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The Influence of Technology Use as a Learning Medium on Students' Learning Interest

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Abstract: This study investigates the effect of technology-based learning media on elementary students' learning interest in the context of increasing digital integration in education. Learning interest is operationalized as students' affective engagement with learning measured through a Likert-scale questionnaire covering enjoyment, attention, curiosity, and persistence. Using a quasi-experimental Nonequivalent Control Group Design, the study involved two classes; four-grade and fifth-grade classes (n = 10 per group): an experimental group taught with interactive videos and educational apps, and a control group taught using traditional lectures and textbooks. Data were analyzed using an independent t-test. Results showed a statistically significant increase in learning interest in the experimental group ($p = 0.002$), with a moderate-to-large effect size, indicating that technology use has a meaningful positive impact. These findings suggest that integrating technology into instructional strategies can effectively enhance students' motivation and engagement in learning.

Keywords: Educational technology; learning media; learning interest; elementary students; quasi-experimental research

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Introduction

Teaching and learning activities in schools are a crucial factor in determining student learning outcomes. A teacher's success in improving students' academic performance is greatly influenced by students' responses to the learning process. In education, learning interest is a psychological factor that determines how actively students engage with the learning material. Learning interest refers to the willingness and enthusiasm of students to understand a topic or subject in depth.

One effective way to enhance students' learning interest is through the use of technology-based learning media. In today's digital era, both society and students are increasingly immersed in and reliant on technology in their daily lives. Recent studies indicate that digital tools can significantly improve student engagement and motivation, particularly at the elementary level, where visual and interactive stimuli are crucial for sustaining attention (OECD, 2023; UNESCO, 2022). The integration of technology in education is also aligned with global trends promoting 21st-century learning, which emphasizes digital literacy, creativity, and student-centered approaches. In Indonesia, the Ministry of Education has also encouraged the adoption of digital learning platforms in primary schools to improve learning outcomes and accommodate diverse student needs. Therefore, the use of technology in the classroom is not only relevant but increasingly necessary to foster

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interest and active participation in learning among elementary students.

Recent studies, such as those by Anam (2021) and Rahmawati & Prasetyo (2020), suggest that technology-based learning media can present learning materials in more contextual, visual, and auditory formats, thereby creating a more dynamic and interactive classroom environment. These tools not only foster student engagement but also assist teachers in delivering content more effectively and adaptively. Moreover, research by Kusumawati et al. (2022) highlights that the integration of interactive media—such as educational apps and digital simulations—can significantly enhance students' motivation and interest in learning, particularly at the elementary level. Building on these findings, the present study aims to empirically investigate the influence of technology integration on students' learning interest in a primary school context.

Literature Review

The rapid advancement of information and communication technology has significantly transformed educational practices, shifting technology from a supporting administrative tool to a central medium in instructional delivery. Bond et al., 2020; Crompton & Burke, (2022) highlight that the integration of technology in classrooms—through tools such as interactive videos, mobile learning applications, and online platforms—can enhance students' engagement, autonomy, and learning outcomes. These studies underscore that technology, when used pedagogically and not merely as a supplement, can create more interactive and student-centered learning environments.

Technology-based learning media refers to digital tools that facilitate the delivery of instructional content, including hardware (e.g., laptops, tablets, projectors) and software (e.g., learning management systems, educational apps, gamified quizzes). According to Al-Furaih & Al-Awidi (2021), such media not only increase accessibility to learning materials but also provide diverse sensory stimuli—visual, auditory, and interactive—that cater to different learning styles and sustain students' attention. In terms of the conceptual framework, *learning interest* is defined as a student's affective and cognitive orientation toward learning activities, marked by curiosity, enjoyment, attention, and persistence (Hidi & Renninger, 2019). Interest plays a key role in initiating and sustaining engagement in learning, particularly in primary education where intrinsic motivation is still developing. Technology can act as a catalyst in this process by presenting content in appealing formats and enabling learners to explore topics at their own pace.

Therefore, understanding how technology affects learning interest is crucial, especially in elementary education where foundational attitudes toward learning are being shaped. This literature supports the rationale for investigating the empirical impact of technology-based media on students' learning interest.

Method

This study employed a quantitative approach using a quasi-experimental design, specifically the Nonequivalent Control Group Design. The research involved two groups: an experimental group that received instruction using technology-based learning media (such as interactive videos and educational applications), and a control group that was taught through conventional methods (lectures and textbooks). Each group consisted of 10 students from grades III and IV, selected through purposive sampling based on class availability and similarity in academic background. To assess students' learning interest, a Likert-scale questionnaire comprising 20 items—validated for content and internal consistency—was administered as both a pretest and posttest. The indicators measured included enjoyment, attention, curiosity, and persistence. The instructional intervention was conducted over a two-week period, after which the posttest was administered.

Data analysis was performed using an

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independent sample t-test to determine whether there was a statistically significant difference in learning interest between the two groups. For improved methodological rigor, data processing was conducted using SPSS (Statistical Package for the Social Sciences), which allowed for more accurate computation and assumption testing. It is important to note that the total sample size of 20 participants represents a methodological limitation. The small sample reduces the statistical power of the analysis and may increase the likelihood of Type II errors. Moreover, the limited scope of participants constrains the generalizability of the findings beyond the studied context. Future research with larger and more diverse samples is recommended to validate and expand upon the current results.

