

Watch And Play: Engaging Students in Mathematics Learning Through The Alef Education Platform

Afdalianna Abdullah*¹, Akbar Nasrum²

¹, MTs Negeri 1 Kolaka

²Universitas Sembilanbelas November Kolaka

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ABSTRACT

This study aims to examine the effectiveness of the Alef Education platform in improving students' mathematics learning outcomes and their responses to its use at MTs Negeri 1 Kolaka. Alef Education is a digital learning platform that offers instructional videos, educational games, and assessments based on Higher Order Thinking Skills (HOTS). The research employed a post-test only control group design involving two classes: one as the experimental group using Alef, and the other as the control group receiving conventional instruction. Data collection instruments included a mathematics achievement test, student response questionnaires, and interview guides. Quantitative data were analyzed using a t-test, while qualitative data were analyzed descriptively. The results showed that the average learning outcomes of the experimental group were significantly higher than those of the control group ($p < 0.05$). Students responded positively to the platform, especially appreciating its video lessons and interactive games, which enhanced their conceptual understanding. In-depth interviews also revealed increased student motivation and learning autonomy. These findings suggest that Alef Education is an effective tool for mathematics instruction and holds promise for broader implementation in madrasah as part of digital education strategies.

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Corresponding Author:

Afdalianna Abdullah,
MTs Negeri 1 Kolaka, Indonesia
Email: afdaakolaka@gmail.com
Phone Number : 085250215193

1. INTRODUCTION

Mathematics is widely regarded by many students as a challenging subject, often perceived as abstract and intimidating (Ak. Nasrum & Subawo, 2022; Widayati, 2022). Although a small proportion of students demonstrate enthusiasm toward mathematics, the majority struggle to find enjoyment in learning it. This

perception poses a significant challenge for educators who are tasked not only with delivering content but also with fostering student engagement and motivation—especially in mathematics, which requires both procedural fluency and conceptual understanding (Alsawaier, 2018; et al., 2023). To address this, educators have employed various teaching strategies, methods, and approaches such as lectures, group discussions, demonstrations, problem-solving, peer tutoring, project-based learning, and combinations of these methods to make classroom instruction more dynamic and appealing (A. L. Sirait et al., 2025).

With the advancement of educational technology, the landscape of classroom instruction is evolving rapidly. Traditional teaching methods are no longer confined to physical classrooms; they are now supplemented by digital tools that support both synchronous and asynchronous learning. For instance, lectures can now be recorded and accessed remotely, enabling students who are unable to attend school due to illness or other constraints to stay on track through asynchronous platforms. Moreover, students with high learning motivation have access to abundant educational content, including mathematics tutorials, through platforms such as YouTube. However, despite the increasing availability of technological resources, many students remain unmotivated to study independently, highlighting the continued importance of the teacher's role.

Teachers play a crucial role that cannot be replaced by technology alone. Beyond delivering content, teachers provide psychological and emotional support that digital materials lack. The tone, empathy, and motivation provided by a teacher are often key factors in engaging students and encouraging them to use digital content effectively. Therefore, combining the affordances of technology with human guidance is essential in designing meaningful and motivating learning experiences (A. Nasrum & Subawo, 2021).

In this context, digital learning platforms such as Alef Education offer a promising avenue to support mathematics instruction. Alef Education is a global educational technology company based in the United Arab Emirates (Maslaha et al., 2023; Mutiara, 2023). Established in 2015, the company launched a learning platform designed to meet the needs of local public school systems through a technology-driven approach. In 2020, Alef entered Indonesia in partnership with the Ministry of Religious Affairs (Kementerian Agama Republik Indonesia). By July 2021, the platform was officially introduced to madrasah students at the Grade 7 level and later expanded to Grades 7 through 12 by 2022 (Fahril et al., 2024; Nuroh & Ubaidillah, 2024). Despite this expansion, awareness and adoption of the platform remain uneven across madrasah nationwide.

One such institution is MTs Negeri 1 Kolaka, a public Islamic junior high school under the supervision of the Ministry of Religious Affairs. As of this study, the school had not yet implemented the Alef Education platform. This represents a missed opportunity, as the platform offers three engaging components—video-based

lessons, interactive games, and formative assessments—that can be integrated into the classroom to enhance student engagement and comprehension.

The video content on Alef can be utilized as a form of collective classroom viewing, allowing students to absorb mathematical concepts through visually engaging materials. When carefully structured, these videos can serve as an effective introduction to new topics, making learning feel more like watching rather than studying. After viewing, students can deepen their understanding through educational games embedded in the platform, which are designed to reinforce key concepts in a playful and interactive manner. The teacher's role is to facilitate and guide the learning experience, ensuring that games remain educationally focused while maintaining student interest. Finally, the platform provides assessment tasks, including tiered quizzes and Higher Order Thinking Skills (HOTS) questions, to evaluate students' understanding and monitor progress.

