Tese de Doutorado em Ciências da Comunicação. Universidade de São Paulo.

Méio, D.B. & Marins, P.R.A. (2014). Ferramentas online para a criação musical colaborativa. In: Proceeding of the 12th Audio Engineering Socie-

ty Convention – Brazil Section. Rio de janeiro: Sociedade de Engenharia de Áudio.

Cart before the horse: Technology disruptions in group piano practices and curriculum.

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Abstract

Undergraduate group piano programs are the most common means through which music majors in the United States fulfill the National Association of Schools of Music's (NASM) requirement of keyboard competency (NASM, 2015). As found in previous investigations, the group piano curriculum and its implementation have not completely undergone the needed modifications to fully prepare students with relevant and useful skills at a greater proficiency. In what ways might technology use serve as a cause or an effect on group piano teaching practices and curriculum development? Given the interest in adapting the music curriculum to address the needs of the 21st Century musician, it seems an ideal time to examine the curriculum and its implementation. As part of a call for change in group piano curriculum and its implementation, we have undertaken a longitudinal study examining student perceptions and learning outcomes in these piano courses. From the examination of the initial findings of the longitudinal study of curricular change in group piano in relation to the use of technology, we hypothesize that that the rapid inclusion and adoption of technology in the group piano classroom disrupted and, in essence, surpassed the curriculum and teaching practices. In other words, the existing pedagogies have not been in line with the

digital teaching tools incorporated, which have continued to develop and provide further enhancements of group piano classroom practices and curriculum. We discuss this within the perspectives of both imperative of disruptive innovation (Selwyn, 2017) and technological determinism (Ruthmann, Tobias, Randles, Thibeault, 2015; Smith & Marx, 1994).

Keywords

Group Piano, Technological determinism, pedagogy

Aims

As found in previous investigations, the group piano curriculum and its implementation have not completely undergone the needed modifications to fully prepare students with relevant and useful skills at a greater proficiency. In what ways might technology use serve as a cause or an effect on group piano teaching practices and curriculum development?

Methods

Given the interest in adapting the music curriculum to address the needs of the 21st Century musician, it seems an ideal time to examine the curriculum and its implementation. As part of a call for change in group piano curriculum and its implementation, we have undertaken a longitudinal study examining student perceptions and learning outcomes in these piano courses. The pilot phase of this project consisted of a series of electronic surveys distributed to undergraduate music majors from four schools in the United States at the beginning of the year, at the end of the first term, and at the conclusion of the academic year. To that end, we invited group piano teachers in the United States to participate in an online questionnaire regarding the use of technology in their piano classrooms. In particular, we were most interested in the lab controller, which allows students and teachers to interact both collaboratively and independently depending on the nature of the activity. The lab controller, or

also termed ‘teacher controller' and ‘conferencing system', is a piece of hardware that allows the instructor to choose the configuration of communication between teacher piano, sequencer, computer, and headphones with student pianos, computers and headphones in a number of options.

Outcome(s)

The participants in the pilot phase of the study were currently enrolled in piano classes and answered questions about the musical training they received during primary and secondary schools, their intended career aspirations, as well as their expectations and outcomes from the piano courses in which they were enrolled. At the beginning of the year, students had difficulty defining their expectations of piano class; however, by the start of the second term, they identified specific piano skills (i.e. playing scales, sight-reading, harmonizing, and improvising) that they anticipated studying in class. While the content of these classes became more evident to the students after one academic term, the intended purpose for the course did not change at the same rate. This led to additional questions regarding how the content of the course can be made evident to students, while the justification for its role in the training of music majors remains unclear. It is possible that the means through which these skills are delivered (i.e. incorporation of technology or assessments) effects students' views on the importance of these courses. Participants in the second part of this study were experienced group piano teachers who currently taught piano in a laboratory environment. In addition to the lab controller, these teachers often used digital instruments, headsets, microphones, computer software and online content, projectors, media players, interactive boards, document cameras, sequencers, and visualizers. Most participants used the lab controller in a variety of contexts and purposes. When listening to individual students, the lab controller was used to assess student progress and observe practice behaviours. The group or ensemble function in the lab controller al-

lowed students to work collaboratively in ensembles, improvise with partners, and improve other functional skills. These teachers also believed that this technology was essential to their teaching and aided in motivating students, interacting with others, helping individuals, reduced chaos, facilitated communication, and effectively managed time spent in lectures.