Results

The results indicate that the use of technology-based learning media had a significant positive effect on students' learning interest. In the experimental group, the average pre-test score was 59.9, which increased to 83.9 in the post-test, showing a mean improvement of +24.0 points. In contrast, the control group showed only a modest gain, from an average pretest score of 60.3 to a post-test average of 65.7, with a mean improvement of +5.4 points.

Table 1.

No	Student Name	Pre-test	Post-test	Impro-vement
1	Student A	60	85	+25
2	Student B	58	80	+22
3	Student C	62	88	+26
4	Student D	59	84	+25
5	Student E	61	86	+25
6	Student F	60	82	+22
7	Student G	63	87	+24
8	Student H	57	79	+22
9	Student I	59	85	+26
10	Student J	60	83	+23

An independent sample *t*-test revealed a statistically significant difference between the posttest scores of the experimental and control groups, with a *p*-value of 0.002 ($p < 0.05$). This suggests that the observed differences in learning interest were unlikely due to chance. To better understand the magnitude of the effect, Cohen's *d* was calculated, yielding a value of approximately 2.10, which is considered a very large effect size. This indicates that the use of technology in the classroom had a substantial and practically meaningful impact on increasing students' learning interest.

These findings support the hypothesis that integrating technology-based media can significantly enhance affective engagement in learning, as reflected by students' increased attention, enjoyment, and curiosity during instructional activities.

Discussion

The findings of this study indicate that the use of technology-based learning media has a statistically and practically significant effect on increasing students' learning interest. The experimental group demonstrated a substantial improvement in learning interest, with the average score rising from 59.9 to 83.9, while the control group showed only a modest increase from 60.3 to 65.7. This difference, confirmed by an independent sample *t*-test ($p = 0.002$), is further supported by a Cohen's *d* value of 2.10, indicating a very large effect size.

These results align with prior findings such as those by Arsyad (2011), who emphasized that technology-enhanced media can improve students' focus, clarify content delivery, and boost motivation. Moreover, Anam (2021) supports the idea that audiovisual materials foster contextual understanding and classroom engagement. Recent studies, including a meta-analysis by Zheng et al. (2020), confirm that digital learning environments significantly outperform traditional methods in terms of student engagement and affective outcomes, especially when interactive media such as videos, simulations, and gamified assessments are integrated. A key explanation for these results lies in the nature of today's learners—digital natives who are more

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responsive to interactive, visual, and self-paced content. Tools like educational apps and interactive quizzes not only help teachers deliver material more effectively but also create a learning environment that is more stimulating and responsive to students' preferences.

However, despite these positive outcomes, this study is not without limitations. The sample size was relatively small (20), which may limit the generalizability of the findings. The short intervention period (two weeks) may also not fully capture long-term effects on motivation or achievement. Additionally, the use of a Likert-scale questionnaire, while validated, is still subject to self-report bias. The analysis was conducted using Excel, which, while functional, lacks some of the robustness and diagnostics offered by specialized statistical software like SPSS or R. Future research should consider using larger and more diverse samples, applying longitudinal designs, and incorporating multiple data sources such as classroom observations or teacher assessments. Moreover, examining how teacher digital competency, school infrastructure, and parental involvement moderate the effectiveness of technology integration would provide a more comprehensive understanding.

In conclusion, this study reinforces the growing body of evidence suggesting that appropriately integrated technology in classrooms can enhance students' interest in learning, particularly when the media used aligns with the cognitive and affective needs of modern learners. These findings underscore the importance of teacher training, curriculum planning, and infrastructure investment to ensure technology serves as a catalyst for deeper student engagement rather than a superficial novelty.

Conclusions

The results of this study suggest that the use of technology-based learning media may have a meaningful impact on increasing students' learning interest, at least within the limited context of this small-scale classroom intervention. Students in the experimental group, who engaged with interactive tools such as educational videos and learning apps, demonstrated greater gains in interest scores compared to their peers in the control group who were taught using conventional methods.

These findings indicate that, when thoughtfully integrated, technology can contribute to a more engaging and dynamic learning environment—particularly for learners who are already familiar and comfortable with digital platforms. The increase in student engagement observed in this study may be attributed to the visual and interactive nature of the media, which aligns with the characteristics of digital-native students and supports attention, curiosity, and participation. However, given the small sample size (n = 20), short duration (two weeks), and reliance on self-report instruments, the results should be interpreted with caution. While they offer initial insight, they are not sufficient to draw broad conclusions about the effectiveness of technology across diverse school contexts or over longer periods.

Future research involving larger, more diverse populations and extended implementations would be valuable to validate these findings and explore additional factors such as student learning outcomes, teacher readiness, and infrastructure support. For now, this study provides preliminary evidence that supports further exploration into the strategic use of technology to enhance student interest—when adapted to context and supported by adequate planning and training.

Suggestion and Recommendation

Teachers are encouraged to be more proactive and creative in utilizing technology as a learning medium. The use of media such as interactive videos, educational apps, and digital platforms has been proven to significantly boost students' learning interest. Hence, teachers should be equipped with digital training and development programs to

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select and implement appropriate media based on students' characteristics.

Schools should also support this integration by providing adequate facilities, such as computers, stable internet connections, and conducive learning environments. Furthermore, the use of technology should be accompanied by supervision to ensure it serves as a tool that supports learning rather than distracts from it.

Additionally, governments and educational authorities are urged to formulate policies that promote the integration of technology in the curriculum and foster innovation in digital learning across all education levels. Through effective collaboration between teachers, schools, and policymakers, technology can be optimized to enhance both the learning process and students' learning interest.

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