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The Impact of Google Sites-Based Interactive Learning Media on Fifth-Grade Students' Fiqh Achievement

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Abstract

Improving students' achievement in Fiqh remains a major challenge in Islamic primary education, particularly in classrooms where teacher-centered instructional practices restrict students' active participation. This study aimed to investigate the effect of Google Sites-based interactive learning media on the Fiqh learning achievement of fifth-grade students. A quantitative quasi-experimental method employing a nonequivalent control group design was adopted. The participants consisted of 48 fifth-grade students from a private Madrasah Ibtidaiyah in Ngawi Regency, East Java, Indonesia, including 25 students in the experimental group and 23 students in the control group selected through total sampling. Learning achievement data were collected using pre-test and post-test instruments and analyzed through descriptive and inferential statistics. The statistical procedures included the Shapiro-Wilk normality test, Levene's homogeneity test, and the Mann-Whitney U test. The findings revealed that students who learned through Google Sites achieved a higher mean post-test score (79.00) than those who received conventional instruction (65.00). Furthermore, the Mann-Whitney U test yielded a significance value of 0.001 ($p < 0.05$), indicating a statistically significant difference between the two groups. These findings demonstrate that Google Sites-based interactive learning media significantly improved students' fiqh learning achievement scores. The observed gains suggest, though were not directly measured, that greater student engagement and conceptual understanding may have contributed to this improvement. Therefore, integrating web-based interactive media into Islamic primary education is recommended to support more effective and meaningful learning experiences.

Keywords: Google Sites, Interactive Learning Media, Fiqh Education, Learning Achievement, Quasi-Experimental Study



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Introduction

Education plays a fundamental role in preparing individuals to develop knowledge, practical skills, moral values, and positive character needed to respond to continuous social change (Republik Indonesia, 2003). In the Indonesian education system, learning is expected not only to improve students' academic achievement but also to foster intellectual, emotional, spiritual, and social development. Achieving these objectives requires learning environments that actively engage students throughout the instructional process. Therefore, teachers are encouraged to adopt instructional strategies and learning media that promote active participation rather than relying

exclusively on teacher centered instruction, where learners function primarily as passive recipients of information (Agus, 2018).

40 The rapid advancement of digital technology has significantly transformed educational practices by creating broader opportunities for technology integration in classroom instruction. Digital learning media have become an essential component of contemporary education because they facilitate learning experiences that are more flexible, interactive, and responsive to students' individual needs (Rivai & Sudjana, 2010). Compared with conventional instructional approaches that predominantly rely on verbal explanations, digital platforms enable teachers to integrate various forms of learning resources including text, images, audio, video, animations, and interactive assessments—within a single instructional environment. Such multimedia integration enhances students' engagement, stimulates learning motivation, and supports deeper conceptual understanding (Widyaningsih et al., 2021).

1 Within Islamic primary education, improving students' achievement in Fiqh remains an important educational challenge. Fiqh instruction is intended not merely to transmit theoretical knowledge regarding Islamic law but also to cultivate students' understanding of religious obligations and their ability to apply Islamic legal principles in everyday life (Setiawan & Setyowati, 2020). Consequently, effective Fiqh learning requires instructional approaches that encourage students to actively construct knowledge, connect theoretical concepts with authentic situations, and strengthen their understanding through meaningful learning experiences. However, classroom instruction that relies predominantly on lecture-based methods often limits students' opportunities to participate actively, resulting in lower motivation and less effective learning outcomes.

Preliminary observations indicated that approximately 85,77% of fifth-grade student had not reached the school's Minimum Mastery Criterion (KKM), with an average score of 70 prior to the intervention (Interview with a fifth-grade teacher, personal communication, June 16, 2024). Many students experienced difficulties in understanding the learning materials, particularly those related to zakat, infaq, and sadaqah. Classroom instruction was generally characterized by conventional teaching practices with limited use of interactive instructional media. As a consequence, students had relatively few opportunities to participate actively during lessons or to access learning resources independently outside classroom hours. These conditions highlight

the need for more innovative instructional media capable of increasing student engagement while supporting independent learning (Gustari, 2020).

Among various web-based educational platforms, Google Sites has emerged as an accessible and practical tool for developing interactive learning media (Said, 2023). The platform enables teachers to organize instructional materials, learning videos, images, online quizzes, hyperlinks, and supporting documents within a single website that can be accessed through computers, tablets, or smartphones (Aziza & Baroroh, 2024). Because Google Sites is freely available and does not require advanced technical expertise, it provides teachers with an efficient solution for designing multimedia-based learning environments. These characteristics make the platform particularly suitable for elementary education, where attractive and interactive instructional media are essential for maintaining students' attention and learning motivation.

