

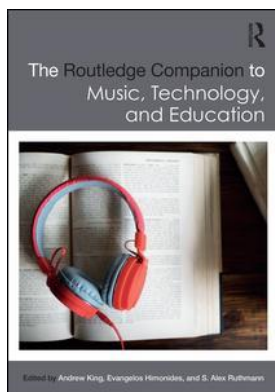
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On: 01 Aug 2021

Access details: *subscription number*

Publisher: *Routledge*

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## **The Routledge Companion to Music, Technology, and Education**

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### **Popular Music and Technology in the Secondary School**

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9781315686431.ch16>

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**Published online on: 29 Dec 2016**

**How to cite :-** Bradley Merrick. 29 Dec 2016, *Popular Music and Technology in the Secondary School* from: *The Routledge Companion to Music, Technology, and Education* Routledge

Accessed on: 01 Aug 2021

<https://www.routledgehandbooks.com/doi/10.4324/9781315686431.ch16>

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# 16

## POPULAR MUSIC AND TECHNOLOGY IN THE SECONDARY SCHOOL

*Bradley Merrick*

### Definitions

For the purpose of this discussion *music technology* refers to any existing or emerging digital device or tools, the use of hardware and/or software and/or web-based applications in any way to support learning about, the creation of, the sharing of, or the performance of music. This draws directly upon the work of Himonides, who suggests that we view music technology from a meta-perspective

as a means of enabling us to become better musicians; understand music and/or the wider impact that music has on our lives and ongoing development; record, capture, experience, study, create, compose, document, analyse, and archive sound and music (and) enhance the teaching and learning experience in the music classroom.

*(2012, p. 437)*

*Popular music* broadly refers to the eclectic range of westernised music styles that have a strong appeal across different eras and provide entertainment to audiences today and in the years gone by. *Popular music* may encompass popular recordings of orchestral, instrumental or vocal works from the Western canon, while also including examples from various popular genres such as rock, jazz, film, television and radio as well as musicals. Music that is commercially produced and developed by various popular artists is considered part of this category. Similarly, music styles that have become popularised over the years such as classical, baroque, chamber and choral music can also be included and could include music genres that have become popular through digital globalisation.

### The Status of Music Technology in Music Education

The continued development of music technology continues to pervade society at a rapid rate, and consequently there is an inherent expectation that education per se will respond and integrate new and emerging devices at speeds that parallel these advancements. Savage says “technology has permeated every aspect of our musical lives in the twenty first

century” (2012, p. 493). The broad discipline of music education has many different curriculum connotations depending on the country of delivery, which makes this even more complex. Digital technology has the capacity to be the common language amongst educators, fostering creativity, collaboration and inquiry, but tied to this is the ongoing need to ensure that the technology supports the development of quality music education, and not solely as classroom-based entertainment.

Whether embedded in the one-on-one learning process of an instrumentalist in the teaching studio, being used with a classroom full of high school students, or acting as a tool for an individual’s personalised reflection to assist their learning of an instrument via video or audio footage, the sheer breadth of music technology in all its forms supports a multitude of flexible learning opportunities through which teachers and students can engage with the aim of enhancing levels of engagement, understanding and application. Critical to this is the ongoing capacity of institutions to support the professional learning of teachers to ensure they have the skills and knowledge to use music technology confidently.

It is important to consider the different groups of digital learners that exist in music education around the world today, *natives* and *immigrants* (Prensky, 2001, pp. 2–3). Savage also poses that there may be some danger in these categories, identifying the *digital expat* who would “go somewhere digital, stay there and never get to know the surrounding areas” (2012, p. 508). The music educators and learners of today represent all of these worlds combined. Some have grown up with records and tape players at the end of the analog era, witnessing the first stand-alone computers. For others, their world has been awash with digital technology that has pervaded their whole lives, including the rise of the Internet, laptops, Wi-Fi and digital television through to mobile devices and ‘apps.’ Social researcher Mark McCrindle highlights that Generations X and Y “have been immersed in these new options their early years and are comfortable with the digital language and technologies” (2009, p. 52).

### **Music Technology and MIDI—Shifting the Landscape of Music Curriculum**

The rise of music technology has seen a shift in the way music education is delivered in schools. There has been a significant shift in the accompanying pedagogy that has emerged, with new approaches constantly being developed. Digital *natives* are the common members of the secondary (high school) classrooms and these developments have often shifted with new commercial developments in music technology.