Discussion

From the examination of the initial findings of the longitudinal study of curricular change in group piano in relation to the use of technology, we hypothesize that that the rapid inclusion and adoption of technology in the group piano classroom disrupted and, in essence, surpassed the curriculum and teaching practices. In other words, the existing pedagogies have not been in line with the digital teaching tools incorporated, which have continued to develop and provide further enhancements of group piano classroom practices and curriculum. We discuss this within the perspectives of both imperative of disruptive innovation (Selwyn, 2017) and technological determinism (Ruthmann, Tobias, Randles, Thibeault, 2015; Smith & Marx, 1994).

References

Smith, M. R., & Marx, L. (Eds.). (1994). Does technology drive history?: The dilemma of technological determinism. Mit Press.

Young, M. M. (2016). A National survey of university-level group piano programs. MTNA e-Journal, 7(3), 13–35.

Ruthmann, S. A., Tobias, E. S., Randles, C., & Thibeault, M. D. (2015). Is it the technology? Challenging technological determinism in music education. Music education: Navigating the future, 271-91.

Does the cultural meaning of Erhu really have an influence in the communication of basic emotions in musical performance?

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Abstract

Music, described as a "language of emotions" (Cooke, 1959), is always used by musicians to communicated emotions. In an experiment, participants were asked to listen to 72 short melodies played by a traditional Chinese musical instrument – the Erhu and then, judge and rate five basic emotions (Happiness, sadness, tenderness, anger and fear) that were communicated in these melodies with a self-assessment Visual Analog Scales (VAS) sheet. Results showed that Chinese participants accurately detected the intentions of Erhu performers to communicate happiness, sadness, and tenderness through the melodies, while non-Chinese participants accurately detected the intention of the Erhu performer to communicate happiness and sadness through the melodies. Chinese participants confused "tenderness" with "no expression", while non-Chinese participants confused "tenderness" and "anger" with "no expression". Although they all accurately detected the expressed sadness, Chinese participants perceived sadder sadness than the non-Chinese participants.

Keywords

Music, Emotion, Erhu

Aims

Audiences appreciate music because it is capable of communicating and inducing a range of different emotions (Juslin & Laukka, 2004). Audiences regard music as an expression of various emotions (Gabrielsson & Juslin,

2003), which appears to be the belief of most scholars (Juslin, 2013). A review of 41 studies of emotion expression in musical performances (Juslin & Laukka, 2003) suggested that well-trained performers have the capability to communicate five distinct emotions (happiness, anger, sadness, fear and tenderness) with audiences with an accuracy approximately as high as facial and vocal expressions. Moreover, outcomes of more than 100 studies have demonstrated that an audience's judgments of emotional expression in music are consistent; in other words, they judge emotional communication systematically and their judgments are reliable (Juslin & Laukka, 2004). Erhu is the most typical and popular of the Chinese traditional string instruments. Based on the influences of cultural differences and timbres of instruments, if we want to fill in some of the blanks in the research of emotions in the area of Chinese traditional music, we should use our traditional instruments when we imitate the methods of Western researchers. The basic aims of this study were to investigate (a) to what extent five basic emotions (happiness, anger, sadness, fear and tenderness) can be accurately perceived through the music performed with the Erhu; (b) if there exist similarities and differences of emotional perception across culture.

Methods

In this study, each of 31 participants (16 Chinese) heard 72 short melodies played by a traditional Chinese instrument— the Erhu. Their task was to judge and rate the emotions that were communicated in these melodies with a self-assessment Visual Analog Scales (VAS) sheet. The VAS sheets were measured by rule and the rating score was defined as the length of the line between the left end of the 100mm line and the mark made by participant (Ahearn, 1997). Each response on the VAS was measured to the nearest millimetre (Guyatt et al, 1987). All the scores were recorded in Excel 2016 and analysed in SPSS 17.0. All the graphs were made by Graphpad Prism 7.

Outcome(s)

Table 2 shows all participants' mean and standard deviation (SD) of the scores of each perceived emotion for each expressed emotion. Post Hoc tests were used to investigate whether there existed significant differences between each perceived emotion. Figure 1 shows the results of the Post Hoc tests of Chinese participants' scores of all five perceived emotions for each expressed emotion. Figure 2 shows the results of the Post Hoc tests of non-Chinese participants' scores of all five perceived emotions for each expressed emotion. Figure 3 shows the results of comparisons of the ratings of all five perceived emotions for melodies with expressed sadness between Chinese and non-Chinese participants. A 4 (music sentences) × 2 (Chinese and non-Chinese participants) multivariate ANOVA was used to do the analysis for five perceived emotions respectively. Results showed that Chinese participants accurately detected the intentions of Erhu performers to communicate happiness, sadness, and tenderness through the melodies, while non-Chinese participants accurately detected the intention of the Erhu performer to communicate happiness and sadness through the melodies. Chinese participants confused "tenderness" with "no expression", while non-Chinese participants confused "tenderness" and "anger" with "no expression". Although they all accurately detected the expressed sadness, Chinese participants perceived sadder sadness than the non-Chinese participants.

