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Sound Design in Popular Music: Gen Z Perspective and Perception

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Abstract
This study explores Generation Z's understanding and perception of sound design in popular music, focusing on how this concept influences their music-listening experiences and emotional responses. Sound design, encompassing audio production quality, sound effects, and waveform processing, is critical in shaping diverse auditory experiences. However, the depth of understanding of sound design among Generation Z varies widely, presenting an opportunity to bridge knowledge gaps in music education. Using a quantitative descriptive approach, a survey was conducted among students with music education backgrounds to assess their familiarity with sound design concepts. The findings reveal diverse levels of comprehension, with some respondents recognizing the term "sound design" but lacking a clear understanding, while others demonstrated a deeper knowledge of its components and significance. Participants identified key elements of sound design, such as the importance of production quality, creative use of sound effects, and manipulating audio waveforms, as pivotal in enhancing the listening experience. A novel aspect of this study is examining how sound design impacts emotional engagement with music. Most respondents reported that sound design enhances the emotional depth of songs and makes the music more immersive and enjoyable. Interestingly, while many felt that sound design influenced their music preferences, a subset of respondents remained unaffected. This research highlights a strong interest among Generation Z in learning more about sound design, suggesting the need for educational initiatives that integrate sound design into music curricula.

Keywords: Gen Z; Perception; Perspective; Popular Music; Sound Design

INTRODUCTION

The popular music industry is a dynamic and integral part of global culture, continually evolving alongside technological advancements in music technology and production equipment (Tan et al., 2020; Zhang & Negus, 2021; Rahimi & Oh, 2024; Trisahid et al., 2024; Ummah & Yohamintin, 2025). Over the past few decades, these advancements have transformed not only the methods of music production

but also the aesthetic and experiential aspects of music consumption. The concept of popular music has become increasingly complex, characterized by diverse audio elements that contribute to a rich and multifaceted listening experience (Tan et al., 2020; Egermannet et al., 2024; Maymuna et al., 2025; Palanisamy, 2025). Within this complexity, sound design has emerged as a critical component in shaping atmosphere, enhancing appeal, and fostering creativity in contemporary popular music.

Sound design, bridging both art and science, empowers musicians and music producers to manipulate, create, and innovate sounds in unprecedented ways (Lensing, 2023; Turchet, 2023; Weaver et al., 2023; Spytska et al., 2025). In the digital age, sound design transcends traditional musical instruments, incorporating sophisticated audio techniques, sound effects, vocal manipulations, and intricate audio production processes. Through sound design, musicians are able to construct immersive audio worlds that align closely with their artistic vision, significantly impacting the overall perception of a musical piece. Despite the rising importance of sound design in popular music, understanding and perceptions of this concept can vary widely, particularly among Generation Z, including students studying music. Rapid technological changes and shifts within the music industry contribute to diverse perspectives and varying levels of knowledge about the role of sound design in popular music. This generation, having grown up surrounded by digital technology, may either benefit from or struggle with this complexity, depending on their exposure and education in music production.

Research indicates that contemporary popular music is heavily influenced by technological contextualization (Moon, 2022; Ronaghi, 2023; Hindriati et al., 2025; Zhu & Smith, 2025). The integration of technology in music creation is now commonplace, as evidenced by the widespread popularity of electronic dance music (EDM) on streaming platforms such as Joox, Spotify, and YouTube (Nikolsky et al., 2020). These platforms provide unrestricted access to millions of songs from global artists, allowing listeners, including music students, to explore a vast array of musical works without geographical limitations. However, despite this access, initial observations conducted in a popular music arrangement class at the Music Education program at Universitas Negeri Padang revealed diverse responses from students regarding sound design. Many students appeared unfamiliar with the term and exhibited varying perceptions, highlighting potential misconceptions about this fundamental concept. This aligns with literature suggesting that sound design is a foundational element in creating not only EDM but also broader contemporary instrumental music (Burger & Toiviainen, 2020; Bylica, 2020; Cannon & Greasley, 2021; Eshiev et al., 2025).

