

EDUCATION, TRANSFORMATION AND APPLICATION  
THROUGH MUSIC TECHNOLOGY

A Document

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Master of Music in Music Technology

Education Track

By

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Phoenixville, Pennsylvania

December 2014



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through Music Technology

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## ABSTRACT

During the past twenty years, the “landscape” of music education has changed significantly with the impact and influence of technology. The laborious task of handwriting musical scores has been replaced with a quick click on the computer screen or the automatic transcription into notation through the use of a MIDI instrument. However, there has also been a disconnect between the potential use of music technology by students and the need for technology training by the educators. The use and integration of instructional technology into classroom practice has become the required academic standard, so it is imperative to guarantee the teachers’ knowledge, skills, and practice for implementation to occur. Benchmarks for music technology competencies have been established by professional organizations, including the Technology Institute for Music Educators (TI:ME) and The National Association for Music Education (NAfME). Establishing a music technology degree and enhancing the current music curriculum with appropriate technology courses are effective methods by which colleges and universities can successfully prepare music educators and professional musicians.

In order to provide the necessary training and preparation for music teachers and professional musicians, colleges and universities must offer current and effective music technology courses/programs. The purpose of this study was to collect data from music educators, including their music technology training, experience, use, and proficiency in order to assess the effectiveness of music departments and schools of music in preparing students for careers in music education and other professional music fields. Analysis of the collected data with regard to courses, standards, and guidelines of successful music technology programs could then be utilized as the framework for developing and implementing a music technology emphasis (and possible degree) at a private college in the Southeast.

The results of this survey based on 70% participation tend to support previous research. A majority of technology used in the classroom is for administrative, management, and general instructional purposes. The bulk of training includes music notation and multimedia, while experience with production and recording and electronic/virtual instruments is marginal. Taking the initiative to learn through instructional websites or self-study greatly increased those outcomes. The completion of 3-6 credit hours (average) in music technology training is the equivalent of only one or two courses, which clearly indicates a lack of adequate preparation for teaching and training students. Consequently, music educators lack confidence and proficiency in their instruction and use of music technology.



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## **Chapter 1 – Introduction**

During the past twenty years, the “landscape” of music education has changed significantly with the impact and influence of technology. The laborious task of handwriting musical scores has been replaced with a quick click on the computer screen or the automatic transcription into notation through the use of a MIDI instrument. However, there has also been a disconnect between the potential use of music technology by students and the need for technology training by the educators. Williams and Webster summarized how technology is enabling new approaches to music learning, while other researchers examined the aspects of music technology, which relates to teacher pre-service training.

Although between 75% and 92% of music teachers use computers for school-related and administrative purposes, less than 30% actually use technology during class with their students (Bauer, Reese, and McAllister 290). In a study by Taylor and Deal (2000), 90% of music teachers expressed the need and desire for technology training in order to maximize their “instructional potential of technology.” Reese and Rimington (2000) discovered that only 25% of teachers received formal pre-service technology training and approximately 13% of school districts offer annual in-service music technology training. Therefore, school systems, private schools, universities, and professional organizations must identify the types of training that will be most effective and increase efforts to make this training more accessible.

The use and integration of instructional technology into classroom practice has become the required academic standard, so it is imperative to guarantee the teachers’ knowledge, skills, and practice for implementation to occur. Benchmarks for music

technology competencies have been established by professional organizations, including the Technology Institute for Music Educators (TI:ME) and The National Association for Music Education (NAfME). In addition, the National Association of Schools of Music (NASM) maintains standards for “majors in or based on electronic media and technology.” Establishing a music technology degree and enhancing the current music curriculum with appropriate technology courses are effective methods by which colleges and universities can successfully prepare music educators and professional musicians (Deal and Taylor 1997). Wolek offers the following process of “making connections” between what can be developed and what is already established:

Identify how current students are specifically learning about music technology and how they might be better served. Perhaps students have inquired about courses in studio production or computer music, or maybe those courses are already being taught through the composition program. Perhaps there is a media program that seems to be drawing students away from the music program. Wherever these courses are, you must create an inventory of how students are currently learning about technology, and then ask how the addition of a technology degree would change things.

In 2012 NASM revised its standards and guidelines for colleges and universities offering studies in music technology. These standards define the purpose, scope, and competencies of music technology courses for specialization, minors, or majors. Even if a music department or school of music is not currently accredited by NASM, their standards provide a framework for ensuring the teachers’ knowledge and skill for integrating music technology into classroom practice. The following is a summary of those standards:

- Music technology is characterized by integrations and fusion of musical and technological knowledge and skills to produce work for various artistic, commercial, research, educational, and other purposes.

- The field of music technology is large; its scope, broad with many sectors and specializations. The field of music technology is dynamic. It evolves with changes in and also influences the evolutions of music and technology.
- Competencies and proficiencies in music technology may be gained in many ways. These include, but are not limited to, degree programs, apprenticeships, individually directed development, work experiences, work experiences, and practicum and internship experiences (12-13).

