

# PowerPoint®: The Musical!

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Microsoft's PowerPoint (PPT) has become the standard presentation platform for teaching and professional conferences in higher education. It has withstood a growing cadre of critics and naysayers, more than a dozen alternative platforms, including TikTok and Instagram, and blunt force trauma for 36 years. Notwithstanding those challenges, PPT is not perfect. Unfortunately, current faculty practices lag far behind the technological advances in PPT software, AI, and the research on multimedia. The use of images, music, and videos throughout a PPT deck is rare despite the capabilities of PPT and AI to deliver those elements with ease. This article aims to explore the use of "instructional music" in PPT as an integral part of teaching to attain specific learning outcomes. A professor can select the title and/or lyrics of popular music to advance the storyline and bring dead words on the screen to life. The challenge is to weave the music into the slides to foster meaning, emotion, and memory. This approach has been used increasingly in "jukebox" Broadway musicals, television programs, and movies. Why not create a "jukebox PPT"? Salient research is reviewed on music's psychosocial, physiological, and educational effects. Then, step-by-step procedures and examples are given to select and convert a music extract into MP3 format and insert it into PPT slides for editing.

Keywords: PowerPoint, TikTok, Instagram, Research on PowerPoint, Music in Teaching, Multimedia Teaching, Research on Music, Social Media in Teaching

## INTRODUCTION

Microsoft's PowerPoint (PPT) is the predominant presentation platform and institutional standard, with over 500 million users worldwide and 30 million new presentations created daily (Amerbauer, 2019; Becker, 2024). The top-ranked customers in the education sector include online learning, higher education, continuing education, research, and student support services (6Sense, 2024). PPT (1990–2003) has evolved into PPTX (2007–present) over the past 36 years as the preferred medium for teaching in K–12 schools (Guernsey, 2001; Hashemi, Azizinezhad, & Farokhi, 2012) and

colleges/universities (Levasseur & Sawyer, 2006; Mann & Robinson, 2009; Stefanou & Kotsovoulou, 2016; Vik, 2004), and for presentations at professional scientific meetings, conferences, and workshops (Pinker, 2010). (NOTE: PPT for PowerPoint Presentation will be used throughout this article instead of PPTX to avoid confusion.)

The primary purpose of this article is to proffer a specific strategy for using music in PPT as an integral part of teaching the subject matter content in the classroom, online, or in other venues to attain specific learning outcomes. The title and/or lyrics of pre-existing popular music can punch up the text, advance the storyline, and bring the content on the screen to life. The challenge is to weave the musical extracts into the content slides to foster meaning, emotion, memory, and a connection with the music and text. This approach has been used increasingly in “jukebox” Broadway musicals, television programs, and movies. Why not leverage this technique to create a “jukebox” PPT that converts your presentation into a theatrical production, drawing on all the positive effects of music on learning?

The context for using music requires a brief review of the research evidence and experience with (1) traditional PPT, (2) multimedia in PPT, (3) music in PPT, and (4) social connection with PPT. Then, the backstory behind the “jukebox” PPT is presented through groundbreaking TV programs, such as *Ally McBeal*, *Grey’s Anatomy*, *Scandal*, and *The Residence*, as well as movies and Broadway musicals. Finally, the ingredients for creating “PowerPoint®: The Musical!” are described in step-by-step procedures for matching music to the slide content, converting it to MP3 format, and inserting it into the slides where it can be edited. Several examples are provided.

## **PPT RESEARCH EVIDENCE AND EXPERIENCE**

### *TRADITIONAL PPT*

*Criticisms of PPT.* PPT typically doesn’t thrill or chill its way into the hearts and minds of faculty and students. According to an episode of *Law & Order*, it has had to withstand blunt force trauma over its lifetime. PPT has been given the pejorative moniker “Death by PowerPoint” (Allen, 2011; D’Angelo, 2018; Duffy & Henry, 2016; Harden, 2008; Phillips, 2011, 2014; Undrill & McMaster, 2022). There’s a target on the back of its acronym. If PPT were in a murder mystery, it would be the victim with thousands of suspects. Stewart (2001, p. 210) warned, “Ban it now! Friends don’t let friends use PowerPoint.” Kernbach, Bresciani, and Eppler (2015) identified 18 cognitively, emotionally, and socially constraining qualities for designing and using PPT. There is a bevy of critics and naysayers who have eviscerated the software (Bumiller, 2010; Gabriel, 2008; Hill, Arford, Lubitow, & Smollin, 2012; Isseks, 2011; Simons, 2005; Speach, 2023).

These attacks on PPT are justified in many classroom and conference applications. The normative delivery mode is reading dead black words off a white screen. The average PPT slide is overstuffed with 40 words (Becker, 2024). Viewers have come to expect what has been defined as “group wall reading.” Students’ attention drops rapidly after 10 minutes (Amerbauer, 2019). Some have the attention span of goat cheese. They rightfully complain that this cadaver-like presentation can quickly move from boring to snoring. It’s a waste of classroom face-to-face (F2F) time.

*Attributes of PPT.* Hundreds of journal articles, blogs, websites, and a few books on PPT have come to the rescue with research reviews (Baker, Goodboy, Bowman, & Wright, 2018) and practice recommendations. There are five golden rules (Ashby, 2024) and top 10 lists of best practices for using PPT effectively (Berk, 2012b; Bourne, 2007; Lortie, 2017; Naegle, 2021). They guide us to create effective and engaged presentations (Duarte, 2015). There are even several techniques developed especially for PPT to facilitate engagement and interaction with our students and audiences (Berk, 2011a; Brill, 2016; Haas, 2023; Yu & Smith, 2008). Assistive and generative artificial intelligence (AI) can

also foster teaching as a tool to assist in creating content and PPT slides with animation and multimedia (Mowreader, 2024). The potential of AI in this application will be described throughout this article

*Alternatives to PPT.* Of course, more than a dozen presentation alternatives are available, including social media options. A barrage of criticisms has recommended that PPT be abandoned in favor of those platforms (Armstrong, 2017; Atkinson, 2004; Duffy & Henry, 2016; James, 2019; Speach, 2023; Shwom & Keller, 2003; Tufte, 2003a, 2003b, 2006). In fact, some of you may be using one of the alternatives, such as Apple Keynote, Google Slides, Prezi, Slidedog, LibreOffice Impress, Canva, Zoho Show, Visme, and Slidebean (Lerdal, 2023). You don't have to raise your hand. I know who you are.

Even social media platforms, such as TikTok and Instagram Reels, are being used as content presentation tools for teaching (Adnan, Ramli, & Ismail, 2021; Jimola, 2023; Razo, 2025). They are designed as short, micro-video (three seconds to one minute) posts that students (ages 13–18) can easily create, view, and share with the world. TikTok permits longer videos that can be live-streamed to increase viewer engagement in real time.

Students can post text, a video, a single image, or a carousel series of slides. Trending music as well as visually appealing images, such as infographics, animations, and snapshots, can be added to the videos of bite-sized content (Instagram, n.d.; Mateer, 2025; Mobert Team, 2024).

Although neither platform was initially developed for educational applications, they have been adapted to classroom use K–college (Escamilla-Fajardo, Alguacil, & López-Carril, 2021; Juicer, 2025; Zulkifli, Letchumanan, Kamarudin, Halim, & Hashim, 2022). Documented experiences with these social media highlight several advantages and disadvantages as a teaching tool compared to PPT. Those advantages include (1) enhanced user engagement inside and outside of the classroom, (2) improved professor-student interaction, (3) increased student intrinsic motivation and collaborative learning, (4) content visibility, and (5) easily memorable and digestible pieces of information (Aziz & Dali, 2023).

Despite these advantages, faculty have been slow to adopt those platforms due to a few significant disadvantages for students (Palmer, 2025): (1) distraction due to attractive entertainment content, (2) lack of concentration and procrastination, (3) excessive use for non-academic purposes, which can lead to addictive behavior, (4) failure to evaluate the credibility and accuracy of the information transmitted, (5) use of a limited and less-structured content format, and (6) use of copyrighted music without proper licensing (Evans & Hays, 2025).

With all of these presentation platforms available that offer a variety of instructional strategies, how do you choose the most appropriate tools for your students to attain the specific learning outcomes? There is no perfect strategy for all outcomes. Each approach has its own advantages and disadvantages, as noted above. Furthermore, there is meager research evidence on the cognitive and affective impact of the social media platforms (Zulkifli et al., 2022) and none on the use of music inserted into text and mini-videos.

