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The Use of Genially-Based Web Learning Media in Enhancing High School Students' Understanding of Payment System and Tools Concepts

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ABSTRACT

The rapid digital transformation in education demands interactive and contextual learning strategies. In economics education, concepts such as payment systems and tools are often abstract and disconnected from students' real-life experiences. This study investigates the effectiveness of Genially-based web learning media in improving students' conceptual understanding of these topics. A quasi-experimental design with a pretest-posttest control group was employed involving 36 tenth-grade students from SMAN 2 Krakatau Steel Cilegon. Students were randomly assigned to an experimental group (using Genially media) and a control group (conventional learning). Data were collected through concept tests, questionnaires, and interviews, and analyzed using paired and independent sample *t*-tests alongside descriptive qualitative analysis. The experimental group showed a significantly greater improvement in posttest scores (gain of 24.89 points) compared to the control group (gain of 14.17 points). Statistical analysis confirmed the difference was significant ($p < 0.05$). Students reported high satisfaction with Genially's visual appeal, ease of navigation, and relevance to real-world applications. Interview results indicated that the media helped students visualize and better retain abstract economic concepts. The findings demonstrate that Genially-based media effectively enhances conceptual understanding and learning engagement. Its multimedia features support cognitive processing and align with constructivist and multimedia learning theories. This suggests that integrating well-designed web-based tools can significantly improve economics education at the high school level.

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1. INTRODUCTION

In recent decades, digitalization has brought significant changes in various aspects of life, including in the education sector (Bilyalova et al., 2020). The advancement of information and communication technology (ICT) provides great opportunities to enrich the learning process at all levels of education (Shukla & Yadav, 2019). In Indonesia itself, attention to the use of technology in learning is increasing, especially with the introduction of the Merdeka Curriculum, which encourages a project-based approach, enhancement of digital literacy, and strengthening of 21st-century skills such as critical thinking, collaboration, creativity, and communication (Dewi & Alivi, 2023). Nevertheless, the implementation of technology-based learning media at the high school level still faces various challenges (Tusino et al., 2022). One of the main challenges is determining the appropriate and relevant media. This is exacerbated by the fact that economic material, especially those discussing payment systems and instruments, is often considered to have no direct relevance to students' lives, and the delivery of the material is still dominated by conventional lecture methods, making the material feel less engaging and somewhat abstract for the learners (Arwansyah et al., 2022).

One of the innovative approaches currently widely used in the field of education is the application of web-based interactive learning media, such as Genially (Kusumah, 2023). Genially is a digital platform designed to help educators create engaging, interactive, and visual teaching materials, without the need for special skills in graphic design or programming (Anghelo Josué et al., 2023). With various features such as interactive quizzes, animations, infographics, and simulations, Genially is able to help students understand abstract concepts through more tangible and meaningful learning experiences.

Several previous studies have shown that interactive learning media can enhance learning motivation and conceptual understanding. For example, a study by Cavanagh & Kiersch, (2023) emphasizes the importance of using multimedia that aligns with cognitive principles in supporting effective learning.Similarly, research by Joshi, (2023) shows that the use of ICT-based media increases students' active participation in economics learning. However, there are still limitations in the implementation of truly interactive and integrated media in the context of economics learning in Senior High Schools (SMA) (Suryani & Mulyani, 2020). On the other hand, there is a debate in the literature regarding the effectiveness of interactive digital media. Some researchers are concerned that excessive visuals and interactive features may distract students from the main content (Kennedy et al., 2022). This indicates the need for careful learning design and empirical research to examine the effectiveness of using media like Genially in improving learning outcomes, especially in conceptual subjects such as systems and payment tools.

This research aims to fill the existing gap by directly examining the effectiveness of using the web-based learning media Genially in helping high school students understand the concepts of systems and payment instruments. The main focus is to analyze the extent to which this media can significantly enhance conceptual understanding compared to traditional teaching methods, while also examining students' learning experiences while using the media. It is hoped that the results of this research will not only be beneficial for teachers and students but also provide valuable input for curriculum developers and education policymakers, encouraging students to understand theory and apply it in the dynamic, complex context of real life.

In the context of economic education, mastery of the concepts of systems and payment instruments plays an important role because it is closely related to students' daily activities (Andraz et al., 2019). As financial technology develops, the digitization of payment systems has become a global issue that needs to be understood by the younger generation from school age (Dr. V. Kanimozhi & Ms. Aparna Pradeep, 2023). Therefore, the use of learning media that can connect the material with real-life situations is highly necessary (Hadžialić, 2019). Learning with the help of Genially allows for differentiation, which is the adjustment of material delivery according to each student's learning style and pace (Amalia et al., 2023). This is highly relevant considering that high

school students have diverse cognitive abilities (Devkota, 2022). With its ability to present content in various forms such as text, images, sound, and animations, Genially becomes an adaptive medium to meet those needs (Inoue et al., 2023).