It has become increasingly apparent that the use of technology is necessary in every aspect of music instruction, learning, and research. In order to determine what students should learn from the music technology degree or program, there must be a logical progression so that skills build on each other and the course sequence meets the goals of the program. Upon graduation music educators or professionals must be able to function comfortably and confidently in their given area—“not only as a powerful tool in their own education, but also as a teaching tool for developing materials and curricula” (Deal and Taylor 17). Instruction and methods should include application and a direct relation between music technology and the existing music degree programs.

In order to provide the necessary training and preparation for music teachers and professional musicians, colleges and universities must offer up-to-date and effective music technology courses/programs. Those courses should serve all music students, not just those seeking specialization. The purpose of this study was to collect data from music educators, including their music technology training, experience, use, and proficiency in order to assess the effectiveness of music departments and schools of music in preparing students for careers in music education and other professional music fields. Analysis of the collected data with regard to courses, standards, and guidelines of

successful music technology programs can be utilized as the framework for developing and implementing a music technology emphasis (and possible degree) at a private college in the Southeast.

## **Chapter 2 - Review of Related Literature**

Participation in school music programs has been described as an “inverted pyramid” during the past nearly five decades. In 1968 the Tanglewood Symposium noted that only 20% of high school students participated in school music programs (Choate 1968). Almost forty years later, a similar study by Edwards (2006) discovered that 82% of secondary school students were not enrolled in traditional performance-based music programs (including band, choir, and orchestra). There is a consensus among

contemporary music educators to increase student participation by incorporating technology into instruction and attract “non-traditional” music students. According to Williams, a non-traditional music student is:

In 6<sup>th</sup>-12<sup>th</sup> grade, does not participate in traditional performing ensembles, may have a music life completely independent of school music, may or may not play an instrument (if so, likely drums or guitar), may or may not read music notation, may be unmotivated academically, and may claim to ‘hate music.’ (2008)

In order to experience the reward of reaching and inspiring more students, perhaps it is time for music educators to consider a less formal learning approach and offer more flexible, technology-based music opportunities.

During the past several years, it has become increasingly obvious that college music graduates must be proficient in working with technology in every facet of music instruction, learning, and research. According to Deal and Taylor, in 1997 only a few music departments in American colleges and universities were equipped to provide their music majors with sufficient training. However, the need was so vital that the National Association of Schools of Music (NASM) added technology as one of the six competencies required for all undergraduate degrees in music. NASM identified the objective of this component in its *1995-96 Handbook*:

Technology: Through study and laboratory experience, students should be made familiar with the capabilities of technology as they relate to composition, performance, analysis, teaching, and research (73).

NASM has persistently addressed the significance of this issue and approved revisions to the *2011-12 Handbook*, including Appendix I.H “Standards and Guidelines for Studies in Music Technology.” Section 4.C of the addendum outlines the following characteristics for music technology:

- A field of study and practice characterized by integrations and fusions of musical and technological knowledge and skills to produce work for various artistic, commercial, research, educational, and other purposes. In this field, digital and emerging technology serves as the primary tool, medium, or environment for musical and music-related work.
- Music and technology have a long and fruitful relationship...The study and use of technological means are found in various music courses and in the work of various music specializations.
- [It] is intended to produce professional competence in the integration of music and technology...[and] requires development of a professional level of competence in music.

John Deal and Jack Taylor conducted two surveys, the first among public schools in Florida and the second through electronic interviews with ten collegiate music departments known for their implementation of technology in music instruction, composition, and performance. The results of those surveys identified five issues, which must be addressed in order to meet the NASM requirement and implement an appropriate model for technology instruction:

- Essential computer skills for all undergraduate music majors
- A variety of computer-skill training from area to area (emphasis to emphasis) versus one set of skills which are adequate for all music majors
- At least one required course in computer literacy for all music majors and/or possible specialized technology experiences in selected courses
- Computer training in the music department or by another department
- Instructional accommodations for the wide range of individual student skills

Overall, those who responded to the higher education survey favored the opinion that music technology requirements should be fulfilled within music departments (Deal and Taylor 19).

Although music teachers maintain high levels of interest in music technology, the development of technology-based music classes has been a slow process. Research focuses on the integration of technology into traditional music instruction and existing class settings rather than in performance settings (Dammers 56). One of the prevailing reasons for this delay is the need for appropriate technology training, especially the applications of technology to music teaching and learning. Two studies (Reese and Rimington, 2000; Taylor and Deal, 2000) investigated the difference between the potential benefits of music technology and the actual implementation by students and educators. These studies revealed that between 75-92% of music teachers used technology for administrative and classroom management purposes, less than 30% actually used computers with their students during instructional time. These studies also revealed that 94% of music teachers desired additional technology training, only 13% of the school districts offered annual music technology training, 25% of the teachers received formal training at a university, and more than 90% were willing to actively pursue technology training. In order for music educators to fulfill the instructional and learning potential of technology, school districts, private schools, colleges, universities, and professional organizations must increase efforts to make this training more accessible to teachers.

