Exploring the Metaverse: Enhancing German Language Learning with Roblox

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Abstract. Proficiency in foreign languages, particularly German, is crucial in the global era. However, low reading interest among Indonesians poses a challenge. This study explores the use of the Metaverse, specifically Roblox, to enhance German language learning, focusing on Grammatik A2 at Universitas Negeri Medan. The research develops and evaluates Metaverse-based learning media using the ADDIE model. Data were sourced from Grammatik A2 textbooks. The results show significant improvements in learning outcomes, increased engagement, and positive feedback from students, demonstrating the effectiveness of interactive media in language education.

Keywords: Exploration, Metaverse, German, Learning Media, Roblox

1 Introduction

The use of digital technology continues to rise across various aspects of society, including individual activities, the economy, health, education, and governance [1][2]. Since the global spread of COVID-19, the demand for remote learning has increased significantly. People were forced to stay at home and conduct various activities digitally, ranging from shopping and working to learning and traveling [3].

Technological advancements have impacted the way learning is managed in schools. Educators play a crucial role in addressing global challenges through creativity in teaching. This shift has transformed teaching and learning to be primarily remote [4]. Teachers are required to adapt to changes, such as curriculum adjustments, new learning processes, educational media, and facility upgrades. They must prepare for this sudden transformation, at least by acquiring basic digital skills. Teaching methods have shifted to online instruction as students are not allowed to attend in person. Some senior teachers, unfamiliar with online platforms, face challenges conducting online teaching and learning [5].

Online learning also impacts language education. Internationally, the influence of technology on language learning is expanding. This shift has transformed traditional classroom-based learning into a more modern approach. In language education, teachers are already using

ICIESC 2024, September 17, Medan, Indonesia
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DOI 10.4108/eai.17-9-2024.2353028

technology to facilitate and mediate learning, enhancing students' learning experiences significantly [6][7].

Altun and Ahmad emphasize the importance of technology in language classrooms, focusing on three key areas: first, it helps in developing students' learning skills; second, it serves as a vital component in education that aids students in their learning process; and third, it offers teachers more alternatives to conventional teaching methods [8]. Thuan adds that technology allows teachers to connect with students both nearby and far away, provides unlimited access to resources, motivates students through engaging interactive activities, and enhances the overall learning process [9].

Technology serves as a tool to enhance innovation in teaching and learning. Numerous examples of technological advancements have been implemented in the classroom, such as game-based learning media, online courses, online modules, online assignments, mobile applications, augmented reality, and more. These developments in media can increase students' curiosity in learning, leading to positive impacts on their achievement, engagement, and motivation in studying [10][11][12][13].

However, challenges arise in integrating these technologies into education, particularly concerning teachers' and students' readiness and the availability of adequate infrastructure. One promising yet underutilized technology is Augmented Reality (AR), which can support interaction between real and virtual environments, enhancing students' motivation and interest in learning.

This research aims to explore the use of AR in language learning on the Roblox platform. Roblox, as an online gaming platform, allows players to create and explore virtual worlds created by other users, offering significant potential for integrating AR technology in a learning context. With over 200 million monthly active users and more than 20 million user-created games, Roblox provides users with the freedom to develop and play various types of 3D games. This study will examine how AR can be integrated into language learning on Roblox, focusing on enhancing students' engagement, motivation, and achievement.

2 Research Method

Research Design

This research is a development study aimed at creating a learning medium based on the Roblox Metaverse for the Grammatik A2 course. The learning medium is developed using the ADDIE model, which was chosen for its ease of understanding and its systematic, instructional design theory-based approach.

The ADDIE model is structured in a programmed manner to address learning problems related to instructional media that align with the needs and characteristics of students. The stages are as follows: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. [14].

Data Collection Instruments

The researcher collected data through tests, questionnaires, and interviews. Tests were used to measure the extent of students' understanding. A questionnaire was employed to assess the effectiveness of the learning medium. Semi-structured interviews were conducted to gather in-depth information on the impact of the learning medium, focusing on students' self-competence and the learning process.

Research Location and Subjects

This study was conducted with students from the German Language Education Program at a university in North Sumatra. The data sources for this research include the extensive knowledge found in the book "Studio Netzwerk Neu A2".

Data Analysis

The analysis used in this study includes descriptive statistical analysis and Likert scale assessments. Open-ended questions were utilized to capture students' responses to the use of the learning medium. The qualitative data in this research was validated through tests of credibility, transferability, dependability, and confirmability. Furthermore, to draw conclusions, a meta-analysis was conducted to summarize the findings and review relevant theories.

3 Results and Discussion

Results

Evaluation of Metaverse Roblox-Based Learning Media and Student Responses

The Metaverse Roblox-based learning media for the Grammatik A2 course has been developed within the Roblox online game platform. A questionnaire was also distributed to students to collect data regarding their perceptions of the learning media used. The developed Metaverse Roblox-based learning media has met the criteria of being "good." Table 1 presents the evaluation results of the learning media.

Table 1. Learning Media Evaluation Criteria

Evaluation Criteria	Media Rating Score
Relevance to the theme	3.60
Idea and message conveyed	3.75
Audio-visual quality	3.50
Uniqueness and creativity	3.30
Average score	3.52
Criteria	Good

This learning media has been utilized in German language instruction in the German Language Education Program at a university in North Sumatra. Students (respondents) were asked to provide feedback on the Metaverse Roblox-based learning media. The students' responses to the learning process are presented based on the indicators in Table 2.