One theoretical underpinning of this research is Johnson & Swedlow (2021) study on perception, which posits that perceptions are influenced by internal and external factors, including culture. As a multicultural nation, Indonesia presents a unique context where cultural diversity may contribute to differences in individual perceptions, including those related to music education. Emphasizes the role of the academic environment in shaping students' perceptions, subsequently influencing their learning quality (Oberle et al., 2020; Grájeda et al., 2024; Hoi et al., 2025; Spaska et al., 2025). These insights suggest that a deeper investigation into students' perceptions of sound design could provide valuable information on how educational and cultural contexts impact musical understanding.

While previous studies have explored the influence of technology on music creation and the general concept of sound design in genres like EDM, several research gaps remain unaddressed. Firstly, existing research primarily focuses on the technical aspects of sound design and its application by professional musicians, with limited exploration of how students, particularly Generation Z, perceive this concept within educational settings. Secondly, there is a scarcity of studies examining the specific impact of sound design on music preferences and the listening experiences of young audiences. Thirdly, despite the increasing use of digital tools in music education, little research has been conducted on how these tools influence students' conceptual understanding of sound design. Finally, the role of cultural diversity in shaping students' perceptions of sound design within the Indonesian context remains largely unexplored.

This study aims to bridge these gaps by investigating the understanding and perceptions of Generation Z regarding sound design in the context of popular music. The research will assess how Generation Z comprehends sound design, its perceived importance in enhancing the musical listening experience, and how these perceptions influence their music preferences. By analyzing these factors, the study intends to provide insights into how well Generation Z appreciates sound design and how this appreciation might translate into emotional and empathetic responses to music.

Understanding the perspectives of today's Generation Z on sound design in popular music is expected to uncover how this concept contributes to creativity and influences musical preferences. Moreover, this research will highlight the intersection of technology and human creativity, showcasing how these elements combine to produce innovative and creative works in the constantly evolving landscape of popular music. Ultimately, the findings could inform educators and music producers on how to better engage young audiences and enhance music education by integrating sound design as a key element of the curriculum.

RESEARCH METHODS

The research methodology of this study employed a quantitative descriptive research design to systematically gather and analyze data regarding respondents' perceptions, preferences, and interests related to sound design in popular music. The quantitative descriptive approach was chosen for its effectiveness in quantifying data to describe specific characteristics of a population or phenomenon without manipulating variables, offering a clear and objective overview of the topic.

Data collection was conducted through a structured online questionnaire. The questionnaire comprised closed-ended questions aimed at evaluating respondents' understanding of sound design concepts, their preferences in music, and relevant demographic information. The online survey method enabled efficient data collection, ensuring a streamlined process from data gathering to analysis. Respondents completed the survey independently, minimizing potential biases in responses. The study sample consisted of students with a background in music education, representing a diverse age range with an average age of approximately 21 years. This diversity provided a broad perspective on sound design in popular music. The educational backgrounds of the respondents varied, with most holding a high school diploma, while some had earned bachelor's degrees. This variation allowed the study to explore how educational attainment might influence perceptions of sound design.

The questionnaire was organized into four main sections: Understanding of Sound Design Concepts: This section assessed the respondents' foundational knowledge of sound design principles; Key Components of Sound Design in Popular Music Arrangements: This part explored which elements of sound design were most valued in popular music; Impact of Sound Design on Emotions and Music Preferences: It examined how sound design influenced listeners' emotional responses and their music choices; Interest in Learning Sound Design: The final section gauged the respondents' interest in further studying or pursuing a career in sound design.