In her research about technology professional development, Lynne Schrum (2001) identifies the following factors “that are necessary for technology training to be effective, resulting in the adoption of instructional technologies by teachers”:

- 30 hours of instruction and work with new technologies are necessary before teachers will actually use them. An exposure to technology shorter than this is not usually sufficient to effect its eventual integration into instructional practice.
- Having equipment available at home and at school so that there is an opportunity for teachers to practice and develop a level of comfort is essential.
- Many people are apprehensive of technology, afraid they will embarrass themselves with it. Teachers need to feel comfortable with technological tools before they will actually use them.
- Using technology may make teachers rethink instructional practice and transform the way they have done things for many years. Teachers can be reluctant to do this and must be made cognizant of the benefits resulting from the use of technology.

An earlier survey by the Center for Technology in Education at the Bank Street College of Education in New York City indicated that it takes a minimum of five years “of exposure to and hands-on experience with computer technology” for a teacher to consistently use the technology “creatively and effectively in the classroom.” The survey further concluded that “a comprehensive exposure to all aspects of computer technology and its application to music” through example or “viewports” will effectively integrate technology as an “essential ingredient of music learning and the creative process.” Technology then becomes “teachology”—a coexistence of teaching with technology and the creative gateway for all aspects of music education, including composing, performing, basic musicianship, an ethno-musicological worldview, research, and administration (Williams 26).

The previously mentioned public school survey by Deal and Taylor revealed practical data about the number of teachers utilizing technology in their music classes, the background of undergraduates entering departments or schools of music, and the teachers' perception about music technology instruction as an integral part of a degree program. 80% of the respondents (primarily public school music teachers in Florida) confirmed they had received some computer training and used technology for music applications. 71% considered themselves "self-taught." Likewise, 94% thought that college music departments should offer music technology courses for music majors, and 63% stated that music technology instruction should be required.

From their surveys and collective experiences, Deal and Taylor developed a model that includes what music students should know in addition to how colleges and universities might fulfill the NASM technology requirements and ensure music technology competency among their students. That model would embrace four basic principles:

- Technology instruction in music degrees is a "bottom up" process; as students develop increased skill and knowledge, there is added pressure on the faculty to include technology in their instruction and produce a more effective strategy for integration of technology throughout the entire music curriculum.
- NASM competency should be achieved by a synchronized progression of experiences based upon fundamental skills and knowledge.
- Learning experiences should represent minimal competency standards so that all schools have a "common ground" approach, providing students with the best possible music technology instruction. As the institution's resources increase, the program will provide advanced standards and opportunities for students desiring more than minimal music technology education.

- Technology is constantly evolving, so the educational opportunities should continue to change and grow (20).

From the Tanglewood Symposium of 1967 to the innovative standards and competencies established by the NASM, there has been a steady but slow process of incorporating technology into traditional music instruction. Thanks to the ongoing focus of the music education technology community through organizations such as the Technology Institute for Music Educators (TI:ME) and the National Association for Music Education (NAfME), teachers can develop music technology skills and integrate technology into existing music classes (Dammers 56). Stampfill identified the direct correlation between the usage of digital music technology and organizational memberships, conference attendance, and digital music workshop attendance. One case study in New Jersey confirmed that technology presentations by TI:ME and NJMEA at state and regional conferences had a “monumental” impact and provided “a context that is conducive for the creation of technology-based music classes” (Dammers 62). In determining music technology’s place in the music teacher training process, the recurring theme is a call to action. “Music education must keep pace with music technology at large and move to a position of leadership. We ensure our long-term relevance as a profession by making computer technology an integral part of the teacher training process” (Williams 30).

### **Chapter 3 – Design and Implementation**

In order to determine the knowledge and use of technology by local music educators, an online survey was created. The questions were designed to be concise, and the length of the survey was intended to be brief (the average time for completion of the survey was 6 minutes, 20 seconds).

Twenty general music educators from the Douglas County (Georgia) School System received an email invitation to complete the online survey. This public school system was selected because it is the writer's county of residence. The total student enrollment is approximately 25,500 for the 2014-15 academic year. These music educators represent

20 schools and more than 10,000 students spanning the socioeconomic range (Douglas County School System).

The original email was a simple invitation, introducing the participants to the purpose of the study and providing a link to the online survey. In order to establish a personal connection, the email was distributed by one of the music educators/participants to fellow educators. The online survey was available for approximately three weeks, and the participants received a reminder email approximately two weeks after the initial invitation.

Participants provided information about their experience in music education, their knowledge of music technology, their proficiency (including degree of preparation, training, and confidence) in using technology, and the frequency with which they use music technology in their teaching. The respondents also provided the following:

- Personal and demographic information
- Educational background, including degree, institution, and year of completion
- Knowledge of MIDI, music and production software, digital media, and the Internet
- Effectiveness of their music technology training and instruction
- Quality of preparation for the “real world”

This questionnaire was developed based on a review of literature, similar questions in related studies, an examination of NASM standards and their potential implementation in music departments and schools of music, and the music educators’ personal experience with and use of music technology. The goal was to compare the results of this survey

with those of previous studies in order to decide whether the quantity and quality of music technology training and instruction increased, decreased, or remained approximately the same.

