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Potentials and challenges of technology-based Algebra learning: A classroom experience using Wizer.me

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ABSTRACT

The study seeks to explore the potentials and challenges associated with implementing Wizer.me in the context of algebra learning. Information was gathered through surveys and interviews involving 31 participants, including students and lecturers, employing a mixed-methodology to assess the platform's engagement, understanding, and ease of use. The results show that Wizer.me enhances student engagement and understanding of abstract algebraic concepts through its interactive and visual features. However, some challenges were identified, including difficulties with the platform's math symbol editor, which often required users to upload images as a workaround, and technical issues such as unstable internet connections that disrupted learning. Despite these challenges, lecturers appreciated features like immediate feedback and integration with Google Classroom, which streamlined task management and improved student interaction. This study underscores Wizer.me's potential in supporting algebra learning while highlighting the need for technical improvements and training for both students and lecturers. Enhancing platform usability and addressing infrastructure barriers are recommended to optimize its effectiveness, particularly for teaching complex mathematical topics.

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INTRODUCTION

Technological advancements have greatly influenced multiple facets of human life, with education being one of the key areas affected. In modern education, digital tools have become integral in creating interactive, effective, and adaptive learning environments (Dubé & Wen, 2022). Technologies such as hybrid learning, project-based learning, and multimedia tools have demonstrated their ability to enhance student engagement and promoting higher-order thinking abilities (Thompson et al., 2021; Rukmana et al., 2023). In Indonesia, these innovations have expanded access to educational resources and promoted equity by reducing barriers to learning (Nugraha et al., 2022).

The field of mathematics learning, especially algebra, is one of the areas of learning that feels a significant impact from technological advances. Research highlights that integrating digital tools, such as STACK and Photomath, into algebra instruction can significantly enhance students' understanding and engagement. For instance, STACK has been shown to provide instant feedback and allow for repeated practice, fostering better conceptual comprehension of algebraic principles (Ahmed & Seid, 2023). Similarly, Photomath leverages augmented reality to present step-by-step solutions for algebraic equations, enabling students to visualize and understand complex mathematical operations more effectively (Saundarajan et al., 2020). On the other hand, other researchers have found that online learning objects not only assist in conceptual learning but also encourage independent problem-solving and analytical thinking, which are crucial in mastering algebra (Meylani & Bitter, 2023).

Despite these advancements, algebra remains one of the most challenging subjects for students across various levels of education. Its abstract nature requires a deep understanding of concepts and strong problem-solving skills, which many students struggle to develop. Students often face challenges in understanding and simplifying algebraic expressions, as well as carrying out mathematical procedures like adding, subtracting, multiplying, and dividing (Purwanti & Pujiastuti, 2020). These challenges are further complicated by misconceptions and procedural errors, such as incorrectly applying signs or performing arithmetic operations within algebraic forms, even when students understand the basic concepts (Mathaba et al., 2024). Such difficulties not only hinder students' ability to solve problems effectively but also reflect an incomplete understanding of fundamental algebraic principles (Raupu et al., 2023). Furthermore, the absence of visual aids or hands-on practice intensifies these challenges, making algebra one of the most demanding components of mathematics for many learners.

Many students find rational inequalities to be one of the more difficult subjects within algebra. This difficulty arises from the rational nature of inequalities involving variables in the denominator, requiring a deep understanding of algebraic operations and the properties of inequalities. Students often face challenges in solving rational inequalities because they need to understand linear and quadratic equations and consider the domain values that render the denominator zero, which complicates the solution process. In addition to these specific challenges, students frequently struggle with understanding the meaning of variables, as noted by Pramesti & Retnawati (2019). This lack of understanding often leads to confusion when solving more complex algebraic problems. Furthermore, Sundari & Wulantina (2022) highlight that students also face difficulties in identifying algebraic elements such as constants and coefficients, as well as performing arithmetic operations involving positive and negative numbers. These challenges reflect broader struggles in mastering fundamental algebraic concepts and operations, particularly in topics like rational inequalities.

In Indonesia, algebra consistently ranks among the most challenging subjects for students, with persistent difficulties in grasping basic concepts that directly impact their learning outcomes. This scenario emphasizes the critical need for innovative and efficient methods of teaching algebra to help students build a more thorough understanding of the subject (Jupri et al., 2014). Integrating technology into algebra education is a promising approach that can connect abstract algebraic concepts with students' comprehension by offering more tangible and engaging learning opportunities. This method not only improves accessibility to the content but also fosters greater student involvement in the learning experience.

