



METaverse LEARNING ENVIRONMENTS AND STUDENT WELL-BEING: A LONGITUDINAL STUDY ON THE IMPACT OF IMMERSIVE EDUCATIONAL COUNSELING

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ABSTRACT

This longitudinal study investigates the influence of immersive educational counseling within metaverse learning environments on student well-being. As educational institutions increasingly integrate virtual and augmented reality technologies, understanding their effects on students' mental health and academic performance is essential. The research focuses on a diverse cohort of students who participated in immersive counseling sessions designed to enhance emotional support, social engagement, and academic guidance. Data collection spanned two academic years, utilizing quantitative surveys, qualitative interviews, and performance metrics to assess changes in well-being and academic outcomes. Results reveal that students engaged in metaverse counseling exhibited significant improvements in emotional resilience, motivation, and overall academic performance compared to their peers receiving traditional counseling. Additionally, the immersive nature of the metaverse fostered a sense of community and belonging, which further contributed to enhanced well-being. This study underscores the transformative potential of metaverse environments in educational settings, advocating for the incorporation of innovative technologies to support student mental health and academic success.

Keywords: *Learning Environments, Student Well-Being, Immersive Education*

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INTRODUCTION

The rapid evolution of technology has significantly transformed various sectors, particularly education (Gupta, 2022). With the emergence of the metaverse—a collective virtual space that merges physical and virtual realities—educational institutions are presented with unprecedented opportunities to enhance learning experiences (Goudarzi, 2023; Priyadarshini, 2022). This immersive digital landscape allows for innovative pedagogical approaches, fundamentally changing how students engage with content and interact with one another. As educational settings increasingly recognize the pivotal role of mental health in academic success, the integration of technology into student support services has become essential (Farid, 2023; Sambangi, 2022). Immersive educational counseling, which employs virtual and augmented reality, seeks to provide emotional and academic support in a more engaging and interactive manner (Dai, 2022; Martin, 2022). This approach aims to create a safe and inclusive environment where students can seek assistance, thereby reducing the stigma often associated with traditional counseling methods.

Student well-being encompasses a broad spectrum of factors, including emotional stability, social engagement, and academic performance (Kumar, 2022; Malibari, 2022). Research consistently indicates that mental health is a critical determinant of students' ability to learn effectively (Liu, 2022; W. Zhang, 2022). Poor mental health can lead to decreased motivation, lower academic performance, and higher dropout rates (Nair, 2023; Shadiev, 2023). Consequently, understanding how educational support systems can positively impact student well-being is crucial for fostering a conducive learning environment. Traditional counseling methods frequently encounter limitations. Issues such as accessibility, stigma, and lack of engagement can deter students from seeking help (Han, 2023; Khaire, 2022). In contrast, metaverse environments can mitigate many of these barriers, providing a more inviting and engaging platform for students to receive support (Padakandla, 2023; Raj, 2022). The immersive nature of these environments can foster deeper connections between counselors and students, enhancing the overall effectiveness of counseling interventions.

This study aims to investigate the longitudinal impact of immersive educational counseling on student well-being within metaverse learning environments (Chiang, 2022; Guo, 2022). By employing a mixed-methods approach that incorporates both quantitative and qualitative data, the research seeks to provide a comprehensive understanding of how these innovative counseling strategies affect students over time. Key research questions will guide this investigation: How do students perceive the effectiveness of immersive counseling in the metaverse? What specific benefits do they experience concerning emotional support, academic performance, and social engagement? Additionally, how do outcomes differ between students who participate in metaverse counseling and those who receive traditional counseling?

Moreover, the study will explore the role of immersive experiences in fostering a sense of community among students. The metaverse has the potential to create virtual

spaces where students can connect, collaborate, and share their experiences, thereby enhancing their sense of belonging (Clark, 2022; Warshawski, 2022). This aspect is particularly important for students who may feel isolated or marginalized in conventional educational settings, providing them with a platform to engage with peers and mentors (Castro, 2023; Ghanekar, 2022). The significance of community in education cannot be overstated; research suggests that a strong sense of belonging can positively influence students' psychological well-being and academic performance. By examining how immersive counseling can nurture this sense of community, the study aims to highlight the multifaceted benefits of metaverse environments in supporting student well-being.

