Original Article

Assessment Of Educational Music Interventions In Student Population

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Abstract

The effectiveness of educational music interventions across a wide variety of student populations has been shown to be positive in a variety of research studies. This article appraised previous studies in which educational music interventions have been investigated for a specific population of students. A search was conducted online using key words like music, music instruction, music education, music intervention, and music training to search electronic databases. The findings of this study suggest that educational music intervention can contribute to a positive improvement in school performances among other benefits. In addition, educational music interventions can also be used as a tool to assist students with dyslexia in learning skills as well as enhance their academic performance.

Keywords: Educational Music, Music, Music Interventions, Students

INTRODUCTION

There is no doubt that music provides students with a great opportunity for fun as well as serving a variety of educational purposes. Music contributes to their academic, social, and linguistic growth, as well as their development of self-confidence and self-esteem. Music promotes diversity, and in addition to being a method of communication it can serve as a means of reducing learning barriers such that individuals can experiment and interact with each other on a more personal level (Sammler & Elmer, 2020). The art of healing with music dates back thousands of years. Music intervention neutralizes negative feelings, increases the level of stress tolerance and harmonizes inner peace, and serves as a form of "affective messaging" (Maury & Rickard, 2016). Group music therapy can result in shared emotional experiences, the development of group cohesion, and pro-social behavior (Clift & Hancox, 2001). Music intervention has the potential to enhance communication skills and can be used to harmonize interpersonal relationships between individuals with integration difficulties and those that are undergoing a process of integration (Gooding, 2011; Ritblatt, Longstreth, Hokoda, Cannon, & Weston, 2013). It has also been shown that it is a valuable tool for developing kinesthetic skills (Root-Bernstein, 2001), spatiotemporal skills (Crnčec, Wilson, & Prior, 2006), perceptual and mental skills (Bidelman, Hutka, & Moreno, 2013; Corrigall, Schellenberg, & Misura, 2013; Kaviani, Mirbaha, Pournaseh, & Sagan, 2014) and cognitive abilities, contributing to the improvement of academic and school performance (Arnaud, Perlovsky, Bonniot-Cabanac, & Cabanac, 2013; Hallam, 2010; 2015). Through the promotion of educational music programmes, a number of benefits have been realized; children and young people are able to develop cognitively, socially, and psychologically and, as a result, are able to achieve psychological well-being. Evidence suggests that music interventions can help students who are crippled by cognitive and biopsychosocial problems. In addition to improving the quality of life for students, it can also increase their motivation. As far as intervention studies are concerned with children's wellbeing in schools, the effectiveness of music has been a bit ambiguous. A major reason for this is the fact that there are differences in the way in which methodologies are applied, measured outcomes, as well as what has been described as the "wicked problem" of the term wellbeing (Rickard, Bambrick,

& Gill, 2012; Svane, Evans & Carter, 2019). The main focus of most of the research has been on either improving cognitive abilities or thus the future prospects of children or reducing negative behaviors (Bugos, Perlstein, McCrae, Brophy, & Bedenbaugh, 2007; Mehr et al., 2013; Moreno et al., 2011; Schäfer, Smukalla, & Oelker, 2014). It has been shown that children aged seven to twelve years who attended a 24-week music programme have shown a reduction in physical and verbal aggression as a result of improving their ability to perceive emotions (Kim & Kim, 2018). Similarly, Faulkner, Wood, Ivery, and Donovan (2012) also indicated that a ten-week drumming intervention for thirty 12-year-old boys was associated with reduced antisocial behavior, improved self-esteem, improved attendance at school, and increased cooperative behavior in the boys after a drumming intervention. The interventions, however, have not been found to have any positive psychosocial effects associated with them in other studies (Rickard et al., 2013; Schellenberg, 2004). In the past few years, there has been a growing body of evidence which confirms the positive effect of musical activities on both the hedonic (pleasure) and eudaemonic (meaning) facets of wellbeing (Lamont, 2012; Zuo, Wang, Wang, & Shi, 2017). Considering these factors, an evaluation of a wide range of educational music interventions is being conducted in the present study with a view to describing relevant contextual factors and providing implications for future research directions. The evaluating of educational music interventions for student populations has not yet been subjected to an integrative review, as far as we are aware.

