

Research to support Music for Life

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Source Article: "Creative Health: The Arts for Health and Wellbeing."

All-Party Parliamentary Group on Arts, Health, and Wellbeing Inquiry Report

http://www.artshealthandwellbeing.org.uk/appg-inquiry/Publications/Creative_Health_Inquiry_Report_2017_-_Second_Edition.pdf

Summary:	<p>This study points out the importance of supported arts engagement across the social gradient. It shows evidence that music and the arts can have great benefits to mental health, social care, academic achievement, and cultural and community involvement, and asks why the arts can often be so little appreciated and not acted upon in society and in schools.</p> <p>In reference to music, it talks about the importance of receiving sustained musical practice over a period of time from a young age to develop the brain at developmentally appropriate times.</p> <p>The 'Big Noise' project in Scotland is discussed to point out the significant social benefits students from disadvantaged backgrounds can receive through professional and quality instrumental music programs that do not require auditions to enter.</p>
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"The [group] was formed in 2014. Our aim is to improve awareness of the benefits that the arts can bring to health and wellbeing, and to stimulate progress towards making these benefits a reality all across the country." - Foreward, page 4

Pertinent Quotes from the Article:

- "We firmly believe that the arts can be enlisted to assist in ... better access to the arts for people who are socially or economically disadvantaged." Forward, page 5.
- "The conundrum that we have found ourselves pondering is why, if there is so much evidence of the efficacy of the arts in health and social care, it is so little appreciated and acted upon." - page 5

6.3 - Early Childhood Development

- "For all children to have a fair chance to develop their talents, proportional investment needs to be made across the social gradient. ... Engagement with the arts can aid physical, cognitive, linguistic, social and emotional development." - page 86

- “There is considerable and compelling evidence that musical training sharpens the brain’s early encoding of sound leading to enhanced performance on a range of listening and aural processing skills.’ Transformations in the brain develop quickly, but music practice needs to be sustained over time for these effects to be retained. Once developed, neurological shifts lead to improved motor skills and speech perception, contributing to language development, literacy and spatial reasoning, bearing a lifelong impact. Formal music practice requires sustained attention and the encoding of musical passages into memory, while playing in an ensemble requires goal-directed, pro-social behaviour and performing to an audience heightens self-belief. People who have learnt to play a musical instrument score better on tests across subjects and display a high degree of conscientiousness, openness to new experiences and enhanced emotional intelligence. The case study in this section looks at an ambitious programme that encourages young children, particularly those from disadvantaged backgrounds, to learn to play a musical instrument. ... Children with additional needs are able to express themselves through music. The connection between music therapy and autism spectrum disorder has been explored since the 1970s.” - page 87

Systema Scotland: Big Noise

- “The Big Noise project, run by Sistema Scotland, works on the basis that ‘children from disadvantaged backgrounds can gain significant social benefits by playing in a symphony orchestra.’ ... Big Noise has been active since 2008, offering an immersive orchestral programme to pre-school and school-age children and young people.” - page 88
- “Big Noise pays explicit attention to the role that musical learning may have in tackling health inequalities. Neither an audition process nor a fee is necessary to participate, and efforts are made to involve children with complex needs in areas of low arts engagement. Excellence is pursued, with teaching provided by professional musicians and highly skilled and motivated participants being sought for public performances.” page 88
- “Longitudinal, mixed-method, controlled evaluation is planned over the life course of the children and young adults taking part in Big Noise. ... The first phase of evaluation ... was completed in March 2015. This demonstrated potential for improvements in health and wellbeing via seven pathways: engagement with learning (improved school attendance, confidence, diligence, linguistic and other skills); life skills (creativity, adaptability, problem-solving and decision-making skills, collaboration, cooperation and self-discipline); emotional wellbeing (gained from the enjoyment of playing music in a safe environment and a sense of belonging); social skills and networks (increasing cultural tolerance); respite and protection (from home stresses, alcohol, drugs and antisocial behaviour); musicianship; healthy behaviours (including diet and exercise). An analysis of tangible and intangible benefits showed a substantial net gain in social value realised within six years of the programme beginning and increasing over the lifetime of participants.” - page 88

- “[A] review compiled research showing a positive association between the development of socio-emotional skills and all the branches of the arts under investigation, while noting that low socio-economic level could delay or distort socio-emotional developments and act as a significant barrier to arts participation.” - page 89