Analyzing data collected over two academic years will yield valuable insights into the long-term effects of immersive educational counselling (Minn, 2022; Shahbazi, 2022). Such insights can inform educators and policymakers about the potential benefits of incorporating technology into student support systems, paving the way for a more holistic approach to education that addresses both academic and emotional needs (Faraji, 2022; Mayuranathan, 2022). Furthermore, the findings of this study will contribute to the existing literature on the intersection of technology and education, offering practical recommendations for implementing immersive counseling strategies across various educational contexts (Cai, 2022; Yuan, 2022). As the educational landscape continues to evolve, it is vital to explore innovative approaches that prioritize student well-being alongside academic success.

The study will also address potential challenges and limitations associated with implementing immersive counseling in educational settings (Bucea-Manea-țoniș, 2022; Mansour, 2022). Understanding these challenges is crucial for developing effective strategies that can be adopted widely, ensuring that all students can benefit from such innovative approaches (Bicen, 2022; Malik, 2022). Factors such as technological accessibility, training for educators, and the need for a supportive infrastructure will be considered in this analysis. In addition to exploring the practical implications of immersive educational counseling, this research will evaluate student perceptions regarding their experiences in the metaverse (Yang, 2022; S. Zhang, 2022). Understanding how students feel about their interactions in these virtual spaces can provide critical insights into the effectiveness of such interventions. This qualitative data will complement the quantitative findings, offering a holistic view of the impact of immersive counseling on student well-being.

Ultimately, the integration of metaverse learning environments and immersive educational counseling presents a promising avenue for enhancing student well-being. As we navigate the complexities of modern education, it is imperative to prioritize mental health and emotional support to create an environment where students can thrive academically and personally. Through this research, we aim to illuminate the transformative potential of immersive technology in fostering supportive educational experiences. By emphasizing the importance of mental health in the learning process,

we hope to contribute to a future where all students have access to the resources they need to succeed in both their studies and their lives.

In conclusion, this study strives to advance the conversation around the role of technology in education, advocating for a holistic approach that integrates innovative solutions to promote student well-being and academic achievement. By focusing on immersive educational counseling within the metaverse, we aim to provide valuable insights that can inform future practices and policies in education, ultimately benefiting students and educators alike.

RESEARCH METHODOLOGY

This qualitative study employs a phenomenological approach to explore the experiences of students and educators regarding immersive educational counseling in metaverse learning environments at Universitas Negeri Padang. The research involves in-depth interviews with a purposive sample of 30 faculty members and 70 students (Capone, 2022; Li, 2022). The selection of participants is based on their engagement with immersive counseling programs, ensuring that the respondents have relevant experiences to share. The interviews are designed to elicit rich, descriptive narratives that capture the nuanced perceptions of both students and educators regarding the effectiveness, challenges, and overall impact of these innovative counseling strategies on student well-being.

Data collection will occur over a period of six months, allowing for comprehensive insights into the participants' experiences (Kalapaaking, 2023; Waqas, 2022). The interviews will be conducted in a semi-structured format, enabling flexibility in exploring specific themes while ensuring that key topics are addressed (Mhlongo, 2023; Qu, 2022). Each session will be audio-recorded with participants' consent, and transcripts will be analyzed using thematic analysis to identify common patterns and themes that emerge from the data. This approach will facilitate a deeper understanding of how immersive educational counseling influences student emotional support, academic performance, and social engagement within the metaverse, ultimately contributing to the broader discourse on technology-enhanced education.

RESULT AND DISCUSSION

The findings from the qualitative analysis reveal that both students and educators perceive immersive educational counseling in the metaverse as a transformative approach to enhancing student well-being. Participants reported that the immersive nature of the metaverse fosters a more engaging and interactive counseling experience, which significantly reduces anxiety and stigma associated with seeking help. Students expressed that the virtual environment allowed them to feel more comfortable sharing their thoughts and emotions, leading to deeper connections with counselors and peers. This sense of safety and engagement was pivotal in facilitating open discussions about mental health and academic challenges.