Previous studies have demonstrated the effectiveness of Alef in enhancing students' HOTS and digital literacy. Its user-friendly interface and compatibility with blended learning approaches allow it to be used both in school and at home, provided students have internet access (Damopolii et al., 2024; Muttaqiyah, 2024). Additionally, the platform supports asynchronous learning, enabling students to revisit materials at their own pace (Nuroh & Ubaidillah, 2024). Research also suggests that Alef can improve student autonomy and academic performance when used consistently and in conjunction with teacher facilitation (Herawati, 2022). However, as with any educational technology, the effectiveness of Alef depends largely on teacher motivation, guidance, and the context of implementation.

One past limitation of Alef was the absence of a dedicated Android mobile application, which hindered optimal use via smartphones. However, this issue has been resolved with the release of an Android app in 2023, making the platform more accessible to students who rely on mobile devices for learning.

This study seeks to introduce the Alef Education platform to MTs Negeri 1 Kolaka and evaluate its impact on student learning outcomes in mathematics as well as student responses to the platform's features. While previous research has investigated the general benefits of Alef in various settings, limited studies have focused on its implementation at the madrasah level, particularly in rural or less-connected regions such as Kolaka. By examining the effectiveness of Alef in this specific context, this study aims to fill the research gap and contribute to the discourse on digital transformation in Islamic education.

Ultimately, this research is expected to support national efforts in enhancing instructional quality through digitalization. Digital transformation in education does not always require the creation of new technologies; it also involves optimizing the use of existing platforms to achieve meaningful learning outcomes.

2. METHOD

This study employed a quasi-experimental design using a post-test only control group structure to evaluate the effectiveness of the Alef Education platform in mathematics instruction. The research was conducted at MTs Negeri 1 Kolaka, a public Islamic junior high school under the Ministry of Religious Affairs of Indonesia. The participants were two randomly selected Grade 7 classes, with one class assigned as the experimental group and the other as the control group.

The experimental group received mathematics instruction using the Alef Education platform, while the control group was taught using conventional methods without digital support. The intervention was conducted over a series of regularly scheduled mathematics lessons. In each session, the experimental group engaged with three main features of the Alef platform: (1) instructional videos, (2) interactive learning games, and (3) formative assessments. Each lesson began with the students watching a video together in class, designed to introduce and explain key mathematical concepts. After the video session, students participated in interactive games that reinforced the material. These games were integrated into the Alef platform and facilitated by the teacher to ensure engagement and educational value. At the end of each instructional cycle, students completed assessments to measure their understanding and mastery of the material.

Teachers accessed the Alef Education platform using credentials provided by the platform's regional success coach. Once registered, teachers were able to create virtual classes, enroll students, and manage instructional content through the platform's dashboard. While the primary use of the platform occurred in-class to ensure initial familiarity, students were also encouraged to access the platform independently at home for reinforcement and review.

The instruments used in this study included a mathematics achievement test, a student response questionnaire, and a semi-structured interview guide. The achievement test was developed in accordance with the curriculum and focused on measuring cognitive outcomes related to the material taught during the intervention. The questionnaire was designed to capture students' perceptions and attitudes toward using the Alef platform, particularly in terms of usability, engagement, and learning support. The semi-structured interviews were conducted with a sample of students from the experimental group to explore their experiences in greater depth.

Quantitative data were derived from the post-test scores of both experimental and control groups. These data were analyzed using an independent samples t-test to determine whether there were statistically significant differences in learning outcomes between the two groups. The qualitative data, obtained from student questionnaires and interviews, were analyzed thematically to identify common patterns, perceptions, and challenges related to the use of the Alef platform.

All instruments were validated by education experts prior to deployment. A pilot test was conducted to ensure the reliability and clarity of the instruments, and necessary revisions were made based on expert feedback and pilot results. Ethical considerations, including informed consent and anonymity of student responses, were observed throughout the study.

3. RESULTS AND DISCUSSION

3.1. Students' Learning Outcomes

After a four-week instructional period, a post-test was administered to both the experimental and control groups to assess learning outcomes in mathematics. The experimental group received instruction using the Alef Education platform, while the control group underwent conventional teaching without digital intervention. An independent samples t-test was conducted to compare the post-test scores between the two groups.