Research highlights that technology, particularly educational software, plays holds significant importance visualizing abstract concepts in mathematics, transforming them more concrete and easier for students to understand. This capability has been shown to enhance students' mathematical skills and support their understanding of difficult material (Rusdi, 2019; Bito & Masaong, 2023; Pagau & Mytra, 2023; Yulianti, 2024). This technology also makes learning more interactive and effective. Moreover, technological advancements such as software, applications, and online platforms create interactive and engaging learning environments, as noted by Hibatulloh et al. (2024). In addition, these technologies also enable more flexible learning without time constraints through various learning platforms that help students understand the material better (Pagau & Mytra, 2023).

One of the platforms currently used to assist technology-based learning is Wizer.me, which allows lecturers to design interactive worksheets that engage students more actively in learning. Wizer.me offers features such as multiple-choice questions, matching pairs, fill-in-the-blank tasks, and multimedia integration, including images, videos, and audio, which help students better understand the material and participate in more in-depth learning activities (Kaliappen et al., 2021; Nildasari & Nur, 2024). The platform delivers instant feedback, enabling students to promptly rectify errors and enhance their understanding. Additionally, Wizer.me not only enhances students' comprehension but also positively impacts the learning process by encouraging them to think more creatively and deeply Afriliyanti et al., 2023). This aligns with findings that interactive multimedia technologies, including concept visualization features on Wizer.me, can increase student engagement by making them more motivated and focused during the learning process (Dewi et al., 2023). Furthermore, these technologies also influence cognitive, behavioral, and reflective dimensions of student engagement, making learning more effective and helping students grasp abstract algebraic concepts, such as the relationships between variables and the effects of changes in one variable on another (Katyara et al., 2022; Bright et al., 2024).

However, while technology such as Wizer.me offers a lot of potential in improving the quality of learning, its implementation in classrooms is still faced with various challenges. However, although technology like Wizer.me holds significant potential to enhance the quality of learning, its application in classrooms continues to encounter numerous obstacles. Korkmaz et al. (2022) highlighted that although internet access expanded during the COVID-19 pandemic, disparities in education have widened, particularly affecting students from low-income families with limited access to technological resources. This access gap can create disparities in learning outcomes between students with access to technology and those without access. Another issue lies in the preparedness of technology infrastructure in schools, as some institutions may lack sufficient internet connectivity or an adequate number of devices to facilitate the effective integration of technology into the learning process. (2020) highlighted that the technology infrastructure factor is one of the main obstacles to implementing technology-based education in developing countries.

On the other hand, there are challenges regarding lecturers readiness. Not all lecturers have sufficient skills to utilize technology in their teaching. Some lecturers lack confidence in using digital platforms due to the lack of training provided on educational technology. Consequently, technology is frequently utilized merely as a complementary tool rather than being integrated as a core component of the learning approach. Without a clear understanding of how to incorporate technology into teaching, educators may not fully harness the potential benefits of platforms like Wizer.me.

Although these obstacles underscore tangible difficulties in implementing technology-based tools such as Wizer.me, there remains a scarcity of research exploring how these challenges specifically impact the platform's effectiveness in teaching complex subjects like rational inequalities. This gap in the literature underscores the need for further exploration, particularly in higher education settings in Indonesia. Previous research on technology-based learning in mathematics has demonstrated the potential of digital tools like STACK and Photomath in enhancing student engagement and comprehension by providing instant feedback and step-by-step solutions, which improve students' conceptual understanding (Ahmed & Seid, 2023; Saundarajan, Osman, Kumar, Daud, Abu, et al., 2020). However, these studies often focus on general benefits and lack an in-depth examination of their practicality in addressing abstract algebraic topics like rational inequalities. Additionally, while interactive platforms such as

Wizer.me are recognized for their multimedia integration and real-time feedback capabilities (Kaliappen et al., 2021; Nildasari & Nur, 2024), few studies have explored their implementation in higher education settings, particularly in algebra courses in Indonesian classrooms. Moreover, issues such as restricted access to technology, lack of proper infrastructure, and insufficient training for educators have been extensively examined within the realm of technology-driven learning (Korkmaz et al., 2022; Rodríguez-Abitia et al., 2020), but there is limited research examining whether these barriers also affect the implementation of Wizer.me, particularly in addressing abstract algebraic concepts in Indonesian classrooms.