Using simple frequency calculations, along with percentage graphs, results from the collected data were analyzed. Additionally, narrative was used to report the responses to some of the open-ended questions. Refer to Appendix A for a copy of the survey.

## **Chapter 4 - Results**

Of the twenty music educators invited to participate in the online survey, fourteen (70%) responded, including twelve females and two males. The participants completed their degrees between 1981-2014 at a variety of public and private institutions:

- Aurora University
- Florida International University
- Georgia College
- Grand Canyon University
- Kent State University
- Liberty University
- Mississippi College
- Shorter College (2)
- University of Georgia (2)
- University of Nebraska Omaha
- University of West Georgia
- Walden University

Approximately 57% majored in music education, while 21% hold degrees in music performance or applied music. The remaining 22% comprise the following:

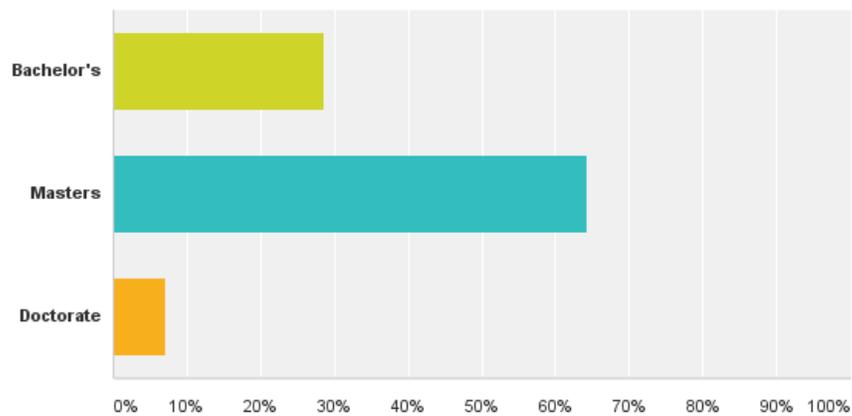
- curriculum, instruction, and assessment
- music therapy
- recreation therapy

71.43% of the respondents have earned advanced degrees (9 masters and 1 doctorate). In addition, 28.57% have 6-10 years of experience in music education, while 21.43% completed 21-25 years.

Note: The respondent who holds a doctorate (completed in 2014) also has the most music education experience with 26+ years.

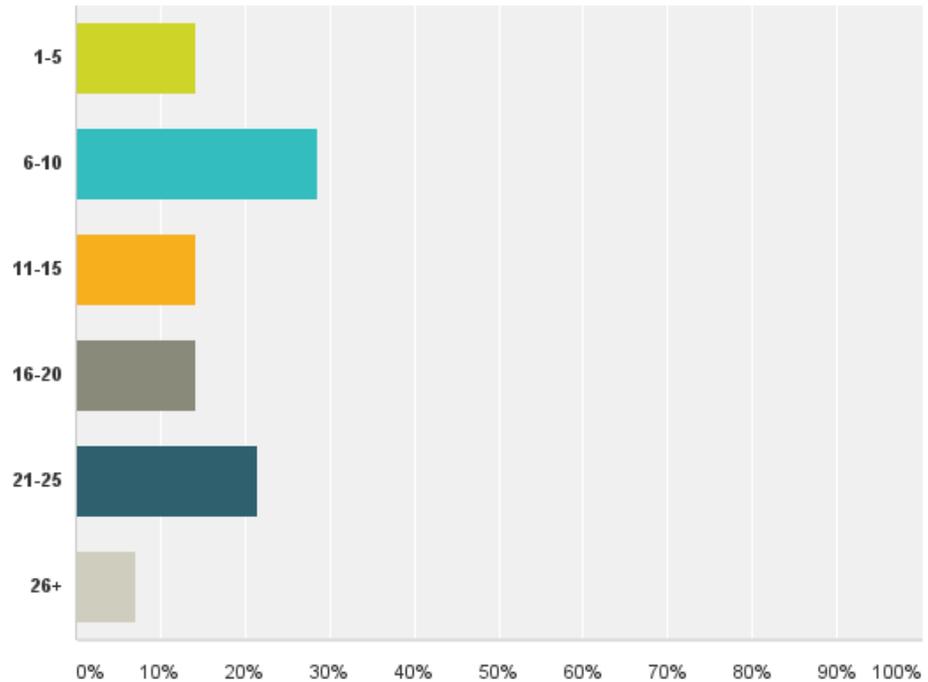
### Q2 What is the highest degree you have received?