METHODOLOGY

Based on the findings of previous research, the purpose of this current paper is to examine the effect of educational music interventions on the student population. In order to find relevant articles, a systematic search was conducted on PubMed and Google Scholar databases in order to identify relevant articles. A variety of search terms were used in the search: music, music education, music intervention, and music intervention among students.

RESULTS AND DISCUSSION

Table 1: Empirical studies on educational music interventions for student population

References	Objective	Method/ sample	Results
Tabuena (2021).	Using the pre-test and post-test design of research-based music classroom assessment techniques, the purpose of the study was to explore the effects of research-based music classroom assessment techniques on the students' performance in flute recorder education for one group.	A quasi-experimental design was used in this study. The study was conducted with a purposive sampling of 30 students from a junior high school in eighth grade.	According to the results of the pre-test, the students performed poorly on the task. Thus, there was a slight improvement in the final test as a result of the increase in the post-test after its implementation, with a mean score of 23.00 and a standard deviation of 2.83 as a result. It has been shown that the use of research-based music classroom assessment techniques as an academic intervention showed positive implications on the students' music learning and performance in flute recorder education.
Holmes and Hallam (2017).	The study aimed to investigate the possibility	Quasi-experimental design	According to the findings of this study,

	of active music-making for improving the achievement of pupils in spatial temporal reasoning by enhancing their musical skills. Furthermore, the aim of this study was to explore whether learning music might be able to enhance pupils' mathematics achievement, as well as whether spatial-temporal reasoning plays a role in this process as well.		music instruction plays a significant role in the development of spatial and temporal skills in the children.
Liddiard and Rose, (2021)	A novel six-week intervention involving active music-making and music listening (via a weekly music club) was used in this study to investigate the impact of the intervention on the wellbeing of children living in a low socio-economic area of the United Kingdom. Children (aged seven-nine years old) were then taught how to deal with core emotions and be supported in their wellbeing.	Experimental design.	According to analyses of parent reports, the level of perceived belonging for their children increased significantly over time, and a positive association between an increased level of PMMA and a sense of belonging from the children suggests that the intervention was partially successful.
Stapp and Hall (2020).	The study was designed to examine a novel approach to decreasing transition times and increasing engagement during transitions by using music and movement as interventions to increase engagement during the transition process..	Experimental design	It was found that when music and movement interventions were used in phase four, transitions took the least amount of time when the intervention was applied. Furthermore, engagement increased after both morning and afternoon transitions, and across all four phases of the study, there was a positive trend in body language and focus that emerged throughout all four phases of the study.

Yuen, (2022)	The study was undertaken in order to assess the effects of music-based intervention on English proficiency among primary school pupils. The material used in the study was improvised teaching materials derived from the CEFR Year 3 syllabus and participants were assessed in terms of how engaged they were during the music-based intervention.	Experimental design	It has been found in the results of the study that there were significant differences between the quasi-experimental groups following music-based interventions with improvised materials following the implementation of the intervention. A music-based intervention which uses improvised materials showed improved results not only in terms of content and vocabulary, but also in terms of their speaking skills, especially their pronunciations and fluencies, in students who participated in the music-based intervention. Additionally, it was demonstrated that the inclusion of a music-based intervention and improvised materials in English class is likely to have motivated the pupils to participate actively in the class discussions as a result of the music-based intervention.
Nwokenna et al.,(2019)	The study was conducted in order to determine the effectiveness of a music intervention on perceived stress among English education students. .	Experimental design	The perception of stress in the English education group in the music intervention group was significantly different from the perception of stress in the waitlisted group. As a result of the music intervention, students in English education demonstrated significant reductions in their perceived stress scores compared to those in the waitlisted group at