Previous studies have consistently reported positive contribution of Google Sites to students' learning in different disciplines such as science, mathematics and social studies. The findings generally suggest that the use of Google Sites in classroom instruction improves students' motivation, classroom participation and general academic performance. However, empirical evidence of implementation in Islamic Religious Education, particularly in Fiqh instructions at the Madrasah Ibtidaiyah level, is still limited. For instance, Putri (2023) developed a Google sites based medium at the Madrasah Ibtidaiyah level, but for Mathematics rather than fiqh instruction, while Mahbubi et al. (2023) examined interactive media in Fiqh learning at the Madrasah Tsanawiyah (Junior High-School) level rather than at the elementary level. This indicates that the specific combination of Google sites, Fiqh instruction, and the Madrasah Ibtidaiyah context has not yet been empirically examined (Putri, 2023) (Mahbubi et al., 2023). This limitation shows the need for further research on the effectiveness of website-based instructional media in supporting the learning of Fiqh in Islamic elementary schools (Lovita, 2021).

Specifically, the combination of the Madrasah Ibtidaiyah level, the zakat, infaq, and sadaqah topic, and a quasi-experimental effectiveness evaluation has not previously been examined together, representing a substantive novelty that extends beyond methodological originality alone. Unlike prior effectiveness studies of Google sites, which have largely been conducted in general subjects such as science, mathematics, and social studies, this study extends the inquiry into fiqh instruction at the Madrasah

Ibtidaiyah level a religious education context in which such empirical evidence remains scarce. By comparing students who learned through Google Sites with those who received conventional classroom instruction, this research provides stronger evidence regarding the educational value of web-based interactive media in the context of Islamic primary education.

This study is expected to contribute both theoretically and practically to the advancement of Islamic education. From a theoretical perspective, the findings enrich the growing body of literature concerning the integration of digital technology into Islamic Religious Education by providing empirical evidence of the effectiveness of Google Sites in Fiqh instruction. From a practical perspective, the results may serve as valuable references for teachers, school administrators, curriculum developers, and educational researchers in selecting and implementing technology-supported instructional strategies. Furthermore, this study offers practical guidance for designing accessible, engaging, and student-centered web-based learning media that can enhance learning experiences in Islamic primary schools.

Based on the research gap outlined above, the study aims to examine the effect of Google Sites based interactive learning media on the Fiqh learning achievement of fifth-grade students, compared with conventional classroom instruction. Accordingly, the following hypotheses were formulated: Ho - there is no significant difference in Fiqh learning achievement between students taught using conventional instruction; H1 - there is a significant difference in Fiqh learning achievement between the two groups.

Research Method

This study employed a quantitative approach using a quasi-experimental research design to examine the effect of Google Sites-based interactive learning media on students' achievement in Fiqh. Specifically, the research adopted a Nonequivalent Control Group Design, in which two existing classes served as the experimental and control groups without random assignment of participants (Sugiyono, 2020). Both groups completed a pre-test before the instructional intervention and a post-test after the intervention to measure changes in students' learning achievement.

The research was conducted during the first semester of the 2024/2025 academic year at a private Madrasah Ibtidaiyah located in Ngawi Regency, East Java, Indonesia. Both the experimental and control classes were taught by the same the teacher, using an

equivalent lesson-hour allocation and comparable introductory material prior to the intervention, in order to minimize the influence of teacher-related variability on the results. The target population comprised all fifth-grade students enrolled at the school. Given the relatively small population size, total sampling was employed, allowing every student to participate in the study. Consequently, the sample consisted of 48 students, including 25 students assigned to the experimental group (Class VB) and 23 students assigned to the control group (Class VA).

Students in the experimental group received instruction through interactive learning media developed using Google Sites, delivered over 2 meetings across a week, with each meeting consisting of two lesson hours (2x45 minutes). The platform integrated a variety of instructional resources, including learning materials, images, instructional videos, online exercises, and hyperlinks within a single web-based learning environment that could be accessed through computers, tablets, or smartphones with an internet connection. In contrast, students in the control group participated in conventional classroom instruction, where teaching primarily relied on teacher explanations and printed instructional materials.

