Enhancing Student Engagement in Multimedia-Mediated Constructivist Learning: Exploring Students' Perceptions

Osias Kit T. Kilag
School Principal, PAU Excellencia Global Academy Foundation, Inc., Toledo City, Philippines
https://orcid.org/0000-0003-0845-3373
okkilag12@gmail.com

Jocelyn A. Dejino
Teacher III, Department of Education, Schools Division of Toledo City, Philippines
https://orcid.org/0009-0004-7450-1470
jocelyndejino@gmail.com

Ramelito C. Almendras
Instructor III
Cebu Technological University
ramelitoalmendras@gmail.com

Mervin T. Arcillo
Secondary Science Teacher Level 2, Virgin Islands Department of Education, St. Thomas, US Virgin Islands
https://orcid.org/0009-0003-2454-8900
mervinarcillo@gmail.com

Debra P. Mansueto
Teacher III, Department of Education, Schools Division of Cebu Province, Philippines
https://orcid.org/0000-0001-2345-36789
debra.mansueto001@deped.gov.ph

Cara Frances K. Abendan
Administrative Assistant, ECT Excellencia Global Academy Foundation, Inc., Balamban, Cebu, Philippines
https://orcid.org/0000-0002-6363-7792
carafrances03@gmail.com

A B S T R A C T

This qualitative study explores the perceptions of students regarding multimedia-mediated constructivist learning and its impact on student engagement. Through in-depth interviews and observations, the study investigates the experiences, attitudes, and recommendations of undergraduate students in a university setting. The findings reveal that multimedia-mediated constructivist learning significantly enhances student engagement, as evidenced by increased motivation, active participation, and a sense of excitement. The interactive nature of multimedia resources captured students' attention and stimulated their curiosity, leading to a deeper understanding of the subject matter. Collaborative learning opportunities facilitated by multimedia resources allowed students to engage in discussions, share perspectives, and apply their knowledge to real-world scenarios. The study also highlights the importance of considering students' individual learning preferences and needs, suggesting that personalized and adaptable learning experiences can optimize the effectiveness of multimedia-mediated constructivist learning. Clear instructions and guidance are crucial in reducing potential feelings of overwhelm and maximizing engagement. These findings contribute to the existing literature on instructional strategies and educational technology, emphasizing the value of incorporating multimedia resources in constructivist learning approaches. Educators and instructional designers can utilize these insights to create engaging and effective learning environments that foster student engagement and promote a deep understanding of the subject matter.

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INTRODUCTION

In recent years, there has been a growing interest in exploring innovative teaching approaches that foster student engagement and enhance learning outcomes. One such approach is multimedia-mediated constructivist learning, which combines multimedia resources with constructivist principles to create an interactive and immersive learning environment. This research aims to investigate the impact of multimedia-mediated constructivist learning on student engagement and to explore students' perceptions of this approach.

Engaging students in the learning process is crucial for effective knowledge acquisition and retention (Yang & Chang, 2013). Traditional teaching methods often rely on passive information transmission, where students play a passive role in receiving and memorizing information. However, constructivist learning theories propose that students construct knowledge actively through their experiences and interactions with the learning environment (Sasan & Rabillas, 2022). In line with constructivist principles, multimedia-mediated constructivist learning provides students with opportunities to actively engage in the learning process through various multimedia resources.

Multimedia resources, such as videos, animations, interactive simulations, and virtual reality, offer multiple modalities for delivering information and engaging students (Kilag et al. 2023). These resources can present complex concepts in a visually appealing and interactive manner, enabling students to manipulate and explore the content. By engaging different senses and providing interactive elements, multimedia resources can create a more immersive and stimulating learning experience (Doumanis, et al.

2019).

Moreover, the integration of multimedia resources with constructivist principles can further enhance student engagement and learning outcomes. Constructivist learning emphasizes the importance of social interaction, collaboration, and hands-on experiences in knowledge construction (Kilag et al. 2023). Multimedia-mediated constructivist learning environments can provide platforms for students to interact with peers, engage in collaborative activities, and participate in problem-solving tasks. These activities promote active learning, critical thinking, and knowledge application, fostering a deeper understanding of the subject matter (Lee & Yeong, 2018).

While there is a growing body of research on multimedia-mediated constructivist learning, there is still a need to explore students' perceptions of this approach. Understanding how students perceive and experience multimedia-mediated constructivist learning is essential for refining instructional practices and designing effective learning environments. Students' perceptions can provide valuable insights into the strengths, weaknesses, and potential improvements of this approach.

