The 21st Century Elementary Music Classroom and the Digital Music Curriculum: A Synergism of Technology and Traditional Pedagogy

Robert E. Murillo
Texas Christian University

Background

The modern age of *digital natives* has ushered in the need to transform the educational system in order to supplement traditional pedagogy (Prensky, 2001). Tobias (2016) posits that a *hybrid technological approach* in the classroom will continue to employ technology as a learning tool, evaluative assistant, multi-media resource, and curriculum developer. Prior to the digital age, the graded-music textbook series was the foundation of primary music education—a convention dating back to the methodologies and school songbooks of early nineteenth century pedagogues, such as Lowell Mason, Christian Hohmann, and Luther Whiting Mason (John, 1954). For nearly 150 years, the graded-level music series has been the basis of general music curriculum for young children since the first widespread and internationally acclaimed series, *The National Music Course* by Luther Whiting Mason in 1870 (John, 1954). The general music program still maintains this model in the elementary school levels, promoting rote singing methods, cultural folk music, instrument fundamentals, essentials of music literacy, and performance.

The core educational subjects have evolved as many schools have approached 1:1 technology resources in support of 21st century educational trends and recent legislation. The 2015 Every Student Succeeds Act (ESSA)—a necessary update to the 2004 No Child Left Behind Act—provided clear definitions to the core placement of arts in public education and stimulated more substantial budgets for arts curricula (U.S., 2015). The ESSA also provided expectations of college readiness, real world connections, and the incorporation of technology in all aspects of education, holding schools and teachers accountable for supporting the *digital wisdom* of the 21st century student (Prensky, 2011).

Since the turn of the century, the introduction of STEM (Science, Technology, Engineering, and Mathematics) programs and magnet schools began taking precedence as they provide specialized education tracks with 21st century credentials, satisfying many of the new criteria of modern education, but may come at a cost to arts programs such as dance, theatre, and visual and performing arts. In some cases, the rise of specialized programs can supersede the traditional enrichment classes as seen in the Figure 1 data gathered from Dallas and Houston school districts.

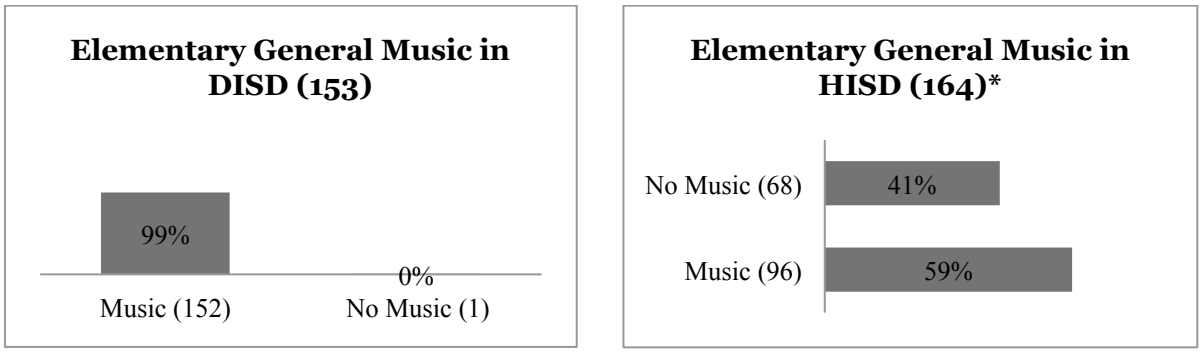


Figure 1. 2017 school data retrieved from Dallas and Houston district web pages and by school communication. *HISD may have additional schools without music classes.

Houston ISD (2017), Fort Worth ISD (2017), and Dallas ISD (2017) are all proponents of a district STEAM mission (science, technology, engineering, *arts*, and math), as stated in their annual reports. Still, some music and art programs have been dissolved in various elementary schools. The transition into the digital music curriculum propels music education advocacy by adapting to the technological competencies of digital natives and appealing to the standards of 21st century education— further justifying the inclusion of arts within STEAM initiatives.