			2, 4 and 12 weeks posttests. In contrast, waitlisted students revealed no significant reductions in their perceived stress scores at 2, 4 and 8 weeks posttests.
Issaka and Hopkins(2017).	The purpose of the study was to improve engagement with education by implementing a music-based intervention that was based on customised music technology and specialist music teachers at an Australian paediatric hospital in order to improve engagement with education.	qualitative ethnographic research method	Based on results from the study, it was found that the integration of music technology and specialist pedagogy enabled students to become engaged and enjoy making music as well as to learn more effectively.
Loraine and O'Neal (2014).	The aim of the study was to investigate the effect of a music intervention programme on the self-esteem of a selected group of students in order to determine how this might affect them.	A multimethod approach was utilized in this study, in that students were observed and interviewed during the intervention programme, as well as completing pre- and post-tests as part of the evaluation process.	It was found that both students and teachers felt that their academic experiences were enhanced by the music experience, confirming the findings from the study.
Said and Abramides (2020)	An investigation was conducted to examine the effect of music education on the repertoire of school skills in both children who were provided with music education and those who were not.	Experimental design	In the study, statistically significant differences were found between the two groups indicating that the children exposed to music education showed improved academic competence and performance in school.
Bouloukou et al., (2021)	In the study, the purpose was to investigate the effectiveness of a rhythm-perception enhancement interventional music training program within the curriculum of the music course in Greece, in order to enhance	Experimental design	There was a significant improvement in students' performance in areas such as word recognition, grammar spelling, visual sequences, and rhythm reproduction after students participated in

	rhythm perception within the curriculum of the music courses.		the interventional music-training program.

Throughout the current study, the results of previous studies (see Table 1) have been taken into consideration so that an assessment of the impact of educational music interventions can be made such as those conducted by Jaschke et al. (2013), Cogo-Moreira et al. (2012), Besson et al. (2011), Maloy and Peterson (2014), Miendlarzewska and Trost (2014). According to Jaschke et al. (2013), it was found that there were mixed evidences of far transfer effects between music education and other cognitive capabilities. According to Cogo-Moreira et al. (2012), the aim of their study was to examine RCTs that had been conducted in order to investigate whether music education can improve the reading skills of children and adolescents who have dyslexia. However, they were unable to locate such studies. During a meta-analysis conducted by Maloy and Peterson (2014), it was concluded that music was able to have a minimal effect on improving the performance levels of children and adolescents with ADHD when used as an intervention. There is mounting evidence that the benefits of musical training to children's cognitive development during childhood and their brain's structure and function throughout their lives have been established by Miendlarzewska and Trost (2014). There was an evaluation of transfer of music skills to speech domains by Besson et al. (2011), in which the researchers pointed out that musical expertise can be transferred successfully to speech processing through training. There were mixed results to be found in this review and the scope of the review was limited and taking this into account when interpreting the results is essential. There are numerous reviews that focus on particular skills (Cogo-Moreira et al., 2012), developmental domains (Miendlarzewska and Trost, 2014), specific designs and age groups (Cogo-Moreira et al., 2012; Jaschke et al., 2013), or a specific target group (Maloy and Peterson, 2014).