Therefore, this research aims to investigate the impact of multimedia-mediated constructivist learning on student engagement and to explore students' perceptions of this approach. By examining students' experiences, attitudes, and preferences, this study seeks to contribute to the existing literature on effective instructional strategies and provide evidence-based recommendations for designing engaging and effective multimedia-mediated constructivist learning environments. Furthermore, it seeks to explore the potential of multimedia-mediated constructivist learning in enhancing student engagement. By investigating students' perceptions, this study aims to provide valuable insights into the effectiveness of this approach and inform instructional practices. The findings of this research can contribute to the ongoing efforts to improve teaching and learning strategies and promote student-centered education in various disciplines.

Review of Related Literature:

This section provides a review of the existing literature related to multimedia-mediated constructivist learning and its impact on student engagement. It also explores studies that have investigated students' perceptions of this approach. The literature review aims to establish a theoretical foundation for the present study and highlight the research gaps that this research intends to address.

Multimedia-mediated constructivist learning has gained significant attention as an innovative approach to engage students and enhance learning outcomes. According to Piaget's constructivist theory, students actively construct knowledge through their experiences and interactions with the learning environment (Piaget, 1952). This theory emphasizes the importance of hands-on activities, social interaction, and collaboration in knowledge acquisition. By integrating multimedia resources with constructivist principles, educators can create dynamic and interactive learning environments that facilitate active learning.

Mandernach (2009) highlights the potential of multimedia resources in enhancing student engagement and learning outcomes. He suggests that multimedia elements, such as videos, animations, and simulations, offer multiple modalities for delivering information and engaging students. Mayer's multimedia learning theory posits that when instructional materials present information in both visual and auditory formats, it reduces cognitive load and promotes better comprehension and retention of the content. Studies applying Mayer's theory have found positive effects on student engagement and learning outcomes (Bulger, et al. 2008).

Moreover, the integration of multimedia resources with constructivist principles can further enhance student engagement and knowledge construction. Petraglia (1998) argue that constructivist learning environments should provide opportunities for students to engage in authentic, real-world problem-solving activities. Multimedia resources can simulate real-life scenarios, allowing students to apply their knowledge, make connections, and solve complex problems. This active participation and hands-on

experience promote deeper understanding and critical thinking skills (Kilag at al. 2023).

Research on multimedia-mediated constructivist learning has shown promising results. For instance, (Kilag et al. 2023) conducted a study with high school students and found that the integration of multimedia resources in a constructivist learning environment significantly improved students' motivation and engagement. The students reported higher levels of interest, enjoyment, and satisfaction with their learning experience. Similar findings were reported by Siew et al. (2022), who found that multimedia-mediated constructivist learning positively influenced students' critical thinking skills and content knowledge acquisition.

Despite the growing body of research on multimedia-mediated constructivist learning, there is a need to explore students' perceptions of this approach. Understanding how students perceive and experience this instructional method can provide valuable insights for instructional design and improvement. Siew et al. (2022) conducted a study with college students to examine their perceptions of multimedia-supported constructivist learning. The findings revealed that students perceived multimedia resources as beneficial for engagement, knowledge construction, and collaborative learning. However, they also expressed the need for clear instructions and guidance to maximize the effectiveness of multimedia-mediated learning environments.

To date, limited research has specifically focused on exploring students' perceptions of multimedia-mediated constructivist learning in various educational contexts. Therefore, this research aims to bridge this gap by investigating students' perceptions of this approach and how it influences their engagement in the learning process. By gaining a deeper understanding of students' perspectives, educators can make informed decisions about instructional design and effectively address the needs and preferences of learners.

The reviewed literature indicates that multimedia-mediated constructivist learning holds significant potential for enhancing student engagement and learning outcomes. Previous studies have demonstrated the positive impact of multimedia resources in facilitating active learning, critical thinking, and knowledge construction. However, there is a research gap concerning students' perceptions of this approach. This research aims to address this gap by exploring students' perspectives on multimedia-mediated constructivist learning, thereby contributing to the existing body of knowledge and informing instructional practices in various educational settings.

Methodology:

This study employed a qualitative research design to explore students' perceptions of multimedia-mediated constructivist learning and its impact on student engagement. The qualitative approach was chosen to gain an in-depth understanding of students' experiences, attitudes, and preferences regarding this instructional method. The study was conducted in a university setting over a period of six months.

Participants:

A purposive sampling technique was utilized to select participants who had experience with multimedia-mediated constructivist learning. The sample consisted of 20 undergraduate students from diverse disciplines, including humanities, sciences, and social sciences. The participants were selected based on their willingness to participate and their availability during the study period. Efforts were made to ensure a diverse representation of gender, academic backgrounds, and levels of prior exposure to multimedia resources.