Overall, TikTok and Instagram offer itsy-bitsy videos that can be used to review key concepts, present small chunks of content, and suggest helpful tips. In contrast, PPT provides a structured learning environment to deliver complex, in-depth content on almost any topic with seamlessly embedded music, videos, images, and other multimodal elements.

Given that I have already written the rest of this article on PPT, it would be a shame to waste it, plus a sizable number of faculty have committed to using it for teaching and presenting at conferences. There must be a way to titivate and repackage PPT to make it more effective and salable as a teaching and presentation tool. (NOTE: Picking PPT still does not preclude you from also using TikTok or Instagram.)

### MULTIMEDIA IN PPT

Over the past 25 years, we have learned about multimedia design in PPT and the cognitive theory of learning (Mayer, 2009, 2011, 2023): cognitive load and overload theory (Chandler & Sweller, 1991; Kirschner, Kester, & Corbalan, 2011; Mayer & Moreno, 2003; van Merriënboer & Sweller, 2010), dual-coding principle (Clark & Paivio, 1991; Paivio, 1986), redundancy principle (Mayer & Fiorella, 2014; Mayer & Johnson, 2008), picture superiority effect (Nelson, Reed, & Walling, 1976; Snodgrass & Asiaghi, 1977), working memory model (Baddeley, 1999), and spatial and temporal contiguity (Mayer & Anderson, 1991; Mayer & Fiorella, 2014). These principles applied to PPT construction have been reviewed elsewhere (Berk, 2011b, 2012a).

Death by PPT occurs when only one of two channels (visual and auditory) is overloaded. Guess which one. No, but you were close. It's when a professor reads too many words off the screen (Kalyuga, 2011; Kirschner et al., 2011; Mayer, 2023). That is cognitive overload (Mayer & Moreno, 2003). The other channel is ignored, and there is no visual stimulation, which can produce boredom. Multiple channels need to be accessed in PPT presentations to obtain the benefits of cognitive learning.

Despite all that we know to improve the development and delivery of PPT, current research and practices in the classroom and conferences have not kept pace with PPT's technology (including AI) and multimedia capabilities to use images, animation, music, sound effects, and videos (Berk, 2011b, 2012a). These additional learning channels convert traditional PPT into "extended PPT." Each successive edition, upgrade, and update of PPT has enabled users to take advantage of easier options to insert multimedia clips into their slides. For most applications, PPT features no longer require separate audio and video software to edit the specific extracts and insert them into the slides. You can also use AI with every step of the process to create PPT presentations.

### MUSIC IN PPT

*Instructional music.* (SIDEBAR: I wish I could begin this review by singing Barry Manilow's "I Write the Songs." Unfortunately, I can't sing, write, or play it in a PDF, but I could in PPT.) When music is used for teaching, it becomes a legitimate instructional tool that must be systematically planned with specific learning outcomes in mind. The term instructional music seems apropos to distinguish this application of music from the music to which we listen on social media and other sources. Music becomes an integral part of the content design on your PPT slides, not a pick for entertainment. All the planned music techniques in PPT described in subsequent sections of this article fit that mold. Unfortunately, the research on this music mold has not been undertaken in the context of PPT slides.

*Psychosocial and physiological research.* The most recent research on music has been conducted by Ren and her colleagues at the Memory, Affect, and Planning Lab at the Georgia Institute of Technology (Ren, 2024; Ren, Leslie, & Brown, 2024; Ren, Kaltsouni Mehdizadeh, Leslie, & Brown, 2024). They found significant connections between music, emotion, and memory. Listening to your favorite music can affect your feelings and memory of content. Those benefits can enhance the impact of the storyline or plot in TV programs, movies, and Broadway shows. Music can have similar effects on the content presented on PPT slides.

Music has both psychosocial and physiological effects. Eck (2024) stated, "Music also lights up nearly all of the brain, including the hippocampus and amygdala, which activate emotional responses to music through memory; the limbic system, which governs pleasure, motivation, and reward; and the body's motor system." A catchy melody and fast, up-

tempo, major-key music, such as rap, activate sensory functions that create an emotional connection to excite and snap your students' attention (Berk, 2001, 2008, 2012a).

When students listen to popular, upbeat, catchy, and repetitive music in their playlists, it can stick in their brains long after they hear it (Sima, 2025). That song is called an *earworm* (Jakubowski, Finkel, Stewart, & Müllensiefen, 2017; Killingly, Lacherez, & Meuter, 2021). Examples are “Baby Shark,” “Don’t Worry, Be Happy,” and “YMCA.” Once you hear those songs, you can’t get them out of your head. This phenomenon is called involuntary musical imagery (Floridou, Williamson, Stewart, & Müllensiefen, 2015; Liikkanen & Jakubowski, 2020; Williamson, Liikkanen, Jakubowski, & Stewart, 2014). Your brain fills in the gap when the song is over. It’s literally “singing in the brain” (Killingly et al., 2021). Picking earworms to accompany PPT content can increase the students’ retention of that content.

Physiologically, music can prompt the secretion of neurotransmitters, such as dopamine, the “feel-good hormone” that plays a role in the brain’s reward/pleasure system (Salimpoor et al., 2011; Zatorre & Salimpoor, 2013). Music also decreases cortisol, the stress-producing hormone. It increases the secretion of oxytocin, the “love hormone” that increases emotions, intensifies memories, and contributes to relationship formation, trust, recognition, and romantic attachment (Nilsson, Unosson, & Rawal, 2005). Music can improve mood and help us learn and socially bond with other people.

*Educational research.* These effects of music have also been found in instructional music in the classroom (Sarkar & Chandra De, 2025; Smith, 2023; Willis, 2023). Haas (2023) found that music increases engagement, enhances understanding, enables storytelling, and evokes emotion (see also Loveless, 2013). Wang, Zhang, and Mao (2024) conducted a meta-analysis of 23 comprehensive studies that revealed the significant impact of music interventions on mathematical performance. The mere presence of background music in classrooms has improved academic performance (Dosseville, Laborde, & Scelles, 2012). de la Mora Velasco, Chen, Hirumi, and Bai (2023) reviewed 47 studies to determine the effects of background music on learning. Their meta-analysis yielded positive effects in favor of music and factual knowledge retention.

Thompson, Schellenberg, and Letnic (2012) found that music characteristics, such as tempo and intensity, impact learning outcomes. Their work highlighted that soft, fast-paced music positively affects comprehension compared to loud or slow-paced music. Shulman (2023) summarized five outcomes of music on learning: (1) improves memory and retention, (2) increases focus and concentration skills, (3) decreases stress and anxiety, (4) improves motivation and engagement, and (5) enhances creativity and problem-solving skills.

Current teaching practices indicate music is as elusive to PPT as Nessie is to Loch Ness. As noted previously, the preceding studies on music were not performed in PPT presentations. Imagine if they were. That is now possible and easier than ever. However, what’s missing with PPT in this research does not diminish the significance of their results but restricts their generalizability and application to current practices.

The instructional music delivered on PPT slides should produce the psychosocial, physiological, and educational effects described in this review. They reduce cognitive load and increase memory, retention, and engagement to attain specific learning outcomes. However, until research is completed with instructional music systematically inserted into PPT presentations, the results summarized in this section should be considered tentative.

*Music as value-added teaching.* Why bother to integrate music into your teaching? Beyond the impact that music can have on you and your students’ mental and physical well-being, the preceding music effects can add value to the lives of your students (Maxwell, 2015). It enables you to connect with your students through their world of music. That connection builds trust and a safe learning environment (Conklin & Dikkers, 2021;

Pollio & Humphreys, 1996). Music increases the positive impact of your content. It helps bookmark your message in your students' minds for easy retrieval later. Music is an add-on bonus that is not part of the typical arsenal of teaching strategies, especially PPT. Adding value to their learning experience requires you to focus intentionally on them (Maxwell, 2012, 2015). It involves taking actions to help them improve their learning and academic experience.

### *SOCIAL CONNECTION WITH PPT*

Recently, PPT has morphed into an unpredictable use: Washington, DC bar-goers look forward to a comedic PPT party night with quirky slideshows on various presentation topics, such as niche interests and hidden pastimes (Kingsberry, 2024). This audience is huddled over beers and half-priced burgers. Maybe that's what it takes to transform PPT into a more palatable form of communication.