Discussion

Laukka and colleagues (2013) suggest that basic emotions in music have high agreement among audiences with different cultural backgrounds. According to the cue-redundancy model (CRM, Balkwill & Thompson, 1999), when the audience hears the music of which the cultural meaning is familiar to them, they combine culture-specific cues with psychophysical cues to do the emotional decoding, it is, thus, relatively easy for them to detect the intended emotions through the music. However, it does not

mean that they cannot detect the expressed emotions when they encounter unfamiliar music or music with an unfamiliar cultural background. Audiences may still turn to psychophysical cues to complete the emotional decoding if there are less or even no culture-specific cues that they can utilize. That is perhaps why both the Chinese and non-Chinese participants accurately detected happiness and sadness through the music performed with the Erhu. However, non-Chinese participants' accuracy in decoding is still influenced by several factors. As the useful cultural cues are less than those for the Chinese participants, their emotional decoding likely depends more on psychophysical cues. Thus, if the cues that they use to decode a certain emotion are more culture-specific, they may not be able to recognize that expressed emotion. Becker (2004) suggested that basic emotions such as anger, love and fear are very specific for many non-Western musical cultures. Therefore, that is why non-Chinese participants could not accurately detect anger and male non-Chinese participants could not accurately detect fear through the music performed with the Erhu.

References

Balkwill, L., & Thompson, W. F. (1999). A cross-cultural investigation of the perception of emotion in music: Psychophysical and cultural cues. Music Perception, 17(1), 43–64.

Gabrielsson, A., & Juslin, P. N. (2003). Emotional expression in music. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith. (Eds), Handbook of Affective Science (pp. 503-534). New York: Oxford University Press.

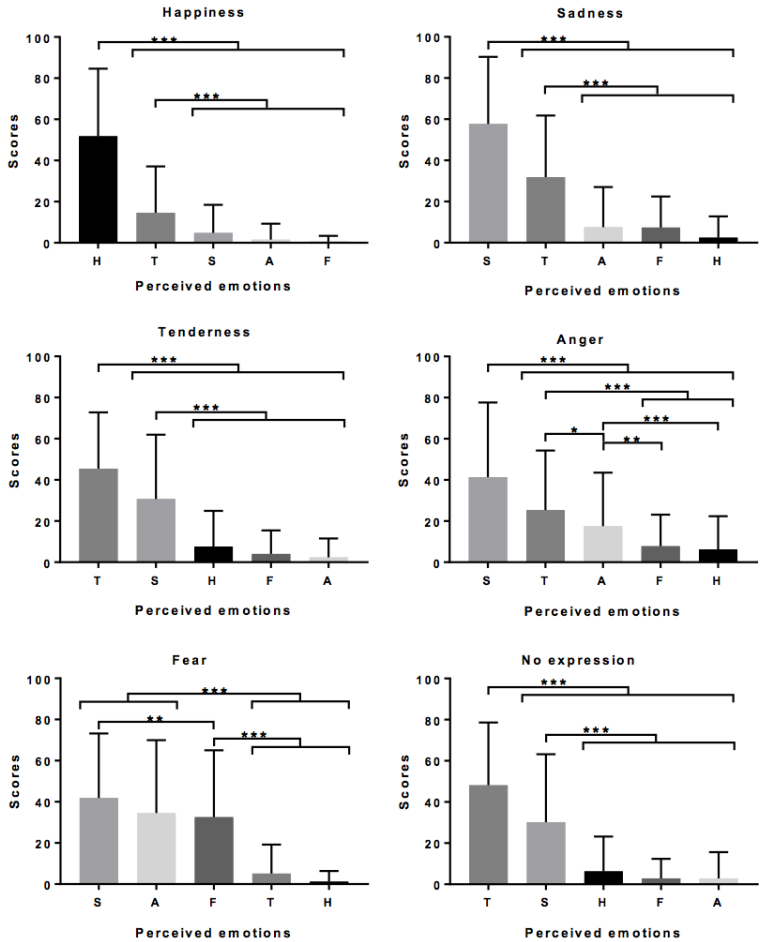
Juslin, P. N. (2013). From everyday emotions to aesthetic emotions towards a unified theory of musical emotions. Physics of Life Reviews, 10, 235-266.