Answered: 14 Skipped: 0



## Q6 Years of experience in music education

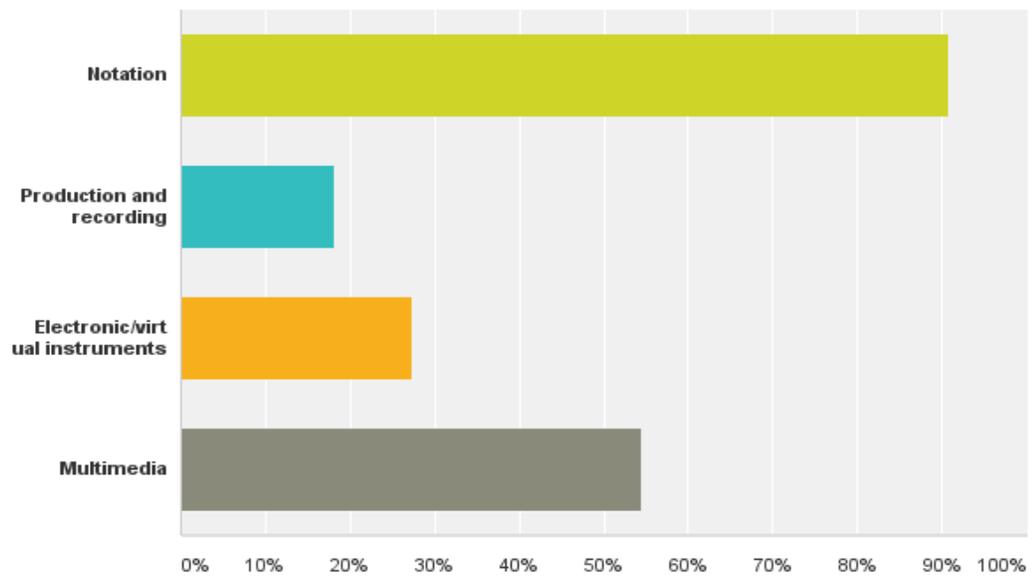
Answered: 14 Skipped: 0



Responses in section 2 (questions 7-13) of the survey were directly related to music technology training at various levels and in diverse settings. A majority of the participants indicated they had received ample training in notation (90.91%) and multimedia (54.55%) during their undergraduate programs, but only 27.27 percent had experience with electronic/virtual instruments, while 18.18% encountered production and recording opportunities.

## Q7 Undergraduate

Answered: 11 Skipped: 3

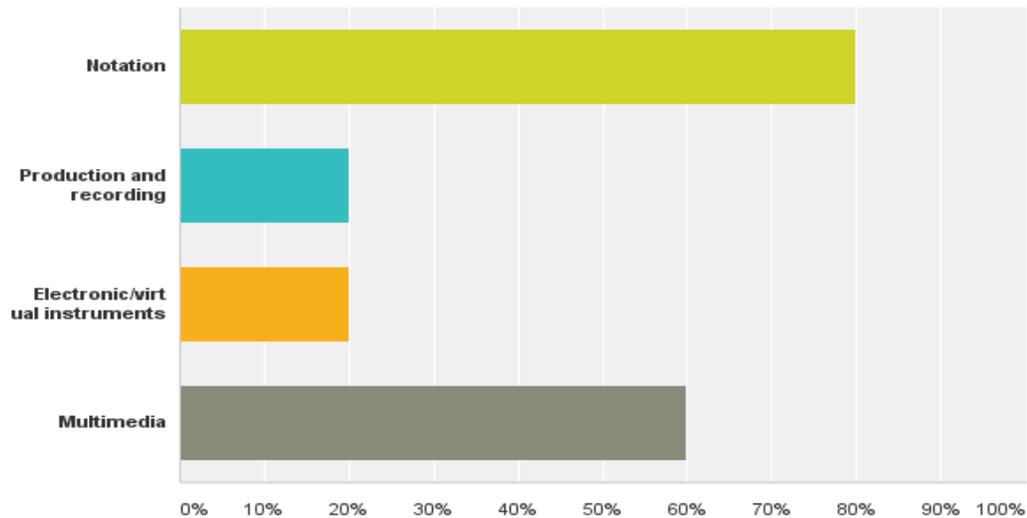


The responses were similar for those completing graduate degrees, although they were somewhat more evenly distributed:

- Notation = 80%
- Multimedia = 60%
- Production and recording = 20%
- Electronic/virtual instruments = 20%

## Q8 Graduate

Answered: 5 Skipped: 9



The remaining responses were based on training and experiences in less formal settings: in-service/professional development, conferences, instructional websites, and self-study.