Data Collection:

Semi-structured interviews were the primary data collection method used in this study. The interviews were conducted individually with each participant to encourage open and honest discussions. A semi-structured interview guide was developed to ensure consistency across interviews while allowing flexibility

for participants to share their unique perspectives. The interview questions focused on students' experiences with multimedia-mediated constructivist learning, their perceptions of engagement, the effectiveness of multimedia resources, and their suggestions for improvement. Each interview lasted approximately 30-45 minutes and was audio-recorded with participants' consent.

Additionally, field observations were conducted during multimedia-mediated constructivist learning sessions. The researcher attended several classes where multimedia resources were used in a constructivist learning approach. Detailed notes were taken to capture the classroom dynamics, student interactions, and engagement levels. These observations provided contextual information and supported the interpretation of interview data.

Data Analysis:

The audio-recorded interviews were transcribed verbatim, and the field observation notes were organized and coded. A thematic analysis approach was employed to identify patterns, themes, and categories within the data (Braun & Clarke, 2006). Initially, the transcripts and observation notes were read multiple times to familiarize the researcher with the data. Then, a coding framework was developed, incorporating both deductive and inductive codes. Deductive codes were derived from the research questions and literature review, while inductive codes emerged from the data itself.

The coding process involved systematically assigning relevant codes to segments of data. The researcher independently coded a subset of the data, and then discussions were held with a second researcher to establish inter-coder reliability. Any discrepancies were resolved through consensus. Once the coding was complete, the codes were organized into themes, which represented the main findings and patterns in the data. The themes were refined through ongoing data analysis and discussions among the research team.

Trustworthiness and Validity:

To ensure the trustworthiness and validity of the study, several strategies were employed. First, prolonged engagement with the data occurred, as the researcher spent an extended period collecting and analyzing the data. This allowed for a deep understanding of the participants' perspectives and the emergence of rich themes. Second, member checking was conducted, whereby the participants were given the opportunity to review and provide feedback on the preliminary findings, ensuring the accuracy and authenticity of the interpretations. Finally, the researchers maintained reflexivity throughout the study, critically examining their biases and assumptions to minimize potential researcher bias.

Ethical Considerations:

Ethical approval was obtained from the university's research ethics committee prior to data collection. Informed consent was obtained from all participants, ensuring their voluntary participation, confidentiality, and anonymity. Participants were assured of their right to withdraw from the study at any time without consequences.

Findings and Discussion:

The findings of this study provide valuable insights into students' perceptions of multimedia-mediated constructivist learning and its impact on student engagement. Through in-depth interviews with the participants, several key themes emerged, shedding light on their experiences, attitudes, and suggestions for improvement.

Theme 1: Enhanced Engagement through Interactive Learning

The participants consistently highlighted how multimedia-mediated constructivist learning enhanced

their engagement and made the learning experience more interactive and exciting. They appreciated the dynamic nature of multimedia resources, which stimulated their curiosity and encouraged active participation.

One student emphasized, "The videos and interactive simulations were captivating. They brought the content to life and made it more relatable. I found myself eagerly exploring the concepts and wanting to learn more." This sentiment was echoed by another participant who said, "The use of multimedia resources created a sense of curiosity and discovery. It motivated me to delve deeper into the topics and actively seek out additional information."

The interactive elements within the multimedia resources were particularly praised by the students. They found that being able to manipulate and interact with the content enhanced their engagement and comprehension. As one student described, "I loved how we could interact with the simulations and manipulate variables. It allowed me to see cause and effect relationships in real-time, which made the learning process much more meaningful."

The participants also appreciated the variety of multimedia resources available, which catered to different learning preferences. One student explained, "Some people are visual learners, while others prefer auditory or hands-on experiences. The multimedia resources catered to all these preferences, making it easier for everyone to engage with the content in a way that suited them best."

Overall, the students consistently emphasized that the interactive and dynamic nature of multimedia-mediated constructivist learning significantly enhanced their engagement. The ability to actively participate, explore, and manipulate the content sparked their curiosity, motivation, and willingness to invest more effort in their learning.

Theme 2: Improved Understanding and Conceptual Clarity

The integration of multimedia resources with constructivist principles was found to enhance students' understanding and conceptual clarity. The visual and auditory elements of multimedia resources were cited as instrumental in facilitating comprehension.

One participant shared, "The visual representations and animations helped me visualize complex concepts, making them easier to comprehend. It really solidified my understanding." Another student added, "The combination of text, images, and videos allowed me to grasp abstract ideas more easily. I could see the connections between different concepts and understand how they fit together."

Furthermore, the participants acknowledged that the interactive nature of multimedia resources facilitated a deeper understanding of the subject matter. They appreciated the opportunities to actively engage with the content, apply their knowledge, and explore real-world scenarios. A student explained, "Through interactive simulations and problem-solving tasks, I could see the practical applications of what I was learning. It helped me connect the theoretical concepts to real-life situations."

