

# Combining math with music leads to higher test scores, according to review of 50 years of research

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Children do better at math when music is a key part of their lessons, an analysis of almost 50 years of research on the topic has revealed.

It is thought that music can make math more enjoyable, keep students engaged and help many ease fear or anxiety they have about math. Motivation may be increased and pupils may appreciate math more, the peer-reviewed article in *Educational Studies* details.

Techniques for integrating music into math lessons range from clapping to pieces with different rhythms when learning numbers and fractions, to using math to design [musical instruments](#).

Previous research has shown that children who are better at music also do better at math. But whether teaching music to youngsters actually improves their math has been less clear.

To find out more, Turkish researcher Dr. Ayça Akın, from the Department of Software Engineering, Antalya Belek University, searched academic databases for research on the topic published between 1975 and 2022.

She then combined the results of 55 studies from around the world, involving almost 78,000 [young people](#) from kindergarten pupils to [university students](#), to come up with an answer.

Three types of musical intervention were included the [meta-analysis](#): standardized music interventions (typical music lessons, in which children sing and listen to, and compose, music), instrumental musical interventions (lessons in which children learn how to play instruments, either individually or as part of a band) and music-math integrated interventions, in which music is integrated into math lessons.

Students took math tests before and after taking part in the intervention and the change in their scores was compared with that of youngsters who didn't take part in an intervention.

The use of music, whether in separate lessons or as part of math classes, was associated with greater improvement in math over time.

The integrated lessons had the biggest effect, with around 73% of students who had integrated lessons doing significantly better than youngsters who didn't have any type of musical intervention.

Some 69% of students who learned how to play instruments and 58% of students who had normal music lessons improved more than pupils with no musical [intervention](#).

The results also indicate that music helps more with learning arithmetic than other types of math and has a bigger impact on younger pupils and those learning more basic mathematical concepts.

Dr. Akin, who carried out the research while at Turkey's National Ministry of Education and Antalya Belek University, points out that math and music have much in common, such as the use of symbols symmetry. Both subjects also require abstract thought and quantitative reasoning.

Arithmetic may lend itself particularly well to being taught through music because core concepts, such as fractions and ratios, are also fundamental to music. For example, musical notes of different lengths can be represented as fractions and added together to create several bars of music.

Integrated lessons may be especially effective because they allow pupils to build connections between the math and music and provide extra opportunities to explore, interpret and understand math.

Plus, if they are more enjoyable than traditional math lessons, any anxiety students feel about math may be eased.

Limitations of the analysis include the relatively small number of studies available for inclusion. This meant it wasn't possible to look at the effect of factors such as gender, socio-economic status and length of musical instruction on the results.

Dr. Akin, who is now based at Antalya Belek University, concludes that while musical instruction overall has a small to moderate effect on achievement in [math](#), integrated lessons have a large impact.

She adds, "Encouraging mathematics and [music](#) teachers to plan lessons together could help ease students' anxiety about mathematics, while also boosting achievement."

**More information:** Let me make mathematics and music together: A meta-analysis of the causal role of music interventions on mathematics achievement, *Educational Studies* (2023). DOI: [10.1080/03055698.2023.2216826](https://doi.org/10.1080/03055698.2023.2216826) , [www.tandfonline.com/doi/full/10.1080/03055698.2023.2216826](http://www.tandfonline.com/doi/full/10.1080/03055698.2023.2216826)

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