Students' learning achievement was measured using an achievement test consisting of multiple-choice and short-answer questions designed to assess cognitive competencies ranging from remembering (C1) to analyzing (C4) according to Bloom's cognitive taxonomy (Mahmudi, 2020). Prior to empirical testing, the item blueprint underwent content-validity review by a Fiqh subject matter expert, who rated each item on a 5-point relevance scale (5=very good, 1=poor) covering aspects of content, construction, and language, and provided written feedback for item revision. Items identified as requiring revision based on the expert's feedback were revised prior to the pilot test. Prior to implementation, the instrument underwent a pilot test involving students outside the research sample. Item validity was evaluated using Pearson's Product-Moment Correlation, resulting in 20 valid items out of the initial 35 test items. Instrument reliability was subsequently assessed using Cronbach's Alpha, yielding a coefficient of 0.863, which indicates a high level of internal consistency and confirms that the instrument was appropriate for data collection (Rampai, 2024). In addition, school documentation was collected to provide supporting information regarding the participants and the research context.

The collected data were analyzed using IBM SPSS Statistics. Initially, descriptive

statistical analysis was performed to summarize students' pre-test and post-test performance, including minimum scores, maximum scores, mean scores, and standard deviations (Abdullah et al., 2022). Prior to hypothesis testing, assumption testing was conducted. Data normality was examined using the Shapiro-Wilk test, as the sample size was fewer than fifty participants. Homogeneity of variance between groups was then evaluated using Levene's Test (Ghozali, 2016).

Because the homogeneity assumption was not satisfied, hypothesis testing was performed using the Mann-Whitney U test, a non-parametric alternative to the independent-samples *t*-test (Susanto et al., 2024). Statistical significance was determined at the 0.05 significance level, with $p < 0.05$ indicating a statistically significant difference between the experimental and control groups (Zahra et al., 2022). Accordingly, a significant result would demonstrate the effectiveness of Google Sites-based interactive learning media in improving students' Fiqh learning achievement.

Results and Discussion

Prior to the instructional intervention, both the experimental and control groups completed a pre-test to determine their initial level of understanding of the Fiqh learning materials. The descriptive analysis indicates that the two groups demonstrated relatively comparable academic performance before receiving different instructional treatments.

Descriptive Analysis of Pretest Data

The control group, consisting of 23 students, obtained scores ranging from 40 to 80, with a mean score of 58,70 and a standard deviation of 12,54. Meanwhile, the experimental group, comprising 25 students, achieved scores between 40 and 90, with a mean score of 58.00 and a standard deviation of 14.43.

The Shapiro-Wilk test was used to analyze the distribution of pretest scores before hypothesis testing. The pretest results were not normally distributed, as the analysis revealed significant values of 0.007 for the control group and 0.021 for the experimental group, both of which were below the 0.05 cutoff. As a result, the Mann-Whitney U test was used instead of an independent-samples *t*-test to assess the equivalency of the two groups' pretest scores. The results of the study showed an Asymp. Sig. (2-tailed) value of 0.656, a Z value of -0.446, a Wilcoxon W value of 591.500, and a Mann-Whitney U value of 266.500. The null hypothesis, which states that there was no statistically significant difference between the pretest scores of the control and

experimental groups, was upheld because this number was greater than the 0.05 significance threshold. This result confirms that both groups possessed statistically equivalent prior knowledge before the intervention, thereby supporting the internal validity of the nonequivalent control group design. The descriptive statistics for the pretest are shown in Table 1.

Table 1 Descriptive Statistics for Pretest Scores

Group	N	Minimum	Maksimum	Mean	Std. Deviation
Control	23	40	80	58,70	12,54
Experimental	25	40	90	58,00	14,43

Descriptive Analysis of Post-Test Data

Following the implementation of the instructional intervention, both groups completed a post-test to evaluate students' learning achievement after the learning process. The descriptive statistics demonstrate a clear improvement in the performance of students who received instruction through Google Sites-based interactive learning media.

The control group obtained scores ranging from 30 to 90, with a mean score of 65.00 and a standard deviation of 15.95. In comparison, the experimental group achieved scores between 55 and 95, producing a substantially higher mean score of 79.00 with a lower standard deviation of 8.90. The Descriptive Statistics for Post-Test are shown in Table 2.

The difference of 14 points between the two groups indicates that students exposed to Google Sites-based learning media demonstrated superior academic achievement. Furthermore, the lower standard deviation observed in the experimental group suggests that students' learning outcomes were more consistent, indicating that the instructional media benefited learners with varying academic abilities.