For data analysis, the study used descriptive statistical methods to provide an accessible interpretation of the collected data. The analysis involved summarizing the data through tables, graphs, and clear visual presentations, allowing the researchers to illustrate respondents' understanding, preferences, and interests in sound design. The focus on descriptive analysis, as opposed to inferential analysis, allowed for a detailed portrayal of the existing trends and perceptions without extending to hypothesis testing or predictive modeling.

RESULTS AND DISCUSSION

In this research, we first explored the favorite popular music arrangement genres of a number of respondents. The aim was to ensure that the data collected subsequently would be the result of respondents with diverse tastes in the music they listen to daily. From the data collected in this initial stage, the survey results showed significant diversity in their music preferences. The preferred genres of popular music arrangements among the respondents can be summarized as follows: Jazz emerged as the favorite genre with 9 respondents selecting it, followed by Pop with 7 respondents. Other genres included Rock (2 respondents), Trance (1 respondent), Classical (1 respondent), Alternative/Indie (1 respondent), Folk (1 respondent), EDM (1 respondent), Country (1 respondent), R&B (1 respondent), Drumset (1 respondent), Slow Rock (1 respondent), Final Countdown (1 respondent), and Progressive Metal (1 respondent). This summary provides an overview of the diversity of music preferences among the respondents, with Jazz and Pop being the most popular choices.

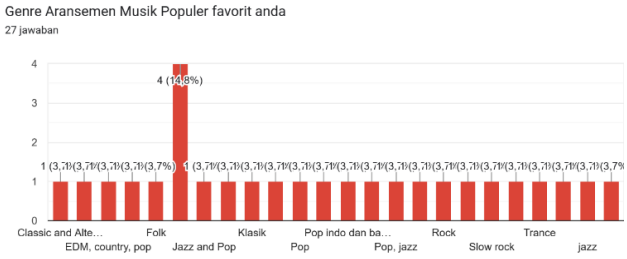

Figure 1. Favorite music genres of the respondents

In this research, there are three aspects that serve as variables in formulating survey questions related to the topic, namely the level of understanding, influence, and interest of the respondents regarding sound design in popular music. With these three aspects, researchers will be able to interpret data related to the perspectives and perceptions of Gen Z towards the research object.

a. Respondents' Understanding Level of the "Sound Design" Concept in Popular Music

Based on the initial evaluation of the collected data, we assessed the respondents' understanding level of the "sound design" concept in popular music. The survey results indicate that there is variation in their understanding of sound design. Some respondents indicated that they have heard the term "sound design" before but do not have a clear understanding of what the concept actually entails (48.1%). This reflects a limited level of knowledge regarding sound design among the respondents. Meanwhile, a number of other respondents stated firmly that they know what sound design is (51.9%). Although the level of knowledge cannot be confirmed at this point, in this case, we can interpret the students' confidence in their understanding of the sound design concept as an initial gauge of their reference

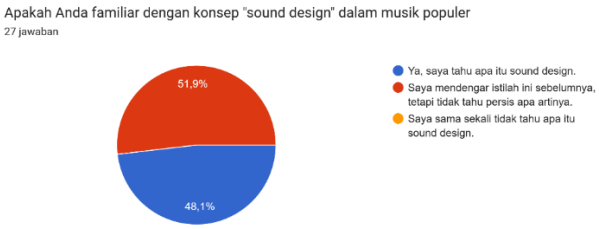

Figure 2. Results of the responses to question number 2

Based on the initial evaluation of the collected data, we assessed the respondents' understanding level of the "sound design" concept in popular music. The survey results indicate that there is variation in their understanding of sound design. Some respondents indicated that they have heard the term "sound design" before but do not have a clear understanding of what the concept actually entails (48.1%). This reflects a limited level of knowledge regarding sound design among the respondents. Meanwhile, a number of other respondents stated firmly that they know what sound design is (51.9%). Although the level of knowledge cannot be confirmed at this point, in this case, we can interpret the students' confidence in their understanding of the sound design concept as an initial gauge of their reference (Calaguas & Dungca, 2024; Doranggi & Rizka, 2025; Firdaus & Mukhtar, 2025).