This study contributes new insights by addressing these gaps. First, it examines the practicality of Wizer.me in supporting algebra learning in Indonesian classrooms, focusing on its effectiveness in engaging students with abstract topics like rational inequalities. Second, the study provides a detailed analysis of the technical and pedagogical challenges encountered by students and lecturers, such as difficulties in using specific platform features, including the input of mathematical symbols, and issues related to internet connectivity. Finally, the findings provide actionable suggestions for educators to enhance the effective utilization of technology-based learning tools and offer insightful feedback for developers to refine the usability and functionality of platforms like Wizer.me, ensuring they are tailored to meet local requirements and contexts.

The study seeks to explore the potentials and challenges associated with implementing Wizer.me in the context of algebra learning. By focusing on direct classroom experiences, this study examines how Wizer.me supports students in understanding algebraic concepts and explores the technical and pedagogical challenges encountered by both students and lecturers. Data collected through questionnaires and interviews provide insights into users' responses to the platform and the factors influencing its implementation.

The results of this study carry meaningful implications for contemporary education. For educators, the findings are anticipated to offer actionable insights to improve the effective use of technology-based learning tools, aiming to enhance student performance in algebra. For developers, this research offers valuable feedback on improving the usability and functionality of platforms like Wizer.me to better support mathematics education.

OBJECTIVES OF THE STUDY

This research aims to investigate the challenges and potentials of using Wizer.me in algebra learning through analysis of student responses and interviews with lecturers and students. This research focuses on how the Wizer.me platform affects students' understanding of algebraic concepts and how lecturers and students assess its effectiveness in supporting the learning process. The specific objectives of this research are as follows.

1. Describe students' responses to using Wizer.me in learning algebra based on questionnaire and interview data so their perceptions are known after using this platform.
2. Describe lecturers' views on the experience of using Wizer.me in learning algebra through interviews.
3. Explore the perceived potential of students and lecturers in using Wizer.me.
4. Explore the challenges students and lecturers face in using Wizer.me as a learning media, both from a technical and pedagogical perspective.

MATERIALS AND METHODS

Research Design

This study employs a mixed-methods research design that combines both quantitative and qualitative approaches to thoroughly evaluate the potential benefits and challenges of utilizing Wizer.me in algebra instruction. This approach was selected to leverage the advantages of each methodology. The quantitative aspect offers a systematic and measurable evaluation of student engagement, understanding, and platform usability through surveys, allowing for the identification of overarching trends and patterns within the participant group. The qualitative

component, on the other hand, delves deeper into individual experiences and contextual factors through interviews, offering nuanced insights into the challenges and benefits of the platform. Together, these methods ensure a holistic understanding of the research problem, with each component complementing the other to provide both breadth and depth in the analysis.

The quantitative aspect involves collecting and analyzing student survey data using descriptive statistics to measure engagement, motivation, and perceived ease of use. These metrics provide an objective overview of the platform's overall impact on learning outcomes and student satisfaction.

The qualitative aspect focuses on semi-structured interviews with students and lecturers to explore subjective experiences, challenges, and perceptions of Wizer.me's utility in facilitating algebra learning. This allows for the identification of specific barriers and enablers that may not be apparent in quantitative data alone. The integration of these two approaches ensures that both numerical trends and personal insights are taken into account, providing a comprehensive understanding of Wizer.me's role in the learning environment.

Participants

The study involved 31 students and two lecturers from a university-level algebra course. Since the class population consisted of only 31 students, total sampling was employed, meaning all students enrolled in the class were included in the study. This approach was selected following the guideline that recommends utilizing the entire population as the research sample when the population size is less than 100 (Sugiyono, 2021). In addition to the students, the two lecturers who taught the course were also included as participants to provide a broader perspective on the classroom dynamics.

The rationale for using total sampling lies in the study's focus on classroom experience, which evaluates the potentials and challenges of using the Wizer.me platform within the context of a complete classroom setting. This approach ensures that every student and lecturer contributes to the research data, providing a comprehensive representation of how the technology influences the overall teaching and learning dynamics.