6.4 Education

- “A 2017 update of the ImagineNation report ... noted that a quarter of children living in the UK were living in poverty and that cultural learning had a vital part to play in addressing the inequalities in educational attainment and health arising from this.” - page 90
- “A study in Australia found that ‘arts education not only has intrinsic value, but when implemented with a structured, innovative and long-term approach, it can also provide essential extrinsic benefits, such as improved school attendance, academic achievement across the curriculum as well as social and emotional wellbeing.’” - page 90
- “‘Students should be presented throughout their school years with a plethora of arts experiences, whether delighting or provoking or challenging, across the gamut of field trips to events, galleries, performances, critical appreciation talks, and soon, including arts residencies in schools, in order to make every school in Wales an arts-rich school in either achievement or ambition.’” - page 90
- “The arts and humanities are being cut back from primary school onwards. The introduction of the English Baccalaureate (EBacc) - which is awarded when grade C or higher is achieved across five subjects including English, maths, history or geography, the sciences and a language but no arts subjects - is being blamed for a decline in pupils choosing music in secondary schools.” - page 91
- “A team at Bath Spa University has conducted an evaluation of Birmingham Youth Offending Service Youth Music Project, which offers weekly two-hour one-to-one music sessions to young people, typically over three months followed by ten mentoring sessions. Mixed-methods evaluation of the programme showed statistically significant improvements in musical ability and wellbeing. Many of the young people interviewed spoke about increases in confidence and social skills, with several re-engaging with education as a result of the programme.” - page 93

"Champions of Change" article:

<http://artsedge.kennedy-center.org/champions/pdfs/champsreport.pdf>

- We haven't read this article yet, but it was recommended by another music teacher in our district.

Musician & Teacher: An Orientation to Music Education by Patricia Shehan Campbell
(2008) W.W. Norton & Company, New York, NY.

Children's enhanced musical development

- "By the end of their elementary years, children may have already begun to function as expressive and thoughtful independent musicians." (page 131)

The Middle Years

- "Early adolescents are in the process of figuring out who they are. They are changing in appearance and personality, in the way they relate to each other and to the adults they encounter." (page 173)
- "Moving into middle level music classes usually means that students move from the elementary school environment to a middle school or junior high school campus. It may also mean that they must make a transition from their regular elementary music teacher and beginning band or orchestra teacher ... to an unfamiliar teacher - one who possibly stands on a podium and wields a baton. It is at precisely these sorts of junctures ... that ensemble retention rates can drop precipitously." (page 173)
- "An ongoing task of the instrumental teacher is to smooth these transitions so that the next level of music making does not seem foreign or forbidding." (page 174)

Tradition and change in School Music

- "Communities have changed, and the music that is valued locally has diversified. Outside schools, within families, in the media, and in a host of neighborhood venues, there is a wide spectrum of possibilities for the music involvement of young people. ... Teachers can do much to open up the possibilities of musical study - all the rest of the music - to students in schools. Given that 10 percent of high school students typically enroll in school music classes, what would happen if there were more choices for the other 90 percent?" (pg 188)
- Options listed for other music options in a school, outside of concert band/orchestra:
 - Guitar, keyboard/piano class, drumming ensembles, gospel choir, handbell choir, jazz ensembles, mariachi, marimbas, recorder consort, rock band, samba, steel drum band, world vocal ensemble, western art music/world music cultures, popular music, AP music theory, composition-related training.
- "A word of advice for teachers interested in the courses described in this chapter: proceed with caution so as to develop courses that fit the interests and needs of the school population. It is wise to learn the history and traditions that have served students well, and that appear to be of continuing interest to them and the broader community. Gauge the interest of students, colleague-teachers, administrators, and parents, and move gradually into developing courses that balance both traditional and contemporary needs. Work toward fashioning something that honors the past as well as the musical diversity that continues to emerge globally." (pg 210-211)

Achievement for All: Keys to Educating Middle Grades Students in Poverty

Publisher: AMLE Released: November 1, 2013. Author: Ruby K. Payne

Rigor of student work and performance

- "The success and achievement of under-resourced students depends on educators who emphasize rigor in students' work and performance"
- "Content-specific expertise must be used to build rigor into assignments. For example, what follows is a rubric to develop a skilled musician. I wrote this with an orchestra teacher who wanted to develop expertise in his students rather than proficiencies." - see attachment at end for the skilled musician rubric
- "After students played a piece, they used a highlighter on the rubric to assess their performance. Then, using a different-colored highlighter, the teacher assessed the performance. The students then made a plan for addressing any discrepancies. For tools and examples of how to do this, see my book *Building Student Expertise and Rubrics*."

Development of expertise

- "Successful academic performance for under-resourced students is dependent upon district level development of expertise in administrators and teachers. Currently, most of our administrator and teacher evaluations are built upon proficiencies - not expertise. Expertise is the ability to know your own discipline (content) and marry it to the world outside of that content for innovation and effectiveness. We have often used rubrics to identify graduated performance on a task but not on the **development of the person as an expert**."
- See attachment at the end for the expert teacher rubric.