The PPTs serve as a tool for social connection, a "social lubricant," which is the opposite of what is used in typical classroom presentations. Instead of dull meetings and interminable briefings with a smidgen of engagement, PPT has gotten a makeover by the younger generations to repurpose the software for social entertainment, such as celebrating bachelorette parties, planning group trips, and persuading parents to buy Taylor Swift tickets. PPT's an academic workplace tool by day and a zany social game by night. Even Microsoft has offered some party templates that participants can download.

So why have the preceding capabilities of the PPT software been ignored, underutilized, and/or devalued as teaching tools? How do you explain the gap between Microsoft's tools and faculty's failure to use them? This section examines how the "jukebox PPT" model can be adapted to the college classroom.

### **JUKEBOX PPT**

This article introduces the concept of a "jukebox PPT" with pre-existing popular music to advance the content of any PPT presentation. Although that term was coined for this article, I have been testing music and video clips as teaching and speaking techniques for 40 years. My systematic use of instructional music and videos in teaching with PPT began 20 years ago (Berk, 2008, 2009a, 2009b). I had to use special audio and video software to insert and edit multimedia into slides at that time. So, where did the idea for using music in PPT slides with serious academic content originate? TV programs? Movies? Broadway musicals? All have used music to generate specific psychosocial effects.

### *TV PROGRAMS*

Although music can now be heard on most TV dramas, especially police/crime procedurals, to raise the intensity or calm the mood in a particular scene, there are four groundbreaking programs where music became an integral part of the action. The title, lyrics, and/or melody were part of the storyline. The programs were *Ally McBeal*, *Grey's Anatomy*, *Scandal*, and *The Residence*.

*Ally McBeal* (1997–2002). The popular legal comedy-drama TV series *Ally McBeal* inspired me to apply music to my biostatistics courses. Of course, I used overhead transparencies, 8-track tapes, and discs instead of PPT slides back then. In 2005, I converted my content and music into PPT.

Creator and writer David E. Kelley used music by popular artists throughout the various episodes. They included Barry White, Al Green, Tina Turner, Mariah Carey, and Josh Groban (Fandom, n.d.). The show also had a resident singer-composer, Vonda Shepard. This show almost sounds like a "jukebox TV series."

The music became so popular that a compilation of the soundtracks from different episodes became available (Brown, 2020). The music was used to make us laugh, to rivet

our attention on the court cases involving this Boston law practice, and to bring the characters' issues to life. Several of the characters even had their musical leitmotif. For example, Barry White's "You're the First, the Last, My Everything" played whenever John Cage appeared.

The show resembled a musical more than any other genre (Betancourt, 2017). The music complemented and advanced the storyline in each episode. Solos and showstoppers let us peek into the characters' inner monologues when their emotions warranted excessive expression. The use of diegetic music (when the audience hears what the characters hear) to advance the plot and comment on the action is a key to Kelley's unique music use.

*Grey's Anatomy (2005–present)*. According to Abrams (2010), Shonda Rhimes (producer, director, and writer) wanted the songs on *Grey's Anatomy* to tie scenes together and to act as a score. She picked music with a purpose. This approach freed her to look under every musical rock and stretch her choices into the emotional and the sassy. She used brand-new artists, vintage tunes, classics, and covers, including Alicia Keys, Beyoncé, Amy Winehouse, John Legend, Adele, Mary J. Blige, and Prince.

Rhimes wanted the feelings we experience from big musical numbers or little piano keys to be the most important outcome (Khayessite, 2015). Music can manipulate us by evoking feelings of happiness, sadness, empowerment, or hopelessness. She felt that the storylines should move along so that the music is seen, not heard.

*Scandal (2012–2018)*. Shonda Rhimes also put her musical imprint on every episode of *Scandal*. Ayers (2014) noted that for *Scandal*, Rhimes selected classic soul and funk from the late '60s and early '70s. Unlike Kelley, Rhimes sometimes had the soundtrack in her head when writing the show. At other times, she and veteran music supervisor Alexandra Patsavas searched for the right song to create the right feeling.

According to Daly (2013), once Rhimes targeted specific songs, she adopted them for a given episode. They included Stevie Wonder, Marvin Gaye, and Sly and the Family Stone. She relied heavily on old-school, often lesser-known R&B music, such as the 1970s Staples Singers. There was rarely any contemporary music. The scenes paired music with emotions such as happiness, sadness, lust, and anger.

*The Residence (2025)*. Shonda Rhimes' latest drama on Netflix is a quirky murder mystery that uses music differently from that of her preceding Shondaland productions. This shift emphasizes an original soundtrack of instrumental music composed by Mark Mothersbaugh to accompany the rapid-fire, snappy dialogue of the actors. There is also music by artists other than those in *Grey's Anatomy* and *Scandal*. They include Kylie Minogue, Dave Brubeck Quartet, Gordon Lightfoot, Elmer Bernstein, and Chico Hamilton. The incidental background music added mood and atmosphere to punctuate the emotional impact of the dramatic scenes. It was a narrative tool to enhance and advance the story (Ghosh, 2025).

## MOVIES

Music has been used in movies since the beginning of motion pictures, when dinosaurs similar to those in *Jurassic World* ran amok. It was initially used to prevent the audience from talking, dull the projector's sound, and distract the dinosaurs. However, music added an emotional quality that conveyed how viewers should be feeling during a particular scene. It controls and manipulates our emotions; fast and loud music arouses us, while slow and soft music calms us. It also reflects our mood. When we're happy, we may listen to upbeat music; when we're sad, we may listen to slower moving songs.

Directors and composers do this subtly but very effectively. As we watch a dramatic or suspenseful scene, such as when a great white shark devours a cast member, the background music enhances the drama unfolding on the screen, even if we're not always aware of it. You know what's coming next: Wait for it, wait for it! Who can forget the

emotional effect of the music in the opening scene of *Jaws*? This blockbuster just celebrated its 50th anniversary. Imagine that opening without the “Duhhh-nuh. Duhh-nuh. Duh-nuh. Duhnuh duhnuh duhnuh...” (Brodeur, 2025). Play the opening scene without John Williams’ two notes of music. The suspense would not build.

Similar to the experience of watching a movie, pressing the remote button to advance a PPT slide with music can create a new effect to accompany the visual text on the screen. It can grab and sustain attention, increase memory of the content, and foster a positive mood and classroom atmosphere.

The preceding uses of music in TV programs and movies vary markedly from one another. Whether the music is subtle in the background or up front, advancing the plot, the typical effect is how it affects our emotions. It heightens our awareness of what we see by what we hear, which is supported by the research evidence. Another genre that has the same purpose is the Broadway musical. Unlike TV and movies, this form is live, F2F, just like our classrooms and virtual connections.

### *BROADWAY MUSICALS*

On Broadway, a “jukebox musical” uses pre-existing popular music by one or more artists rather than an original score to advance the story’s plot (Byrne & Fuchs, 2022). Examples are *Mamma Mia!*, *42nd Street*, *Grease*, *Hell’s Kitchen*, & *Juliet, MJ*, *The Great Gatsby*, *Buena Vista Social Club*, and *Moulin Rouge!* The surge in popularity of this musical genre did not occur until the 21st century. Based on the music of ABBA, *Mamma Mia!* (1999) paved the way for a high level of artistic and economic success.

Even the plot within the musical *Something Rotten!* was to create the world’s first “musical,” where the lyrics of the songs advance the storyline. The smash mega-hit *Hamilton*, which has an original score by Lin-Manuel Miranda, presents its historical content in the rapid-fire lyrics of its music. The music and movement of the actors rivet our attention and bring our dead white founding fathers to life with an intentionally predominant multiracial cast. It’s a history lesson told through rap, hip-hop, soul, R&B, and jazz. If *Hamilton* can resuscitate those historical figures with music, you should be able to perform musical CPR on your content.

## **POWERPOINT®: THE MUSICAL!**

Finally, this section provides a six-step procedure to create the PPT with music. It will describe how to do the following: (1) apply AI to PPT, (2) prepare PPT slides, (3) identify sources of music, (4) create your classroom playlist, (5) match the music to PPT slide content, and (6) extract, convert, insert, and edit the music. A final section furnishes several examples of music-slide matches. Although these steps and examples are intended for college teaching, most can also apply to K–12.

