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| **Topic/Duration** | Music and the Digital Age / 1 Class period |
| **Priority Standards** | **Georgia Music Technology Standards**  [**MSMTC6.CN.2**](https://case.georgiastandards.org/f3b94c72-9c0d-11e8-b85c-3b1a3079ae6e/6bed3ddc-fc12-11ea-912f-0242ac150004/1929) Relate musical ideas to varied contexts and daily life to deepen understanding.  a. Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life. |
| **Supporting Standards** |  |
| **Student Facing Goals** | Students will be able to...   * understand digital audio’s impact on music production and consumption throughout history and today. |
| **Essential Question & Enduring Understanding** | **How does digital audio differ from analog audio?**  *Analog recordings preserve the original sound waves of the sound source. Digital Audio approximates analog audio by sampling the original sound source, which can be stored more compactly than analog audio.*  **How did the invention of digital audio impact the way we create and listen to music?**  *Impacts include reduced barriers to music creation and listening, reduced physical space for storing music, and the ability to share music globally.* |
| **Evidence of Learning** | **Formative**: Written reflection on the music that students listen to and whether they think it uses analog (recorded) instruments or digital samples. |
| **Materials** | N/A |
| **Vocabulary** | * **Acoustic (Audio):** Audio created by real instruments producing analog sound waves. * **Digital (Audio):** Computerized audio that is created via methods such as sampling or synthesizing, often created with the use of computers. |

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| **Resources** |
| * **Video links (also in PowerPoint):**   Video 1 - From Phonographs to Spotify:  <https://www.youtube.com/watch?v=-bVketPj5to>  Video 2 - Robotics and Music: Automatica - Robots Vs. Music (PPT page 12): <https://www.youtube.com/watch?v=bAdqazixuRY>   * **Sample songs showcasing the difference in sound between real and digital instruments:** Video 3 - Feel It Still (Analog): <https://www.youtube.com/watch?v=e-2aoz_Um10> - First 25 seconds Video 4 - Ocean Eyes (Digital): <https://www.youtube.com/watch?v=HQitbbtPZz8> – First 25 seconds Video 5 - Hedwig’s Theme (Digital and Analog): <https://www.youtube.com/watch?v=wtHra9tFISY>   Video 6 - Combining Digital and Analog music in Harry Potter’s music: <https://youtu.be/eOCJkrbQWaE?t=165>  Video 7 - Using creative technology to empower artists:  <https://www.youtube.com/watch?v=luy0eX6HI_Y> |

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| **[Teacher Preparation](https://www.youtube.com/watch?v=luy0eX6HI_Y)** |
| 1. [Review the concept of digital audio (especially in comparison to analog audio) and its uses today.](https://www.youtube.com/watch?v=luy0eX6HI_Y) 2. [Check the video links to pre-load the videos.](https://www.youtube.com/watch?v=luy0eX6HI_Y) 3. [Preload the necessary timestamps for the following YouTube examples (found in the Resources section above): Feel It Still and Ocean Eyes.](https://www.youtube.com/watch?v=luy0eX6HI_Y) 4. [Review videos on the history of music streaming/digital music and choose a video to show to class among choices provided.](https://www.youtube.com/watch?v=luy0eX6HI_Y) 5. [Read the following articles as a primer:](https://www.youtube.com/watch?v=luy0eX6HI_Y) [[A Brief History of Music Production](https://www.youtube.com/watch?v=luy0eX6HI_Y)](https://www.rslawards.com/a-brief-history-of-music-production/#:~:text=Arguably%20the%20most%20significant%20change,producers%20simultaneously%20mixed%20the%20music.) [and](https://www.youtube.com/watch?v=luy0eX6HI_Y) [[How Evolving Tech has changed Music Production](https://www.youtube.com/watch?v=luy0eX6HI_Y)](https://tech.co/news/music-production-evolution-2016-01)[.](https://www.youtube.com/watch?v=luy0eX6HI_Y) |

[Lesson Implementation](https://www.youtube.com/watch?v=luy0eX6HI_Y)

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| **[Engage / Explore: Warm-up Time: 15 minutes](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |
| **[Section Goal:](https://www.youtube.com/watch?v=luy0eX6HI_Y)** [Students will explore how music has changed throughout history and how technology has played a role in these changes.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | |
| **[Student Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Watch video: From Phonograph to Spotify (Slide 4).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Identify ways in which music from different points in the past century may be distinguished from one another.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Consider what different music technologies were available at varying points in history.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | **[Teacher Activities:](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Prompt the students to consider the changes that are closely linked to available technology (Slide 4).](https://www.youtube.com/watch?v=luy0eX6HI_Y)    + [Instruct students to brainstorm some of the changes (encourage them to think about how they interact with music in their everyday lives as well as possibilities that only exist due to current technological advancements – the ability to:](https://www.youtube.com/watch?v=luy0eX6HI_Y)      - [preview songs on Tik Tok](https://www.youtube.com/watch?v=luy0eX6HI_Y)     - [listen to and create new sounds that weren’t possible in the past](https://www.youtube.com/watch?v=luy0eX6HI_Y)     - [write song lyrics on ChatGPT, etc.](https://www.youtube.com/watch?v=luy0eX6HI_Y)     - [Additionally, speak about multitrack recording, DAWs, etc.](https://www.youtube.com/watch?v=luy0eX6HI_Y)   + [Share video 1:](https://www.youtube.com/watch?v=luy0eX6HI_Y) [[From Phonograph to Spotify](https://www.youtube.com/watch?v=luy0eX6HI_Y)](https://www.youtube.com/watch?v=-bVketPj5to)   + [How did the video support and/or change their thoughts on changes in music due to technology?](https://www.youtube.com/watch?v=luy0eX6HI_Y) |
| **[Coding Connections: N/A](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |

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| **[Explain: Digital Audio Time: 20 minutes](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |
| **[Section Goal:](https://www.youtube.com/watch?v=luy0eX6HI_Y)** [Students will understand the basics of digital audio.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | |
| **[Student Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Understand the differences between analog and digital audio.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Listen to various YouTube Links and try to determine the difference between analog and digital instruments. (Encourage students to consider how music has evolved since the invention of digital audio).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Understand the pipeline by which analog audio is converted to a digital format and, eventually, back into an analog signal that human ears can process.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | **[Teacher Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Highlight the key differences between analog and digital audio (Slides 5-7).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Play each YouTube Link and quiz the students on whether they can tell the difference between analog and digital instruments (Videos 3-6). Ask students why they thought a specific sound was analog/digital (Slide 8). (Video 6 is a short demonstration on how Hedwig’s Theme combines recordings of analog instruments with digital synthesis to create a unique sound).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Explain how methods of music recording and distribution have changed alongside new technologies.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Show the video on the creation of Hedwig’s Theme 2:45-end to show how analog and digital sounds are often combined in music production (Slide 8).](https://www.youtube.com/watch?v=luy0eX6HI_Y) |
| **[Coding Connections: N/A](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |

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| **[Elaborate: Impacts of Streaming Time: 5 minutes](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |
| **[Section Goal:](https://www.youtube.com/watch?v=luy0eX6HI_Y)** [Students will investigate how the invention of digital audio has changed the way that we create, share and interact with music.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | |
| **[Student Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Suggest ways in which the role of music in our society has changed due to digital audio and the rise of music streaming.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Watch a video showing the transition of music interaction from tapes/CD to streaming. Students can engage in a Think-Pair-Share about the advantages/disadvantages of streaming music.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | **[Teacher Activities (Notes)](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Highlight key changes in music that may be attributed to digital audio (Slide 9).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Briefly discuss the interaction between music and the internet through streaming and how streaming accesses large amounts of data from remote data storage (servers).](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Facilitate a class discussion through Think-Pair-Share and/or Debate about the transition to streaming music and how streaming may have contributed to how artists create, and listeners interact with, music (Slide 10). Feel free to discuss topics such as an artist's ability to make a living off album sales vs. streams, subscription-based streaming services and the consumer’s inability to own streamed music, how accessible different types of music (music from different genres and cultures) have become for global music enthusiasts, etc.](https://www.youtube.com/watch?v=luy0eX6HI_Y) |
| **[Coding Connections: N/A](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |

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| **[Evaluate:](https://www.youtube.com/watch?v=luy0eX6HI_Y)****[Future](https://www.youtube.com/watch?v=luy0eX6HI_Y)** **[Time: 10 minutes](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |
| **[Section Goal:](https://www.youtube.com/watch?v=luy0eX6HI_Y)** [Students will discuss how future advancements in digital audio may continue to impact the way we create music as well as how we interact with music created by others.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | |
| **[Student Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Respond to prompts provided by teacher.](https://www.youtube.com/watch?v=luy0eX6HI_Y) | **[Teacher Activities](https://www.youtube.com/watch?v=luy0eX6HI_Y)**   * [Prompt students to consider how the ways in which we create and interact with music will continue to evolve.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Play video 7: Using Creative Technology to Empower Artists (Slide 11). Transition students into a conversation about what technologies they would like to see in the future of music.](https://www.youtube.com/watch?v=luy0eX6HI_Y) * [Play video 2: Robotics Vs. Music (Slide 12). Ask students to consider if robotics is the Future of Music. Start by playing the music without the video visible to students. Ask if they can identify what makes this song’s production different from others. If, after watching the video, student reactions suggest they are surprised to see robotic performers instead of a human band, ask them to explain their thoughts/reaction.](https://www.youtube.com/watch?v=luy0eX6HI_Y)    + [Possible discussion questions could include how they think using robotics has changed/will change music.](https://www.youtube.com/watch?v=luy0eX6HI_Y) |
| **[Coding Connections: N/A](https://www.youtube.com/watch?v=luy0eX6HI_Y)** | |