Music and Music Education in People's Lives: An Oxford Handbook of Music Education, Volume 1. Ed. by Gary E. McPherson and Graham F. Welch. Copyright Oxford University Press 2018

Summary	Music and Music Education in People's Lives is one of five paperback books derived from the foundational two-volume Oxford Handbook of Music Education. Designed for music teachers, students, and scholars of music education, as well as educational administrators and policy makers, this first book in the set provides a framework for understanding the content and context of music education, and for future action within the profession. A broad examination of the philosophical, psychological, cultural, international, and contextual issues that underpin a wide variety of teaching environments or individual attributes is paired with 25 relevant and insightful commentaries from established scholars and music educators. Taken as a whole, [this book] gives clear direction to how the discipline of music education can
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achieve even greater political, theoretical and professional strength.
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Pertinent Quotes from the book:

The Impact of Education on Musical Development, Biography, and Identity:

- “[A woman’s perceived inability to sing] arose within a culture with a strong oral music tradition, reported as being “one of the richest repositories of traditional music in the Western world.” (Diamond & Colton, 2007, p.1). Such richness is unlikely to be sufficient, however, to ensure that the culture encourages singing inclusively, if a particular characteristic of the culture is a persistent belief that some people are intrinsically musical and some are not.”

Musical Development and Education

- “Notwithstanding the persistence of an erroneous bipolar conception in many cultures of humanity as “musical”/“not-musical,” unless something negative occurs to hinder progress, empirical evidence indicates that musical skills normally develop with age and experience and particularly so in a nurturing educational environment.”
- “Analyses of the observational data [from an observation of 20 schools in England] revealed that learning was most likely where:
 - Pupils were *actively engaged* for a high percentage of time across the session
 - The *pupils’ voice was dominant* with the session, either being expressed in song or used to question, reflect and review their own progress
 - The *criteria for success* were made *explicit and reinforced* throughout the session
 - Pupil performance was *monitored and assessed*, and musically informed feedback instantly provided, with *clear indications of how to improve*.
 - Achievement was *celebrated and valued* and related to the criteria for success.
 - A *suitable paced session* was evidenced - such as a fast paced session that builds to a crescendo or a more intermittent pace that allowed space for discussion.
 - Learning was placed within a *wider context of pupils’ lives*, such as through detailed discussion of the song’s lyrics (Saunders et al., 2011).”

The Child as Musician: A Handbook of Musical Development

https://books.google.ca/books?id=RbWICgAAQBAJ&pg=PA32&source=gbs_selected_pages&cad=3#v=onepage&q&f=false - Google preview

Summary (taken directly from the description online)	<i>The Child as Musician</i> is an authoritative and comprehensive handbook of musical development from conception to late adolescence. Within 24 chapters by leading specialists, it celebrates the richness and diversity of the many different ways in which children can engage in and interact with music.
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	<p>The 24 chapters have been organized according to five sections:</p> <p>The first section (Development) examines the critical months and years from conception to the end of infancy. It looks at how the musical brain develops, ways of understanding musical development, and the nature of musicality.</p> <p>Section two (Engagement) scrutinizes claims about the non-musical benefit of exposure to music, for example that music makes you smarter. This is followed by four thorough reviews of dealing with musical preference and taste, literacy, aesthetic identity and the perception of emotion in music.</p> <p>Section three (Differences) focuses on those issues that help explain and identify individual differences. It includes chapters examining how children develop their motivation to study music, conceptions of giftedness and talent, and two chapters on music therapy. Five chapters cover skills that can develop as a result of exposure to music. It considers the informal activities associated with musical play and the use of computers and technology. There are also chapters dealing with the acquisition of vocal and instrumental skills, as well as the individual and social worlds of children's musical creativity.</p> <p>The final section of the book discusses five different contexts: The chapter on historical perspectives provides readers with information that will assist them in making comparisons between how children have learned and developed their musical capacities in the past, with current opportunities. This is extended by two additional chapters that focus on children's involvement in music in non-western cultures. The book concludes with two chapters focusing on youth musical engagement and the transition from child to adult.</p> <p>A landmark publication in music education and developmental musical psychology, this is a book that will fascinate both students and researchers - inspiring them to think deeply about the many different ways in which music can affect children's lives and the quality of life in communities throughout the world.</p>
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Visit this site to see the chapter-by-chapter synopsis.

<http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198530329.001.0001/acprof-9780198530329>

Pertinent Quotes from the Book:

Section 2: Engagement

- "In Western society, exposure to music typically takes one of two forms: listening and performing. Music listening is everywhere, both by design and by accident. ... By contrast, performing music is relatively rare in Western society." (pg 111 - 112)

Music listening: The Mozart effect

- "According to the arousal and mood hypothesis, the 'special link' between music composed by Mozart and spatial (or spatial-temporal) abilities is actually just one

example of a stimulus that affects arousal and mood, which, in turn, affect performance on a wide variety of tests. The main advantage of this perspective is that it explains the seemingly mysterious Mozart effect in a straightforward manner with well-established psychological findings.” (pg 115)