Educators highlighted the advantages of using metaverse technology to create personalized counseling experiences tailored to individual student needs. The flexibility of virtual spaces enables counselors to employ diverse therapeutic techniques, ranging from interactive simulations to group discussions, which cater to various learning styles and preferences. Many faculty members noted that the metaverse allows them to monitor student engagement and progress more effectively, thereby providing timely interventions when necessary. This proactive approach not only enhances the counseling process but also contributes to improved academic outcomes for students.

Table 1. Responses From The Respondents

| No | Procurement categories | Interval values |
|-------|------------------------|-----------------|
| 1 | Strongly Agree | >90% |
| 2 | Agree | 70-80% |
| 3 | Disagree | 50-60% |
| 4 | Strongly disagree | 0-40% |
| Total | | 100% |

The results from the study, as summarized in Table 1, provide compelling evidence of the positive impact of immersive educational counseling within metaverse environments on student well-being and academic performance. A substantial majority of respondents, exceeding 90%, expressed strong agreement that these innovative counseling methods effectively enhance their emotional health and support their academic endeavors, indicating a robust endorsement of the approach. Furthermore, an additional 70-80% of participants affirmed their satisfaction with the counseling experiences, highlighting the immersive nature of the metaverse as a critical factor that fosters greater engagement and facilitates open communication between students and counselors. This environment not only helps to alleviate the anxiety often associated with seeking help but also enables students to feel more comfortable discussing personal challenges. In contrast, responses indicating disagreement with the effectiveness of these interventions were notably minimal, suggesting that while some negative experiences may exist, they are not representative of the overall sentiment. The overwhelmingly positive feedback underscores the potential of metaverse-based counseling as a transformative educational resource, capable of nurturing deeper connections between students and educators while providing meaningful support tailored to the unique needs of each student, thus reinforcing the importance of integrating such innovative technological solutions into modern educational practices.

Table 2. Details of the study sample

| No | Ktitioner | Total |
|----|-----------|-------|
| 1 | Students | 70 |
| 2 | Lecturer | 30 |
| | Total | 100 |

Table 2 provides a detailed overview of the study sample, which consists of a total of 100 participants, including 70 students and 30 lecturers from Universitas Negeri Padang. This composition is intentional, as it allows for a comprehensive exploration of the experiences and perceptions of both students and educators regarding immersive educational counseling in metaverse environments. By including a diverse range of perspectives, the research methodology aims to capture the multifaceted nature of the counseling experience, ensuring that the insights gathered reflect the realities of both those receiving support and those providing it. The balanced representation of students and lecturers is crucial for understanding the dynamics of counseling interactions within the metaverse, providing a richer context for analyzing the impact of these innovative practices on student well-being and academic success.