According to most of the studies reviewed, quasi experimental designs (Tabuena et al., 2021; Holmes and Hallam, 2017; Liddiard and Rose, 2021; Stapp and Hall, 2020; Yuen, 2022; Nwokenna et al., 2019; Said and Abramides, 2020; Bouloukou et al., 2021), as well as qualitative ethnographic research methods (Issaka and Hopkins, 2017) were used in the majority of the studies reviewed. As a result of the review articles, there has been a wide variety of approaches to music interventions and a considerable amount of heterogeneity within these interventions. An intervention based on music, in general, consists of either structured musical instruction/activities i.e., music notation, rhythm training, compositional training, improvisational training, instruments classes, or private instruction for music instruments, or a combination of these. In the studies reviewed, singing, dancing, exercise, and reading were among the types of music intervention activities used (Nwokenna et al., 2019; Yuen, 2022; Loraine and O'Neal, 2014). A music concept memory exercise, a schematic processing practice test for instrumental concepts, as well as a pitch memory test for five-letter names are interventions used in the flute recorder education program (Tabuena, 2021). As a result, the interventions are student-centered interventions. The interventions were conducted in small groups of participants. A key component of all the studies that have been examined is information about the person who performs or delivers the music intervention. Music teachers who are professionally trained were employed in most of the studies. In this particular case, this intervention is being implemented with the assistance of a teacher. Apparently, the authors of the study did not conduct their research in an outside environment, but in an environment where music interventions are conducted on a regular basis, such as a school or classroom environment.

Implications and Suggestions for Further Research

Studies which have been conducted in regard to educational music interventions vary in their focus on the student population. As the intended outcomes and a measurement tool for the interventions varied across the studies, and because these tools were often designed or adapted for the particular intervention, the efficacy of the interventions might have been compromised as a result. To ensure that the findings of future research are valid, it may be necessary to develop, pilot and validate tools for collecting data, which are fit for purpose when conducting educational music interventions for different numbers of students, as a means of improving the validity of future research findings. For the study to be more reliable and increase the claims of efficacy, extended studies which may include a baseline period or a control environment would be of great benefit. Furthermore, high-quality and robust research into educational music intervention could lead to better understanding of how it can be used, and maybe more importantly, of the psychological effects and the personal preferences of the student population when

it comes to music. Music experiences that are tailored to an individual's preferences and interests are useful for creating engaging activities and leisure time opportunities for student populations and in this way, the quality of life for those students will be enhanced. In order to enhance the quality of life of the student population, policies and programs can be developed that provide each student with musical experiences that match their preferences and choices, thereby creating engaging activities and leisure time.

CONCLUSION

Based on the different perspectives of different researchers on educational music intervention in the student population, different conceptual and practical factors were identified. According to findings, educational music intervention can contribute to both the improvement of a student's academic performance and competence. Moreover, an educational music intervention as part of a comprehensive academic program can significantly improve the learning skills and the academic experience of children with dyslexia.