Our students display intuitive understanding where “new technologies are an integral part of the daily activity that all students employ in much of their work and play” (Merrick, 2012, p. 671). Brown and Dillon highlight the collaborative and cultural potential of these digital innovations (2012), while Tobias highlights how new worlds of interaction have been realised through games and virtual worlds, whereby “games such as Guitar Hero and Rock Band have captured the imaginations of popular media” (2012, p. 530). The challenge for music education is to harness all the possibilities that music technology offers in all of its forms and capacities.

The advent of MIDI (Musical Instrument Digital Interface) in 1983 saw the creation of “MIDI recordings (that could) be edited to a precision of hundredths of a beat. But in addition the pitch, rhythm, tempo or repetition of a single note, a longer passage, or an entire piece could be adjusted quickly and accurately (Rothstein, 1992, pp. 2–3) These developments redefined the direction of music-making and allowed users to create music via

multiple sound sources and instruments, sharing and collaborating digitally for the first time as a means of fostering creativity, developing composition and performance, and changing the way popular music was transmitted. These files allowed multiple parts to be stored as a file and then be shared via the early forms of the Internet, providing access to various forms of popular music via early notation and sequencing software. This provided the flexibility to save, copy, edit, analyse and mix instrumental parts in ways never previously thought possible. Although MIDI was a commercially developed protocol, it was quickly seen as the future of music education, and early software such as Notator (Atari) allowed teachers to see the potential of such innovations. Although very expensive and often difficult to access (with schools often only having one machine due to the excessive cost), MIDI was the start of a new approach to disseminating and teaching music that has become an embedded part of curriculum development in music education around the world.

Coupled with these new technologies, curriculum design for music education had to respond in a significant way to ensure that learning was embedded in the new 'tools' that were on the rise. Significant research and shifts in pedagogy started to appear in various publications, often focusing upon student use of new technology via MIDI (Feldstein, 1988; Kemp, 1986).

These changes that arose as MIDI was created are not dissimilar to the continuous shifts in thinking as laptop computers and music software appeared in 1984 and have continued to evolve to the present day.

Depending on location and often the system of education (e.g. United States, UK, Australia, Europe or Asia), there have always been key differences in curriculum design and structure offered, with some countries offering a more integrated series of classroom courses that encompass aspects of performance, composition, aural skills and musicology while other types of curriculum design focus specifically on areas of music skill such as choral and band, which are commonly offered as individual subjects in American schools. This diversity in curriculum structure has seen varied approaches to integration of music technology across the globe.

### **Sharing of Popular Music, the Internet and Digital Media**

Since the earliest forms of records, tapes, CDs and now digitally stored MP3 and MP4 files, popular music has continued to be a source of connection amongst cultures around the world. From the first sharing of music video on 1 August 1981 via MTV, through to the digital online media store called iTunes in 2003, this access to music has been the thread that has changed how teachers work with students to learn about music. Another significant development was the creation of YouTube in 2005, which catapulted artists and music to all parts of the globe through a highly accessible and flexible online web service.

While these online developments impacted access and dissemination of popular songs, the accompanying development of music software for composing, notating and arranging became more accessible; coupled with the development of portable computers and cheaper equipment, emerging artists were able to record and release their music to the world for a small proportion of the cost historically associated with the recording of an album. Artists like Australia's Savage Garden, who had worldwide success with their popular songs in the late 1990s and early 2000s, highlighted this change in the creation and dissemination of music around the world, when they composed many of their hit songs in a bedroom using a portable computer and various electronic and acoustic instruments.

As popular music has continued to pervade society, the subsequent shift in the way people access and consume music has had a profound impact on the way that approaches to classroom teaching of music have developed. Students and teachers are now able to access, create and share information 24/7 with the proliferation of mobile devices and the continuous access our adolescents have to the Internet and thousands of digital tools and 'apps' that can be used in their lives, whether for learning, creating or communicating.

From a teaching and learning perspective, the way in which popular music is so readily accessible via the Internet and supported via other technologies including a myriad of online resources and digital tools has demanded a significant change in the teaching and learning process in secondary schools around the globe. This has necessitated a significant shift in pedagogy, whereby the teacher now adopts a series of different roles in class. The teacher often moves continuously between instructor, guide, facilitator and observer. These changes are integral in the learning process.