- “Specific characteristics of music (e.g., tempo or mode) can induce changes in listeners’ arousal levels and their moods, but so can drinking a cup of coffee, or receiving a gift of \$5.” (pg 129)

Music lessons

- “The available evidence also indicates that associations between music lessons and cognitive abilities are general - extending broadly across the various subcomponents of intelligence and cognition - rather than limited to a specific subset of abilities. Other out-of-school activities (e.g., drama lessons) do not appear to have similar intellectual benefits, although they may have benefits for other aspects of child development (e.g., social skills).” (pg 129)
- “If the effects of music listening are due to changes in arousal and mood, can we explain the effects of learning to play music with similar underlying mechanisms? Despite some speculations that this is indeed possible (Rauscher, 1999, 2002), the answer *must* be ‘no’ for at least 2 reasons: (1) taking music lessons and practising regularly over a period of time could not conceivably have the same emotional impact day in and day out, and (2) in studies of effects of music training, the outcome variables are *never* measured directly after listening to music.” (pg 129-130)
- “How, then, can we explain the effect? ... One is that the effect is simply an extension of the well-known fact that schooling raises IQ (Ceci & Williams, 1997). ... Music lessons could still be unique because ... they represent a scholarly out-of-school activity that many children *enjoy*. Another possibility is that the intellectual benefits of music lessons stem from one or more of the wide array of abilities that are trained and improved when learning to play music. These include fine-motor skills, learning to read music, learning to perceive and express emotions in music, memorization of extended passages, acquired knowledge of musical structures, ... and so on. ... A third possibility is that something specific about the music is driving the effect. A musical tune is an *abstraction*, which means that it can be recognized whether it is played fast or slow, or high or low. ... Learning explicitly about the abstract nature of music could lead to an improved ability to reason abstractly in general, which would, in turn, explain the observed increases on measures of intellectual ability. Yet another possibility is that learning to play music is similar to learning a second language. Bilingualism is known to confer some non-linguistic cognitive advantages.” (pg 130)

Factors influencing singing development and the realization of potential

- “Opportunities to engage in vocal play and exploration, to share in singing games with peers and ‘experts,’ as well as to improvise and compose their own songs

are essential features of musical cultures that foster singing development.” (page 325)

- “Children who exceed the ‘norms’ reported in the research literature are likely to have been provided with a nurturing environment that is designed to match, celebrate, enable, and extend individual singing expertise. Others, whose singing is perceived to be ‘lacking; in some way, will not have had such appropriate opportunities. For some, entry into adolescence can confirm their identity as a ‘non-singer,’ as someone for whom music is seen as an area of ‘failure.’ (page 325)

Playing an instrument - starting age

- “Within reason, the adage ‘the earlier the better’ is appropriate as a general guide to when children should start learning an instrument.” (page 331)
- “For brass and woodwind instruments, which require more physical strength, it is unlikely that children will have much success until at least 6 or 7 years of age when they have acquired the physical ability (and the teeth) to maintain a correct embouchure and move the air through the instrument in order to produce a characteristic tone.” (page 331-332)
- “The adoption of the electronic keyboard is in part a consequence of the broadening of the music curriculum ... and possibly also a reaction against the *squawks* produced by cheap plastic school recorders, which children regard as the least popular of all instruments (O’Neill, 2001)” (page 332)

The decision to begin

- “English children aged 5 and 6 were the most enthusiastic for expressing a desire to learn.” (page 333)
- “By the age of 7 less than half the children surveyed expressed a desire to learn an instrument, and this remained stable at about a quarter of non-playing children until 11 years. By the age of 14 only 4% of the children said that they were likely to start learning an instrument.” (page 333)
- “Placed in perspective, however, ... Many rock guitarists for example typically do not begin playing until they reach their early teenage years, but then, if they are highly motivated, make progress very quickly as a result of engaging in many hours of practice” (page 333)

Choosing an instrument

- Many children have been grateful in later life for having parents who insisted that they learn a particular instrument.” (page 333)
- “Children are goal-oriented individuals; meaning that they choose and gravitate toward activities in which they believe they can achieve and be successful. Their behaviour is directly connected to the personal beliefs they hold about the activity, such that the expectations they hold for becoming competent impact on the level of performance they achieve” (page 335)

- “There are many facets underpinning children’s personal beliefs about learning an instrument. ... six seem particularly relevant for learning to play an instrument:
 - *Interest*: the personal satisfaction gained when playing and practising alone and with others, plus the love for the repertoire learned;
 - *Importance*: the degree to which learning the instrument fits with personal goals about that the child hopes to be good at;
 - *Usefulness*: whether learning the instruments is constructive and functional for what the child wishes to do, both now and in the future;
 - *Difficulty*: whether the learning process creates obstacles or is perceived as being more difficult than other activities with which the child is engaged;
 - *Competence*: for which playing and performing become activities in which the child would like to succeed, and
 - *Confidence*: the empowerment felt for developing the skills necessary to master challenges associated with learning and performing on the instrument, such as whether the learning process is fraught with pressures and anxieties which diminish confidence and a sense of self-worth.” (page 335-336)