喜悦	无		非常强烈
Happiness	**None**		**Extremely**
悲伤	无		非常强烈
Sadness	**None**		**Extremely**
柔和	无		非常强烈
Tenderness	**None**		**Extremely**
愤怒	无		非常强烈
Anger	**None**		**Extremely**
恐惧	无		非常强烈
Fear	**None**		**Extremely**

Table 1 :A sample of the new questionnaire using VAS

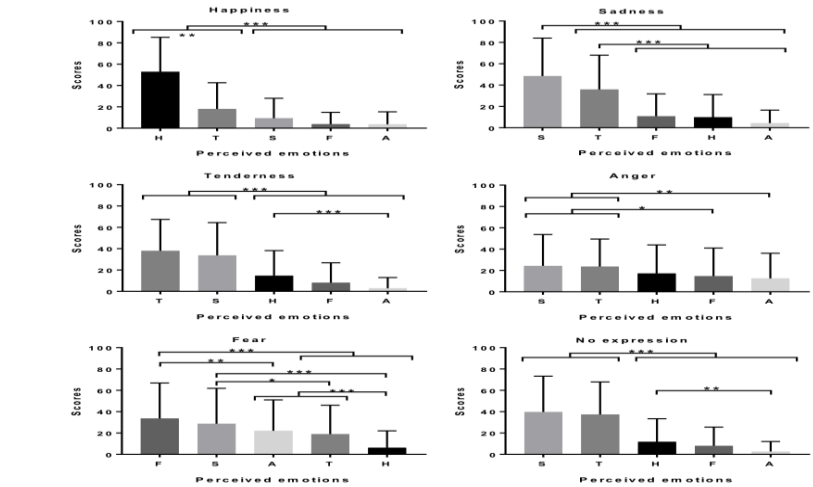
Expressed Emotion	Mean (Standard Deviation) of the scores of each perceived emotion									
	Happiness		Sadness		Tenderness		Anger		Fear	
	C	NC	C	NC	C	NC	C	NC	C	NC
Happiness	51.82(32.77)	52.93(32.29)	4.80 (13.61)	9.34(18.71)	14.63(22.54)	18.00(24.60)	1.51(7.82)	3.61(11.76)	.57(2.76)	3.81(11.05)
Sadness	2.47(10.35)	9.97(21.18)	57.69(32.56)	48.46(35.60)	31.67 (29.88)	35.85(32.22)	7.55(19.53)	4.41(12.13)	7.39(15.07)	10.84(20.92)
Tenderness	7.61(17.37)	14.68(23.51)	30.70 (31.28)	33.71(30.76)	45.50(27.31)	38.01(29.46)	2.41(9.17)	2.90(10.05)	4.05(11.38)	8.09(18.67)
Anger	6.22(16.13)	17.18(26.80)	41.36(36.22)	24.32(29.35)	25.378 (28.96)	23.72(25.74)	17.51(26.02)	12.56(23.60)	7.79(15.31)	14.67(26.37)
Fear	1.24(5.10)	6.18(15.87)	41.83(31.40)	28.74(33.14)	5.10(14.12)	18.99(27.03)	34.51 (35.43)	22.16(28.92)	32.57(32.51)	33.62(33.24)
No Expression	6.29(16.89)	11.79(22.56)	30.23 (32.94)	39.83(33.49)	48.10(30.48)	37.41(30.45)	2.83(12.76)	2.68(9.34)	2.91(9.44)	7.92(17.64)

Table 2: All participants' mean and standard deviation (SD) of the scores of each perceived emotion for each expressed emotion



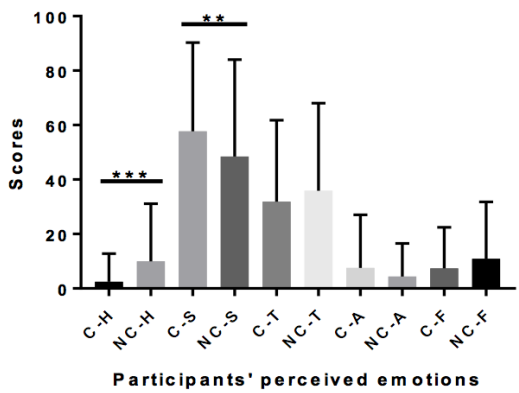
Note. H = Happiness, S = Sadness, T = Tenderness, A = Anger, F = Fear.
* = p < .05, ** = p < .01, *** = p < .001.