It is very common to observe students melding numerous learning experiences into each other, whereby hundreds of digital transactions become the main currency in their learning process. Often students become their own teachers, guiding their inquiry through a series of digital roads and pathways in order to consolidate their own musical understanding.

The following is a selection of some of the ways in which popular music and the use of digital technology are changing the classroom environment. Although only examples, these serve to illustrate how students and teachers interact in different ways as they learn using music technologies and a range of digital resources.

1. Students and teachers are now able to access and share music (audio, video, scores) for analysis, performance or rehearsal at any time of day, from any location in the world.
2. Students and teachers are able to share, observe and hear a range of different versions of performances by artists (i.e. the original video, live performances and reviews of performances).
3. Students and teachers can now explore the function of music in a multifaceted and customised way, whereby an individual can stop a performance midway, rewind or slow down a video, analysing the media to assist their understanding of the music presented.
4. Students can now learn music informally (through listening, observing and copying) in contrast to the didactic teaching methods that were thought to be the most effective for many years in classrooms and studios. A good example of this is the emergence of TABs (tablature which displays the fingers to be used to play songs and chords on the guitar rather than the actual pitch of the note), which are widely available on the Internet and used by many music educators and students around the world.
5. The access to popular music and the proliferation of digital recording software allows students and teachers to replicate and explore the dimensions of music-making in different ways, creating their own compositions and digital recordings and videos (i.e. a student creating a bass line, drum loop and keyboard part on their mobile device or laptop then recording a vocal line. After mixing, this is shared as an MP3/MP4 via the web on social media).
6. Students are now able to access interactive videos via the web or use YouTube to receive instruction in how to play instruments or songs. This allows them to perform popular music without having to receive instruction from a teacher, and often seeing

learning of popular songs without the capacity to actually understand the musical notation or relationship of pitch or rhythm. This has allowed for the globalisation of popular music styles around the world.

These selected examples of possible approaches to learning are more common in many secondary schools, providing the catalyst for ongoing change in the learning process. These ongoing shifts continue to provide enormous challenges for teachers of varied levels of experience and proficiency as they look to address and implement the influx of digital technology and popular music that surrounds them. Recently graduated teachers, who are more intuitive in their ability to use technology, have a distinct advantage in the teaching process.

In essence, the continuous emergence of new technologies and rapid proliferation of so many styles of popular music has redefined the music classroom. The latest dimension of these changes include the sharing of learning experiences via digital electronic books which incorporate sound, video, visual images and text, providing flexible access to a range of new learning experiences, all of which can be created and shared very easily.

### **Connecting and Collaborating With Students in Global Learning Environments**

While music technology based education gathers momentum, research into education and technology per se has identified critical areas for attention. The recent Horizon Report identified the following key trends for K-12 education to consider. Factors included collaboration, hybrid learning, open access to information, social media and changes in communication and the rise of mobile devices (2013) as key areas of consideration.

In essence, all of the media that pertains to music on the Internet can be seen as 'popularised' in some form or another. Consumption is mostly free and access is readily available, whether via a portable device with data or through a local Wi-Fi connection point. Albums, videos and sheet music are all examples of resources that are accessible with any digitally connected device.

This enormous shift in our ability to access music, even when we are charged a fee for a download or access remains a key factor to be considered and acknowledged in music education. It pervades all areas of the music curriculum and encompasses all areas of the learning spectrum, aural skills, performance, composition and musicology. The emerging opportunities are endless, but the subsequent shift required to develop appropriate pedagogy that incorporates the key factors identified in the Horizon Report highlights the challenges music education. Where schools have often used traditional teacher-centred 'physical' classrooms, emerging music technology and the range of popular music available requires a sizeable change in thinking. Ruthmann and Hebert (2012) suggest the idea of 'blended' music learning whereby popular music-making draws on influences from outside formal school settings and enables musical empowerment (pp. 568–569). Consideration of the 'global' classroom is essential for this to occur.

There are many ways to approach the development of meaningful connections with students via music creation and the integration of social media and collaborative tools. YouTube, iTunes and GarageBand, together with the plethora of social media hubs, cloud-based resources and communication software around the world such as Facebook, Edmodo, Twitter, Skype, Instagram, Prezi, Google Drive and Dropbox, are examples of the possibilities available for use.