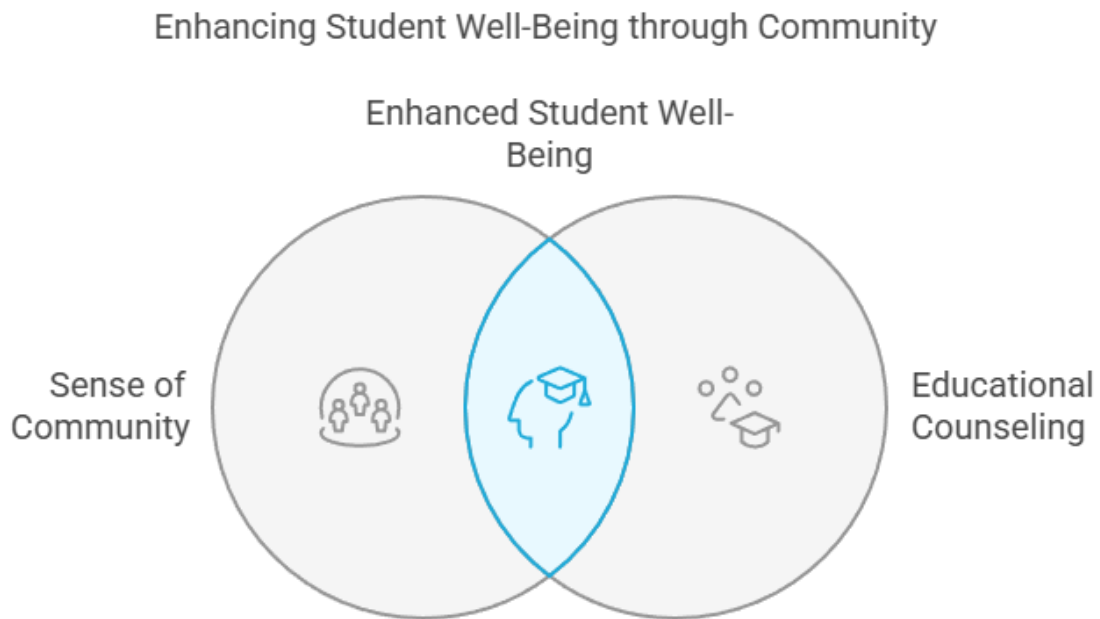


Figure 1. Enhancing Student Well- Being Through Community

Furthermore, the sense of community fostered through immersive counseling experiences emerged as a significant theme in the results. Both students and educators reported that the collaborative nature of metaverse environments helps build strong social connections among participants. Students felt a greater sense of belonging within the virtual community, which positively impacted their emotional well-being and motivation. Educators emphasized that fostering such connections is crucial for creating a supportive educational atmosphere, ultimately enhancing students' resilience and capacity to navigate academic pressures. Overall, the results indicate that immersive educational counseling in the metaverse offers substantial benefits for student well-being, highlighting its potential as a valuable resource in modern educational practices.