Mental strategies

- “The most successful learners were children who actively kept track of what they were learning by using a practice diary to take notes about what they needed to practise and how this might be accomplished. They also organized their practice sessions by focusing on the repertoire they needed to practise first in order to improve their playing before moving on to pieces they could already play and/or enjoyed playing (in contrast to children who organized their practice by playing for enjoyment first and improvement later).” (page 338)
- “More strategic and capable players were also more inclined to self-diagnose and correct their playing.” (page 339)
- See table summarizing age-related learning principles in formal learning settings attached at the end of this document.

Article: “The Influence of Beginning Instructional Grade on String Student Enrollment, Retention, and Music Performance”

Linda A. Hartley - *University of Dayton, Ohio*

Ann M. Parter - *University of Cincinnati, College-Conservatory of Music, Ohio*

Summary:	The results of this study indicated that number of class meetings per week have more of a significant impact on instruction, retention, and musical success than starting grade by the end of grade 7. I would like to note that while this article states that starting age is a small factor, it is considering grade 6 a ‘late’ start. It
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	argues that if the late start corresponds with the opportunity for more frequent, linear instruction inside the timetable (such as starting in middle school) that all students perform equally by the end of grade 7. This article does not mention starting instrumental instruction as late as grade 7. It only discusses grade 4, 5 and 6 starts, and points out that whatever grade a middle school starts at may be the ideal starting age.
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Pertinent Quotes:

- "Starting beginning instrumental music programs in the sixth grade (middle school) tends to present the advantage of more weekly instructional time, 3 to 5 days per week, versus starting instruction in elementary school (K-5), with 1 to 2 days per week of instruction." (page 372)
- For band instruction, Hartley, Kuhn, and Sillman demonstrated that a higher retention rate could occur if students begin instruction at a later age (sixth grade vs fifth grade). The MENC publication *the Complete String Guide* suggests that starting strings and band during the same year has several advantages: (a) A potentially larger participation rate in the overall instrumental program may occur, (b) attrition from the instrumental program may be reduced, and (c) the negative string image that can result from students shifting from string instruction to band instruction may be eliminated." (page 372)
- "Attrition rates for instrumental music have been shown to be greater when students move from building to building, such as from elementary to middle school." (page 372)
- "These studies indicated no statistically significant differences in performance achievement between students who began instruction in elementary grades and those who began in middle school and junior high grade levels by the time students reached the upper middle school or junior high grades" (page 373)
- "Hartley suggested that the level of cognitive development found in middle school (formal operations) is as asset when learning a musical instrument because students can more easily perform simple music reading skills as well as begin to understand musical interpretation and apply this to their performances." (page 373)
- "Retention of 60% or better was reported by 31% of the fourth-grade starting programs, 72% of the fifth-grade starts, and 94% of the sixth-grade starts." (page 376)
- "In addition, chi-square analysis indicated that a greater number of class meeting per week was significantly related to the end-of-first-year retention." (page 378)
- "With respect to the time of day for delivery of beginning string instruction, 90.3% occurred during the school day, and 5.5% occurred before school." (page 378)
- "Results seemed to indicate, however, that the school district superintendent made this decision [concerning beginning grade level for string instruction] in 23.9% of cases, whereas the school principal was the decision maker in only 0.6% of the cases, and the string instructor has responsibility for this decision in 11.7% of surveyed programs." (page 378-379)
- "Neither starting grade level nor percentage of private lesson instruction appears to have a significant effect on music ensemble performance by the seventh grade." (page 380)

- “Results of this survey indicated that although the difference in enrollment between a fourth-grade start and starting in the later grades was not statistically significant when considering percentages, starting students in the fifth or sixth grades clearly yielded much higher retention rates by the end of seventh grade. ... In addition, as the number of class meetings per week is a direct reflection of the starting grade level of instruction, more research is needed to determine whether the number of class meeting per week may have a greater effect than starting grade on both the retention and the end of the first year of instruction and retention rates at the seventh-grade level.” (page 381)

Article: *From Child to Musician: skill development during the beginning stages of learning an instrument*

Gary E. McPherson - University of New South Wales, Sydney

<p><u>Summary:</u></p>	<p>This article summarizes a 3 year study with 157 children across grades 3 and 4 who started learning an instrument. There were 8 different school music programmes involved. The findings (based on assessments given at the end of each school year) show that success in music correlates strongly to the quality of mental strategies used by the students and their ability to identify challenges in their playing and create a plan to improve. Practice over a period of time (Ericsson) is also strongly correlated with success in music, but the entire picture needs to also include metacognition. In other words, success in music in the school system is greatly tied to a teacher’s ability to teach students how to reflect on their own learning and create strategies for improvement, in addition to purposeful practice over a sustained period of time.</p>
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Pertinent Quotes:

- “Some of the most important research on performance skill acquisition has focused on the quantity and quality of practice with evidence suggesting that experts undertake vast amounts of practice over a period of more than 10 years to perfect their skills to master level.” (page 7)
- “They argue that a major distinction between professional and amateur musicians (and perhaps successful versus unsuccessful learners) is the amount of deliberate practice during the many years required to develop instrumental skills to a high level.” (page 7)
- “Practice is a direct cause of achievement level rather than merely a correlate of it” (page 7)
- “It might be expected that children who had previous experience learning another instrument and who therefore had been exposed to more musical training would progress more rapidly on their new instrument as compared with novice learners. ... this was not the case for the skills of performing rehearsed music, sight-reading and

improvising. For the aural skills of playing from memory and playing by ear, however, children who were continuing to learn another instrument such as piano in addition to their new school wind instrument were significantly better at these skills when compared to novice learners.” (page 26)

- “Given this evidence, music teachers should be encouraged to recognize the importance of reacting perceptively to performance errors by analysing why they might occur and trying to understand what the student is thinking about mentally, especially when introducing a new skill. The results of this study suggest that asking pupils to reflect on what they are doing, how they are doing it, and to consider alternative approaches to performing would go a long way to improving music instruction, by helping children who find their learning frustrating and difficult and who typically fall behind or do not survive the first few years of learning.” (page 29)
- “...the sophistication of their mental strategies provides an important means of understanding why some progress effortlessly in contrast to others who struggle and fail.” (page 31)
- “...children who apply musically appropriate mental strategies very early in their learning were more likely to succeed in comparison with their peers.” (page 31-32)
- “...there is much more to the making of a musician, and to explaining musical development, than just hearing how well a child can reproduce music from notation that has been rehearsed over multiple practice sessions.” (page 32)
- “...improvements in instruction which help children struggling with their learning, can be attained by placing more emphasis on in music on teacher (a) what are appropriate music strategies, (b) how musical strategies can be used, (c) where and in what situations certain types of musical strategies are best employed, and (d) why each type of musical strategy aids one’s performance.” (page 32)

STEM to STEAM

<http://stemtosteam.org/>

“Innovation remains tightly coupled with Science, Technology, Engineering and Math – the STEM subjects. Art + Design are poised to transform our economy in the 21st century just as science and technology did in the last century.

We need to add Art + Design to the equation — to transform STEM into STEAM.

STEM + Art = STEAM:

STEAM is a movement championed by Rhode Island School of Design (RISD) and widely adopted by institutions, corporations and individuals.

The objectives of the STEAM movement are to:

- transform research policy to place Art + Design at the center of STEM
- encourage integration of Art + Design in K–20 education
- influence employers to hire artists and designers to drive innovation”

**Music Education Research Articles
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CHAPTER 6: Musical development and education. The Social and applied psychology of music, 313-355. – who did we get this from?

Still Want:

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Expert Teacher Rubric

<p>Safe, culturally competent learning environment</p>	<p>BEGINNING Little classroom management. No clear procedures. Has favorite students and ignores others. Engages in negative comments about students during class. Many discipline referrals. May blur physical or verbal boundaries.</p>	<p>DEVELOPING Classroom is usually calm, with procedures and discipline established. Some relational aggression between students. Cultural differences not always understood. Helps students when requested. Boundaries are generally appropriate and intact.</p>	<p>CAPABLE Establishes mutual respect in classroom (support, insistence, high expectations). Calm, businesslike atmosphere. Classroom is relational and inclusive. Actively ensures student well-being.</p>	<p>EXPERT Rapport with nearly every student. Positive regard for competency, culture, and individuality of each student. Gets best from students. Students have great respect for teacher. Addresses emotional issues appropriately.</p>
<p>Student achievement</p>	<p>Gives formative assessments but doesn't use results for decision making in instruction. May blame students for not learning. Assignments often not on grade level. Doesn't know value of relationships in learning. Doesn't know names of many of his/her students.</p>	<p>Gives feedback and correctives on student work. Most assignments on grade level. Has relationships of respect with some students. May work with individual students to augment their instructional needs. Slow to pick up on needs of highly mobile students. Knows most students' names.</p>	<p>Knows where he/she wants each student to be by end of year. Can discuss each student with some accuracy by name and achievement characteristics. Welcomes questions from students and quickly assesses new students for achievement levels. Most students are in top two quartiles.</p>	<p>By end of first month of school, has accurate assessment of individual achievement needs of each student. Daily tailors group and individual instruction to get phenomenal growth from each student. Takes students to new levels of competence and promotes their growth.</p>
<p>Content expertise (purpose, structure, patterns, processes)</p>	<p>Limited understanding of content. Can seldom sort important from unimportant.</p>	<p>Heavily dependent on textbooks, curriculum assists, etc. Unable to clearly explain content and translate to students' understandings.</p>	<p>Good understanding of content. Clearly explains it with stories, examples, drawings, mental models. Processes are clearly taught. Knows when students are confused versus totally wrong.</p>	<p>Extraordinary understanding of content. Frames it so students can understand quickly. Teaches both conceptually and in great detail. Students often develop additional interest in content outside of class.</p>
<p>Student intervention and diagnosis</p>	<p>Says, "I treat them all the same." Makes few adjustments for individual students. Unable to assess what would work with individual students. Many failures.</p>	<p>Interventions used but not necessarily successful. Accuracy of student performance limited. Often will say, "I don't know what to do." Tends to be surprised by student failures.</p>	<p>Quick, accurate intervention and diagnosis. Doesn't wait for students to fail. Will seek support for students from multiple sources. Some failures.</p>	<p>Often uses preventive interventions before students can falter or become discouraged. Almost always intervenes accurately. Few failures.</p>