Through the creative use of these technologies, students are able to create music compositions and performances, all of which can be shared instantaneously. A student can create a composition on a version of GarageBand on their device and share it immediately.

The challenge for music education is to develop new approaches to learning that incorporate social media and engage students in learning tasks that have relevance to them. The use of music technology should be continually justified and reviewed to ensure it is used appropriately in the educational process.

A good way to ensure this occurs is to embrace the notion of ‘purposeful’ learning, whereby the reason for employing the music technology is considered thoughtfully before, during and after learning, rather than being used purely as a means through which to engage the students and hopefully keep them on task.

### **Development of Performance, Composition, Musicology and Aural Skills**

Popular music provides both a rich and tangible means for accessing music in classroom curriculum programs, with many of the school courses in Australia—particularly New South Wales—placing an onus on the incorporation and study of a variety of popular styles.

Recent research (Hattie, 2008) identifies motivation, self-efficacy and self-assessment as being key variables that can impact the success of student learning across a range of settings. This meta-analysis and many other studies have evaluated the predictive power of one’s self-efficacy (McPherson and Zimmermen, 2002) in music performance and other learning experiences. Studies have also examined the development of self-efficacy in composition using music technology, finding the use of composition software assisted students to plan, monitor and create their own music (Merrick, 2006). Music technology provides an obvious conduit through which to connect and motivate students across all cultures and experiences. These factors need to be considered in the development of curriculum and assessment tasks.

In performance, music technology provides a rich range of resources for students to employ. Here are some possible approaches that may be integrated in the classroom:

1. Use YouTube to access various examples of performances to observe, critique and learn from. Students are able to view excerpts of live performances in a number of ways, examining the setting of the performance, the way it was staged and the response of the audience and so on. Students engage in the process of learning about their repertoire and how it can be performed by observing exemplars of popular performances that they aspire to deliver in their own environments, whether at school or in their community (physical or digital).
2. Access a range of different audio versions of performance via iTunes, referencing both original versions and derivatives of genres to best avail themselves of different approaches to learning, while seeing how different changes in the era of a recording, or production of a performance, can impact the way in which the music develops.
3. Use tools like GarageBand, iMovie and online tools such as Prezi to create digital portfolios, where students self-assess their own performance skills in minute detail, examining small components of their work.
4. Use notation software, such as Sibelius and Finale; students can download MIDI files and analyse the details of performances and various score markings. Through repertoire and immediate access via the web, students can see, hear and use different versions of songs, repertoire and arrangements, assisting their own learning.

5. Use collaborative technologies and online tools to share lessons and activities in real time, using communication software such as Skype.
6. Use social media platforms such as Twitter, Edmodo and Facebook; students will be able to share their own performances and give them a public voice via the web. Whether an individual performer or a young rock band creating their own work, music technology allows for instant dissemination.

In the area of composition, social media and collaboration allows students to gather feedback while sharing works with other composers using a multitude of digital tools. Some of the possibilities include:

1. Accessing and studying a wide array of scores and accompanying recordings to assist the composition process as students look to develop and create new ideas. Existing scores were often difficult to access and hear, and the access to PDFs and an array of MP3s allows the student to access the many popular versions of works in an instant.
2. Looking at different performances of compositions via connecting to a link on YouTube, by legally download via iTunes or through the sharing of original performances via Dropbox.
3. Sharing and receiving feedback via social media or a closed environment, allowing the student post their composition with classmates on a learning management system (LMS) like Edmodo, or submit and share their work via the Internet. This enables them to receive personalised feedback from their teacher or peers in a non-threatening and supportive environment, allowing them to develop their own creativity.

Like performance and composition, the learning areas of musicology and aural skills are supported via a breadth of resources. Here the combination of music technology and popular music can assist learning across a range of levels and experience, relative to students' individual strengths and weaknesses. These areas of musicology and aural can be facilitated in a number of ways including:

1. The combination of various types of music technology and emerging 'online' aural tools and apps, combined with audio examples (iTunes) or video examples (YouTube) to refine and practice specific skills related to aural development.
2. Continuously observing popular music, encouraging students to analyse the roles of performers and the roles of various instruments. Using the incredible range of resources, students can find modes of learning best suited to their needs, whether audio, visual, text or even interactive or kinaesthetic.
3. Having students analyse and critique small sections of audio from a well-known popular repertoire, and then use commercially available sequencers such as Logic and GarageBand or free software to create their own digital portfolio of their analysis. Rather than writing an essay, the students are encouraged to record or video an analysis of a popular work and submit this digitally.