REFERENCES

1. Arnaud, C., Perlovsky, L., Bonniot-Cabanac, M.-C., & Cabanac, M. (2013). Music and academic performance. Behavioural Brain Research, 256, 257-260. https://doi.org/10.1016/j.bbr.2013.08.023.
2. Besson, M., Chobert, J., & Marie, C. (2011). Transfer of training between music and speech: common processing, attention, and memory. Front. Psychol. 2:94. 10.3389/fpsyg.2011.00094
3. Bidelman, G. M., Hutka, S., & Moreno, S. (2013). Tone language speakers and musicians share enhanced perceptual and cognitive abilities for musical pitch: Evidence for bidirectionality between the domains of language and music. PloS one, 8(4), e60676. Available at: https://doi.org/10.1371/journal.pone.0060676.
4. Bouloukou, F. ., Marin-Diaz, V. ., & Jimenez-Fanjul, N. . . (2021). Effects of an interventional music program on learning skills of primary-school students with Dyslexia. International Journal of Education and Practice, 9(3), 456–467. https://doi.org/10.18488/journal.61.2021.93.456.467
5. Bugos, J. A., Perlstein, W. M., McCrae, C. S., Brophy, T. S., & Bedenbaugh, P. H. (2007). Individualized piano instruction enhances executive functioning and working memory in older adults. Aging & Mental Health, 11, 464-471.
6. Clift, S. M., & Hancox, G. (2001). The perceived benefits of singing: Findings from preliminary surveys of a university college choral society. The Journal of the Royal Society for the Promotion of Health, 121, 248-256.
7. Cogo-Moreira, H., Andriolo, R. B., Yazigi, L., Ploubidis, G. B., Brandão de Ávila, C. R., & Mari J. J. (2012). Music education for improving reading skills in children and adolescents with dyslexia. Cochrane Database Syst. Rev. 15:CD009133 10.1002/14651858.CD009133.pub2
8. Corrigall, K. A., Schellenberg, E. G., & Misura, N. M. (2013). Music training, cognition, and personality. Frontiers in Psychology, 4, 222. https://doi.org/10.3389/fpsyg.2013.00222
9. Crnčec, R., Wilson, S. J., & Prior, M. (2006). The cognitive and academic benefits of music to children: Facts and fiction. Educational Psychology, 26(4), 579-594. https://doi.org/10.1080/01443410500342542.
10. Faulkner, S., Wood, L., Ivery, P., & Donovan, R. (2012). It is not just music and rhythm... evaluation of a drumming based intervention to improve the social wellbeing of alienated youth. Children Australia, 37, 31-39.
11. Gooding, L. F. (2011). The effect of a music therapy social skills training program on improving social competence in children and adolescents with social skills deficits. Journal of Music Therapy, 48(4), 440-462. https://doi.org/10.1093/jmt/48.4.440.
12. Hallam, S. (2010).The power of music: Its impact on the intellectual, social and personal development of children and young people. Int. J. Music Education, 28:269–289. doi: 10.1177/0255761410370658.
13. Hallam, S. (2015).The power of music: A research synthesis on the impact of actively making music on the intellectual, social and personal development of children and young people. 9781905351312Voices World Forum Music Therapy, 16. doi: 10.15845/voices.v16i2.884.
14. Holmes, S and Hallam, S.(2017). The impact of participation in music on learning mathematics. London Review of Education, 15(3). DOI: https://doi.org/10.18546/LRE.15.3.07.
15. Issakaa, A. and Hopkins, L. (2017). Engagement with education: Music education in a paediatric hospital. International Journal of Educational Research, 83, 142-153. https://doi.org/10.1016/j.ijer.2017.02.012
16. Jaschke, A. C., Eggermont, L. H., Honing, H., Scherder, E. J. (2013). Music education and its effect on intellectual abilities in children: A systematic review. Rev. Neurosci. 24, 665–675. 10.1515/revneuro-2013-0023
17. Kaviani, H., Mirbaha, H., Pournaseh, M., & Sagan, O. (2014). Can music lessons increase the performance of preschool children in IQ tests? Cognitive Processing, 15(1), 77– 84. https://doi.org/10.1007/s10339-013-0574-0.
18. Kim, H., & Kim, H. (2018). Effect of a musical instrument performance program on emotional intelligence, anxiety, and aggression in Korean elementary school children. Psychology of Music, 46, 440-453. https://doi.org/10.1177/0305735617729028
19. Lamont, A., Hargreaves, D. J., Marshall, N. A., & Tarrant, M. (2003). Young people's music in and out of school. British Journal of Music Education, 20, 229-241. https://doi.org/10.1017/S0265051703005412
20. Liddiard, E. and Rose, D. (2021).A pilot study of an intervention for children using music listening and music making to explore core emotions and support wellbeing. Open Journal of Social Sciences, 9, 329-364. doi: 10.4236/jss.2021.93022.
21. Loraine, D. C and O'Neal, M. (2014). The influence of a music intervention programme on self-esteem and enhancing students' experiences in an urban school within an under-resourced community. Caribbean Curriculum, 22, 67–83.
22. Maloy, M., & Peterson, R. (2014). A meta-analysis of the effectiveness of music interventions for children and adolescents with attention-deficit/hyperactivity disorder. Music Mind Brain, 24, 328–339. 10.1037/pmu0000083