Expert Teacher Rubric *(continued)*

Teaching performance	BEGINNING Lots of “busy work.” Instruction disconnected. Much what instruction but very little how and why. Teaching is done “to” students, not “with” them.	DEVELOPING Instructional design is solid but fails to engage many students. Pedagogy is limited. Gaps in explanation. Little why in instruction. Has difficulty monitoring group and individuals. Tends to get sidetracked.	CAPABLE Lesson is connected to most students’ interests. Varied pedagogy. Opportunity to question and interact with teacher. Teacher monitors both group as a whole and individuals within group simultaneously.	EXPERT There’s flow to instruction (regardless of pedagogy) —seamless, almost effortless, but exceedingly effective. Individually and collectively, students are engaged. Relaxed, yet intense, approach to learning. Students leave wanting to know more. Humor is often part of instruction.
Paperwork, organizational and legal responsibilities, professional ethics	Misses deadlines frequently. Not cognizant of legal implications of decisions. Often must be prompted about paperwork. Grading procedures, standards compliance, etc., are questionable. Often creates difficulties with other staff and administration.	Meets most deadlines. Is aware of most legal implications and responds appropriately. Grades and other paperwork are accurate. Tolerated but not necessarily respected by other staff.	Paperwork and organization are good. Grades are accurate and careful. Responsibilities, including legal, are addressed. Professional ethics are invariably present. Is generally respected by other staff.	Paperwork completed. Virtually always organized and legal. Highly respected by other staff members, even if they don’t agree. Grades are respected. Works to create better staff relationships. Asset to campus and community.
Parental contact and interaction	Blames parents or avoids parents. Little predictable communication with them. Often condescending to or defensive with parents during conferences.	Contacts parents if there is difficulty with student. Other communication with parents is limited. In conferencing, lectures more than dialogs. Doesn’t see it as partnership.	Sees parents as potential partners to help student. Has regular communication with parents. Adjusts without judgment for limitations of some parents.	Highly regarded by parents in community. Often requested as teacher. Works to create partnership with parents. Communicates regularly and appropriately.

Source: *Developing Expertise and Rigor* by R. K. Payne, 2013.

Skilled Musician Rubric (for band and orchestra members)

CRITERIA Accuracy	1 Not in correct time Several wrong notes Wrong key	2 Mostly in correct time Misses notes Key is correct Fingerings are off	3 In correct time Mostly uses correct fingerings Notes are correct	4 Timing is virtually always correct Fingerings are correct Notes are virtually always correct
Articulation	No variation in tempo Markings not observed No contrast in sound	Some variation in tempo but not correct Some contrast but incorrect for piece Random use of markings	Tempo mostly correct Mostly correct use of markings Dynamic contrast thin but correct	Markings are virtually always observed and followed Wide range of dynamic contrast Tempo is correct
Sound quality	Thin timbre High and low notes off Too loud or too soft for note or section Unpleasant to ear	Timbre for most notes is fuller All difficult notes have some timbre Use of sound markings is random	Timbre is mostly full Sound markings are used but not advantageously	Timbre is full Sound markings are correctly interpreted and followed
Interpretation	No meaning assigned to piece No understanding of intent or purpose of composer	Playing indicates emotion but little understanding of meaning Understands that piece has climax but does not know where it is	Playing mostly conveys meaning and always conveys emotion Understands role of climax Can talk about intent and purpose	Playing conveys meaning and emotion Climax can be identified Plays truly to intent and purpose
Ensemble contribution	Does not pay attention to conductor Listens only to his/her playing Too loud/too soft for group	Periodically pays attention to conductor Is mostly in balance with group Listens to his/her section Little understanding of his/her contribution to melody	Mostly follows conductor's interpretations Is in balance with group Mostly listens to piece as whole Can verbally articulate contribution to melody but does not always reflect that in his/her playing	Follows conductor's interpretation Is in balance with group Listens to piece as whole Understands his/her contribution to melody

Source: *Developing Expertise and Rigor* by R. K. Payne, 2013.