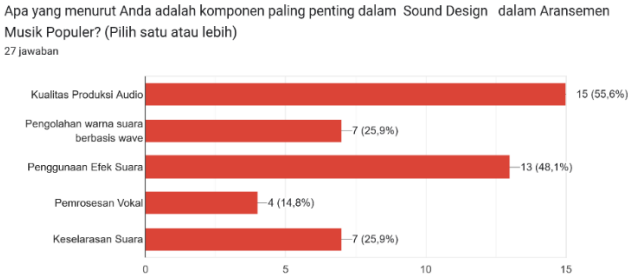

Figure 3. Results of the responses to question number 3 about sound design components

In this survey, the majority of respondents consider understanding sound design to be very important. Most respondents stated that understanding sound design is very important (highest score 59.3%). This indicates that they believe that understanding how sound design influences popular music is a significant aspect of the music listening experience. Some respondents stated that understanding sound design is important (medium score 25.9%) or neutral (not too important 14.8%). This reflects variation in their levels of awareness and assessment regarding this concept.

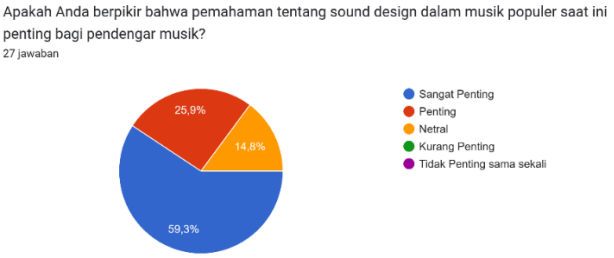

Figure 4. Question number 4 about the importance of understanding the concept of sound design

b. The Influence of Sound Design on Emotions and Music Listening Preferences

One interesting thing is that in this survey, the majority of respondents agreed that they believe sound design can influence the emotions or moods they feel when listening to popular music arrangements. All respondents answered "Yes," indicating their awareness of the role of sound design in creating emotional experiences in music.

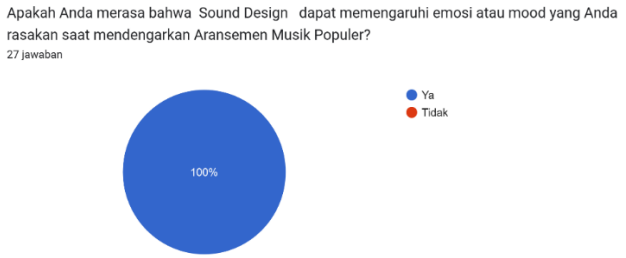

Figure 5. Question number 5 about the influence of sound design on emotions and moods

Respondents stated that sound design can make a song more emotional and appealing. Some also consider that sound design makes a song more unique and enhances its attractiveness. This indicates that respondents value the role of sound design in creating a deeper listening experience. Some respondents even stated that sound design not only influences their preferences but also enhances the overall appeal of a song. However, there are also some respondents who do not feel that sound design affects their music preferences. In terms of song selection, most respondents in this survey choose to listen to specific songs because of their sound design quality. The majority of respondents answered "Yes" to this question. This indicates that the quality of sound design plays an important role in their decision-making when choosing songs to listen to.

Respondents expressed their understanding of how sound design would affect the quality of a song or music album. The majority of respondents emphasized three main aspects: first, sound design can add emotional dimensions to music through the use of instruments or sound effects that convey emotions to the listener. Second, sound design can make a song more captivating through the use of sound elements that grab the listener's attention. Third, sound design is considered to contribute to the improvement of the audio quality of a musical work, resulting in clearer and high-quality audio.

c. Respondents' Interest in Learning Sound Design in Popular Music.