Figure 1: The results of the Post Hoc tests of Chinese participants' scores of all five perceived emotions for each expressed emotion



Note. H = Happiness, S = Sadness, T = Tenderness, A = Anger, F = Fear.
* = p < .05, ** = p < .01, *** = p < .001.

Figure 2: The results of the Post Hoc tests of Non-Chinese participants' scores of all five perceived emotions for each expressed emotion



Note. C = Chinese participants, NC = Non-Chinese participants, H = Happiness, S = Sadness, T = Tenderness, A = Anger, F = Fear.
* = p < .05, ** = p < .01, *** = p < .001.

Figure 3: The results of comparisons of the ratings of all five perceived emotions for melodies with expressed sadness between Chinese and non-Chinese participants

The Effects of Auditory Integration Training (AIT)-using Creative Music Technology to facilitate the intervention and wellbeing of children with Autism Spectrum Disorder (ASD).

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Abstract

Autism Spectrum Disorder (ASD) is rapidly on the increase, with approximately 1.1% of the UK population diagnosed (94 per 10,000) as having ASD or being on the spectrum. There are at present over 1000 interventions available to assist children and individuals with the condition. One significant auditory intervention—that has been available for many years— know as Auditory Integration Training (AIT) is utilised to treat Hyperacusis (hyper-acute hearing) that affects behaviour in people with autism. By utilising Creative Music Technology and modern advances of online web/data streaming, it is possible to diagnose problematic frequencies and offer sensory, interactive, and motor planning therapy (on-site) to assist the wellbeing and social interaction. There has been much debate regarding the veracity of AIT over the last fort years—however, there have been many cases (Stehli, 1992) that this non-invasive treatment really does work.

Keywords

Creative Music Technology, Auditory Intervention, Online Music / Web Technologies

Aims

To utilise creative music technology to assist children and individuals with ASD, thus facilitate the wellbeing and intervene with early diagnosis of autism.

Methods

Offering the intervention to healthcare, schools—Administer therapy on-site using creative music technology and web based methods.

Outcome(s)

Facilitate and intervene using music and sensory therapy to assist the wellbeing of children with ASD and reduce the prevalence of diagnosis Nationwide and globally.

Creative Music Technology - An Intervention for ASD

Developing and prototyping

Acknowledgements

Cynthia Stephens-Himonides - Music Psychology & Health - Canterbury Christ Church University.

References

Sokhadze, E. M., Casanova, M. F., Tasman, A., & Brockett, S. (2016). Electrophysiological and Behavioral Outcomes of Berard Auditory Integration Training (AIT) in Children with Autism Spectrum Disorder. Applied psychophysiology and biofeedback, 41(4), 405-420.

Stehli, A. (1991). The sound of a miracle. 1st ed. New York: Doubleday.

Cipriani, A. and Maurizio, G. (2014). Electronic Music and Sound Design: Theory and Practice with Max and MSP Vol 1. 1st ed. Italy: ConTempoNet, p.320.

Silence... What's that? A study about silence in media and its implications for creativity.

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Abstract

This paper presents this author's doctoral research study design, conducted at UCL Institute of Education. The study is a qualitative research enquiry focused on understanding the notion of silence in media, with a particular focus on radio. An initial extensive review of existing literatures demonstrated that the notion of silence is highly contested, and unclear. It was therefore decided that in order to form a somewhat holistic understanding about silence, a design of a novel taxonomy was essential. In order to research the evidence and design this new taxonomy, series of interviews were conducted with individuals from a variety of backgrounds and interests. This paper presents some initial findings from the phenomenological analyses of the interviews.

keywords

silence, radio, mindfulness, synaesthesia

Aims

The aim of the research is to understand the notion of silence in media, with a particular focus on radio. Due to the multifaceted and complex nature of silence, as it appears within numerous fields of enquiry and

literatures, it was decided that it is essential to develop a taxonomy of silence, informed by both literature and empirical research.

Methods

An extensive review of existing literatures has been conducted, spanning Psychology, Sociology, Acoustics and Psychoacoustics, Philosophy, Social Psychology, Anthropology, Epistemology, Physics, Neuroscience, Media studies and Education. Key concepts and notions were distilled and organised into an interim taxonomical matrix. Following the review of the literature, the researcher conducted a pilot study that entailed qualitative analyses of transcripts from a popular radio drama in order to interrogate the initial taxonomy and rehearse whether additional key themes could arise. This led to a slight adjustment of the interim taxonomy. Upon this, a qualitative empirical research study was designed, comprising interviews of eleven individuals from a variety of professional backgrounds and personal interests.