The arts must adapt in order to meet the digital wisdom in this new technology age; otherwise, they will become too far removed from what is now considered a well-rounded school education (Prensky, 2011). Children are spending increasing amounts of time with electronic devices and applications—new platforms for creativity coined “curiosity-amplifiers”-- doodling on drawing apps, designing in *Minecraft*, learning songs by finger tapping apps, and composing

high quality music pieces with the iPad and the smartphone (Order, 2015). Trends in the modern music industry also place technology at the forefront of popular music making with the use of digital instruments, mechanisms for vocal correction or auto-tune, and complex sound mixing and editing capabilities. The rise of electronic dance music (EDM) and artist-music producers such as Kanye West, DJ Khaled, Deadmau5, and David Guetta also points clearly to what the future holds for popular music production and performance. It seems logical that the arts must adapt to the current trends by regularly including digital applications for artistic learning and creativity. The alignment of general music to 21st century technology is inevitable, as music education must look toward the future with a digital music curriculum.

Music education retains a unique criterion for measuring success as students are expected to develop musicianship skills such as mastering music literacy, cultivating an eclectic musical palate; acquiring competencies in listening to, analyzing, and composing music; and making music with proper practice techniques and performance standards. These benchmarks are delineated in national music standards and TEKS standards (TEA, 2017).

The use of technology in music education has for long been considered a tool for measuring music competency, assisting instruction and methods, and supplementing the classroom with multi-media resources, yet its impact on education is still unclear. For example, researchers in Finland investigated the possibility of teaching several rural homes simultaneously through the creation of a digital general music classroom taught by a music specialist over a webcam which produced more problems than benefits (Maki, 2001). A partnership of music education students from Australian and African universities created the "Orff-Tswana" Intercultural Music-Making Initiative. Students successfully communicated and collaborated with Orff methodologies to capture authentic transcriptions and recordings via video-conferencing and Sibelius software (Klopper, 2010). Astafan utilized *SMARTMUSIC* software program to assess the sight-reading level and rhythmic skills with a 5th grade class over several weeks which did not reach any noticeable outcomes except that the students enjoyed working with the digital activities (Astafan, 2011). The most significant research comes from another international collaborative

study with children from Indiana and Israel using the music technology program, *Teach, Learn, Evaluate* (Portowitz, Peppler, & Downtown, 2014). The music program study highlighted the music fundamentals units and interactive computer software which yielded positive findings in music learning, retention of concepts, and cognitive skill development; however, the program itself is a single-user format which does not have implications for classroom settings.

Much of the research on music education and technology conducted in recent years is in danger of becoming obsolete since many of the digital resources and materials highlighted in the literature, such as YouTube, music education websites, and GarageBand, are more than a decade old. An Ohio study addressed the increasing demand of music teachers to utilize technology competencies such as computer-based notation, digital music production, and computer-assisted instruction (Dorfman, 2008). The study confirmed that teachers only used technology for some planning, electronic accompaniment, and burning CDs which propelled the researcher to inquire into the possible potential of advancing music education landscapes.

There is at least some investigation into the feasibility of a smart device or iPad such as the music making tool of Williams (2014) and the curiosity amplifier of Order (2015). Additionally, there are considerations regarding the discovery of new applications for musical creativity such as with Ko and Chou (2013) who stated that, "music technology can enhance the quality of music being created and allow children to hear their creation instantly." Lum (2016) reflected on the reality that "digital natives enter the classroom with a higher technology competency and accessibility than the teachers". After investigating the current perspectives of technology and music education, it can be concluded that there has not yet been significant research of the effects of a technology-based music curriculum. The following question prompts the underlying purpose of this study: "Should [it] not continue to bewilder and challenge music educators to think about what it means to be teaching general music in the 21st century?" (Lum, 2016).

On the positive side of technology and music education, several supporters note benefits from using digital resources; however, there has not been any insight into the recent music curriculum advancements. The *connectivism* of Beegle and Bond (2016), *creative application* of

Guderian (2014), and the *hybrid approach* of Tobias (2016) all presented ideologies of a technology-infused classroom; but, resources that were highlighted are a decade old, such as YouTube, music education websites, and GarageBand, in addition citing publications about technology from the 1990s and 2000s. There is at least some investigation into the feasibility of a smart device or iPad in a pedagogical and music educational setting such as the *music making tool* of Williams (2014) and the *curiosity amplifier* of Order (2015). Additionally, Ko and Chou (2013) offered that, "music technology can enhance the quality of music being created and allow children to hear their creation instantly." Lum (2016) reflected on the reality that "digital natives enter the classroom with a higher technology competency and accessibility than the teachers". After investigating the current perspectives on technology and music education, it can be concluded that there has not yet been significant research into a technology-based music curriculum. The followings question prompts the underlying purpose of this study: "Should [it] not continue to bewilder and challenge music educators to think about what it means to be teaching general music in the 21st century?" (Lum, 2016).