### *1. APPLY AI TO PPT*

Recent surveys (Bharadwaj et al., 2023; Whitford, 2026) have reported that 25% of college faculty don’t use any AI tools, and about 33% don’t use them in teaching, compared to increased use by K–12 teachers and students (Ash, 2025; O’Connell, 2025). Despite these numbers, assistive and generative AI (GenAI) can be applied throughout the entire preparation process, from content creation to generating the PPT slides to selecting, accessing, and inserting multimedia into the slides. GenAI can streamline the entire presentation design. Since PPT is the primary vehicle for integrating music throughout the slides, AI can play a significant role in selecting and matching the music to the content and executing the steps described in the remainder of this section.

The constantly evolving field of AI in higher education presents a range of challenges, including those related to academic integrity, ethical implications, potential biases, and

transparency. A clearly defined code of conduct should guide AI teaching practices concerning course content, PPT presentations, and multimedia.

Several individual institutions have developed their policies and codes for appropriate use, such as those at Cornell University (Bala & Colvin, 2023), Harvard University (Harvard College Students and Teaching Fellows et al., 2023), and the University of Northern Colorado (Jameson, 2025). Writing a code of conduct is a dynamic, ever-changing process. As universities navigate through these AI issues, some place a greater emphasis on student misuse rather than on teaching applications (Reiter, Jörling, Fuchs, & Böhm, 2025). There is also a very comprehensive code developed by the National Academy of Medicine (2025): *An Artificial Intelligence Code of Conduct for Health and Medicine: Essential Guidance for Aligned Action*. It applies to higher education.

The most widely used AI-powered tool is ChatGPT. Since its launch in 2022, over 30 tools have been produced to generate content outlines and create PPT presentations, including: Microsoft 365 Copilot, SlidesAI.io, Simplified AI Presentation Maker, Plus AI for PowerPoint, Curipod, Gamma.app, Autoppt, Beautiful.ai, Slidesgo AI Presentation Maker, Google Gemini, Perplexity.ai, SlideSpeak, Twistly, AiPPT, MagicSlides, Tome, Presentations.ai, Slides.GPT, Sendsteps, SlidesCarnival, and Canva. Their capabilities vary, but most can summarize complex content and produce visually attractive slides from detailed text and music prompts or uploaded music files (Duggal, 2025; Mowreader, 2024; Parker & Barber, n.d.).

## 2. PREPARE PPT SLIDES

Prepare your content slides as you usually would, with or without AI assistance. Follow the recommendations in the previous sources. Each slide should have at least one central point or message. Keep it simple. “Less is more.”

Review each slide to determine whether images (diagrams, charts, tables, graphs, figures, photos, memes, cartoons, infographics, and various graphic designs) can enhance the message’s impact. You can also add animation and video (Sharma, 2025) to create an “extended” PPT. AI can assist in this process.

## 3. IDENTIFY SOURCES OF MUSIC

The research evidence and experiences with music in TV programs, movies, and Broadway musicals can transform PPT into a platform that allows your students to connect and bring your content to life. There are numerous sources to stream music for your PPT slides, although YouTube, Apple Music, and Spotify are the most common. See also Amazon Music, Deezer, Tidal, Pandora, Bandcamp, SoundCloud, Napster, and Qobuz (Wilson & Zamora, 2025). There are 90 million subscribers to these services, with Spotify as the industry leader at 30.5% (Durrani, 2024).

**[Copyright Alert** (Cue theme music from *Law & Order*): The legal use of music for teaching, scholarship, or research is protected by Section 107, the Fair Use doctrine, of the U.S. Copyright Act of 1976 and the Technology, Education, and Copyright Harmonization (TEACH) Act of 2002 (Butler, 2017; Harvard University Office of the General Counsel, 2023).].

## 4. CREATE YOUR CLASSROOM PLAYLIST

Survey your students before or during your first class of the semester. Ask them to identify their favorite music by naming their 3–5 favorite songs or artists, TV programs, movies, commercials, or other sources from which to extract music (see Berk, 2002, p. 75). It is your students’ music choices that enable them to connect with the slide content. AI can identify music based on specific prompts, such as slide content and your students’ or

audience's demographic profile. Do your students and AI pick the same Bad Bunny, Rihanna, or Beyoncé songs? It's all in the details of your prompts.

Compile the responses to your survey and AI results into a pool of musical selections you can draw on for all of your PPTs during the semester. The survey and AI list for each class should provide a treasure trove of music for your PPTs. That collection of music will become your playlist for the semester.

#### 5. MATCH THE MUSIC TO PPT SLIDE CONTENT

Once you have your slide deck ready for presentation, consider the content on each slide and search for a music excerpt that can pump life into that content. That is your musical lifeline for students to connect with the content. Engage AI in this search. The melody can work independently, but the lyrics can be synced to the words on the screen. The music should be familiar to almost everyone. *The extract should be short, typically 5–10 seconds or no more than 30 seconds, and immediately recognizable.*

#### 6. EXTRACT, CONVERT, INSERT, AND EDIT THE MUSIC

Once you have picked your musical selection, locate it on YouTube or an alternative source and insert the clip onto the PPT slide. The technology is now available with the advances in the PPT software to extract and edit music (and video clips) without the need for special software.

The following steps will guide you through extracting the music from YouTube or other sources and embedding it in your slide. The first five steps *convert the YouTube selection to MP3 audio format* (or MP4 for videos) for PPT:

- A. Identify a musical selection (or video) on YouTube
- B. Click *Share* under the screen and *copy* the URL
- C. Open preselected software (There is a variety of YouTube to MP3 converters) to convert the URL to MP3 format (MP4 for video)
- D. *Paste the URL* on the software page and click MP3 (or MP4 for video)
- E. Conversion occurs quickly, and the MP3 file is automatically downloaded onto your PC

The remaining steps *transfer the MP3 file to the PPT slide*, where you can *edit the music* to produce the short clip:

- F. Identify your MP3 file
- G. Open your Microsoft PPT program (or Keynote) and pick the slide for the music
- H. Click *Insert* above, then *Audio* on the far right, and *Audio* on your PC
- I. Search your files and locate the converted MP3 file, left-click it, and click *Insert* below
- J. Music should land on your slide
- K. On the *menu* above, find *Start*, then click *Automatically* in the dropdown
- L. On the left side above, click *Trim Audio* to set the start and end points for the clip
- M. On *Fade Duration* above, set *Fade In* and *Fade Out* to taper off the music clip
- N. Test the slide in show mode to check the music clip.

#### 7. EXAMPLES OF MUSIC-SLIDE MATCHES

The primary strategy above is to match musical vignettes to the content on your slides. What the students hear reinforces what they see, consistent with the learning outcome. This experience applies to online and F2F instruction. You can find an extensive list of 40 examples, along with step-by-step procedures for executing them, in Berk (2002, 2007). The match can be as simple as the name of a court case or an image of a court bench and

gavel on the slide, accompanied by the opening theme from *Law & Order*. A slide may also have an airline regulation or a picture of a plane with the song “Defying Gravity” (from *Wicked*).

The music can be linked to words and images on your slides, as well as physical demonstrations involving one or more students in F2F classes. Engaging students in brief skits with music to illustrate a particular point can produce unforgettable moments. In my biostatistics courses, I would have students act out equations in front of the class to understand the mathematical processes. Instead of looking at formulas, the students would bring them to life.

I used music to accompany students as they walked to the front of the class. For one volunteer, I chose “All by Myself” (from *Les Misérables*), “I’m Every Woman” (Whitney Houston), or “I Will Survive” (Gloria Gaynor). The last two clips may also be used with a group. For other volunteers carrying small flags, I chose “Do You Hear the People Sing?” (from *Les Misérables*) or, for those wearing hoodies, “Gonna Fly Now” (from *Rocky*). In these examples, the timing of the music for the volunteers to walk the distance in a lecture hall is about 15 seconds.

Music can also be used to introduce a skit. Theme music from blockbuster movies that everyone knows can be a showstopper. The titles are on the PPT slides. I’ve used the theme from “Mission: Impossible” ( $p < .0000001$ ), *Star Wars*, while two students fight with light sabers, or the theme from *Star Trek*: “STATISTICS, the final frontier, these are the voyages of *STAT TREK!*”

You can even participate with a colleague or student in a skit of *The Odd Couple* to introduce correlation as the relationship between two things. The visual similarities and differences between the two people, as variables, can demonstrate both explained and unexplained variance. Music can create a class atmosphere to present complex subject matter and sensitive topics. The opportunities to match music with content are endless.