Outcomes

This doctoral research study is still ongoing. In this paper, some interim findings from the final empirical research (interviews) are being presented, suggesting that:

-silence is a highly complex notion;

-there is a clear need of understanding silence using two main/key perspectives: the ontology of silence and the epistemology of silence;

-notions within the ontological and epistemological sets are often interacting and dynamically connected;

-there are numerous implications for personal development, education, and potentially health.

Coda

A number of quotations coming from the interviews will be presented anonymously, in order to celebrate the diversity but also the important role that silence plays in people's everyday lives.

Acknowledgements

The researcher would first like to thank all participants in the empirical research. Secondly, many thanks to Terry Smith for his support and Dr Evangelos Himonides for supervising this study.

References

Jaworski, A. (1993). The power of silence [electronic resource]. Newbury Park, Calif., London: Sage Publications.

Kurzon, D. (1998). Discourse of silence. Amsterdam: Benjamins.

Poyatos, F. (1994). La comunicación no verbal (1. ed). Madrid: Istmo.

Caranfa, A. (2013). Socrates, Augustine, and Paul Gauguin on the Reciprocity between Speech and Silence in Education: Speech and Silence in Education. Journal of Philosophy of Education, 47(4), 577–604. https://doi.org/10.1111/1467-9752.12042

Watzlawick, P., Bavelas, J. B., & Jackson, D. D. (2011). Pragmatics of human communication: a study of interactional patterns, pathologies, and paradoxes (Pbk. ed). New York: W.W. Norton & Co.

Is there potential for using beatboxing in supporting laryngectomees? findings from a public engagement project.

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Keywords

beatboxing, cancer, laryngectomy, public engagement

Abstract

This paper outlines key findings from the UCL public engagement project Beatboxing after laryngectomy. The project was a collaboration between Dr Evangelos Himonides from the UCL Institute of Education and Shout at Cancer, the only charity, globally, that implements singing and acting techniques in the voice rehabilitation for laryngectomies. Clinicians, patients with laryngectomies and young people from East London were brought together to explore the role of beatboxing in voice rehabilitation and raise awareness of the difficulties facing those without voice boxes.

Aims

To engage a vulnerable group of individuals in collaborative music making, using novel techniques (i.e. beatboxing);

to engage a wider group of local youth in East London in artistic expression and collaboration with cancer patients;

to engage the wider public audience in an open showcase of masterclass outcomes / final concert.

Participants

The project involved: the charity Shout at Cancer, Marv Radio (beatboxer), the researchers/facilitators, a group of cancer survivors with laryngectomies coming from across the UK, local East London youth and an audience (of the final performance) that comprised people and families across London.

Design

To explore the different techniques applicable in speech rehabilitation after laryngectomy, patients and clinicians were invited to participate in a series of beatboxing workshops - lasting an hour each and spanning five consecutive weeks. During these sessions the patients worked with the beatboxer developing vocal and breathing skills.

These workshops culminated into a final performance, a world premiere of Beatboxing Without a Voice, at the Olympic Village, Stratford, East London on 8th April 2017. This performance was an interactive session, involving local young people and families across London. This involved performances from the patients with laryngectomies, young people and beatboxer, alongside small explanatory talks of the layered impact of laryngectomy and information on throat cancer and the impact it has.

Findings

Beatboxing after laryngectomy was a pilot project using public engagement to explore an under researched area to inform future research and practice.

Monitoring and evaluation ran throughout the project, for example: the patients with laryngectomies were recorded (audio) pre and post participation, and sprectotemporal voice characteristics were assessed. Beatboxer and clinicians were asked to undertake bespoke surveys about laryngectomy and throat cancer; and encouraged to reflect on how participating in this project has developed/changed their practice. Those at the final performance public event were asked to provide feedback both about their experience, but also about the knowledge that they gained/acquired about throat cancer.

The feedback received was extremely positive, particularly from the patients involved, and illustrated by this quote from one participant:

“As a Laryngectomy participant, this was unique experience performing in front of people of all ages & letting them know, Life is to Live on even after loosing natural speaking ability”.

The project exceeded the aims set out in the initial proposal. Beatboxing after laryngectomy had an impact on some many levels: on individuals and partners involved and potentially on future research. For example, impacts included:

- Research and teaching. This was a pilot exploratory project, and there are numerous projects that the team are planning to build up from this experience. The team discovered that beatboxing has helped all participants with their breathing, which is something that further systematic research should look into, for non alaryngeal groups also. Little is known about the alaryngeal voice, this is an underresearch area. -

-Innovation. The team discovered that the use of the electrolarynx is something that can be exploited for artistic expression with 'normal' (i.e. non alaryngeal) singers. They are currently in the process of liaising with a major manufacturer in order to acquire a number of units in order to rehearse this opportunity in a future project.