The respondents have varying levels of interest in seeking information about sound design in popular music arrangements. Most respondents answered that they sometimes seek information about sound design. However, there are also a number of respondents who answered that they often seek such information

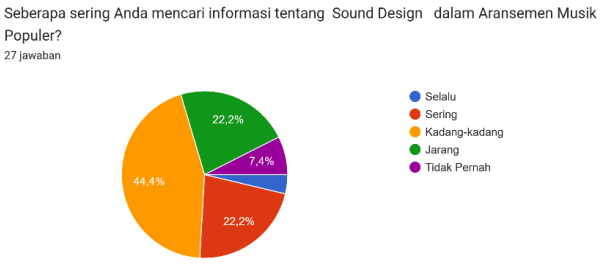

Figure 6. Question 6 related to searching for information about sound design

The research results also indicate that the majority of respondents (92%) express an interest in further learning about sound design in the context of popular music. Only a small percentage of respondents (8%) are not interested in deepening their understanding of sound design. This finding illustrates a high level of interest in understanding the role of sound design in popular music among the respondents.

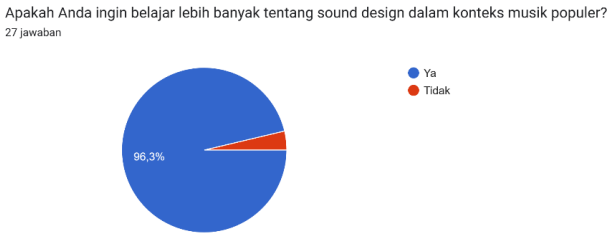

Figure 7. Question 7 that offers the opportunity to learn a lot about sound design

Table 1. Survey findings data interpretation

Findings	Summary
Respondents' Understanding of Sound Design: • Variation in understanding of sound design: Some know and some do not.	• Varying levels of understanding among respondents
Important Components in Sound Design: • Audio production quality is considered the most important. • Mastery of sound effects is considered important. • Wave processing is considered important.	Audio production quality is considered the most important. The use of sound effects, sound harmony, and wave processing is considered important.
Influence of Sound Design on Emotions and Music Listening Preferences: • Most respondents believe that sound design affects their emotions. • Sound design is considered to make songs more emotional and engaging. • Some respondents feel that sound design does not affect their music preferences.	• The majority state that sound design will affect their emotions while listening to music. • Some respondents believe that sound design makes songs more emotional and enhances the overall appeal of the song. • However, a small portion states that sound design does not influence their music preferences.
Respondents' Interest in Learning Sound Design in Popular Music • The majority of respondents have an interest in learning more about sound design. • Only a small number of respondents are not interested in understanding sound design.	• The majority (92%) have an interest in learning more about sound design • A small number are not interested in deepening their understanding of sound design.

Gen Z is widely regarded as the most diverse and unique generation (Pichler, Kohli, & Granitz, 2021; Harari et al., 2023; Jumaera et al., 2024; Mokoginta et al., 2024; Ihyauddin et al., 2025). This generation, also known as the "Tech Gen," generally includes individuals born between 1998 and 2009. However, according to Gabrielova & Buchko (2021), Gen Z encompasses those born between 1997 and 2012. Gen Z is the first generation to grow up with the internet, social media, and advanced technology as integral parts of their lives. Given their early and deep exposure to technology, Gen Z has become a leading consumer group in the digital music market, leveraging online streaming platforms such as YouTube, Spotify, and Joox.

The transition from traditional music formats (e.g., VCDs, tapes, vinyl) to digital streaming has made it easier for Gen Z to access music. Their preference for convenience and technology-driven solutions aligns with digital platforms' offerings (Ndatyapo et al., 2024; Rachmatika & Salighehdar, 2024; Li et al., 2025). Gen Z engage in creative activities daily, demonstrating their active involvement in music consumption and possibly creation (Moles et al., 2024; Rahmayanti & Kwalat, 2024; Setyaningsih et al., 2024). However, the current study highlights a knowledge gap in understanding the concept of sound design within popular music. The term "sound design" is interpreted differently depending on an individual's perspective, ranging from general concepts such as sound effects and audio quality to more technical aspects like waveforms, LFOs, and envelope processing (Snook et al., 2020; Anderson, 2022; Hayes et al, 2022; Cavdir, 2024).