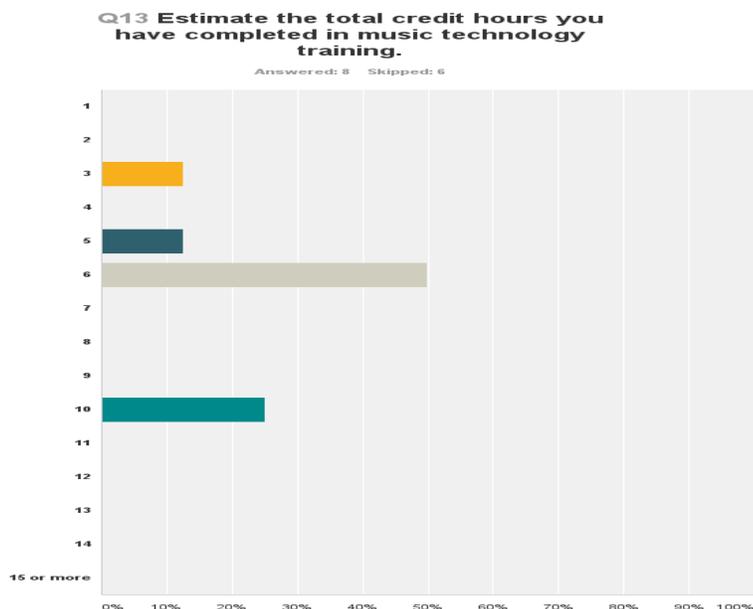
The following is a summary of those responses.

- In-service/professional development
  - Notation = 33.33%
  - Production and recording = 0%
  - Electronic/virtual instruments = 16.67%
  - Multimedia = 83.33%
- Conferences (including state MEA, TI:ME, regional and national NAFME):
  - Notation = 50%
  - Production and recording = 12.50%
  - Electronic/virtual instruments = 37.50%
  - Multimedia = 75%
- Instructional websites:
  - Notation = 66.67%
  - Production and recording = 50%
  - Electronic/virtual instruments = 50%
  - Multimedia = 66.67%

- Self-study:
  - Notation = 66.67%
  - Production and recording = 33.33%
  - Electronic/virtual instruments = 44.44%
  - Multimedia = 100%

Obviously, notation and multimedia were predominant at all levels and in all settings; however, it is interesting to note that the production and recording as well as the electronic/virtual instruments components increased significantly in the self-directed and self-study settings. This indicates there is genuine interest in these areas, which deserve enhanced attention in more formal and organized training situations.

When asked to estimate the total number of credit hours completed in music technology training, the responses ranged from 3 to 10 total credit hours completed. Half (50%) of the participants had completed 6 credit hours, 25% achieved 10 credit hours, and the remaining 25% equally accomplished 3 or 5 credit hours.

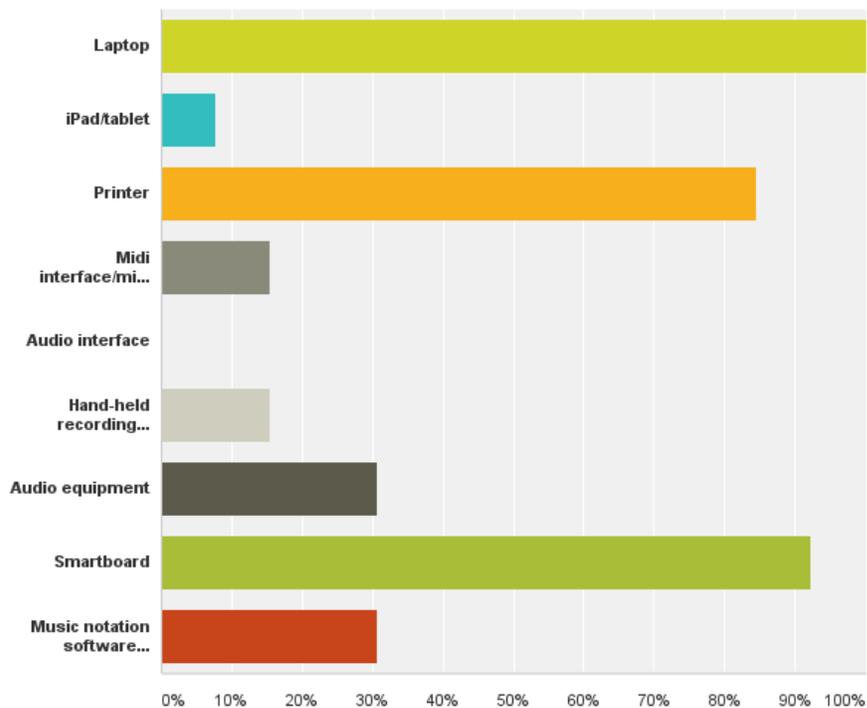


Section 3 (questions 14-19) of the survey focused on the actual use of music technology in the participant's role and responsibilities as a music educator. The three

most frequently used technologies were not directly linked to music technology but can be utilized for general classroom management and administrative purposes: laptop (100%), SMART board (92.31%), and printer (84.62%). Ranking in fourth place (30.77%) were audio equipment and music notation software with MIDI interface/MIDI keyboard and hand-held recording devices tied for fifth place (15.38%).

