JULY 23, 2025

BREAKTHROUGH IN READING EDUCATION & LITERACY DEVELOPMENT

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A significant breakthrough has been made in reading education and literacy development. An underlying barrier to reading has been identified[1]. This barrier, long overlooked and never systematically addressed before now, may help explain the stubbornly low rates of reading proficiency amongst U.S. high school seniors (37% in 2019)[2, 3] and amongst U.S. adults (more than 50% of U.S. adults are said to read at below a 6th grade level)[4].

This breakthrough comes from neuroscience research. With better understanding of differences in the way students' brains function, we can better understand the way such differences impact the process of learning to read[1, 5-9]. Improved understanding has led to an effective evidence-based intervention[10-16], which is the subject of this Information Letter.

Much has been written about the science of reading and the importance of teaching students about phonics, the sounds linked to specific letters and letter combinations. Teaching phonics makes sense. Students who learn phonics can 'sound out' words for themselves.

1. Overlooked Barrier to Reading. However, an overlooked barrier to reading has been found that can make learning to read difficult for many students, whether they learn about phonics or not. This barrier involves how precisely a student's brain captures sound.

Neuroscience researchers have found that some students have brains that capture sound very precisely. By 3rd and 4th grade, 100% of students with precise brains learned to read without much trouble[1]. These students were also reading at grade-level[1].

Brain researchers have also found that some students have less precise brains[1]. For such students, incoming sounds can be muddled. (While any struggling student should get their hearing checked - the issue described here is not a hearing issue.) The *brains* of some students may not *accurately* capture as much as half, or more, of specific incoming sounds. Because of inaccurate, imprecise brains, these students miss important cues that students with precise brains use to make specific sound-to-meaning connections, upon which learning to read is based. By 3rd and 4th grade, students with less precise brains continue to struggle with reading; 100% were labeled 'learning disabled'[1].

2. Music-Based Mentoring – Evidence-Based Intervention 'Tunes Up' Students' Brains, Improves Literacy. In randomized controlled research conducted in Los Angeles with 2nd graders from low-income families, a team of neuroscientists from Northwestern University found that students who engaged in music-based mentoring developed significantly more precise brains[10-15]. The design of the research enabled the research team to state – with a high degree of confidence – that participating in music-based mentoring for multiple years *caused* students' brains to capture sound much more precisely. Students who engaged in music-based mentoring for two years also met their 3rd grade-level reading target, an outcome not achieved by controls[11, 12].

Music-based mentoring was subsequently implemented as an Expanded Learning Opportunity Program after-school hours at 5 high-poverty elementary schools in Long Beach, CA. Reading and math scores shot up for participating students across all five campuses, but no such improvements were seen in non-participating peers[16]. The greatest gains were seen in students who had the lowest prior levels of achievement (+33 points, math; +39 points, English Language Arts)[16]. No improvements were seen in low-performing students who did not participate in music-based mentoring[16]. School administrators also reported that learning to play increasingly challenging music in ensembles with other students improved students' mental health and social and emotional wellbeing[17].

Music-based mentoring differs from traditional music instruction in important ways. It was specifically designed to nurture children who attend high poverty schools, but it can benefit students from any background.

Music-based mentoring is immersive (4 or more hours per week), delivered year-round throughout childhood (from grades 2 – 12), is ensemble-based, and is relentlessly encouraging[16, 18]. It is led by skilled musicians who are specialists on their instruments. Students are loaned instruments they can take home with them for daily practice. Teaching artists mentor their students as much as they provide them with music instruction. They understand that students who attend high poverty schools may experience multiple challenges in their daily lives that can interfere with their education, such as poverty, food insecurity, crowded or loud living conditions, occasional or chronic homelessness, unsafe dwellings, toxic exposures, or community violence[19-26]. Parents may work multiple jobs, which make them less available to their children. A family member may struggle with chronic illness, depression, addiction, or other mental health issues.

Although research links poverty and the conditions that accompany poverty to disparities (unequal differences) in children's brain development and function[5, 6, 8, 9], students with less precise brains can come from any background. Genetics may play a part.

Students who attend high-poverty schools and participate in music-based mentoring speak of their music ensemble as their "second family", their "sanctuary" or their "refuge." Many have described their music program as "a place where I can forget about all the problems in my life and just focus on music." A culture of mutual acceptance and support develops. Students learn to collaborate around shared goals, and to be accountable to one another. They learn to listen intently, to focus, and to practice, practice, practice until – little by little – the pieces they are learning come together and begin to sound like real music. As students advance, they are also trained to help mentor their less advanced peers[16].

The process of learning to play increasingly challenging music with one another does more than teach students how to play and perform music. The discipline and persistence that students develop help them succeed in their other subjects in school, and throughout their lives.

Students are typically enrolled in after school music-based mentoring programs early in elementary school, in 2nd or 3rd grade, and continue to participate until they graduate from high school. Children are advantaged over adults when it comes to learning languages.

Music is known as a universal language, and young children learn to make music more easily than do older teens or adults. In fact, children learn any language they are exposed to if they practice using it consistently.

Consistent music practice enables the brains of music students to capture sound more precisely over time[7, 10-15]. This improves their ability to make accurate sound-to-meaning connections, which is the basis for learning to read. Music students also practice reading and playing music notation. This requires them to decode music symbols along lines, from left to right, in ensembles with other students. Play it too slowly, or with the wrong rhythm, and it doesn't sound like music. These (embodied) activities combine to improve the ability of music students to read written language. Improved reading, in turn, leads to better academic performance, greater feelings of achievement and success – and opens the door to greater opportunities in higher education and employment throughout life[16].

3. Resources for Implementing a Music-Based Mentoring Program. The best (and simplest) way for a school or district to establish a successful music-based mentoring program after school hours is to partner with a local non-profit music program that has a good track record. The local music program staff have the expertise to implement (and grow) music-based mentoring on one or more school campuses after school hours. The music program will be accustomed to the risk-management policies required by school districts, such as privacy policies with respect to student data, fingerprinting and conducting background checks of staff who work with children. Non-profit music programs typically maintain such risk-management policies. The D'Addario Foundation has helped support hundreds of non-profit music organizations that provide such services for more than 40 years. Visit our interactive map to find programs near you.

School districts and charter systems are sometimes pressured to spread their resources thin, in the interest of equity. Watering down a music program to save funds or to reach more students with a less intensive program will not be likely to deliver the documented brain-changing benefits that students derive from participating in a more intensive music-based mentoring program, as described above. Experienced non-profit music programs can be counted on to maintain the essential integrity of music-based mentoring programs.

The D'Addario Foundation has published: Music-Based Mentoring: A Handbook for Implementation[18] to guide schools and districts through the implementation of (evidence-based) music-based mentoring programs. The handbook is free of charge, and is licensed under Creative Commons to ensure schools and districts may share and adapt the content to meet their own needs.

The D'Addario Foundation is leading additional implementation research with students on six high-poverty campuses through partnerships with non-profit music programs and public schools across three states. Data is being collected and additional evaluations will be forthcoming. However, the evidence to date is so uniformly positive, and the impact on students' lives so great, that we felt this evidence should be brought to the attention of our colleagues in education without delay.

4. References

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