Table 2. Scores Obtained from the Student Response Questionnaire on the Learning Media

Factor-Indicators	Average Score	Standard Deviation	Response Criteria

Relative advantage of suitability	3.76	.124	Good
Suitability	3.81	.093	Good
Complexity	3.70	.058	Good
Trialability	3.79	.071	Good
Observability	3.75	.060	Good
Average	3.76	.081	Good

Results of the Interest and Learning Achievement Questionnaire

After all respondents completed the questionnaire, the researcher analyzed it using descriptive statistics. The questionnaire contained questions aligned with the indicators of learning interest. The achievement of each indicator is presented in Table 3.

Table 3. Excerpts of Respondent Answers to Open-Ended Statements

Code	Question and Answer	Percentage (%)
Q-1	Why did you choose a learning game on Roblox as a tool for studying German grammar (Grammatik A2)?	
A-01	I can play the German grammar levels or mini-games repeatedly until I fully grasp the concepts.	55
A-02	I enjoy the process and don't get bored because the game presents German grammar in a fun and engaging way.	25
A-03	I can access the game anytime and anywhere, making it quick and easy to study German grammar.	20
Q-2	Does the learning game on Roblox improve your German grammar skills?	
A-01	This learning game boosts my interest and motivation to study while helping me overcome difficulties in German grammar.	55
A-02	The game makes me more excited about learning German grammar, even though I previously found grammar challenging.	30
A-03	I can understand German grammar rules faster by playing the game than just by reading textbooks.	15
Q-3	How do you feel after learning German grammar through the game on Roblox?	
A-01	I feel happy and interested in learning grammar rules or sentence structures within the game. I used to find grammar boring, but now I enjoy it.	60
A-02	Initially, I wasn’t interested in the game, but I realized that German grammar could be understood in an easy and enjoyable way.	25
A-03	I hope more German grammar learning games are developed by teachers.	15
Q-4	What do you do if you don’t understand a German grammar rule in the Roblox game?	
A-01	I would ask my teacher or discuss it with friends in the game.	55
A-02	I would try to replay the level multiple times until I understood it.	30
A-03	I would search for another game or learning resource on Roblox to help me grasp the rule.	15
Q-5	What are the positive impacts of using educational games on Roblox for learning German grammar?	
A-01	I can learn more flexibly and easily access information through	55

	educational games on Roblox.	
A-02	I can understand German grammar concepts more thoroughly through games on Roblox.	25
A-03	I am more motivated to learn and discover new knowledge.	20

The Critical Role of Video-Based Learning in the Digital Education Era

Based on the data in Table 1, researchers report that the development of the language learning media has been successfully completed. The created media contains content and messages that are aligned with the educational objectives. Therefore, it can be concluded that this learning media is categorized as valid and suitable for application in German language learning. Educational technology experts suggest that the more complex the learning outcomes to be achieved, the more critical the role of learning media in reaching educational goals becomes [15][16]. The Roblox Metaverse-based learning media is one such medium capable of presenting learning materials in a more engaging way. This also influences students' ability to achieve learning objectives and comprehend the German language [17]. High-quality Roblox Metaverse-based learning media meet criteria such as easy-to-understand content, increased student interest and curiosity for learning, and the ability to serve as a study companion at home or elsewhere [18].

German language learning with the help of Roblox Metaverse-based learning media has shifted the paradigm from a mechanistic (memorization) concept to digital learning methods. The presence of Roblox Metaverse-based learning media represents creative innovation in the digital learning era [19][20]. This media, designed and modeled innovatively and effectively, serves as an alternative pedagogical method [19]. The Roblox Metaverse-based learning media has emerged as a digital tool capable of overcoming students' knowledge and comprehension limitations. Difficult and complex concepts and topics, such as German grammar, can be presented in a more realistic, contextual, and easily understandable way [19] [21]. Students can use the Roblox Metaverse-based learning media repeatedly to achieve a better understanding of concepts. The development of this media has significantly impacted students' learning experiences, allowing them to gain practical and innovative experience in creating learning materials and teaching effectively [18].

Roblox Metaverse-Based Learning Media Enhances Interest and Academic Performance

The increased interest in learning among students is evidence that the Metaverse Roblox-based learning media has received positive responses from students, indicating an improvement in the quality of education [22][23][24]. Focus and motivation are enhanced among students when learning is conducted using Metaverse Roblox-based learning media by the teacher. Interviews with students reveal that the German language learning media based on Roblox Metaverse fosters positive emotions during learning because students feel excited and challenged to delve deeper. This media can rekindle students' interest and motivation, which, in turn, can be conducive to improving their academic performance. In Table 3, the results of the students' interest questionnaires show high scores. Thus, it can be said that the Roblox Metaverse-based learning media can enhance students' motivation and interest in learning, as the games presented offer various attractive visuals that prevent students from getting bored during their studies.

4 Conclusion

In exploring the Metaverse, particularly through the use of Roblox, learning media has proven to be an effective tool for enhancing German language education. According to research findings, Roblox Metaverse-based learning media is not only valid and aligned with educational goals, but also capable of presenting content in an engaging and interactive manner. This approach enhances understanding and increases student interest in learning. The shift toward digital learning through platforms like Roblox represents a significant innovation, boosting student motivation and focus in mastering the German language. With its engaging visuals and the ability to facilitate repeated learning, this media revitalizes students' interest while improving their academic performance. Therefore, in the context of the Metaverse, Roblox offers a promising new approach to optimizing German language learning, making it more engaging and effective in this digital era.

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