This research primarily aims to examine whether the use of web-based learning media, namely Genially, can significantly enhance students' understanding of the concepts of systems and payment tools compared to traditional learning approaches. Additionally, this study also focuses on students' learning experiences while using the media, as well as attempting to uncover the challenges and opportunities that may arise in its implementation within the school education environment.

The quasi-experimental approach with a pretest-posttest design and control group allows researchers to observe differences in learning outcomes between students who use Genially media and those who learn with conventional methods. In addition to quantitative data from test results, qualitative data were obtained through questionnaires and interviews to provide a comprehensive picture of the effectiveness and acceptance of Genially in high school economics learning. This research is based on the need for teaching methods that can comprehensively enhance students' conceptual understanding. The use of web-based interactive technology is expected to create an engaging and relevant learning experience, as well as serve as a reference in the development of innovative economic learning models that meet the demands of the times.

2. METHODS

This study uses a quasi-experimental method with a pretest-posttest design on the control group. This approach was chosen because it allows researchers to evaluate the impact of Genially-based learning media on students' conceptual understanding by comparing the learning outcomes between the experimental group that received the treatment and the control group that did not, without involving a full randomization process for the participants. This design is considered suitable for the real conditions in schools, where class divisions have been predetermined.

The research subjects consisted of 36 students from the X-Canopus class at SMAN 2 Krakatau Steel Cilegon. This class has a diverse range of abilities and limited experience in using web-based learning media, so it was purposively selected because it meets the characteristics needed for this study. Students were divided into two groups using simple random sampling: 18 students were placed in the experimental group who learned with the help of Genially, and 18 other students were in the control group who followed conventional learning through lectures and discussions.

This research was conducted through three main stages: preparation, implementation, and evaluation. In the preparation stage, the development of learning devices, the creation and validation of Genially media by subject matter and media experts, as well as the preparation of research instruments, were carried out. The implementation was carried out in three sessions, each lasting two class hours (2 x 45 minutes), focusing on the material of systems and payment instruments. The experimental group used Genially media as an interactive aid, while the control group used printed media and teacher explanations. The final evaluation was conducted through a post-test and a questionnaire to determine students' perceptions of the learning media.

The research instruments include lesson plans (RPP), student worksheets (LKPD), pretest and posttest questions, Genially media adjusted to the curriculum, and student perception questionnaires. The validity and reliability of the instruments were tested through limited trials before use. Data collection techniques include tests to measure conceptual understanding, closed questionnaires to evaluate students' responses to Genially, and semi-structured interviews to deeply explore students' learning experiences. Data analysis was conducted quantitatively using statistical tests (paired and independent sample t-tests) through SPSS, as well as qualitative descriptive analysis of questionnaires and interviews. This combined approach provides a comprehensive picture of the effectiveness of interactive media in enhancing students' conceptual understanding.

3. FINDINGS AND DISCUSSION

This study aims to evaluate the effectiveness of the web-based learning media Genially in enhancing high school students' understanding of the system and payment instruments material. To achieve this objective, the researchers conducted pretests and posttests on two groups, namely the experimental group that used Genially as a learning medium and the control group that learned through traditional methods. In addition, data collection was also conducted through questionnaires and interviews to understand students' views and experiences regarding the use of Genially in the learning process.

3.1 Results of Pretest and Posttest Concept Understanding

Based on the pretest results, it is known that the initial understanding level of students in both groups is not significantly different. The average pretest score for the experimental group was recorded at 58.22, while the control group obtained an average of 57.39. After the learning process took place, there was a significant increase in posttest scores, especially among the students in the experimental group.

Table 1. Average Pretest and Posttest Scores of the Experimental and Control Groups

Group	Number of Students	Average Pretest Score	Average Posttest Score	Average Difference
Experiment (Genially)	18	58.22	83.11	24.89
Control (Conventional)	18	57.39	71.56	14.17

As shown in Table 1, the experimental group achieved a mean score of 24.89 points, which is substantially higher than the control group's mean score of 14.17 points. This notable difference suggests that the instructional intervention had a positive impact on student performance. In particular, the use of Genially media appears to have contributed to a deeper and more comprehensive understanding of the targeted concepts. The higher achievement of the experimental group indicates that interactive and visually engaging digital media can facilitate more effective learning compared to conventional instructional methods. Therefore, the findings provide empirical support for the integration of Genially-based media as an innovative strategy to enhance students' conceptual understanding.