**Q14 Which of the following technologies are available for your use? (Identify all that apply.)**

Answered: 13 Skipped: 1

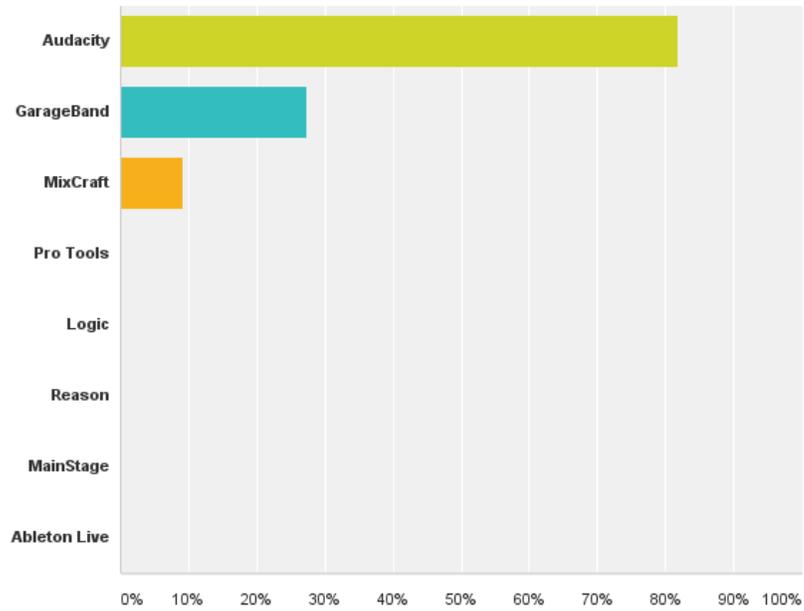


Participants also responded to the availability and use of production/recording software and specified only three of the eight selections: Audacity (81.82%), GarageBand (27.27%), and MixCraft (9.09%). Likewise, the participants responded to the availability of multimedia software. The majority use PowerPoint (91.67%) and Movie Maker (66.67%), followed by iMovie (25%), Keynote (8.33%), and Final Cut Pro (8.33%).

When asked how frequently they use music technology as music educators, 81.82% indicated in-class daily, while 18.18% identified in-class and out of class weekly.

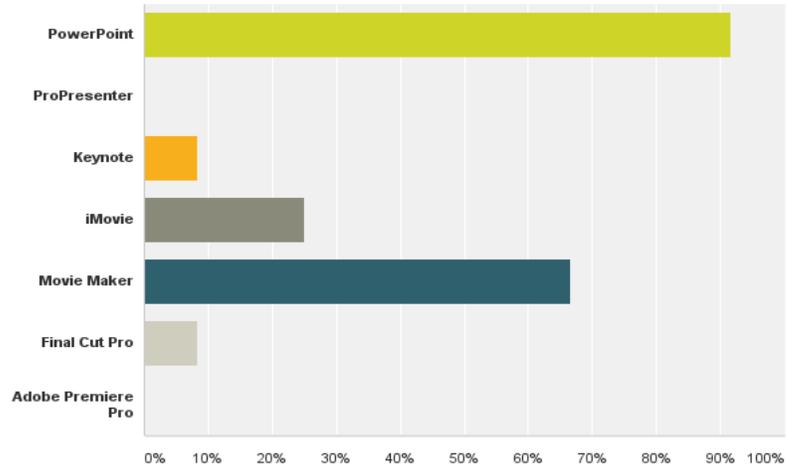
**Q15 Which of the following production/recording software is available for your use? (Identify all that apply.)**

Answered: 11 Skipped: 3



**Q16 Which of the following multimedia software is available for your use? (Identify all that apply.)**

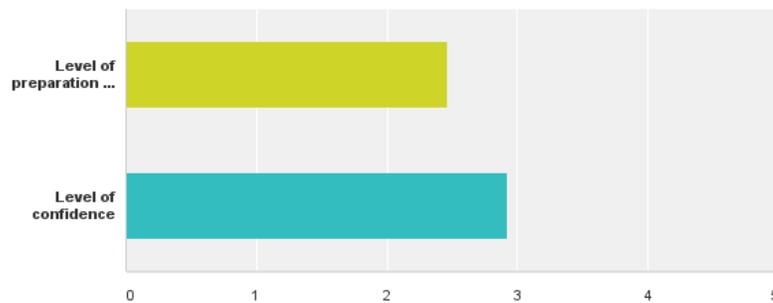
Answered: 12 Skipped: 2



Perhaps the most significant and enlightening result was the participants' responses to the final question about their level of preparation/training and level of confidence for teaching and using music technology. When asked to rank these levels on a scale from weak (0) to moderate (3) or strong (5), the average outcome for preparation/training was only 2.46, and confidence rated 2.92.

**Q18 Please rank your level of preparation/training as well as your level of confidence for teaching and using music technology.**

Answered: 13 Skipped: 1



## **Chapter 5 – Summary and Conclusions**

The results of this survey tend to support previous research. A majority of technology used in the classroom is for administrative, management, and general instructional purposes (comparable to 75-92 percent in the previously mentioned studies by Reese and Remington; and Taylor and Deal). The bulk of training includes music notation and multimedia, while experience with production and recording and electronic/virtual instruments is minimal. Taking the initiative to learn through instructional websites or self-study greatly increased those outcomes. This initiative collaborates with Taylor and Deal's discovery that more than 90 percent of music educators were willing to participate in technology training in order to increase knowledge and competency. The completion of 3-6 credit hours (on average) in music technology training is the equivalent of only one or two courses, which clearly indicates a lack of adequate preparation for teaching and training students (Reese and Rimington verified that only 25 percent of music educators received formal technology training at a college or university).