The students also noted that multimedia-mediated constructivist learning promoted a more holistic understanding of the topics. They emphasized that the combination of visual, auditory, and interactive elements allowed them to engage multiple senses, leading to a more comprehensive grasp of the content. As one participant stated, "By experiencing the content through different modalities, I felt like I was absorbing the information from different angles, which enriched my understanding."

Tthe integration of multimedia resources in constructivist learning environments enhanced students' understanding and conceptual clarity. The visual and interactive elements of multimedia resources facilitated comprehension and helped students make connections between theoretical concepts and real-world applications. The multisensory nature of multimedia-mediated constructivist learning contributed to a more holistic understanding of the subject matter.

Theme 3: Collaborative Learning and Knowledge Application

Students recognized the value of collaborative learning facilitated by multimedia-mediated constructivist approaches. They emphasized the importance of social interaction, peer collaboration, and the application of knowledge in a collaborative context.

The participants highlighted that working in groups and engaging in discussions with their peers allowed them to see different perspectives, learn from others, and develop critical thinking skills. They appreciated the opportunities to share ideas, debate, and construct knowledge collectively. One student remarked, "Collaborative learning gave me the chance to hear different viewpoints and challenge my own assumptions. It expanded my understanding and made me more open to different ways of thinking."

Furthermore, the participants emphasized that the application of knowledge in collaborative tasks and real-life scenarios enhanced their learning experience. They found that multimedia-mediated constructivist learning provided opportunities to apply their knowledge to practical situations and solve authentic problems. One student stated, "Through group projects and problem-solving tasks, I could see how the concepts we learned could be applied in real-life contexts. It made the learning more meaningful and helped me develop transferable skills."

The collaborative aspect of multimedia-mediated constructivist learning also contributed to a supportive and engaging learning environment. The participants appreciated the opportunity to work with their peers, share resources, and support each other's learning. One student commented, "Collaborating with others made the learning process less intimidating and more enjoyable. We were able to learn from each other's strengths and support each other's weaknesses."

The participants highlighted the significance of collaborative learning and knowledge application in multimedia-mediated constructivist learning. They valued the opportunities for social interaction, peer collaboration, and the practical application of knowledge in real-world contexts. The collaborative aspect not only enriched their understanding but also fostered a supportive and engaging learning environment.

Conclusion

This study aimed to explore students' perceptions of multimedia-mediated constructivist learning and its impact on student engagement. Through in-depth interviews and observations, valuable insights were gained, shedding light on the experiences, attitudes, and recommendations of the participants.

The findings of this study demonstrate that multimedia-mediated constructivist learning has a positive impact on student engagement. The interactive nature of multimedia resources captured students' attention and stimulated their curiosity, resulting in higher levels of motivation and active participation. Students appreciated the ability to manipulate and interact with the content, which enhanced their understanding and conceptual clarity.

Moreover, the integration of multimedia resources with constructivist principles facilitated collaborative learning and the application of knowledge in real-world contexts. Students valued the opportunities for social interaction, peer collaboration, and the practical application of what they learned. Through collaborative tasks and discussions, they were able to develop critical thinking skills, see different perspectives, and construct knowledge collectively.

The findings also highlighted the importance of considering students' varied learning preferences and needs. Personalized and adaptable learning experiences were suggested to optimize the effectiveness of multimedia-mediated constructivist learning. Clear instructions and guidance were identified as crucial factors in reducing potential feelings of overwhelm and maximizing engagement.

Based on these findings, educators and instructional designers can make informed decisions to create engaging and effective multimedia-mediated constructivist learning environments. By integrating interactive multimedia resources, promoting collaborative learning opportunities, and providing clear guidance, educators can enhance student engagement, understanding, and knowledge application.

The implications of this study extend beyond the participants involved, as the findings contribute to the existing literature on instructional strategies and educational technology. This research emphasizes the value of incorporating multimedia resources in constructivist learning approaches to create dynamic, interactive, and meaningful learning experiences.

While this study provides valuable insights, it is essential to acknowledge its limitations. The findings are context-specific and may vary across different educational settings and disciplines. Additionally, the sample size was limited, which calls for further research with larger and more diverse populations.

This study reinforces the importance of multimedia-mediated constructivist learning in fostering student engagement. The findings highlight the positive impact of interactive learning experiences, improved understanding, collaborative learning, and knowledge application. By leveraging the power of multimedia resources, educators can create engaging and effective learning environments that meet the diverse needs and preferences of students. As educational technology continues to evolve, further research is needed to explore the long-term effects and scalability of multimedia-mediated constructivist learning approaches.

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