- Raising awareness. Shout at Cancer have been receiving continual media exposure from this project. This is an extremely positive outcome, as it raises the profile of the charity and the condition.

- Understanding of public engagement. The team felt that this project reaffirmed how public engagement can be a very effective way to communicate research, explore ideas and raise awareness of topics.

Beatboxing after laryngectomy provides an excellent example of how key relationships and networks can be built through such innovative public engagement projects.

Acknowledgements

This project was funded under the UCL Public Engagement Unit Beacon Bursary funding scheme. The project team would like to thank all singers, their families and/or carers, and all participants at the final public engagement event.

References

Pearson, B. W. (1981). Subtotal laryngectomy. The Laryngoscope, 91(11), 1904-1912.

Riley III, J. L., Dodd, V. J., Muller, K. E., Guo, Y., & Logan, H. L. (2012). Psychosocial factors associated with mouth and throat cancer examinations in rural Florida. American journal of public health, 102(2), e7-e14.

Stowell, D., & Plumbley, M. D. (2008). Characteristics of the beatboxing vocal style. Dept. of Electronic Engineering, Queen Mary, University of London, Technical Report, Centre for Digital Music C4DMTR-08-01.

Can Software Engineering be Taught by Making (and) Music? a proposed empirical study.

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Abstract

The work proposed here centres on materializing core concepts of software engineering (e.g. version management, architecture, the interplay between functional and non-functional requirements, the need to think at both small and large scale simultaneously, user interaction and design constraints, as well as project management) in design thinking through the creation of physical instruments, and their subsequent translation (by introducing the crucial engineering concepts of abstraction and abstract representation) into a combination of software-based digital instruments with physical controllers. The hope is that by doing so, the thinking skills that benefit software engineering (beyond programming) can be developed through physical, not just mental practice. More broadly, students can engage with other aspects of their curriculum (physics, art, design etc) and bring these to bear in an integrated way.

Keywords

making, programming, software engineering, LEGO

Aims

To research ways in which making may be combined with aspects of computer music to create and evaluate secondary-level education resources that introduce fundamental engineering and software engineering concepts at early stage.

There is no doubt that computer music can be used in the context of motivating programming education (e.g the highly-successful SonicPi initiative), however programming is only one part of the broader engineering picture in which software sits.

It is proposed that Lego Technic is used as the foundational material with which to work: children are usually familiar with Lego as a construction tool and system and it has been well-researched as an educational resource. It has been used to construct musical instruments (although there are not many full-scale working examples) and can be easily adapted (through the Mindstorms system or similar) to controller construction with sensors and switches. It is likely that the SonicPi system (or the underlying SuperCollider synth) can be leveraged to provide easy instrument definition and sound production with controllers communicating over local networks, and to introduce programming using the resources that that project has already developed for schools.

The concrete aim is to develop two physical instrument prototypes and corresponding digital/controller versions, create instruction, lesson plans and other educational resources (e.g. 'workshops') to accompany them, to evaluate these in a mainstream secondary school setting, and publish the results. The proposed series of workshops and materials to be developed is envisaged as an 'off-the-shelf' resource for teachers to use either each session individually for particular aspects of curriculum support, or as a coherent programme leading to better student education in computer science and software engineering, delivered through a curriculum founded on computer music.

The intention is that students completing the series would have an appreciation of many underpinning concepts of software development, revealed and demonstrated through physical and subsequently digital means. For example, designing an instrument such as a guitar requires one to consider not just the 'user interface' (balancing norms of playing with creativity), but also the underlying 'architectural' design that must provide sufficient strength not to warp or crack under the tension of strings (and that must be thought about as the instrument is being developed) and functional properties like the transmission and amplification of sound in the body.

There is thus balance between functional and non-functional requirements (along with fundamental lessons to be learned about sound, waves, propagation, amplification, resonance and so forth). Building like this requires design thinking that considers multiple viewpoints simultaneously, experiments with solutions, records things that work and things that don't (version control) and ultimately, after completing the physical instrument, can re-examine and critique it from a new standpoint: the digital instrument. The lessons learned from physical implementation can then be moved into the digital realm: abstracting control and representation of the instrument away from its inherent properties makes some problems easier to solve (e.g. neck tension), and others are new: how should the software be organized? Can we retain history of our development? Others are readdressed in the new context: at what stage do we have to think about fundamental structures? What happens if we don't?