Table 17.1 Summary of age-related learning principles in formal learning settings.

Age	Choice of instrument	Learning processes	Learning activities	Role of significant others
Up to age 5	Determined by child's ability to produce a characteristic tone without too much effort. Keyboard and smaller stringed instruments, recorder, plus tuned and untuned percussion are common choices.	The emphasis should be on making music 'fun' with opportunities for children to explore their own and other instruments. Children should be encouraged to sing and play a variety of musical games as a foundation for developing a sense of pitch and rhythm. Learning about some basic terms allows the child to express how they feel about music.	Learning by rote (copying and repetition) is the most important and natural way for very young children to learn. Aural awareness can be developed by learning pieces that are already known or first learnt by heart through repeated singing or hearings, before being reproduced on an instrument. The sound (not the symbol) should be emphasized with formal instruction about traditional notation being left until a later stage of development. The repertoire should be interesting and challenging, not difficult and frustrating. The emphasis should be on providing a rich, varied background of experiences that will lay the foundation for future musical success.	Teachers must develop a strong personal nurturing relationship such that the child regards them as warm, caring, and lots of fun to be with. Parents have a particularly special role during this time. Because children will not have developed their self-regulatory abilities, it is advisable for parents to attend lessons so that they will be able to reinforce what has been taught during the rest of the week. They should also try to be actively involved in their children's musical progress, by frequently sitting with them when they play the instrument and helping to make them feel 'special' about their learning. Parents are also responsible for exposing their children to a variety of music around the home, such as by putting on a recording of music when they go to bed, by playing music during the day, and by singing and playing musical games whenever possible.
From 6 to 9	More choices become available, but choosing a suitable instrument is still dependent on the child's physical capacity, with larger winds still being beyond their control. Suitable instruments include most of the woodwind, brass, string families, plus keyboard, guitar, percussion (tuned and untuned), and many other less common instruments. Wind instruments require a full set of teeth while children who commence on string instruments will still need to play a smaller sized instrument. Posture will need to be carefully monitored, so that any child who is struggling to maintain a correct hand, lip or seated position does not fall into bad habits. In some cases, it is advisable for a child to commence on a more manageable instrument before progressing to a more difficult instrument.	The emphasis should still be on making music 'fun', while at the same time ensuring that there is a reasonable amount of progress over time. During these years a child's interest and motivation will ebb and flow, depending on a variety of extrinsic and intrinsic forces. This is a natural part of growing and learning. It is therefore important to have regular exposure to enriching activities that help motivate the child, such as performing in concerts or for other family members, attending music camps, or even busking to make some extra pocket money.	Musical notation should not be emphasized until the child can demonstrate basic ear-to-hand co-ordination skills. Children should be able to play a repertoire of works by ear. In the initial stages of introducing musical notation, children should be encouraged to invent their own notations to describe well-known songs. Later this can be extended to include traditional forms of notation but only when the child has become capable of co-ordinating their eyes with their ears and hands.	The importance of a teacher retaining a strong personal relationship with the child is still paramount. Personal characteristics such as being a good communicator, showing interest and being easy to talk to and relate to the child are important. Professional characteristics, such as being able to demonstrate effectively and provide an appropriate model for the child become increasingly important. Parents should continue to provide ongoing support for their child, through gentle but persistent reminders to practice, and take an active interest in their child's learning. Ongoing praise and encouragement are also essential.
From 10 upwards	Almost any instrument is now possible with opportunities to learn instruments informally with peers increasing. The guitar, drums, and computer synthesizers are common instruments, particularly with teenagers in informal learning settings.	Some may be motivated to learn by ear rather than a desire to become musically literate. In formal settings, however, children are able to pick up music reading skills more quickly than in the past. Unlike previous ages, they will be less likely to want to learn by repetition.	This is a period when children become more independent, and in which they will want to perform repertoire that they find stimulating and challenging rather than repertoire that their teacher feels is appropriate for their technical development.	Children at this age are becoming more self-regulated and better able to monitor and control their own learning. Both the personal and professional characteristics of their teacher are important to them. They need to know that the teacher cares and will support them during difficult patches in their learning, but increasingly need to be stimulated by the quality of their teacher's abilities as a musician, in order to become inspired to reach higher levels of achievement. Children of this age are increasingly influenced by peer pressure, so it is important that the learning environment allows opportunities for group interaction and social experiences that enable them to be immersed in the style and 'culture' of the type of music being learned. This can occur in both formal setting such as a school band or orchestra, and informal settings such as garage bands and group jamming sessions.