Consequently, without sufficient training, music educators lack confidence and proficiency in their instruction and use of music technology. Consider the results of a study by Bauer, Reese, and McAllister. The participants attended a 1-week intensive workshop identifying strategies for teaching music to K-12 students using music technology. Their responses to a pretest (pre-workshop) questionnaire regarding their degree of confidence measured 49.27 of 100. A follow-up questionnaire was distributed 9-10 months after completing the workshop, and the results significantly increased to 81.68 of 100 (296). Likewise, the results of this survey

indicate a similar level of preparation and training as well as level of confidence.

Perhaps the best indicators are the educators' personal comments regarding the overall impact of music technology in their roles, responsibilities, and goals as a music educator.

- "Most of my knowledge and experience comes from individual work or outside experience, and very little to none is from collegiate or other official training."
- "I am fairly comfortable on the computer and use it often in my classroom and preparing for class. I do NOT have any formal training or any purchased software for my classroom."
- "Technology greatly enhances music instruction in my classroom. I wish I had more opportunities to learn about it."
- "Students are more engaged when technology is involved."
- "I believe that in today's tech-savvy world, music technology is very important. Ideally, students should have opportunities to use it. Honestly, I'm always in awe of teachers who successfully include it in their daily lessons, but feel somewhat intimidated about using it more frequently in my classroom."

Two of the participants apparently enjoy a more positive approach and situation:

- "As a veteran music educator, becoming technologically 'savvy' is quite challenging at times. However, I try to continually participate in professional development that helps me meet the challenges in an ever-increasing technology-based classroom."
- "At the elementary level, music technology does not play AS BIG of a role due to the basic level of music understanding of the students. However, in my classroom, we do make use of electric keyboards, which have recording capabilities. The students also have access to age-appropriate websites that supplement and extend their knowledge of basic music concepts."

There is both a need and interest among music educators for enhanced music

technology training in order to transform school music programs into creative opportunities for both traditional and non-traditional music students. This transformation can be a continual process of professional development through the stages of entry, adoption, adaptation, appropriation, and invention (Bauer, Reese, and McAllister 300). Perhaps appropriate teacher training, support, resources, and both formal and informal learning will accomplish long-term “teachnology”—teaching through technology.

## Appendix A

### THE IMPACT OF MUSIC TECHNOLOGY

1. What is your full name?  
*(All personal information will remain confidential and will not be shared in the results of this study.)*
2. What is the highest degree you have received?
3. In what year was your degree awarded?
4. What was your major?
5. Institution where degree was awarded
6. Years of experience in music education

*The following questions are directly related to your music technology training. Identify all responses that apply.*

7. Undergraduate
  - Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia
  - Other (please specify)
8. Graduate
  - Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia
  - Other (please specify)
9. In-service/professional development
  - Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia
  - Other (please specify)
10. Conferences (including state MEA, TI:ME, regional NAFME, national NAFME)
  - Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia

- Other (please specify)
11. Instructional websites
- Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia
  - Other (please specify)
12. Self-study
- Notation
  - Production and recording
  - Electronic/virtual instruments
  - Multimedia
  - Other (please specify)
13. Estimate the total credit hours you have completed in music technology training

*The following questions are related to your actual use of music technology as a music educator.*

14. Which of the following technologies are available for your use?  
(Identify all that apply.)
- Laptop
  - iPad/tablet
  - Printer
  - Midi interface/midi keyboard
  - Audio interface
  - Hand-held recording devices
  - Audio equipment
  - Smartboard
  - Music notation software (Finale, Sibelius, NoteFlight, Notion-please specify in the comment field)
  - Other or comments
15. Which of the following production/recording software is available for your use?  
(Identify all that apply.)
- Audacity
  - Garage Band
  - MixCraft
  - Pro Tools

- Logic
  - Reason
  - MainStage
  - Ableton Live
  - Other or comments
16. Which of the following multimedia software is available for your use?  
(Identify all that apply.)
- PowerPoint
  - ProPresenter
  - Keynote
  - iMovie.
  - Movie Maker
  - Final Cut Pro
  - Adobe Premier Pro
  - Other or comments
17. How frequently do you use music technology in your role and responsibilities as a music educator?
- In-class daily
  - In-class weekly
  - Out of class daily
  - Out of class weekly
  - Other (please specify)
18. Please rank your level of preparation/training as well as your level of confidence for teaching and using music technology.  
(Weak, moderate or strong)
19. Please add comments that would be helpful in understanding the overall impact of music technology in your role, responsibilities, and goals as a music educator.

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