Similarly, emerging curricula such as the Australian Curriculum, which covers stages from P-10 (<http://www.acara.edu.au>) has all of the documentation presented as a living, online entity that can be updated or varied as needed, ensuring that teachers have access the most recent versions of resources and activities. The use of digital curriculum documents



integrated with performance, aural, composition and musicology activities allow for the documents to be continuously updated, ensuring currency.

### **Promoting Music Education—Accessing Materials, Resources and Assessment**

The rapid shift in the digital expectations of schools has given rise to the development of online management systems. Similar to large-scale learning software such as Moodle or Blackboard, it is now an expectation of schools to participate in the use of LMS or portals that allow students and parents private access to curriculum, assessments and resources.

Combined with this, schools regularly maintain a web presence, sharing public information about the school. Here, performances from concerts, compositions created by students in class or testimonials about the approaches to learning can be posted on the website, providing information to prospective students and parents, all of which highlight the ongoing use of music technology in the school.

Software such as Twitter, Edmodo and iTunes U are examples that facilitate innovative teaching and learning. A teacher could utilise their own class hashtag (#) or Twitter handle (@) to share information with the class or have students post their opinion or answer a question. A teacher can create a virtual classroom via Edmodo through which students can share work, assess peers and receive ongoing feedback from their teachers, or create a ‘closed’ course using iTunes U and other standard protocols. By engaging in the use of these digital tools and using standard productivity based files such as Word documents, PDFs, JPEGs and MP3s, teachers and students are able to share work and receive ongoing assessment.

A teacher who has just presented a PowerPoint can share it as PDF slides or attach a digital photo of notes created on the board in class via a post in Edmodo, allowing all students immediate access to the content covered. Similarly, teachers can post website links, YouTube links and their own lectures to these sites, whereby the students engage in aspects of the content from the lesson at any time. This enables students to engage more fully in their own learning while also letting them revisit material that has been covered after the lesson, so as to confirm their understanding.

The combination of various music technology and popular resources in combination with LMS allows teachers and students to archive and share material related to learning in a multitude of ways. The use of these types of platforms is really only limited by the level of creativity and technical proficiency that the teacher and students have in using these tools.

### **Self-Reflection—Vodcast, Podcasts and Ongoing Feedback**

More recently, there has been the use of video to analyse performances which are embedded into GarageBand or similar software (Gouzouasis and Bakan, 2011; Merrick, 2011); this used as a digital tool to review and critique performance skills that are then archived as a combination of video and audio as an MP4 (vodcast). If students only use audio (a recording of their performance), this is sent to the teacher as a podcast, which forms part of the ongoing assessment of the student in the class. From experience, this connection between music technology and the learning process makes the learning much more meaningful and valid for the participant.

There is no reason why the use of ongoing feedback via music technology cannot be employed to develop performance in any secondary music classroom. Whether via a smartphone, a tablet, a laptop or through a webcam, these types of integrated experiences

demonstrate how popular music can be combined with practical and creative uses of music technology to enhance music the context of music education.

Used in partnership with a social media platform or an LMS, the teacher–student relationship can be sustained via digital connection and individual collaboration with the teacher. Similar processes can also be adopted for development of composition, musicology or aural skills across the secondary curriculum.

### Conclusion

Music technology and popular music continue to proliferate due to globalisation and the rapid growth in our global connectivity. It will be essential for music educators to critically embrace change and evaluate the ongoing integration of these tools in the secondary classrooms around the world. Significant time will need to be invested in developing training that parallels these advances if music education wishes to stay connected as a discipline.

Schools provide an essential connection point as students study music. Whether through the use of music technology in informal ways or as an accompaniment to more traditional approaches to learning music, educators need to learn from their students as well as continually adapting their pedagogy and curriculum to meet the needs of the digital *natives* they work with each day. This is the challenge for music education now and will continue to be so into the years to come.

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