By including all participants, the study captures collective perceptions and diverse experiences in the classroom, including potential challenges and opportunities that might be overlooked if only a subset of participants were involved. Total sampling also enhances the accuracy of the research findings, as the small population size allows for a comprehensive analysis without the risk of bias associated with selective sampling processes.

Instrument

Two main instruments were used to collect data:

1. Student Survey: The survey, distributed through Google Forms, consisted of Likert scale questions designed to determine students' responses to using Wizer.me worksheets. The survey was derived from a previously validated instrument and adjusted to fit the specific context of the study.
2. Interviews: Semi-structured interviews were carried out with 31 students and two lecturers in a face-to-face format. These interviews centered on participants' experiences with Wizer.me, exploring the challenges encountered and the perceived educational benefits of the platform.

Instrument Validation and Reliability

The survey instrument was evaluated by experts in the field of educational technology to confirm its content validity. To assess its reliability, Cronbach's alpha was calculated, resulting in a coefficient of 0.85, which demonstrates a high level of internal consistency among the survey items. This reliability value reflects the consistency of responses across survey questions.

Data Collection Procedure

Data collection was conducted over four weeks, coinciding with lecture sessions where Wizer.me was used in learning. Student surveys were distributed online via Google Forms at the end of the two weeks, and interviews were conducted in person with five students and two lecturers during the same period. Informed consent was obtained from all participants prior to their involvement in the study. The interviews were recorded with the participants' approval and subsequently transcribed for detailed analysis.

Data Analysis

This study utilized a combination of quantitative and qualitative data analysis methods to thoroughly examine the opportunities and challenges associated with using Wizer.me in technology-enhanced algebra learning. Quantitative data collected from student questionnaires were analyzed through descriptive statistical methods. This method summarized the average responses across 12 questionnaire items, enabling the identification of key trends in student perceptions regarding the use of Wizer.me for algebra learning. Descriptive statistics were utilized to deliver a straightforward and concise summary of student responses, facilitating the identification of patterns in critical areas such as engagement (e.g., engaging worksheets), motivation, user-friendliness, and the alignment of the materials with learning objectives. This approach highlighted areas where Wizer.me excelled, such as supporting critical thinking and understanding, as well as areas requiring improvement, including usability and technical functionality. The results guided the formulation of actionable recommendations to address these challenges and optimize the platform's effectiveness.

Qualitative data from interviews with students and lecturers were analyzed using thematic analysis. Thematic analysis was chosen for its ability to systematically identify recurring patterns and insights from the transcribed interviews. The process involved familiarizing with the data, generating initial codes, grouping similar codes into meaningful categories, and refining themes to ensure they reflected the core aspects of participants' experiences. This approach provided a structured framework for understanding the nuanced perspectives of both students and lecturers. Insights from the thematic analysis complemented the quantitative findings, offering deeper context and practical implications for improving the use of Wizer.me in algebra education.

RESULTS AND DISCUSSION

This study explores the potential and challenges of using Wizer.me in technology-based algebra learning. Data were collected through questionnaires, interviews involving 31 students, and interviews with lecturers. This section focuses on the key findings of the study, beginning with the presentation of the results, followed by an in-depth analysis and discussion in relation to the research objectives.

Based on the questionnaire filled out by students, data was obtained on their responses to several important aspects of using Wizer.me in learning algebra. The following are the questionnaire results, which include 12 statement items that measure various aspects such as engagement, ease of use, and the benefits students feel while using this platform.

Table 1. Mean Score for Each Questionnaire Item in the Student Survey

Item Statement	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Average Score	3.29	3.26	3.39	3.29	3.52	3.45	3.52	3.48	2.87	3.52	3.48	3.32

Most items received an average score above 3.3, indicating generally positive responses. For example, engagement (P1: 3.29) and learning motivation (P2: 3.26) highlight the platform's potential to sustain student interest.

However, ease of use (P9: 2.87) scored lower, reflecting challenges with specific features such as uploading images and typing equations.

In addition to the quantitative data from the questionnaire, interviews with students provided qualitative insights into their experiences of using Wizer.me. The following table summarizes the results of the student interviews, grouping their responses into several general categories.