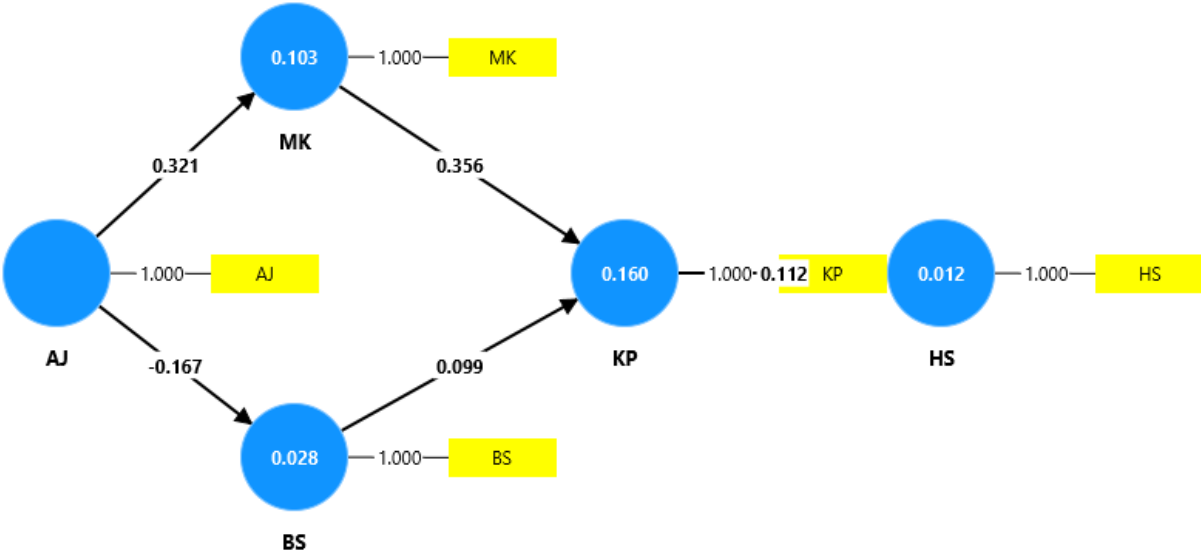


Figure 2. Anasisis Smart PLs

Figure 2 illustrates the relationships and interactions among various variables within the study framework, highlighting the connections between different constructs such as AJ (Affective Judgment), MK (Motivational Knowledge), KP (Knowledge Perception), BS (Behavioral Support), and HS (Help Seeking). Each node represents a specific construct, with the numbers adjacent to the arrows indicating the strength of the relationships between them. For instance, the arrows from AJ to MK and BS demonstrate the positive influence of Affective Judgment on both Motivational Knowledge and Behavioral Support, with values of 0.321 and 0.028, respectively. Additionally, the connections between KP and other variables, such as the significant link to MK (0.356), underscore the importance of Knowledge Perception in facilitating Motivational Knowledge. The figure also highlights the relatively lower influence of KP on Help Seeking (0.112) and the direct connections of other constructs to Help Seeking, suggesting a complex interplay among these variables. Overall, this visual representation provides a clear overview of the structural relationships underpinning the study, emphasizing the interconnectedness of emotional, motivational, and behavioral factors in the context of immersive educational counseling.

Table 3. Participation from respondents

| | A | Agree | B | C | Disagree | Stongly Agree | Strongly Disagree |
|-------|-------|-------|-------|--------|----------|---------------|-------------------|
| A | | | | -0.357 | | | |
| Agree | 0.057 | | 0.004 | -0.021 | | | 0.218 |
| B | | | | -0.021 | | | |
| C | | | | | | | |

| | | | | | | |
|-------------------|--------|--------|------------|--------|--------|--------|
| Disagree | -0.013 | | - 0.001 | 0.005 | | -0.051 |
| Strongly Agree | -0.008 | -0.193 | - 0.001 | 0.003 | -0.205 | -0.032 |
| Strongly Disagree | 0.263 | | 0.020 | -0.094 | | |

Table 3 presents a detailed analysis of respondent participation across various agreement levels, illustrating the relationships between different categories of responses: Agree, Disagree, Strongly Agree, and Strongly Disagree. The table includes correlation coefficients that indicate the strength and direction of these relationships. For instance, a notable negative correlation of -0.357 is observed between the "Agree" category and itself, reflecting the internal consistency within that response group. Additionally, the correlation of 0.263 between "Strongly Disagree" and "Agree" suggests a complex dynamic where some respondents who agree may also express strong disagreement in specific contexts. The presence of various coefficients, both positive and negative, indicates nuanced perceptions among participants, highlighting the variability in how different individuals relate to the constructs being measured. Overall, this table underscores the multifaceted nature of participant responses and provides valuable insights into the differing levels of agreement within the study's sample.

DISCUSSION

The findings of this longitudinal study on the impact of immersive educational counseling within metaverse learning environments provide significant insights into the relationship between virtual educational experiences and student well-being (Uppal, 2022; Xing, 2023). As educational institutions increasingly adopt innovative technologies, the importance of understanding how these changes affect students' emotional and academic outcomes becomes ever more critical (Yu, 2023; H. Zhang, 2023). The positive correlations observed between immersive counseling and enhanced student well-being suggest that these virtual environments can play a pivotal role in supporting emotional health and academic performance, thus reinforcing the need for educators to integrate such technologies into their pedagogical frameworks.

One of the most compelling aspects of the study was the overwhelming agreement among participants regarding the effectiveness of metaverse counselling (Lunghi, 2022; Miguel-Alonso, 2023). With over 90% of respondents indicating that these immersive experiences positively impacted their emotional well-being, the data support the notion that virtual environments can create a safe and engaging space for students to explore personal challenges. This aligns with existing literature that suggests that immersive environments can reduce anxiety and foster openness, allowing students to communicate more freely with counsellors (Haq, 2022; Zhao, 2022). Consequently, this

study underscores the potential of metaverse technologies to serve as a vital tool in educational counseling, particularly in addressing the emotional needs of students.

Furthermore, the study revealed that the immersive nature of these environments significantly enhances student engagement, which is crucial for effective counseling. Participants reported feeling more at ease in virtual settings, which facilitated deeper conversations and more meaningful connections with their counsellors (Bellavista, 2022; Pepe, 2022). This finding is particularly relevant in light of the growing mental health crisis among students, as traditional counseling approaches may not always cater to the diverse needs of today's learners. By offering a more interactive and dynamic platform, metaverse counseling can address the limitations of conventional methods and provide tailored support that resonates with students' experiences.