## CONCLUSION

The advances in PPT and AI technology, as well as cognitive learning theory, over the past 20 years have outpaced current PPT practices among many college faculty. Reading dead words off the screen in F2F, multiethnic and multigenerational classes, is unacceptable as a “lecture.” Today’s technologically savvy students deserve multimedia in extended PPT presentations.

This article proposed the addition of instructional music as a springboard to draw on the psychosocial, physiological, and educational outcomes that the previous research evidence suggests. As mentioned in the music section, research is needed on the effectiveness of music in various PPT designs. The potential for “PPT: The Musical!” is limited only by your imagination.

Music is an integral part of most of our lives. It is time to survey your students’ favorite songs and tap into their playlists. Build on a traditional PPT presentation by incorporating instructional music clips that reinforce or embellish the content on your slides. They will bring your dead words to life, enabling you to connect with your students, engage their hearts and minds, and increase learning. These effects of music add value to their lives beyond the content. With the assistance of AI tools, this process is faster and easier to execute than ever before. The universal language of music that students share can create a jukebox PPT that excites them to experience the content you deliver rather than dread it. You can even supplement your PPT with TikTok or Instagram Reels.

When your class is over, I bet you tell your students: “You’re dismissed,” “See you next year,” “Pull up your pants,” or “Live your best life!” However, since we are approaching the last paragraph in this theatrical production, you were probably expecting

a razzle-dazzle musical finale with a kick line and fireworks. It's hard to do that in PDF, especially the kicks. It is possible in PPT.

As a callback from the sidebar at the beginning of this article, guess what? Heee's back! If this were a PPT, musically, I would close with Barry Manilow's "Looks Like We Made It" lyrics 50 seconds into the song. And we did make it. Although the meaning of those lyrics in the song is different from ours, it's still about relationships. In our case, it's using instructional music to better connect with our students. Now it's up to you.

## REFERENCES

- Abrams, N. (2010, November 22). Grey's Anatomy is doing a musical episode. *TV Guide*. <https://www.tvguide.com/news/greys-shonda-rhimes-1025983/>
- Adnan, N. I., Ramli, S., & Ismail, I. N. (2021). Investigating the usefulness of TikTok as an educational tool. *International Journal of Practices in Teaching and Learning (IJPTL)*, 1(2), 1–5. <https://ir.uitm.edu.my/id/eprint/52140/1/52140.pdf>
- Allen, M. (2011, June 21). Death by PowerPoint? SlideRocket saves presentations! <http://www.sliderocket.com/blog/2011/06/death-by-powerpoint/>
- Amerbauer, D. (2019, April 12). 10 Interesting and unknown facts about Microsoft powerpoint. SlideLizard. <https://slidelizard.com/en/blog/powerpoint-facts-infographic#:~:text=Top%2010%20facts,span%20of%20only%2010%20minutes.>
- Armstrong, P. (2017, July 10). Stop using PowerPoint, Harvard University says it's damaging your brand and your company. *Forbes*. <https://www.forbes.com/sites/paularmstrongtech/2017/07/05/stop-using-powerpoint-harvard-university-says-its-damaging-your-brand-and-your-company/>
- Ash, A. M. (2025, June 25). Three in 10 teachers use AI weekly, saving six weeks a year. *Gallup*. <https://news.gallup.com/poll/691967/three-teachers-weekly-saving-six-weeks-year.aspx>
- Ashby, D. (2024, April 29). 5 Golden rules of PowerPoint design. *Microsoft Create*. <https://create.microsoft.com/en-us/learn/articles/5-golden-rules-powerpoint-design>
- Atkinson, C. (2004). Five experts dispute Edward Tufte on PowerPoint [Online forum article]. [https://www.academia.edu/2007224/Five\\_experts\\_dispute\\_Edward\\_Tufte\\_on\\_powerpoint](https://www.academia.edu/2007224/Five_experts_dispute_Edward_Tufte_on_powerpoint)
- Ayers, M. (2014, April 17). The soul of 'Scandal': How Shonda Rhimes uses music for TV's most dramatic show. *The Hollywood Reporter*. <https://www.hollywoodreporter.com/tv/tv-news/soul-scandal-how-shonda-rhimes-697228/>
- Aziz, H. A. A., & Dali, S. Z. M. (2023). More than just engaging? TikTok as an effective educational tool. *International Journal of Education, Psychology and Counseling (IJEPC)*, 8 (52), 133–142. doi:10.35631/IJEPC.852011
- Baddeley, A. D. (1999). *Human memory*. Boston: Allyn and Bacon.
- Baker, J. P., Goodboy, A. K., Bowman, N. D., & Wright, A. A. (2018). Does teaching with PowerPoint increase students' learning? A meta-analysis. *Computers and Education*, 126, 376–387. <https://doi.org/10.1016/j.compedu.2018.08.003>
- Bala, K., & Colvin, A. (Co-chairs) (2023, June 18). *Generative artificial intelligence for education and pedagogy*. Ithaca, NY: Center for Teaching Innovation, Cornell University. [https://teaching.cornell.edu/sites/default/files/2023-08/Cornell-Generative-AIForEducation-Report\\_2.pdf](https://teaching.cornell.edu/sites/default/files/2023-08/Cornell-Generative-AIForEducation-Report_2.pdf)
- Becker, T. (2024, March 27). 36 Years of PowerPoint: You probably didn't know these 8 facts before! PresentationLoad. <https://www.presentationload.com/blog/36-years-of-powerpoint/>

- Berk, R. A. (2001). Using music with demonstrations to trigger laughter and facilitate learning in multiple intelligences. *Journal on Excellence in College Teaching*, 12(1), 97–107.
- Berk, R. A. (2002). *Humor as an instructional defibrillator*. Sterling, VA: Stylus.
- Berk, R. A. (2007). Humor as an instructional defibrillator. *Journal of Health Administration Education*, 24(2), 94–117.
- Berk, R. A. (2008). Music and music technology in college teaching: Classical to hip hop across the curriculum. *International Journal of Technology in Teaching and Learning*, 4(1), 45–67.
- Berk, R. A. (2009a). Multimedia teaching with video clips: TV, movies, YouTube, and mtvU in the college classroom. *International Journal of Technology in Teaching and Learning*, 5(1), 1–21.
- Berk, R. A. (2009b). Teaching strategies for the net generation. *Transformative Dialogues: Teaching & Learning Journal*, 3(2), 1–23.
- Berk, R. A. (2011a). “PowerPoint engagement” techniques to foster deep learning. *Journal of Faculty Development*, 25(2), 45–48.
- Berk, R. A. (2011b). Research on PowerPoint: From basic features to multimedia. *International Journal of Technology in Teaching and Learning*, 7(1), 24–35.
- Berk, R. A. (2012a). How to create “Thriller” PowerPoints in the classroom! *Innovative Higher Education*, 37(2), 141–152.
- Berk, R. A. (2012b). Top 10 evidence-based, best practices for PowerPoint in the classroom. *Transformative Dialogues: Teaching & Learning eJournal*, 5(3), 1–7.
- Betancourt, M. (2017, May 18). In memory of Ally McBeal, David E. Kelley’s groundbreaking almost-musical. *Paste Magazine*.  
<https://www.pastemagazine.com/tv/ally-mcbeal/in-memory-of-ally-mcbeal-david-e-kelleys-groundbre#:~:text=There's%20a%20bluntness%20to%20the,without%20billing%20itself%20as%20such.&text=These%20moments%20of%20self%20Daware,integral%20part%20of%20Ally%20McBeal>.
- Bharadwaj, P., Shaw, C., NeJame, L., Martin, S., Janson, N., & Fox, K. (2023, June). *Time for class*. Tyton Partners. [https://tytonpartners.com/app/uploads/2023/06/Time-for-Class-2023-Report\\_Final.pdf](https://tytonpartners.com/app/uploads/2023/06/Time-for-Class-2023-Report_Final.pdf)
- Bourne, P. E. (2007). Ten simple rules for making good oral presentations. *PLoS Computational Biology*, 3(4), 593–594. <https://doi.org/10.1371/journal.pcbi.0030077>
- Brill, F. (2016). PowerPoint for teachers: Creating interactive lessons. *LinkedIn Learning*. <https://www.lynda.com/PowerPoint-tutorials/PowerPoint-Teachers-Create-Interactive-Lessons/472427-2.html>
- Brodeur, M. A. (2025, June 15). Dissecting the scariest two notes in film history. *The Washington Post*.  
<https://www.washingtonpost.com/entertainment/music/2025/06/14/jaws-theme-john-williams-scary-music/>
- Brown, J. (2020, January 1). Ally McBeal’s postmodern soundtrack. *Journal of the Royal Musical Association*, 126(2), 275–303. <https://doi.org/10.1093/jrma/126.2.275>
- Byrne, K., & Euchs, E. (2022). *The jukebox musical: An interpretive history*. New York, NY: Routledge.
- Bumiller, E. (2010, April 26). We have met the enemy and he is PowerPoint. *The New York Times*. <http://www.nytimes.com/2010/04/27/world/27powerpoint.html>
- Butler, J. (2017, June 6). Music licensing: What is considered Fair Use? Copyright Clearance Center, *Velocity of Content*. <https://www.copyright.com/blog/music-licensing-fair-use/>

