

The benefits of integrating music into teaching mathematics

As students journey through their academic endeavours, encountering abstract mathematical concepts often triggers anxiety and a waning interest (Tall & Vinner, 1981). Traditional teaching methods, isolating mathematics and lacking relevance, prove ineffective (An & Tillman, 2015). Dewey and Jackson (1990) advocate for engagement, connecting with children's instincts and interests, emphasizing social and cooperative learning contexts. The amalgamation of mathematics and music, initially unconventional, yields cognitive, emotional, and developmental benefits (An & Capraro, 2011; An et al., 2013).

Recognizing the importance of motivation, Trinick et al. (2016) underscore the necessity of connecting mathematics and music. This integration captures students' attention, particularly crucial in the dynamic educational landscape. As educators seek innovative methods, the integration of music into mathematics gains traction, injecting enjoyment into learning (An et al., 2013). Grossman's (2023) research supports this, revealing that music boosts motivation and positively influences overall attitudes and attending behavior, enriching the educational experience.

The dynamic interplay between music and mathematics extends to nurturing creativity, offering a unique approach to explore abstract ideas (An and Tillman, 2015). By linking mathematical concepts to musical expressions, students approach the subject with innovation, fostering a deeper understanding.

The integration of music into mathematics lessons yields tangible benefits, including improved problem-solving skills and real-world application (Moreno et al., 2011). Students exhibit advancements in visual problem-solving abilities, navigating mathematical challenges with increased adeptness. The ability to generate real-world word problems through mathematical reasoning sees substantial development in interventions incorporating music.

Recent studies (Thompson et al., 2013; Grünke et al., 2013) suggest that the integration of music into mathematics positively influences memory and retention. Music engages multiple brain areas, acting as a mnemonic device that improves recall of mathematical concepts.

Graziano, Peterson, and Shaw's (1999) research indicates that the integration of music into mathematics education extends its influence to spatial-temporal skills. The synergistic relationship between music and mathematics contributes to the improvement of problem-solving skills, as demonstrated in a study by An et al. (2014). Teachers integrating music provide an alternative and enjoyable model that enhances executive functions, including problem-solving, transferable to mathematical scenarios.



On the linguistic front, the blend of music and mathematics creates a distinctive platform for the development of mathematical language (Graziano, Peterson, & Shaw, 1999). Through lyrics, rhythm, and notation, students forge connections between mathematical terms and auditory experiences, facilitating a more profound understanding of language and its application. The integration of music and mathematics encourages students to explore broader connections between different subjects, fostering a more comprehensive perspective on learning.

In this harmonious fusion of music and mathematics, educators unveil a potent tool for enriching the educational journey. Beyond the realms of notes and numbers, this approach cultivates a holistic understanding, fostering creativity, critical thinking, and a lasting appreciation for the beauty of learning. As schools continue their quest for innovative teaching methods, the integration of music into mathematics emerges as a symphony of educational enrichment.

References:

Bsharat, T. R. K., Barahmeh, M. Y., & Turkman, J. M. H. (2021). The influence of music and educational songs on EFL students' achievement from their teachers' perspective in Jenin Region. *African Educational Research Journal*, 9(2), 728–738.

<https://doi.org/10.30918/AERJ.93.21.106>

Lesser, L. M., Pearl, D. K., Weber, J. J., Dousa, D. M., Carey, R. P., & Haddad, S. A. (2019). Developing interactive educational songs for introductory statistics. *Journal of Statistics Education*, 27(3), 238–252. <https://doi.org/10.1080/10691898.2019.1677533>

Lovemore, T. S., Robertson, S.-A., & Graven, M. (2021). Enriching the teaching of fractions through integrating mathematics and music. *South African Journal of Childhood Education*, 11(1), 1-14. <https://doi.org/10.4102/sajce.v11i1.899>

Scieszka, J. (1995). *Math curse*. Penguin Young Readers Group.

Sulzer, D. (2021). *Music, math, and mind: The physics and neuroscience of music*. Columbia University Press. <https://www.jstor.org/stable/10.7312/sulz19378>