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This edition of the newsletter continues our series on specific arts disciplines, this time with a focus on music education. In the articles that follow, we explore how music can enliven lessons, help students stay engaged, and foster deeper learning. Our feature article by Dee Hanson, a professor of music education at the University of Hartford, describes some of the latest research about the benefits of music and how it can energize learning for all students. The spotlight articles show what music education looks like in action. In our AEMDD spotlight, you can read about Fresh Ed, a 2014 grantee that uses hip-hop music to make social studies and ELA classes more exciting and relevant for middle school students in New York City. Our PDAE spotlight highlights the work of Project Etude, a 2014 grantee pioneering innovative teaching methods and technology to improve music education at schools serving low-income neighborhoods in Fort Worth, Texas. The Arts in the News section includes links to articles from across the country relevant to all arts education disciplines. Be sure to also check out the Upcoming Events section for information on conferences and professional development opportunities.

**FEATURE ARTICLE**

**Energizing Learning through Music**

Middle school students who are divided into teams write and compose hip-hop songs that reflect their understanding of events in history and social studies. This Fresh Ed classroom buzzes with enthusiasm as one student shares ideas with others. As a group they join the words and music to express their interpretation of the important learning goals of the lesson unit. For these students, an active learning environment such as this brings to life what some might view as old and irrelevant subject matter.

This short scenario represents many levels of learning: personalizing cultural understanding; learning important future workplace skills such as collaboration, communication, problem solving, and creativity; furthering growth in musical knowledge and skills; and developing critical language arts skills. An uninformed observer might wonder how all of this could happen when the students are engaged in a noisy, creative activity. The answer revolves around how we learn and what motivates us to learn.
Brain Research

Nearly every class I teach or professional development I facilitate begins with an overview of current brain research. Understanding how we learn informs how we teach. Neuroscientists, neuropsychologists, and educators have teamed up in an insatiable drive to discover what the mechanics of our brain have to do with learning processes. This research is immensely helpful to us as we discover how neural connections are made and how learning affects us emotionally and psychologically. Music, in particular, is a hotspot of research activity all over the world. Involvement in music learning is proving to be a developmental elixir for the brain on multiple levels from birth to old age.

In relation to music learning, we know that participation in music activates critical parts of the brain. The primary lobes of the brain’s cerebral cortex that are highly involved with learning include the Occipital Lobe for visual processing; the Temporal Lobe for auditory processing; the Parietal Lobe for spatial awareness and sensory processing; and the Frontal Lobe for speech and motor functions, reasoning, problem solving, and controlling behavior.

Music activates many parts of the brain.
All of the lobes and their cortices have specialized roles but are entirely interactive with the rest of the brain including memory and emotion centers. We know, for instance, that music can trigger specific memories, which often activate internal chemical reactions associated with various emotions including pleasure and satisfaction. Music that is common to a given culture provides a sense of stability and recognition that can be motivating in its familiarity.

**Music and language literacy**

Researchers from the Kraus Auditory Neuroscience Laboratory at Northwestern University over years of investigations have uncovered important effects of music in auditory processing of rhythms, pitch differences, and timbre or sound quality. Their lab and many others are investigating the parallels between music and language development. Technically, reading literacy is dependent on the development of language. To date they have found that speech and musical sounds mutually rely on what language arts teachers call “prosody.” Prosodic elements of speech—the frequencies, intensity, timber (quality), and durations (rhythms)—are necessary for relaying meaning as we speak or read aloud. These elements are at the heart of phonological awareness (or awareness and understanding of sound) which is a foundational element in reading. Combined with investigations of the mechanisms which underlie the relationships between linguistic and musical rhythm in songs, we can begin to understand why recalling factual information is easier when applied to song formats. Physiologically, humans rely on patterns—rhythmic, melodic, harmonic, and visual—to assist with memory.

It makes sense, then, that projects like *Fresh Ed* can be highly effective. The development of language is critical to successful reading skills. By applying specifically directed language to the rhythms and pitch of a song, students create learning patterns, they practice saying and speaking the targeted vocabulary, and they problem solve and think critically about assigning meaning to their song lyrics. These cognitive skills are significantly important and transferable and develop neuro-processing and growth through the entire brain.

Music teachers who are well trained in effective methodologies also strongly support language and reading development. In refining their musical pedagogy, *Project Etude* teachers learn time tested approaches for helping students to better discriminate and perform musical sounds. Each of the methodologies has phonological awareness at its
Internalizing sound or audiation, as described in Gordon’s Music Learning Theory, is a key factor in music performance. We must be able to internally understand and then perform melodic lines and rhythmic sequences. Eventually we apply those sounds to musical symbols; we decode the symbols into sounds. The reading process involves the same procedures. Musical development supports **early language literacy** development.

Again, researchers are uncovering strong relationships between these entities. We know that the majority of students who have reading disabilities are deficient in phonological skills. Children must be able to differentiate and replicate sounds (e.g., consonants such as b, p, and blends such as bl) and associate them with text symbols. Music teachers specialize in sound discrimination learning. Music itself is an auditory art with an infinite array of highly nuanced variations. Early on children learn the differences between high-low, fast-slow, and soft-loud sounds. Whether they sing or play instruments to practice these variations, the intent is the same.

As we develop these musical skills, we learn to match pitch, accurately perform complex rhythms, and blend our music making with others around us while at the same time paying attention to our own musical production. We decode musical symbols on multi-levels as we process and perform pitches, rhythms, meters, text, and affective markings such as dynamics and articulations, all at the same time. Though recently researchers found **specific locations** for language recognition and music recognition, the complexities for processing and performing written text and music are overlapping and transferable. Music
learning helps us develop **language and reading literacy skills**.