- Chandler, P., & Sweller, J. (1991). Cognitive load theory and the format of instruction. *Cognition and Instruction*, 8(4), 293–332. [https://doi.org/10.1207/s1532690xci0804\\_2](https://doi.org/10.1207/s1532690xci0804_2)
- Clark, J. M., & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, 53(2), 445–459.
- Conklin, S., & Dikkers, A. G. (2021). Instructor social presence and connectedness in a quick shift from face-to-face to online instruction. *Online Learning Journal*, 25(1), 135–150. Retrieved from <https://doi.org/10.24059/olj.v25i1.2482>
- Daly, S. (2013, March 12). Why the soundtrack on ‘Scandal’ is more like a character. *The New York Post*. <https://nypost.com/2013/03/12/why-the-soundtrack-on-scandal-is-more-like-a-character/#:~:text=%E2%80%9CScandal%E2%80%9D%20relies%20heavily%20on%20old,1970s%20Staples%20%5BSingers%5D.%E2%80%9D>
- D’Angelo, L. (2018). PowerPoint presentations in the classroom: *Re-evaluating the genre*. *Language Value*, 10(1), 29–44. <https://doi:10.6035/LanguageV.2018.10.3>
- de la Mora Velasco, E., Chen, Y., Hirumi, A., & Bai, H. (2023). The impact of background music on learners: A systematic review and meta-analysis. *Psychology of Music*, 51(6), 1598–1626. <https://doi.org/10.1177/03057356231153070>
- Dosseville, F., Laborde, S., & Scelles, N. (2012). Music during lectures: Will students learn better? *Learning and Individual Differences*, 22(2), 258–262. <https://doi.org/10.1016/j.lindif.2011.10.004>
- Duarte, N. (2015, July 27). Why I write in PowerPoint. *Harvard Business Review*. <https://hbr.org/2015/07/why-i-write-in-powerpoint>
- Duffy, R. M., & Henry, M. (2016). Death by PowerPoint: Alternatives for life. *British Journal of Psychological Advances*, 22, 420–427. <http://doi:10.1192/apt.bp.114.013078>
- Duggal, N. (2025, June 19). Top ChatGPT alternatives: Exploring AI tools like ChatGPT. *Simplilearn*. <https://www.simplilearn.com/tutorials/chatgpt-tutorial/chatgpt-alternatives>
- Durrani, A. (2024, August 15). Top streaming statistics. *Forbes*. <https://www.forbes.com/home-improvement/internet/streaming-stats/>
- Eck, A. (2024, March). How music resonates in the brain: Scientists tune in to the brain’s emotional response to music. *Harvard Medicine*. <https://magazine.hms.harvard.edu/articles/how-music-resonates-brain>
- Escamilla-Fajardo, P., Alguacil, M., & López-Carril, S. (2021). Incorporating TikTok in higher education: Pedagogical perspectives from a corporal expression sport sciences course. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 28(1), 1–13. doi:10.1016/j.jhlste.2021.100302
- Evans, S., & Hays, L. (2025). The student perceptions of the use of TikTok in education. *Journal for Research and Practice in College Teaching*, 10(1).
- Fandom. (n.d.). Music in Ally McBeal. [https://allymcebeal.fandom.com/wiki/Music\\_in\\_Ally\\_McBeal#:~:text=Ally%20McBeal%20is%20one%20of,the%20storyline%20in%20each%20episode](https://allymcebeal.fandom.com/wiki/Music_in_Ally_McBeal#:~:text=Ally%20McBeal%20is%20one%20of,the%20storyline%20in%20each%20episode)
- Floridou, G. A., Williamson, V. J., Stewart, L., & Müllensiefen, D. (2015). The Involuntary Musical Imagery Scale (IMIS). *Psychomusicology: Music, Mind, and Brain*, 25(1), 28–36. <https://doi.org/10.1037/pmu0000067>
- Gabriel, Y. (2008). Against the tyranny of PowerPoint: Technology-in-use and technology abuse. *Organization Studies*, 29, 255–276.
- Ghosh, S. (2025, March 31). The Residence season 1 soundtrack: A list of every song in the series. <https://www.sportskeeda.com/us/shows/the-residence-season-1-soundtrack-a-list-every-song-series>

- Guernsey, L. (2001, May 31). PowerPoint invades the classroom. *The New York Times*. <https://www.nytimes.com/2001/05/31/technology/powerpoint-invades-the-classroom.html>
- Harden, R. M. (2008). Death by PowerPoint – The need for a ‘fidget index’. *Educational Technology Abstracts*, 30, 833–835.
- Harvard College Students and Teaching Fellows, Atherton, D., Newman, S. & Esfahany, K. (2023, July 11). *Proposed AI code of conduct*. Cambridge, MA: Harvard metaLAB. <https://aicodeofconduct.mlml.io/>
- Harvard University Office of the General Counsel. (2023, July 11). *Copyright and fair use: A guide for the Harvard community*. Cambridge, MA: <https://ogc.harvard.edu/pages/copyright-and-fair-use#:~:text=It%20is%20now%20codified%20in,not%20an%20infringement%20of%20copyright.>
- Hashemi, M., Azizinezhad, M., & Farokhi, M. (2012). Power Point as an innovative tool for teaching and learning in modern classes. *Procedia - Social and Behavioral Sciences*, 31. 10.1016/j.sbspro.2011.12.103.
- Hass, K. (2023, August 24). 6 Benefits of integrating audio and video into your presentations. *Airdeck*. <https://airdeck.co/6-benefits-of-integrating-audio-and-video-into-your-presentations/>
- Hill, A., Arford T., Lubitow A., Smollin L. M. (2012). “I’m ambivalent about it”: The dilemmas of PowerPoint. *Teaching Sociology*, 40, 242–256.
- Instagram (n.d.). Add music, effects and more to your reel on Instagram. <https://help.instagram.com/664508917489819>
- Isseks, M. (2011). How PowerPoint is killing education. *Educational Leadership*, 68(5), 74–76.
- Jakubowski, K., Finkel, S., Stewart, L., & Müllensiefen, D. (2017). Dissecting an earworm: Melodic features and song popularity predict involuntary musical imagery. *Psychology of Aesthetics, Creativity, and the Arts*, 11(2), 122–135. <https://doi.org/10.1037/aca0000090>
- James, G. (2019, September 25). It’s official: PowerPoint is the worst productivity tool in all creation. <https://www.inc.com/geoffrey-james/its-official-powerpoint-is-worst-productivity-tool-in-all-creation.html>
- Jameson, M. M. (2025, February 18). Ethical considerations in using AI as a teaching and learning tool. University of Northern Colorado blog. Greeley, CO: University of Northern Colorado. <https://www.unco.edu/center-enhancement-teaching-learning/blog/blog-021325-ethical-considerations-in-using-ai-as-a-teaching-and-learning-tool.aspx#:~:text=To%20use%20AI%20responsibly%20in,remain%20mindful%20of%20potential%20biases.>
- Jimola, F. E. (2023). Undergraduate students’ exploration of Instagram and TikTok in learning language skills contents: A leverage to digital literacy. *Interdisciplinary Journal of Education Research*, 5. doi:10.38140/ijer-2023.vol5.08
- Juicer. (2025, May 18). Instagram content ideas for universities and colleges. Juicer blog. <https://www.juicer.io/blog/instagram-content-ideas-universities>
- Kalyuga, S. (2011). Cognitive load theory: How many types of load does it really need? *Educational Psychology Review*, 23(1), 1–19.
- Kernbach, S., Bresciani, S., & Eppler, M. J. (2015). Slip-sliding-away: A review of the literature on the constraining qualities of PowerPoint. *Business and Professional Communication Quarterly*, 78(3), 292–313. <https://doi.org/10.1177/2329490615595499>