3.2 Paired Sample t-test

A paired-samples t-test was used to determine whether there were significant differences between pretest and posttest scores within each group.

Table 2. Results of the Paired Sample t-test

Group	t count	Sig. (2-tailed)
Experiment	-12,547	0,000
Control	-9,103	0,000

Based on the results of the paired sample t-test analysis, the obtained significance value (p-value) was less than 0.05, indicating a statistically significant difference between the pretest and posttest scores in both the experimental and control groups. This finding suggests that learning occurred in each group over the course of the intervention. However, a closer examination of the mean score

gains reveals that the improvement in the experimental group was considerably greater than that of the control group.

This more substantial increase not only demonstrates statistical significance but also reflects meaningful practical significance in the educational context. The magnitude of improvement in the experimental group indicates that the instructional treatment had a stronger impact on students' learning outcomes. Consequently, these results reinforce the effectiveness of the implemented intervention in enhancing students' academic performance compared to conventional instruction.

3.3 Independent Sample t-test

To compare the improvement in learning outcomes between the experimental and control groups, an analysis was conducted using an independent sample t-test on the gain scores, which is the difference between the posttest and pretest scores of each group.

Table 3. Results of the Independent Sample t-test on Gain Value

t count	Sig. (2-tailed)
5.837	0.000

Since the obtained significance value (p = 0.000) is lower than the established alpha level of 0.05, it can be concluded that there is a statistically significant difference in the improvement of conceptual understanding between the experimental and control groups. This result indicates that the learning gains achieved by the two groups were not equal and that the observed difference is unlikely to have occurred by chance alone.

Furthermore, the magnitude of improvement demonstrated by the experimental group suggests that the instructional treatment had a stronger educational impact. These findings provide empirical support for the research hypothesis, confirming that the use of Genially media is significantly more effective than conventional learning approaches in enhancing students' conceptual understanding. In addition, the results highlight the potential of interactive digital media as an innovative instructional strategy capable of fostering deeper engagement and more meaningful learning outcomes.

3.4 Student Perception from Survey Results

To complement the quantitative data, a questionnaire was given to the experimental group students to understand their perceptions of using the Genially media.The results are displayed in the following Table 4:

Table 4. Average Score of Student Perception Questionnaire towards Genially Media

Aspects Being Evaluated	Maximum Score	Average Score	Percentage (%)
Readability and Clarity of the Material	5	4.56	91.2
Visual Interest	5	4.78	95.6
Navigation Facilities	5	4.61	92.2
Relevance to Real Life	5	4.44	88.8
Learning Motivation	5	4.67	93.4

The survey results indicate that most students expressed positive perceptions of the use of Genially media in the learning process. A substantial proportion of respondents reported increased enthusiasm and higher levels of motivation during lessons delivered through this interactive platform. Additionally, students indicated that the material was easier to comprehend compared to when it was presented through conventional instructional methods. These responses suggest that the

integration of Genially media not only supports cognitive understanding but also enhances students' affective engagement, thereby contributing to a more dynamic and effective learning environment.

3.5 Interview Results

Interviews were conducted with five students from the experimental group to gain deeper insight into their learning experiences. Most participants reported that the use of Genially media assisted them in visualizing abstract concepts, particularly topics such as cashless payment instruments and digital transaction processes. They explained that the incorporation of animations and simulations made the instructional content more concrete and easier to grasp.

Furthermore, students emphasized that the interactive features of the media created a more enjoyable and less monotonous learning atmosphere. Several respondents also noted that the structured and sequential presentation of the material supported better retention, as the content was delivered in a clear and engaging progression. Overall, the interview findings suggest that Genially media not only enhances conceptual clarity but also strengthens students' interest and memory retention.

Discussion

The findings of this study indicate that the use of Genially as an online learning medium significantly enhances students' understanding of payment systems and instruments in economics. The primary objective of this research was to evaluate the effectiveness of Genially in facilitating the learning of economic concepts that students often perceive as abstract. Quantitative analysis of pretest and posttest scores demonstrated that the experimental group outperformed the control group, indicating a measurable improvement in conceptual understanding. These statistical results were further corroborated by qualitative data from questionnaires and interviews, which revealed that students responded positively to the use of Genially and perceived it as beneficial to their learning experience.

The effectiveness of Genially can be interpreted through the lens of multimedia learning theory. Genially integrates text, images, animations, and interactive quizzes into a cohesive instructional design. According to Kennedy et al. (2022), multimedia environments that combine verbal and visual representations enhance cognitive processing by engaging dual channels of information processing. When learners receive information through both visual and auditory modalities, they are more likely to organize and integrate new knowledge effectively. This dual coding process supports working memory and promotes stronger connections in long-term memory. In the present study, students in the experimental group demonstrated improved conceptual understanding, which may be attributed to the elaborative processing facilitated by interactive and visually rich content.