Table 2. Interview Results Based on Response Categories

Response Categories	Number of Students
Easy to Understand Material	24
Difficulty uploading answers	14
Clarity and Structure of Worksheet	26
Challenges of Feature Usage	8

Students appreciated the clarity and structure of the worksheets (26 out of 31) and found the material easy to understand (24 out of 31). However, technical issues, such as uploading images, were frequently mentioned (14 out of 31), particularly when internet connectivity was unstable. Eight students also noted difficulties with using the equation typing feature, which impacted their overall learning experience.

Similarly, interviews with lecturers revealed both advantages and challenges in using Wizer.me for algebra learning. Lecturers highlighted benefits such as the flexibility to create diverse question formats and the integration of video features, which facilitated the explanation of abstract concepts. Furthermore, the ability to provide personalized feedback and the integration with Google Classroom were noted as significant advantages, as they streamlined task management and improved interaction with students.

However, lecturers also reported challenges, particularly with the equation-writing feature, which was insufficient for creating complex mathematical formulas. As an alternative, both lecturers and students often resorted to uploading images, which sometimes resulted in unclear visuals and added time to the correction process. These limitations were compounded by technical challenges such as unstable internet connections and device limitations, which affected the overall effectiveness of Wizer.me.

The results of this study emphasize Wizer.me's capability to improve student engagement and learning outcomes in algebra instruction, while also pointing out significant technical and instructional challenges. Based on the questionnaire results, the average score for student engagement (P1) is 3.29, suggesting that the platform is fairly effective in boosting student participation during the educational activities. The integration of multimedia features, such as videos and animations, likely contributed to this outcome by making abstract algebraic concepts more accessible and engaging. The Cognitive Theory of Multimedia Learning suggests that individuals learn more effectively when information is delivered through both visual and auditory channels, as this approach minimizes cognitive overload and promotes deeper comprehension (Mayer, 2020). This theory aligns with the interactive and dynamic learning environment provided by Wizer.me. As noted by Kaliappen et al. (2021), the platform's integration of multimedia plays a crucial role in maintaining student engagement.

In addition, the average score of student motivation (P2) is 3.26, suggesting that Wizer.me plays a crucial role in fostering learning motivation. Web-based applications like Wizer.me create an engaging learning experience that encourages students to stay motivated throughout the learning process. This is consistent with the findings of Subagja (2022) and Aisyah & Supriyo (2024), who emphasize the significance of interactive platforms in sustaining students' interest and enthusiasm in mathematics learning. Similarly, interactive multimedia with contextual approaches, as discussed by Pratiwi et al. (2024), enhances motivation by presenting materials in a rich, interactive format connected to real-world contexts. By integrating simulations, animations, and visually appealing elements, platforms like Wizer.me foster active participation and meaningful learning experiences, addressing key challenges often associated with mathematics learning.

Lecturers also appreciate the integration feature of Wizer.me with Google Classroom, as it facilitates task management and communication with students. Research by Harjanto & Sumarni (2019) found that Google Classroom serves as an effective facilitation tool for organizing classroom tasks and promoting collaboration through its virtual tools. Furthermore, its ability to streamline assignment uploads and task tracking enhances time efficiency, allowing teachers to focus more on interactive teaching. This supports increased student engagement and enthusiasm for learning. These findings align with Susilawati (2023), who revealed that using information-based technology improves students' enthusiasm for learning mathematics.

Regarding material mastery, the questionnaire results show that the average score for the material per the learning objectives (P5) is 3.52, and to help master the algebra material (P6) is 3.45. This indicates that Wizer.me has been successful in assisting students to master abstract algebraic concepts. The platform's ability to create different types of questions facilitates a more diverse and dynamic delivery of material, supporting the learning objectives set. This is evidenced by the interview results, where 24 out of 31 students stated that they found it easier to understand the material provided.

The effectiveness of Wizer.me in facilitating material mastery can be understood through the framework of Cognitive Load Theory (Sweller, 2023). This theory highlights that the complexity of a topic is determined by the level of element interactivity and the number of elements learners must manage simultaneously within their working memory. Algebra, as a high element interactivity subject, requires instructional design that reduces extraneous cognitive load to help students focus on intrinsic cognitive tasks. Wizer.me achieves this by presenting structured and scaffolded questions that guide learners step by step, thereby reducing the cognitive effort required to process multiple interacting elements.