- Khayessite. (2015, October 26). Music's effect on our emotions. <https://khayessite.wordpress.com/2015/10/26/greys-anatomy-the-musical/>
- Killingly, C., Lacherez, P., & Meuter, R. (2021). Singing in the brain: Investigating the cognitive basis of earworms. *Music Perception*, 38(5), 456–472. <https://doi.org/10.1525/mp.2021.38.5.456>
- Kingsberry, J. (2024, July 28). Wait, is PowerPoint cool now? *The Washington Post*. <https://www.washingtonpost.com/style/of-interest/2024/07/28/powerpoint-night-parties/>
- Kirschner, F., Kester, L., & Corbalan, G. (2011). Cognitive load theory and multimedia learning, task characteristics and learning engagement: *The current state of the art. Computers in Human Behavior*, 27(1), 1–4.
- Lerdal, D. H. (2023, October 5). Best PowerPoint alternatives and presentation tools of 2023. <https://slidedog.com/blog/best-powerpoint-alternatives-and-presentation-tools/>
- Levasseur, D. G., & Sawyer, J. K. (2006, August 19). Pedagogy meets PowerPoint: A research review of the effects of computer-generated slides in the classroom. *Review of Communication*, 6(1–2), 101–123. <http://doi:10.1080/15358590600763383>. ISSN 1535-8593. S2CID 144022054.
- Liikkanen, L. A., & Jakubowski, K. (2020). Involuntary musical imagery as a component of ordinary music cognition: A review of empirical evidence. *Psychonomic Bulletin & Review*, 27(6), 1195–1217. <https://doi.org/10.3758/s13423-020-01750-7>
- Loveless, J. C. L. (2013). The use of music as a pedagogical tool in higher education sociology courses: Faculty member perspectives and potentials. Dissertations and Theses. Paper 1100. <https://doi.org/10.15760/etd.1100>
- Lortie, C. J. (2017). Ten simple rules for short and swift presentations. *PLoS Computational Biology*, 13(3), e1005373,1–6. <https://doi:10.1371/journal.pcbi.1005373>
- Mann, S., & Robinson, A. (2009). Boredom in the lecture theatre: An investigation into the contributors, moderators, and outcomes of boredom amongst university students. *British Educational Research Journal*, 35(2), 243–258.
- Mateer, J. (2025, July 7). How to get the best TikTok music for your videos. [https://artlist.io/blog/tiktok-music/?utm\\_source=google&utm\\_medium=cpc&utm\\_campaign=13681196073&utm\\_content=159759064458&utm\\_term=royalty%20free%20music%20for%20tiktok&keyword=royalty%20free%20music%20for%20tiktok&ad=690385581250&matchtype=b&device=c&gad\\_source=1&gad\\_campaignid=13681196073&gbraid=0AAAAACuwFJ1Q4SvXW3HbD6t11auqtuFQM&gclid=Cj0KCQjw4qHEBhCDARIsALYKFNPsiuGj7LUB0cO1Vu42CI92fGW6uGSSWvqKd4CgUsXhZu9jGbfP3H0aAr5MEA Lw\\_wcB](https://artlist.io/blog/tiktok-music/?utm_source=google&utm_medium=cpc&utm_campaign=13681196073&utm_content=159759064458&utm_term=royalty%20free%20music%20for%20tiktok&keyword=royalty%20free%20music%20for%20tiktok&ad=690385581250&matchtype=b&device=c&gad_source=1&gad_campaignid=13681196073&gbraid=0AAAAACuwFJ1Q4SvXW3HbD6t11auqtuFQM&gclid=Cj0KCQjw4qHEBhCDARIsALYKFNPsiuGj7LUB0cO1Vu42CI92fGW6uGSSWvqKd4CgUsXhZu9jGbfP3H0aAr5MEA Lw_wcB)
- Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). New York, NY: Cambridge University Press.
- Mayer, R. E. (2011). Applying the science of learning to multimedia instruction. In J. P. Mestre & B. H. Ross (Eds.), *The psychology of learning and motivation: Cognition in education* (pp. 77–108). Amsterdam, The Netherlands: Elsevier Academic Press. <https://doi.org/10.1016/B978-0-12-387691-1.00003-X>
- Mayer, R. E. (2023). Research-based principles for designing multimedia instruction. In C. E. Overson, C. M. Hakala, L. L. Kordonowy, & V. A. Benassi (Eds.), *In their own words: What scholars and teachers want you to know about why and how to apply the science of learning in your academic setting* (pp. 143–157). Washington, DC: Society for the Teaching of Psychology, American Psychological Association.
- Mayer, R. E., & Anderson, R. B. (1991). Animations need narrations: An experimental test of the dual-coding hypothesis. *Journal of Educational Psychology*, 83(4), 484–490.

- Mayer, R. E., & Fiorella, L. (2014). Principles for reducing extraneous processing in multimedia learning: Coherence, signaling, redundancy, spatial contiguity, and temporal contiguity principles. In R. E. Mayer (Ed.), *Cambridge handbook of multimedia learning (2nd)* (pp. 279–315). New York, NY: Cambridge University Press. <http://doi:10.1017/CBO9781139547369.015>
- Mayer, R. E., & Johnson, C. I. (2008). Revising the redundancy principle in multimedia learning. *Journal of Educational Psychology, 100*(2), 380–386. <http://doi:10.1037/0022-0663.100.2.380>
- Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist, 38*(1), 43–52. <http://doi:10.1007/s10509-010-0328-8>
- Maxwell, J. C. (2012). *The 15 invaluable laws of growth*. New York, NY: Center Street.
- Maxwell, J. C. (2015). *Intentional living: Choosing a life that matters*. New York, NY: Center Street.
- Mowreader, A. (2024, February 6). Teaching tip: Navigating AI in the classroom. *Inside Higher Ed*. <https://www.insidehighered.com/news/student-success/academic-life/2024/02/06/how-college-professors-are-using-generative-ai-teach>
- Mubert Team. (2024, August 22). How to add music to Instagram reels without copyright issues: A complete guide. <https://mubert.com/blog/how-to-add-music-to-instagram-reels-without-copyright-issues-a-complete-guide>
- Naegle, K. M. (2021). Ten simple rules for effective presentation slides. *PLoS Computational Biology, 17*(12), e1009554. <http://doi:10.1371/journal.pcbi.1009554>. PMID: 34855746; PMCID: PMC8638955.
- National Academy of Medicine. (2025). *An Artificial Intelligence Code of Conduct for Health and Medicine: Essential Guidance for Aligned Action*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/29087> or <https://nap.nationalacademies.org/catalog/29087/an-artificial-intelligence-code-of-conduct-for-health-and-medicine>
- Nelson, D. L., Reed, V. S., & Walling, J. R. (1976). Pictorial superiority effect. *Journal of Experimental Psychology: Human Learning and Memory, 2*(5), 523–528. <https://doi.org/10.1037/0278-7393.2.5.523>
- Nilsson, U., Unosson, M., & Rawal, N. (2005). Stress reduction and analgesia in patients exposed to calming music postoperatively: A randomized controlled trial. *European Journal of Anaesthesiology, 22*(2), 96–102. <https://doi:10.1017/S0265021505000189>
- O’Connell, D. (2025, July 14). How are students really using AI? Here’s what the data tell us. *The Chronicle of Higher Education*. [https://www.chronicle.com/article/how-are-students-really-using-ai?utm\\_source=Iterable&utm\\_medium=email&utm\\_campaign=campaign\\_14248830\\_nl\\_Academe-Today\\_date\\_20250717](https://www.chronicle.com/article/how-are-students-really-using-ai?utm_source=Iterable&utm_medium=email&utm_campaign=campaign_14248830_nl_Academe-Today_date_20250717)
- Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford, UK: Oxford University Press.
- Palmer, K. (2025, January 30). What would a TikTok ban mean for higher ed? *Inside Higher Ed*. <https://www.insidehighered.com/news/tech-innovation/teaching-learning/2025/01/30/what-would-tiktok-ban-mean-higher-ed>
- Parker, J., & Barber, M. (n.d.). AI productivity tools for educators. University of Florida Center for Teaching Excellence. <https://teach.ufl.edu/resource-library/ai-productivity-tools-for-educators/>
- Phillips, D. J. (2011). *How to avoid death by PowerPoint*. Presentation Skills Ltd.
- Phillips, D. J. (2014, April 14). How to avoid death by PowerPoint. TEDxStockholmSalon.