While previous research has explored sound design in specific musical genres, such as Minang pop (Sriwulan et al., 2023) and Chinese pop (Ramírez, J., & Flores, 2020), and analyzed music preferences among youth (Webster, 2020), this study contributes new insights into how Gen Z perceives sound design, emphasizing their varied levels of understanding. The findings reveal that many young listeners have a surface-level understanding of sound design, often associating it with general audio quality rather than the deeper, technical processes involved in music production (Bernardo et al., 2020; Chilvers et al., 2024; Simamora et al., 2024; Sulaiman et al., 2024; McDonald, Foster, & Rafferty, 2025).

The findings have several implications for music education and the music industry. For educators, there is an opportunity to incorporate more detailed music production and sound design concepts into curricula, particularly for Gen Z students who may benefit from a deeper understanding of the music they consume. For the music industry, understanding Gen Z's preferences and their emotional responses to sound design can inform production techniques that align with this generation's tastes. A limitation of this study is the relatively small sample size, which may not fully represent the broader Gen Z population. Additionally, the study primarily focuses on students, which could introduce bias as these respondents might have different levels of exposure to music theory and production compared to non-students or professionals in the music field.

Future research should consider expanding the sample size and including a more diverse range of respondents, including professional musicians and producers. Longitudinal studies could also examine how Gen Z's understanding of sound design evolves over time, particularly as they gain more exposure to music education or industry practices. Music educators should consider integrating sound design concepts into their teaching strategies, potentially using popular genres like K-Pop, which Gen Z is highly interested in, as a gateway to explore technical elements of music production. This study provides valuable insights into Gen Z's understanding of sound design in music. While there is a broad interest in music among this generation, their understanding of technical concepts like sound design varies significantly. Bridging this gap through education and industry engagement can enhance Gen Z's music appreciation and potentially inspire the next generation of music creators.

CONCLUSION

This study explored Generation Z's popular music genre preferences, their understanding of sound design, and how this concept influences their music listening experience. The findings revealed a broad spectrum of music preferences, with Jazz and Pop emerging as the most favored genres. This diversity highlights the eclectic taste of Generation Z and underscores the importance of versatile sound design in catering to varied musical interests. Respondents displayed mixed levels of understanding regarding sound design. While many were familiar with basic concepts, their grasp of advanced elements like soundwave-based sound color processing was limited. The components of sound design deemed most important included audio production quality, the use of sound effects, and sound harmony. These insights suggest that while there is a general appreciation for sound design, deeper and more technical aspects of it remain

underexplored among this demographic. A significant portion of respondents acknowledged the emotional impact of sound design, stating that it enhances the appeal of songs and deepens their emotional connection to music. However, a smaller group indicated that sound design did not significantly affect their music preferences. The findings also revealed a strong interest among Generation Z in learning more about sound design, indicating potential for educational initiatives and industry engagement in this area.

The implications of this study are multi-faceted. Firstly, for music producers and educators, there is an opportunity to bridge the knowledge gap by providing resources and learning opportunities focused on advanced sound design concepts. This could involve workshops, multimedia content, or interactive learning experiences that delve into sound color processing and other technical aspects. Secondly, the music industry can leverage these insights to create more targeted and immersive audio experiences, aligning with the emotional and aesthetic preferences of Generation Z. Lastly, this research supports the potential for developing new music products or services that integrate educational elements on sound design, enhancing not only the listening experience but also promoting a deeper understanding and appreciation of music. Ultimately, by aligning sound design strategies with the nuanced preferences and curiosities of Generation Z, stakeholders can contribute to a richer and more informed musical culture.

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