Overall therefore, it is hoped that students come to software development with a physically-developed appreciation of the need for software

engineering approaches, and some of the fundamental thinking patterns required.

Acknowledgements

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References

Kmieć P. S. (2016). The unofficial LEGO Technic builder's guide. No Starch Press.

Gannod, G. C., Burge, J. E., & Helmick, M. T. (2008, May). Using the inverted classroom to teach software engineering. In Proceedings of the 30th international conference on Software engineering (pp. 777-786). ACM.

Runeson, P., Host, M., Rainer, A., & Regnell, B. (2012). Case study research in software engineering: Guidelines and examples. John Wiley & Sons.

Sonic Pi - The Live Coding Music Synth for Everyone. (n.d.). Retrieved February 23, 2018, from https://sonic-pi.net/

City of Culture Hull 2017: Engaging communities, developing listening skills, and examining well-being.

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As part of the programme for Hull City of Culture 2017, 5 composer residencies took place over 4 months within various communities in the city as part of the PRS Foundation's New Music Biennial. This took place alongside the delivery of a Bespoke Minute of Listening project designed by Sound and Music that was delivered in around 50 primary schools in Hull and the wider East Yorkshire across a broader timescale. The composer residencies were designed to spark interest in collaborative composition and new music, the composers ran workshops with different groups of participants, including refugees and asylum seekers, travellers, older adults, primary school children, formerly homeless people, and vulnerable young people. The residencies culminated in 2 public performances at Hull City Hall, involving performances from each composer's groups and a ‘supergroup' performance delivered by all the groups together.

Minute of Listening is a digital tool created by Sound and Music, the UK's national charity for new music, that introduces pupils to a wealth of exciting sonic experiences. Pupils listen actively to a minute of creative music or sound at some point during the school day and teachers may choose to employ various extension activities to focus on creative, musical, or cross-curricular development. For Hull 2017 and as part of the PRS Foundation's New Music Biennial, over 50 primary schools in Hull participated in Minute of Listening. The majority of the Minutes were excerpts

of new music expertly selected and curated by Sound and Music and connected in some way to Hull to further engage the children in the New Music Biennial and the wider City of Culture programme.

Several studies have highlighted the positive effects of musical engagement (e.g. Croom, 2015), and participation in group music activities has been a particular focus (e.g. Creech et al., 2013; Hallam & Creech, 2016), as researchers seek to understand more fully this long-acknowledged positive impact of musicking with others (Small, 1999). Although such studies have considered that it may be the creative and social aspects of group music-making in particular which have a positive affect on participants' wellbeing, so far only one study (Habron et al., 2013) has explored the potential benefits of group music-making involving the collaborative creation of new musical material. The researchers found that the sense of control over musical materials, opportunities for creativity and identity formation, as well as social interaction with other participants and musicians were all beneficial for participants' wellbeing. Whilst the participants in that study had creative control over the music realised by the professional musicians involved in the project, they did not create the music themselves. Furthermore, no study has yet examined the facilitative skills required by composers in order to engage participants in collaborative composition.

The Art of Listening in an educational perspective, or indeed any environment, is an important concept for educators and is an area of research in its own right. This in turn can be related to particular interventions to enhance wellbeing through transformative means particularly through the participation in the creative arts. Research indicates that such interventions are usefully seen as a practice of liminality that relates to an exact time and space that requires careful management. The evaluation of such interventions is also an important consideration for re-

searchers whilst trying to ascertain the effects from an initial base-line to a post-intervention test. General research into well-being is perhaps rooted in the work of Greek philosophers and as McLellan (lay-lan) & Steward (2014) describe is perhaps a more contemporary topic although the term wellbeing is used interchangeably in the literature with others such as happiness, enjoying a good life, or life satisfaction. There is evidence to suggest that studies with adults are not always applicable to younger adults and school age children in terms of our understanding of well-being and the tools developed to measure this. New instruments have been developed to explore this in different school-age settings.

This research project therefore sought to explore the perceived impact of collaborative composition and group performance on diverse groups of people and to identify skills and approaches employed by the composer-facilitators as well as the effects of the MoL intervention. There were four particular aims within the study relating to the impact, the phenomenologically experience of teachers, and the insights they can provide. The procedure for the composer residencies involved pre- and post-interviews with composers and some participants, and observational data relating to the delivery of the composers workshops. For the MoL project researchers examined a small number of schools in detail collecting pre- and post interview data from teachers, and collecting observations of classroom activities around MoL at key points in the process. This paper presents an evaluation of some of these aspects.