These findings align with prior research emphasizing the role of interactive media in promoting cognitive engagement and knowledge transfer. Cavanagh and Kiersch (2023) argue that interactive digital tools can increase student involvement and foster deeper learning by encouraging active participation. Similarly, Joshi (2023) highlights that engaging and contextually relevant digital media can enhance students' intrinsic motivation, which subsequently influences academic achievement. The present study extends these insights to the context of high school economics education, a domain in which the systematic integration of interactive digital media remains relatively underdeveloped. By demonstrating both statistical and practical significance, this research contributes empirical evidence supporting the pedagogical value of interactive media in economics instruction.

Qualitative findings further illuminate how Genially supports meaningful learning. Students reported feeling more connected to the material because the media incorporated real-life examples and simulations, such as digital payments, QR codes, and online transactions. In economics education, the linkage between theoretical constructs and authentic contexts is essential for deep

understanding. The inclusion of realistic scenarios allows learners to situate abstract concepts within familiar experiences, thereby facilitating knowledge construction. From a constructivist perspective, learning occurs most effectively when students actively engage with content and relate it to prior knowledge. The interactive features of Genially appear to provide such meaningful experiences, enabling students to construct understanding rather than passively receive information.

Despite these positive outcomes, not all students in the experimental group demonstrated substantial improvement. A small number encountered difficulties navigating the platform or interpreting instructions. This finding underscores the importance of digital literacy as a moderating factor in technology-enhanced learning. The successful implementation of interactive media depends not only on instructional design but also on students' ability to interact effectively with digital tools. Moreover, technology cannot replace the essential role of teachers in guiding, scaffolding, and clarifying learning processes. Previous research has suggested that interactive media may yield limited impact if not complemented by socially interactive strategies such as collaborative discussion or group problem-solving. Although the present study employed individual use of media, significant gains were still observed, possibly due to the clarity of instructional design and the suitability of the material for visual representation. This suggests that the effectiveness of interactive media is influenced by the nature of the content and its integration into broader pedagogical strategies.

The implications of these findings are multifaceted. Practically, Genially can be integrated into economics curricula, particularly for topics requiring visualization and real-world contextualization. Policymakers and curriculum developers may consider supporting the adoption of interactive media as part of broader initiatives to enhance digital literacy and educational quality in the digital era. However, effective implementation requires adequate infrastructure and sustained professional development for teachers to design and manage technology-enhanced instruction effectively.

Future research should explore the long-term impact of interactive media on knowledge retention and higher-order skills such as critical thinking and problem-solving. Investigating moderating variables, including learning styles and levels of digital competence, would provide a more nuanced understanding of differential effects. Additionally, combining interactive media with pedagogical models such as flipped classrooms or project-based learning could reveal synergistic benefits.

In conclusion, this study provides robust evidence that the use of Genially is not only statistically effective but also pedagogically advantageous in enhancing students' understanding of economics content. The findings underscore the importance of innovative, student-centered approaches that leverage technology thoughtfully and contextually. By integrating interactive media into instruction, educators can foster more engaging, relevant, and enduring learning experiences aligned with the demands of contemporary education.

4. CONCLUSION

This study, conducted through a quasi-experimental design involving students of class X-Canopus at SMAN 2 Krakatau Steel Cilegon, demonstrates that the use of web-based learning media through Genially significantly enhances students' conceptual understanding of payment systems and instruments in economics. Both quantitative findings, reflected in higher posttest scores in the experimental group compared to the control group, and qualitative evidence from student responses, indicate that Genially contributes positively to learning outcomes. The interactive visual design and contextualized content successfully bridged abstract economic concepts with students' practical experiences, thereby fostering deeper cognitive engagement and more meaningful learning. These results confirm the initial objective of evaluating Genially as an innovative instructional alternative and suggest that well-designed educational technology can function not merely as a supplementary aid but as a strategic component of the learning process. Nevertheless, this study has certain limitations, including its focus on a single class within one school, a specific subject area, and a

relatively short intervention period, which may limit the generalizability of the findings. Moreover, variations in students' digital literacy and the absence of integrated collaborative learning strategies may have influenced the outcomes. Therefore, future research should expand to diverse educational levels, subject areas, and institutional contexts to enhance external validity. Further investigations are also recommended to examine long-term knowledge retention, the development of higher-order thinking skills, and the role of teachers in effectively integrating interactive web-based technologies into comprehensive pedagogical frameworks. Continuous and evidence-based research is essential to ensure that the growing adoption of digital learning tools meaningfully contributes to the quality, relevance, and inclusivity of 21st-century education.

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