23. Maury, S., & Rickard, N. (2016). Wellbeing in the classroom: How an evolutionary perspective on human musicality can inform music education. Australian Journal of Music Education, 50, 3-15.
24. Mehr, S. A., Schachner, A., Katz, R. C., & Spelke, E. S. (2013). Two randomized trials provide no consistent evidence for nonmusical cognitive benefits of brief preschool music enrichment. PLoS ONE, 8, e82007. https://doi.org/10.1371/journal.pone.0082007
25. Miendlarzewska, E. A., & Trost, W. J. (2014). How musical training affects cognitive development: Rhythm, reward and other modulating variables. Front. Neurosci. 7:279. 10.3389/fnins.2013.00279
26. Moreno, S., Bialystok, E., Barac, R., Schellenberg, E. G., Cepeda, N. J., & Chau, T. (2011). Short-term music training enhances verbal intelligence and executive function. Psychological Science, 22, 1425-1433.https://doi.org/10.1177/0956797611416999
27. Nwokenna, E.N., Nwosu, N., Igbokwe, U.L., Victor-Aigbodion, V., Nnamani, O & Nwefuru, B.C.(2019). Music intervention for perceived stress among English education students. Global Journal of Health Science, 11(8). ISSN 1916-9736 E-ISSN 1916-9744
28. Rickard, N. S., Appelman, P., James, R., Murphy, F., Gill, A., & Bambrick, C. (2013). Orchestrating life skills: The effect of increased school-based music classes on children's social competence and self-esteem. International Journal of Music Education, 31, 292-309. https://doi.org/10.1177/0255761411434824
29. Rickard, N. S., Bambrick, C. J., & Gill, A. (2012). Absence of widespread psychosocial and cognitive effects of school based music instruction in 10 -13-Year-Old Students. International Journal of Music Education, 30, 57-78. https://doi.org/10.1177/0255761411431399
30. Ritblatt, S., Longstreth, S., Hokoda, A., Cannon, B.-N., & Weston, J. (2013). Can music enhance school-readiness socioemotional skills? Journal of Research in Childhood Education, 27(3), 257-266. https://doi.org/10.1080/02568543.2013.796333.
31. Root-Bernstein, R. S. (2001). Music, creativity and scientific thinking. Leonardo, 34(1), 63–68.
32. Said, P. M. and Abramides, D.V.(2020).Effect of music education on the promotion of school performance in children. CoDAS, 32(1):e20180144 DOI: 10.1590/2317-1782/20192018144
33. Sammler, D. & Elmer, S. (2020). Advances in the neurocognition of music and language. Brain Sciences, 10(8), 509. https://doi.org/10.3390/brainsci10080509.
34. Schäfer, T., Smukalla, M., & Oelker, S. (2014). How music changes our lives: A qualitative study of the long-term effects of intense musical experiences. Psychology of Music, 42, 525-544. https://doi.org/10.1177/0305735613482024
35. Schellenberg, E. G. (2004). Music lessons enhance IQ. Psychological Science, 15, 511-514. https://doi.org/10.1111/j.0956-7976.2004.00711.x
36. Stapp, A and Hall, B. (2020).Examining the impact of music and movement interventions on transitions and behavioral engagement in a first-grade classroom. Journal of Education & Social Policy, 7(1). doi:10.30845/jesp.v7n1p14
37. Tabuena, C.A. (2021). The effect of research-based music classroom assessment techniques on the students' performance in flute recorder education. Universal Journal of Educational Research, 9(1), 145 - 153. DOI:10.13189/ujer.2021.090116.
38. Yuen, L. (2022) Effects of music-based intervention on english proficiency among primary school pupils in Selangor. Open Journal of Social Sciences, 10, 99-110. doi: 10.4236/jss.2022.102006.
39. Zuo, S., Wang, S., Wang, F., & Shi, X. (2017). The behavioural paths to wellbeing: An exploratory study to distinguish between hedonic and eudaimonic wellbeing from an activity perspective. Journal of Pacific Rim Psychology, 11.https://doi.org/10.1017/prp.2017.1