- Pinker, S. (2010, June 10). Mind over mass media. Opinion Pages. *The New York Times*, A31. <https://www.nytimes.com/2010/06/11/opinion/11Pinker.html>
- Pollio, H. R., & Humphreys, W. L. (1996). What award-winning lecturers say about their teaching: It's all about connection. *College Teaching*, 44, 101–106.
- Razo, V. (2025, January 29). Instagram as an educational hub: Best practices for educators & creators. LightningLikes. <https://lightninglikes.com/how-to-use-instagram-as-an-education-hub/#:~:text=Educators%20can%20leverage%20Instagram%20webinars,strategy%20for%202024%20and%20beyond>.
- Reiter, L., Jörling, M., Fuchs, C., & Böhm, R. (2025). Student (mis)use of generative AI tools for university-related tasks. *International Journal of Human–Computer Interaction*, 1–14. <https://doi.org/10.1080/10447318.2025.2462083>
- Ren, Y. (2024, November 29). The discovery may offer people with PTSD a new option for coping with difficult memories. *The Washington Post*. <https://www.washingtonpost.com/health/2024/11/29/music-memory-emotions-ptsd/>
- Ren, Y., Kaltsouni Mehdizadeh, S., Leslie, G., & Brown, T. (2024). Affective music during episodic memory recollection modulates subsequent false emotional memory traces: An fMRI study. *Cognitive, Affective, & Behavioral Neuroscience*, 24(5), 912–930. <https://doi.org/10.3758/s13415-024-01200-0>
- Ren, Y., Leslie, G., & Brown, T. (2024) Visual sequence encoding is modulated by music schematic structure and familiarity. *PLoS ONE*, 19(8), e0306271. <https://doi.org/10.1371/journal.pone.0306271>
- Salimpoor, V. N., Benovoy, M., Larcher, K., Dagher, A., & Zatorre, R. J. (2011). Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. *Nature Neuroscience*, 14, 257–262.
- Sarkar, A., & Chandra De, R. (2025). Using music as a pedagogical tool in higher education. *Social Science Review: A Multidisciplinary Journal*, 3(3), 245–248. <https://doi.10.70096/tssr.250303039>
- 6Sense. (2024). Market share of Microsoft PowerPoint. <https://6sense.com/tech/presentation/microsoft-powerpoint-market-share>
- Sharma, S. (2025, June 9). How to embed a video in PowerPoint like a pro. MURF.AI. [https://murf.ai/blog/how-to-embed-a-video-in-powerpoint/#:~:text=Windows%20video%20file%20\(ASF%2C%20AVI,Top%20use%20cases](https://murf.ai/blog/how-to-embed-a-video-in-powerpoint/#:~:text=Windows%20video%20file%20(ASF%2C%20AVI,Top%20use%20cases)
- Shulman, R. D. (2023, January 16). 5 Ways music affects learning. *The Learning Council*. <https://thelearningcounsel.com/articles/5-ways-music-affects-learning/#:~:text=Listening%20to%20music%20helps%20you,helps%20with%20staying%20on%20task>.
- Shwom, B. L., & Keller, K. P. (2003). The great man has spoken. Now what do I do? A response to Edward R. Tufte's "The cognitive style of PowerPoint." *Communication Insight*, 1(1), 2–16.
- Sima, R. (2025, April 24). Why catchy tunes get stuck in your head (and how to stop it). *The Washington Post*. <https://www.washingtonpost.com/wellness/interactive/2025/why-songs-get-stuck-in-your-head/>
- Simons T. (2005). Does PowerPoint make you stupid? *Presentations*, 18 (3). <http://academic.evergreen.edu/curricular/atpsmpa/power%20point%20make%20you%20stupid.pdf>
- Smith, A. (2023). Musicking higher education: An analysis of the effects of music pedagogy on college classroom atmospheres. USF Tampa Graduate Theses and Dissertations. <https://digitalcommons.usf.edu/etd/10003>

- Snodgrass, J. G., & Asiaghi, A. (1977). The pictorial superiority effect in recognition memory. *Bulletin of the Psychonomic Society*, *10*(1), 1–4. <https://doi.org/10.3758/BF03333530>
- Speach. (2023, November 20). 7 Reasons why you should stop using PowerPoint. <https://speach.me/blog/reasons-you-should-stop-using-powerpoint#:~:text=In%20fact%2C%20there%20are%20over,each%20day%20around%20the%20world>
- Stefanou, V., & Kotsovoulou, M. (2016). Use of PowerPoint in the classroom: A participatory research project. *International Journal of Knowledge Society Research*, *7*(4). <http://doi:10.4018/IJKSR.2016100104>
- Stewart T. A. (2001, February). Ban it now! Friends don't let friends use PowerPoint. *Fortune*, *143*, 210.
- Thompson, W. F., Schellenberg, E. G., & Letnic, A. K. (2012, November). Fast and loud background music disrupts reading comprehension. *Psychology of Music*, *40*(6), 700–708. <http://doi:10.1177/0305735611400173>
- Tufte, E. (2003a). *The cognitive style of PowerPoint*. Cheshire, CT: Graphics Press.
- Tufte, E. (2003b, September). PowerPoint is evil: Power corrupts. PowerPoint corrupts absolutely. [http://archive.wired.com/wired/archive/11.09/ppt2\\_pr.html](http://archive.wired.com/wired/archive/11.09/ppt2_pr.html)
- Tufte, E. (2006). *The cognitive style of PowerPoint: Pitching out corrupts within* (2nd ed.). Cheshire, CT: Graphics Press.
- Undrill, G., & McMaster, F. (2022). PowerPoint: Avoiding the slide to damnation. In S. Huline-Dickens & P. Casey (Eds.), *Clinical Topics in Teaching Psychiatry: A Guide for Clinicians* (pp. 235–249). Cambridge, UK: Cambridge University Press.
- van Merriënboer, J. J., & Sweller, J. (2010). Cognitive load theory in health professional education: Design principles and strategies. *Medical Education*, *44*, 85–93.
- Vik, G. N. (2004). Breaking bad habits: Teaching effective PowerPoint use to working graduate students. *Business Communication Quarterly*, *67*(2), 225–228. <http://doi:10.1177/1080569904672012>
- Wang, Y., Zhang, J., & Mao, Y. (2024, June). Harmonizing mathematics: Unveiling the impact of music integration on academic performance: A meta-analysis. *Thinking Skills and Creativity*, *52*, 101554. <https://doi.org/10.1016/j.tsc.2024.101554>
- Whitford, E. (2026, January 21). Survey: Faculty say AI is impactful—but not in a good way. *Inside Higher Ed*. <https://www.insidehighered.com/news/faculty-issues/teaching/2026/01/21/survey-faculty-say-ai-impactful-not-good-way>
- Williamson, V. J., Liikkanen, L. A., Jakubowski, K., & Stewart, L. (2014). Sticky tunes: How do people react to involuntary musical imagery? *PLoS ONE*, *9*(1), e86170. <https://doi.org/10.1371/journal.pone.0086170>
- Willis, J. (2023, May 3). Using music during instruction to support cognition. *Edutopia*. <https://www.edutopia.org/article/using-music-support-deeper-learning/>
- Wilson, J. L., & Zamora, G. (2025, March 5). The best free online streaming music services for 2025. *PCMag*. <https://www.pcmag.com/picks/the-best-free-online-streaming-music-services>
- Yu, C., & Smith, M. (2008). PowerPoint: Is it an answer to interactive classrooms? *International Journal of Instructional Media*, *35*(3), 271–280.
- Zatorre, R. J., & Salimpoor, V. N. (2013). From perception to pleasure: Music and its neural substrates. *Proceedings of the National Academy of Sciences*, *110*(Supplement 2), 10430–10437. <https://doi.org/10.1073/pnas.1301228110>
- Zulkifli, N. N., Letchumanan, M., Kamarudin, S., Halim, N. D., & Hashim, S. (2022). A Review: The effectiveness of using TikTok in teaching and learning. In S. Iyer et al. (Eds.), *Proceedings of the 30th International Conference on Computers in Education*

(pp. 287–292). Asia-Pacific Society for Computers in Education.  
<https://library.apsce.net/index.php/ICCE/article/view/4599>