Additionally, the platform's dynamic question types and interactive tasks align with instructional strategies that improve learning retention and transfer. Kala & Ayas (2023) highlight that instructional designs following CLT principles significantly enhance learners' ability to manage high element interactivity tasks. By breaking down complex algebraic concepts into manageable chunks, Wizer.me enables students to progressively build their understanding, ultimately aiding the transfer of knowledge to long-term memory.

Lecturers also highlighted the features of Wizer.me, such as the insertion of videos and the variety of problems, succeeded in increasing the attractiveness of learning. The video feature, in particular, allows the delivery of algebra material more visually and interactively, thus helping students understand difficult concepts. This is reinforced by the findings of Afriliyanti et al. (2023) and Sari et al. (2024), which revealed that interactive platforms like Wizer.me assist students in grasping challenging mathematical concepts by incorporating multimedia elements, such as videos and animations, that simplify the presentation of abstract material. Moreover, Information and communication technology (ICT) applications serve as effective tools for enhancing students' comprehension and performance in mathematics, as well as in solving various problems within the subject (Orhani & Çeko, 2024).

In addition, lecturers noted that the platform allows for immediate and personalized feedback to students, significantly accelerating their understanding of the material. This finding aligns with the RETFAL system, which demonstrates that real-time feedback allows educators to promptly identify and address understanding gaps, fostering more effective learning interventions (Alnahidh et al., 2022). With this feedback, students can immediately correct their mistakes, improving both their conceptual understanding and procedural accuracy (Nakamoto et al., 2023).

Students' learning experience also benefits from using Wizer.me, as reflected in the average score of 3.52 on P10, which indicates that students felt their learning experience was enhanced by using this platform. Most students thought the worksheets' language and structure were clear enough and helped them achieve the learning objectives. This aligns with Zhou (2024), who highlighted that timely feedback and personalized recommendations significantly enhance the learning experience by addressing individual needs. Furthermore, the personalized feedback feature of Wizer.me mirrors the benefits noted in other real-time learning systems, where targeted insights foster deeper engagement and more meaningful learning outcomes

In addition to the potentials described, using Wizer.me also faces some challenges, especially in technical and pedagogical aspects. One of the challenges reported by students is related to the difficulty in uploading answers. From the questionnaire results, the average score on P9 (ease of use) was 2.87, reflecting this issue. Furthermore, judging from the interview results, 14 students mentioned that they experienced difficulties uploading images as answers. One of the main causes of this difficulty is the internet connection quality, especially if the uploaded file is large. A slow or unstable internet connection often causes the uploading process to stop or fail, so students must repeat it several times. This technical challenge is not new in online learning. Research by Isnawati & Ardani (2023) and Murtiyasa & Lathifah (2023) confirmed that unstable internet connection is one of the main factors that hinder online learning and cause math learning difficulties during distance learning.

In addition, the quality of the uploaded images was often an issue, with some students mentioning that the images they uploaded were in the wrong orientation, too small in size, or the text was unclear. Students had to repeat the uploading process or retrieve clearer images. This repetitive work is not only time-consuming but also adds to their workload. To produce good-quality images, adequate devices, such as a cellphone or laptop with a high-quality camera, are needed. Unfortunately, not all students have access to such devices, reflecting broader issues of digital inequality in online learning environments. This aligns with findings by Tauhidah et al. (2021), who reported that limited facilities and unstable internet networks hinder students' participation in online learning, often requiring them to repeat assignments multiple times due to technical issues.

These challenges also affect lecturers, who reported that the correction process took longer because the images uploaded by students were often difficult to read. This problem further highlights the need for platforms like Wizer.me to provide more robust features for handling image-based submissions, such as built-in editing tools or guidelines for uploading images. Without such enhancements, these technical barriers reduce the platform's overall effectiveness in facilitating streamlined learning and assessment processes.

Another technical challenge is the limited equation-writing feature on Wizer.me. This feature does not yet support the creation of complete mathematical formulas or symbols, forcing both lecturers and students to use external applications like Microsoft Word or PowerPoint to create and upload these elements as images. Arafat (2022) similarly noted that platforms like Moodle face limitations in content editing and integration, often requiring users to rely on external tools, which increases their workload. A total of 8 students reported that they found the equation typing feature too complicated, preferring to upload images as answers. However, this workaround presents its own set of challenges, as students often experienced difficulties editing images directly on the platform, such as cropping or changing their orientation.