The development of digital music curricula

What is a digital music curriculum? There is currently a wide variety of electronic resources that supplements lesson content and instruction. In the elementary music classroom, there are many free digital tools that enhance fundamental music skills. Such tools include music and video streaming sites, music theory applications, lesson plan resources, digital instrument players, accompaniment and notation software, and music games. The modern general music teacher balances curriculum resources with online and text resources in order to supplement a self-written general music. Prior to 2011, there was not an online music curriculum that offered a wide variety of applications, materials, and resources for the use of year-round lesson planning.

The concept of an all-inclusive digital music curriculum was first introduced with *Interactive Music* through the collaboration of Silver Burdett, Alfred, and Pearson, followed by Quaver's *Marvelous World of Music* and, the most recent, *Themes and Variations: MusicPlay Online*. In

Texas school districts, a trend of digital music curriculum adoption appeared in 2015, which included two large ranking school districts in the nation, Houston ISD (ranked 7th) and Dallas ISD (ranked 14th) (Snyder, 2016). The allure of a digital general music program includes the assimilation of online and cloud-based platforms, diverse interactive media resources, alignment with traditional methodologies, ongoing digital updates and new material, efficient time management, and the differentiated instruction that enables teachers to reach even more students via technological platforms. As new curricula adoptions are shifting towards digital content, it is essential to explore the perspective and feedback from current educators to obtain a current snapshot of general music. The digital curricula providers of the Silver Burdett *Interactive Music®, Quaver's Marvelous World of Music®,* and Themes and Variations' *MusicplayOnline®* have been selected for examination into the viability and benefit of developing a 21st century general music classroom.

On October 4th, 2011, Pearson released the premiere PK-8 general music curriculum of the Silver Burdett® *Interactive Music* in association with Alfred Music® (Pearson, 2016). The all-digital platform was a significant step away from the typical graded-level text book series which offered a multitude of digital mp3, song banks, midi-adjustable song features, interactive games, and platform of the *Online Learning Exchange*. *Interactive Music* is equipped with a 36 lesson-set for each grade which provides downloadable song-based lesson files, pdf sheet music, printable activities, national standard alignment, and structured lesson plans that can be edited in word applications. *Interactive Music* boasts an activity and lesson bank of over 1600 selections that can be quickly accessed through search tools or grade-level units. The PK-8 costs $1,435.97-$1,678.97 per grade level for the 8-year license. *Interactive Music* issued an extensive update in January 2017, supporting the convenience that is a feature of an online curriculum.

Quaver's Marvelous World of Music® was a joint endeavor of music artist, Graham Hepburn and businessman, Dave Mastran, out of Nashville in 2008 (Quaver, 2017). Since the 2011 release of the 30-episode music collection in the *Quaver's Music Essentials*, the vision of providing educational tools developed into a complete online K-5 curriculum. Texas music education

received its own customized version of *Quaver's QK-5 Texas Music Curriculum*, developed just prior to the ESSA and the Texas Proclamation of 2015 (TEA, 2017), making it the only fully TEA compliant curriculum adoption. Marvelous World of Music® is used in over 4,000 schools in most states across the nation and in 16 countries, making it one of the largest K-5 music curricula providers in the world. Quaver's resources include over 216 full lessons organized into 36 weeks, 600+ songs in ClassPlay, complete instrument units for recorder, keyboard, and ukulele, methodology-based lessons of Orff, Kodàly, Gordon, Eastman, and Dalcroze, sequenced grade-level curriculum maps that include Pre-K, fully customizable *click and drop* lesson plans, weekly educator newsletter with *The Beat*, and extensive webinar training resources for the reinforcement of professional development. The Texas QK-5 curriculum prices are $1,575 a year or $10,400 for the 8-year license which includes all features of the web platform in addition to a full USB Flash Drive content back-up for offline usage. The Quaver company holds this essential vision: "We want to set a new standard for general music education—to help teachers become more effective with less effort and to have children learn music while having fun." (Quaver, 2017).