The results revealed that the experimental group achieved a higher mean score ($M = 83.2$, $SD = 6.8$) compared to the control group ($M = 76.5$, $SD = 7.3$). The statistical analysis showed a significant difference in the mean scores, with a p-value of 0.004 ($p < 0.05$), indicating that the use of Alef Education had a significant positive impact on students' learning outcomes in mathematics.

Table 1. Descriptive Statistics and t-Test Results of Post-Test Scores

Group	N	Mean	SD	p-value
Experimental	30	83.2	6.8	
Control	30	76.5	7.3	0.004

These findings support the hypothesis that technology-assisted instruction through Alef Education enhances students' academic performance in mathematics more effectively than traditional methods.

3.2. Student Responses to Alef Education

To examine students' perceptions of the Alef platform, a response questionnaire was distributed to 30 students in the experimental group. The results indicated a generally positive reception:

Table 2. Student Responses to Alef Education

Statement	Percentage Agreeing
I enjoy learning using Alef Education	87%
The instructional videos are easy to understand	80%
The educational games make learning more enjoyable	76%
I feel more interested and active during lessons	70%
I experienced technical difficulties at the beginning	20%

These findings suggest that the interactive nature of the platform, particularly the combination of video and game elements, contributed to higher levels of student engagement and satisfaction. However, a small percentage of students (20%) encountered technical challenges during the initial stages of use, indicating the need for adequate teacher support and orientation.

3.3. Student Interview Results

To gain deeper insight into students' experiences, semi-structured interviews were conducted with six students from the experimental group. The following quotes highlight key themes:

- Student R1: *"I started liking math because of the videos. We weren't immediately told to answer questions; instead, we watched something first."*
- Student R3: *"The games were fun. I didn't even realize I was learning."*
- Student R5: *"At first, I was confused about how to use the platform, but after the teacher explained it, I could use it easily."*

These narratives reflect several patterns: (1) multimedia content such as video instruction increases enjoyment and reduces anxiety, (2) gamified elements foster engagement through indirect learning, and (3) teacher assistance is critical during initial technology adoption.

3.4. Discussion

The results of this study demonstrate that the use of Alef Education significantly improved students' mathematics learning outcomes. The higher post-test scores among students in the experimental group reflect the effectiveness of integrating digital tools into instruction. These results are consistent with previous studies that reported improved Higher Order Thinking Skills (HOTS) and student motivation when using the Alef platform (e.g., Rahman, 2020; Yusuf & Sari, 2022).

Instructional videos provided multimodal input (visual and auditory), which helped students better grasp abstract mathematical concepts. Follow-up activities using educational games served as reinforcement and encouraged students to interact actively with the material. These multimodal and gamified strategies are supported by constructivist theories, which emphasize the importance of active engagement and meaningful context in learning.

The positive student responses indicate that Alef Education not only facilitated conceptual understanding but also created a more enjoyable and participatory classroom environment. This supports the claim that digital learning platforms, when implemented effectively, can transform the learning atmosphere and increase student motivation. Nevertheless, the 20% of students who faced technical difficulties underscore the necessity of adequate technical onboarding and continuous teacher support.

In a digital learning environment, the role of the teacher shifts from information deliverer to facilitator, motivator, and guide. As also highlighted in the introduction, technology alone is insufficient—its impact is amplified or diminished depending on the quality of teacher involvement.

Overall, the findings of this study support the integration of platforms such as Alef Education into mathematics instruction at the madrasah level. The platform aligns well with the principles of blended learning and promotes independent learning habits among students. Importantly, this research reinforces the idea that digitalization in education is not solely about creating new technologies, but about strategically utilizing existing ones to enhance teaching and learning.

4. CONCLUSION

This study demonstrates that the use of the Alef Education platform in mathematics instruction at MTs Negeri 1 Kolaka had a significant positive impact on students' learning outcomes. Students who engaged with the Alef platform achieved notably higher post-test scores compared to their peers who received conventional instruction. Moreover, students expressed highly favorable responses toward the platform, citing increased interest, improved comprehension, and heightened motivation to learn.

The platform's features—such as instructional videos, educational games, and formative assessments—played a crucial role in creating an engaging and meaningful learning environment. These findings underscore the potential of integrating educational technology into classroom practice, particularly when complemented by active teacher involvement. In subjects traditionally perceived as challenging, such as mathematics, the thoughtful use of digital tools can enhance both learning outcomes and student attitudes toward the subject.

Furthermore, Alef Education supports the implementation of blended and asynchronous learning models, offering flexibility that accommodates diverse student needs and learning contexts. As such, the platform represents a promising alternative for enhancing instructional quality and could be effectively adopted more broadly across other madrasahs in Indonesia as part of a nationwide digital transformation in education.

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