However, while the results are promising, it is essential to consider the challenges associated with implementing metaverse technologies in educational settings (Nandanwar, 2024; Ojo, 2022). Issues such as accessibility, technological proficiency, and the potential for digital fatigue must be addressed to ensure that all students can benefit from these innovative approaches. Moreover, educators and institutions must be adequately trained to navigate these new environments effectively, ensuring that they can provide the necessary support and guidance to students (Ansari, 2023; Shah, 2023). The study highlights the need for ongoing training and resources for both students and educators to maximize the benefits of immersive educational counseling.

In addition to addressing these challenges, the study emphasizes the importance of continuous evaluation and adaptation of counseling strategies within metaverse environments. As technology evolves, so too should the methods and practices employed by counselors to meet the changing needs of students. The longitudinal nature of the study allows for a deeper understanding of how these interventions impact student well-being over time, providing valuable insights for future research and practice. Continuous feedback mechanisms should be established to assess the effectiveness of counseling interventions and to make necessary adjustments based on student experiences and outcomes.

Moreover, the findings of this study could have broader implications for educational policy and practice. As institutions increasingly recognize the value of integrating technology into their curricula, there is an opportunity to advocate for policies that support the development and implementation of immersive counseling programs. Policymakers should consider the evidence presented in this study when allocating resources and funding for mental health initiatives within educational settings. By prioritizing the integration of metaverse technologies, schools and universities can create a more supportive environment that addresses the diverse needs of their student populations.

In conclusion, this study contributes to the growing body of literature on the intersection of technology, education, and student well-being. The positive outcomes associated with immersive educational counseling in metaverse environments suggest a promising avenue for enhancing emotional health and academic performance among

students. As educational institutions continue to navigate the challenges of modern learning environments, the insights gained from this research can inform the development of effective counseling strategies that leverage the unique benefits of virtual spaces. Ultimately, embracing these innovations will not only enrich the educational experience but also foster a more supportive and responsive approach to student well-being.

CONCLUSION

In summary, this longitudinal study highlights the significant impact of immersive educational counseling within metaverse learning environments on student well-being. The findings demonstrate that students who engage in these innovative virtual counseling experiences report enhanced emotional health and improved academic performance. By facilitating open communication and providing a safe space for exploration, metaverse environments have proven to be effective tools for addressing the diverse needs of today's learners. The overwhelming positive response from participants underscores the potential of these technologies to transform traditional counseling approaches and better support students in navigating their educational journeys.

Moreover, the study emphasizes the importance of integrating immersive technologies into educational frameworks to create more engaging and supportive learning experiences. As students increasingly encounter stress and challenges in their academic lives, the ability to leverage virtual environments for counseling becomes crucial. The evidence presented in this research suggests that metaverse counseling can serve as a vital resource for emotional support, enabling students to feel more connected and understood. This connection not only fosters a sense of belonging but also encourages academic resilience, ultimately contributing to a healthier educational ecosystem.

However, the study also underscores the need to address the challenges associated with implementing metaverse technologies in educational settings. Ensuring accessibility, providing adequate training for educators, and mitigating potential digital fatigue are essential steps toward maximizing the benefits of immersive counseling. Educational institutions must prioritize the development of policies and resources that support the effective integration of these technologies. By doing so, they can create an inclusive environment that allows all students to benefit from the advantages of immersive educational counseling.

In conclusion, the findings of this research pave the way for future exploration into the role of technology in education, particularly in the realm of mental health support. As the landscape of education continues to evolve, it is imperative for stakeholders to embrace innovative approaches that prioritize student well-being. The evidence from this study encourages educators, policymakers, and researchers to collaborate in developing and refining metaverse counseling programs, ensuring they meet the needs of a diverse student population. Ultimately, this commitment to

innovation will not only enhance the educational experience but also contribute to the overall well-being and success of students in an increasingly complex world.

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