In the Arts Education Partnership publication, *Champions of Change*, p. 18, researchers found that students who were highly involved in the arts, including economically disadvantaged students, scored substantially and significantly higher in important attitudes and behaviors including academic performance in reading than students with little or no musical involvement. When researchers conducted a meta-analysis investigating the relationships between music education and reading/language skills, they found that music instruction is linked to improved **phonological skills**. As we consider the physiological structures of the brain, these findings are logical and provide noteworthy points of advocacy for the importance of strong music programs in our schools. However, the benefits of music don’t stop there. Let’s also take a look at why music can be so motivating and is also a strong training ground for 21st century skills.

**Why does music bring us together? Motivation and active learning classrooms**

The discovery of ancient bone flutes dating 35,000-40,000 years ago raises many questions. Why would early humans make musical instruments, whether for communication or pleasure, when simply surviving wild animals and their untamed environment should be their focus? This puzzling question posed by anthropologists, psychologists, historians, and others frames the discussion of why music is so motivating. Participating in music making, creating, or listening appears to be a natural, internally driven means of expression. Through it we communicate, transmit emotion, establish cultural norms and values, and entertain.

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Experiences with arts education provide a fertile ground for these types of activities. Using *Fresh Ed* as the example, creating music compositions is not only engaging, but it requires students to experience and develop 21st century workplace skills. Students must think analytically, and problem solve by thinking about how to apply the historical information to
a new circumstance. This cognitive experience represents synthesis and creativity, the highest levels of Bloom’s Taxonomy. Additionally, students must develop some sophisticated social and behavioral skills. They need to learn to collaborate and communicate with one another while respecting each other’s opinions and ideas, and then transform them into a song, what Scott Shuler describes as “real-world music making.”

The end goal for these types of experiences is for students to own their learning, to internalize the cognitive, social, and behavioral lessons so that they may learn to be productive citizens in and out of school. These are lofty goals, indeed. Rich arts education experiences teach critical skills that transcend memorizing and regurgitating facts. Indeed, music and arts education provides multi-faceted and engaging learning environments that develop literacies and future 21st century workplace skills.

*Connections to Arts and Literacy Standards*

The [National Core Arts Standards](https://www.coreartsstandards.org) (NCAS) and the [Common Core State Standards for English Language Arts](https://www.corestandards.org) (CCS ELA) share many common features. Both emphasize...
increasingly advanced cognitive skills; both have as their foundation process-based skills as ways to acquire the learning targets. Foundational skills for the ELA standards include four categories: phonological awareness (understanding and discriminating sounds), phonics and word recognition (the ability to decode words and sounds), print concepts (understanding the organization and basic feature of print), and fluency (reading with accuracy and fluency in order to comprehend purpose of context). The parallel processes in achieving music literacy are striking. The National Arts Standards include Enduring Understandings that help teachers frame the big ideas or concepts in music learning and the related standards. Here are some examples from the pre-K-8 Music Standards for 4th grade that demonstrate these parallel processes:

- **Artistic Process**: Perform
- **Process Component**: Analyze
- **Enduring Understanding**: Analyzing creator’s context and how they manipulate elements of music provides insight into their intent and informs performance.
- **Standard**: MU-Pr4.2.4a: Demonstrate understanding of the structure and the elements of music (such as rhythm, pitch, and form) for selected performance.
- **Standard**: MU-Pr4.2.4b: When analyzing selected music, read and perform rhythmic patterns and melodic phrases using iconic and standard notation.

To meet these standards, students must have the ability to discriminate the sounds of elements of music (phonological awareness). They must decode and perform music based on musical symbols (phonics and word recognition) and in doing so, understand the organization of musical symbols (print concepts). When students have mastered these skills, their ability to perform music becomes more automatic (fluency) and can transfer to other musical tasks.

You will read in the In Focus sidebar that what students do in the music classroom and how they think and interact with one another provides the foundation for curriculum, assessment, and teaching. These processes can be readily found in arts education programs. However, it is not just about playing, singing, or moving to music, it is also about students thinking about their music or arts making. This metacognitive approach is also suggested in the English Language Arts standards. Students are asked to integrate ideas, compare and contrast, analyze, distinguish, and demonstrate comprehension. The CCSS
ELA standards do not delineate how teachers should teach, but implied active learning techniques are a hallmark of today’s professional development, SLO creation, and teacher evaluations. Classrooms in all disciplines are changing to reflect authentic life situations. We have moved from the textbook to the world around us.

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**In Summary**

Through the centuries, music has remained pervasive in all cultures and societies. Today the vast amount of musical genres is dizzying, yet the presence of pitches, rhythms, harmonies, and affect continues to be present in each. With planning and proper execution, using music to teach academic subject matter is highly motivating and effective. It is the consummate active learner environment; one which places the students at the center of learning and the teacher as the facilitator of the learning. In this educational setting, teachers move seamlessly from direct instruction to modeling to inviting students to participate in a collaborative, interactive exchange of ideas and project creation. Students learn the material from multiple perspectives: learning specific facts or concepts, trying out or applying the facts or concepts, and then sharing those ideas with each other and building something new or representative of the learning goals. Most importantly, when music learning is advanced through strong pedagogical instruction, students become engaged and energized. Kudos to the outstanding AEMDD and PDAE projects spotlighted in this issue, and the others supported by AIE that are demonstrating the importance of music—for its own role in a well-rounded education and for the connections it shares with other core subjects.