Canadian-based *Themes and Variations* founded by Denise Gagnè in 1994 has been a foundational music curriculum and education resource for many classrooms in Canada and the US (Themes and Variations, 2017). The *Musicplay K-5/K-6* series is the classroom curriculum package includes grade level teacher guides, digital lesson resource, Smartboard files, mixed-percussion guides, performance/accompaniment CDs, and the inclusion of the *Musicplay Online* which was released in October 2016. The basic K-5 School Complete Package starts at $1,625 and the upgraded package with a class set of student books costs $2,200. Many additional resources and classroom activities can be added to customizable packages, allowing for the teacher to design a unique music curriculum. The K-5 Musicplay package includes online subscription for 3-year access, providing a variety of user-friendly web features along with 700 full song lessons by grade level, piano sheet music, lesson plans, warm-up exercise videos, rhythm and solfège activities, and instrument lesson units for Orff percussion, guitar, ukulele,

and recorder. The most valuable attribute of *Musicplay Online* is that it can be purchased at an annual subscription of $149, a remarkable bargain for districts with limited budgets and smaller education organizations such as homeschool communities, early childhood centers, or private schools. Current features of each of the three curriculum providers can be seen in Tables 1 and 2 below.

Table 1. Features of three popular digital curriculum providers.

Curriculum Features	Quaver®	Interactive Music®	MusicPlay Online®
National Standards	X	X	X
TEA-TEKS Compliant	Full Compliant	TEKS Correlations K-4	TEKS Correlations K-5
K-8 (PK component)	X	X	X
Single User Login	X	X	X
Grade-level Units	X	X	X
Song-based Lessons	X	X	X
Interactive Activities	X	X	X
Interactive Lessons	X	X	—
Smart Device Apps	4	—	6
Student Home Access	X	X	—
Hispanic Music	13	59	32

Table 2. Resources offered by three popular digital curriculum providers.

Curriculum Resources	Quaver®	Interactive Music®	MusicPlay Online®
Teacher Training	Online and In-person	Online and In-person	Workshops Only
Print Resources	X	X	X
Hardcover Textbooks	—	X	X
Downloadable Multimedia Content	USB Flash Drive	X	Sheet Music/Lessons
Interactive Music Player/Accompaniment	X	X	MP3/Video only
Editable Lesson Plans	X	X	—
Formal Assessment Tool	X	X	—
Instrument Units and Lesson Resources	Keyboard (26), Recorder (19), Ukulele (28)	Percussion, Recorder, Guitar	Percussion, Recorder (38), Guitar (25), Ukulele (32)

The purpose of this study was to investigate teachers' perceptions about the viability and benefit of using a digital music curriculum in the elementary music classroom. A survey was created that focused on three leading digital curricula providers: PK-5/8: *Quaver's Marvelous*

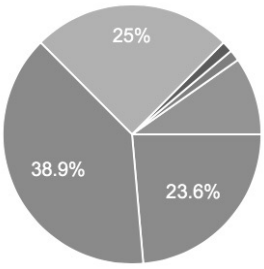
World of Music®, *MusicPlay Online*® by Themes and Variations, and Silver Burdett's *Interactive Music*® by Pearson and Alfred.

Method

An online survey created in Google Forms was emailed in November 2016 and, again, in January 2017 to over 400 Texas elementary music educators that subscribed to digital curricula in and around Dallas, Houston, and Fort Worth. The survey consisted of three sections: 1) General Information of Educator (5 questions), 2) School and Classroom Information (3 questions), and 3) Digital Music Curriculum and Resources (14 questions). The final section allowed participants to provide further feedback about their prescribed digital curriculum. The survey took between 4 and 7 minutes to complete.

Results

Participants (N = 72) were Texas educators at schools in various districts within and surrounding the cities of Houston, Dallas, and Fort Worth (see Figure 2).



Houston ISD	**17**	23.6%
Dallas ISD	**28**	38.9%
Fort Worth ISD	**18**	25%
Fort Bend ISD	**1**	1.4%
Private School	**1**	1.4%
Other	**7**	9.7%

Figure 2. Location reported by survey participants. "Other" consisted of schools in various districts using *Musicplay*.

Participants indicated college specialization in the following areas: vocal (33.3%), woodwind (22.2%), brass (15.3%), percussion (5%), or two or more areas (19.4%). 69.4% of participants reported 4+ years of elementary teaching experience (9 years and above, 50%; 4 to 8 years, 19.4%; and 0 to 3 years, 30.5%) and 43% indicated having received specialized certification in Kodàly, Orff, or Gordon methodologies.

Participants provided information about their school demographics, music classrooms, and school resources. Aligning with the documented growth of predominantly Hispanic communities in the metropolitan centers of Houston and Dallas, participants confirmed prominent Hispanic populations in their schools (see Figure 3).