These technical limitations underscore the importance of continuous development in educational technology platforms. Improving features such as equation editors, integrated image editing tools, and user-friendly interfaces would not only reduce students' workload but also enhance the overall learning experience. Additionally, addressing broader infrastructural issues, such as ensuring stable internet access and providing adequate devices, is crucial to maximizing the potential of platforms like Wizer.me in diverse educational contexts.

CONCLUSION AND RECOMMENDATION

Conclusion

This study explores the potential and challenges of using Wizer.me in technology-based algebra learning. The findings demonstrate that Wizer.me significantly enhances student engagement and comprehension of abstract algebraic concepts. Students reported positive experiences, particularly in terms of interactive and structured learning facilitated by the platform. Key features, such as multimedia integration and real-time feedback, proved instrumental in improving the learning process.

However, limitations were noted, particularly in the equation-writing functionality, which remains insufficient for complex algebraic operations. Additionally, technical issues like image uploads and internet connectivity challenges hindered optimal usage. These limitations affect the efficiency and accessibility of the platform, particularly in subjects requiring precise mathematical representations.

Based on the research findings, this study provides valuable insights into how Wizer.me can help bridge the gap in abstract algebra learning by fostering greater engagement through its interactive features and feedback-driven tools. The platform's seamless integration with Google Classroom and flexibility in managing tasks were also identified as key strengths, contributing to a more structured and efficient teaching-learning process.

To fully leverage the benefits of Wizer.me, the following recommendations are proposed:

1. Enhance the platform’s equation-writing capabilities to accommodate complex algebraic expressions.
2. Address technical issues by providing tools to optimize image handling and ensuring better internet infrastructure support.
3. Conduct training for students and lecturers to improve their proficiency in using Wizer.me effectively.

These improvements would ensure Wizer.me becomes a more robust tool for learning algebra and other mathematical subjects. Future studies should concentrate on assessing these improvements and investigating the platform's potential applications in a wider range of educational settings.

Recommendation

Building on the findings of this study, specific recommendations can be made for key stakeholders to improve the usability and accessibility of Wizer.me in algebra education. For Wizer.me developers, enhancing the platform's equation-writing feature is crucial to support the creation of complex mathematical formulas and symbols. This improvement would enable students to solve algebra problems directly on the platform, eliminating the need to upload images as alternative solutions, which often disrupts the workflow and affects efficiency. Additionally, developers could consider integrating built-in tools for handling image uploads, such as automatic resizing, orientation correction, or enhanced clarity to streamline the user experience.

For educational institutions, addressing technical challenges faced by students is essential. Institutions should ensure that all learners have access to adequate technological devices, such as laptops or tablets, as well as reliable internet connections. This can be achieved through initiatives such as providing device subsidies, establishing on-campus computer labs, or improving campus network infrastructure. These steps would reduce technological disparities and foster equitable learning opportunities.

To maximize the platform's effectiveness, educators and students should undergo regular training on how to utilize Wizer.me effectively. Training sessions should focus on optimizing the use of the platform’s features, including writing equations and managing task submissions. Familiarity with the platform will enable users to engage with it confidently and efficiently, ultimately enhancing their learning outcomes.

While this study provides important insights into the potential and challenges of using Wizer.me in algebra education, it has certain limitations. First, the study was conducted in a specific academic context involving 31 students and two lecturers from a single university-level algebra course. The relatively small sample size and specific context may restrict the applicability of the findings to broader educational settings or larger populations. Furthermore, the study focused exclusively on the application of Wizer.me in algebra learning, without exploring its potential in other disciplines or educational levels, which could offer a broader perspective on its utility.

Another limitation of this study is the dependence on self-reported data collected through questionnaires and interviews, which may be influenced by biases such as social desirability or incomplete recall. While these methods

provided rich insights into user experiences, they could be complemented by observational or experimental approaches to validate and extend the findings. In addition, the study was conducted within a relatively short timeframe, which might not adequately reflect the long-term effects of using Wizer.me on learning outcomes and user satisfaction.

Future research should aim to overcome these limitations by incorporating larger and more diverse participant samples, including students from different educational levels and institutions. Conducting longitudinal studies could also offer a more comprehensive understanding of the sustained impact of Wizer.me on student engagement and academic performance. Expanding the focus to other subjects or integrating more objective data collection methods, such as performance analytics or user interaction logs, would further enhance the robustness of the research.

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