Typically Caucasian (over 50%)	**3**	4.2%
Typically Hispanic (over 50%)	**45**	62.5%
Typically African American (over 50%)	**7**	9.7%
Typically Asian American (over 50%)	**0**	0%
Typically Hispanic and African American (50% and 50%)	**11**	15.3%
Balanced demographic or no majority	**6**	8.3%

Figure 3. Reported survey data on participants' school demographics.

The majority of participants reported regularly teaching in a music class consisting of 16 to 25 students (83.3%). 43.1% of teachers indicated having observed class size growth over the past few years. It was also clear from the responses that most participants have available to them technology, such as laptop (98.6%), wireless Internet (86.1%), smart tablet or iPad (72.2%), and a Smartboard (80.6%), that allows them to take advantage of interactive digital curriculum resources (see Figure 4).

Screen Projector	**49**	68.1%	Teacher Computer/Laptop	**71**	98.6%
TV	**8**	11.1%	Teacher Ipad/Tablet	**52**	72.2%
Smartboard/Prometheon/Ebeam Technology	**58**	80.6%	Internet (Cable)	**47**	65.3%
Sound System/Room Speakers	**44**	61.1%	Internet (WIFI)	**62**	86.1%
Student Computers	**8**	11.1%	White Board (magnetic)	**56**	77.8%
Student Ipad/Tablet (individual or class set)	**6**	8.3%	White Board (non-magnetic)	**19**	26.4%

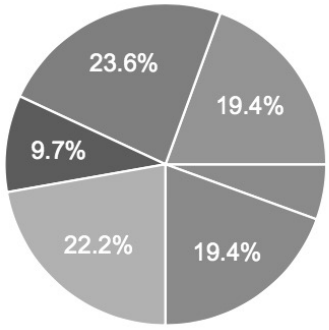
Figure 4. Reported survey data on digital resources available to participants.

It was clear that the participants have the available technology to take full advantage of the interactive digital curriculum resources using a laptop (98.6%), wireless internet (86.1%), smart

tablet or iPad (72.2%), and the smartboard (80.6%).

Digital curriculum and viability

The third section of the survey was designed to answer whether teachers feel that digital music curricula are viable and beneficial to elementary music classrooms. Responses revealed that the majority of participants (65%) used *Quaver's Marvelous World of Music*® at the time of the study and that most teachers (62.5%) had previous experience in using a music curriculum series prior to the digital subscription. Most participants used the digital curriculum resources in the majority of (59.7%) or occasionally in (23.6%) their lessons and activities. However, educators indicated much less utilization of the digital curricula in classroom assessments, as seen in Figure 5.



Most Assessments and Data/Grades	4	5.6%
Occasional Assessments and Data/Grades	14	19.4%
Occasional Assessments	16	22.2%
Occasional Data/Grades	7	9.7%
Rarely use	17	23.6%
Never	14	19.4%

Figure 5. Reported digital usage for teaching of survey respondents.

In response to questions related to observable improvements in the classroom as result of the including of digital curricula, most participants agreed that improvements were seen in student participation (79.2%), student behavior and classroom management (73.6%), retention of music pieces and songs (75%), and retention of musical knowledge and concepts (75%). Teachers also indicated that the adoption of digital curricula resulted in positive changes in their lesson planning, assessments, and time management (73.6%) as well as in their understanding and instruction of general music content (68.1%). The great majority responded that their digital music curriculum met the grade level TEKS standards (95.8%) and aligned with music

methodologies such as Kodàly, Orff, and Gordon (84.7%).

80.6% of teachers reported that they would recommend their respective curricula to future music educators and most free responses to the final question of the survey, "Do you believe that there is a need to update the general music curriculum to a digital curriculum?" were positively in favor.

Conclusion

Music educators believe that the digital music curriculum is a viable method of instruction in classrooms, benefiting their instruction and their students' learning, as there was an overall 71.9% of regular usage and a reported 73.3% of improvement of student and teacher performance. Additionally, the data reflected alignment with both music education standards (95.8%) and traditional methodology (84.7%). Participants in this study viewed the online digital music curriculum as viable for the music program and beneficial to the classroom.

The survey used in this study had limitations, as only a few districts were chosen due to time constraints and limited district access. To arrive at a more comprehensive understanding of the use of digital curricula, it may be necessary to include a larger, more diverse sample of educators and schools across the state. Further research may also examine more closely the effects of a digital curriculum on student success as defined specifically by state standards.

Keywords

educational technology, digital music curriculum, ESSA, STEM, STEAM

Address for correspondence

Robert Murillo, Texas Christian University; *Email:* r.murillo@tcu.edu

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