Table 2 Descriptive Statistics for Post-Test Scores

Group	N	Minimum	Maksimum	Mean	Std. Deviation
Control	23	30	90	65,00	15,95
Experimental	25	55	95	79,00	8,90

Prerequisite Tests for Analysis

Prior to hypothesis testing, the distribution of post-test scores was examined using the Shapiro-Wilk test, which is appropriate for datasets containing fewer than fifty participants.

The analysis produced significance values of 0.099 for the control group and 0.113 for the experimental group. Since both significance values exceeded the threshold of 0.05, the post-test scores were considered normally distributed. The Results of the Shapiro-Wilk Normality are shown in Table 3.

Table 3 Results of the Shapiro-Wilk Normality

Group	Statistic	df	Sig.
Control	0,928	23	0,099
Experimental	0,931	23	0,113

The equality of variances between the two groups was subsequently evaluated using Levene's Test. The analysis generated a significance value of 0.019, which is below the significance criterion of 0.05. The Results of the Homogeneity Test are shown in Table 4.

Table 4 Results of the Homogeneity Test (Levene'S Test, Based On Mean)

Levene Statistic	df1	df2	Sig.
5,874	1	46	0,019

These findings indicate that the assumption of homogeneity of variance was not satisfied. Therefore, the data did not meet all assumptions required for parametric hypothesis testing, making the use of a non-parametric statistical procedure more appropriate.

Hypothesis Testing

To examine the effectiveness of Google Sites-based interactive learning media, the research hypothesis was tested using the Mann-Whitney U test, which compares the post-test achievement of the experimental and control groups.

The statistical analysis yielded a Mann-Whitney U value of 125.000, a Wilcoxon W value of 401.000, a Z value of -3.386, and an Asymp. Sig. (2-tailed) value of 0.001. The Results of the Mann-Whitney U Test are shown in Table 5. To assess the practical magnitude of this difference, the effect size was calculated using $r = Z/\sqrt{N}$, yielding $r = 0.49$. According to Cohen's (1988) benchmark for effect size in the r metric (0.10 = small, 0.30 = medium, 0.50 = large), this value falls just below the conventional threshold for a large effect, indicating a medium-to-large practical effect of the instructional medium on students' Fiqh learning achievement.

Because the obtained probability value was lower than the predetermined

significance level of 0.05, the null hypothesis (H_0) was rejected. Accordingly, the alternative hypothesis (H_1) was accepted, indicating a statistically significant difference in Fiqh learning achievement between students who learned through Google Sites-based interactive learning media and those who received conventional instruction. These findings provide empirical evidence that integrating Google Sites into classroom instruction contributes positively to students' academic achievement in Fiqh.

Table 5 Results of the Mann-Whitney U Test

Statistic	Post-Test Learning Outcomes
Mann-Whitney U	125,000
Wilcoxon W	401,000
Z	-3,386
Asymp. Sig. (2-tailed)	0,001

The results indicate that the use of Google Sites based interactive learning media led to significantly higher Fiqh achievement scores among fifth-grade students compared to conventional teaching methods, with effect size ($r=0.489$) indicating a medium to large practical difference between the two groups.

Discussion

The findings of this study demonstrate that the integration of Google Sites-based interactive learning media significantly improved fifth-grade students' achievement in Fiqh compared with conventional classroom instruction. Students who participated in technology-supported learning achieved considerably higher post-test scores than those who learned through teacher centered methods. This result indicates that web-based interactive media can facilitate a more engaging learning process, enabling students to participate actively and construct a deeper understanding of Fiqh concepts. Consequently, the present findings reinforce the growing recognition that digital technology can serve as an effective instructional resource in Islamic Religious Education, particularly at the primary school level.

One possible explanation for the improved learning achievement lies in the multimedia capabilities provided by Google Sites (Rosiyana, 2021). Unlike conventional instructional media, Google Sites enables teachers to integrate textual explanations, images, instructional videos, hyperlinks, and interactive exercises within a single digital platform. Such multimedia integration accommodates diverse learning preferences and allows students to access instructional materials repeatedly according to their individual

1 learning pace (Widyaningsih et al., 2021). Continuous access to learning resources encourages independent learning while strengthening students' conceptual understanding through repeated exposure to the content. These characteristics are consistent with the cognitive theory of multimedia learning (Mayer, 2024), which posits that combining verbal and visual forms of instructional content processed through separate cognitive channels can improve comprehension and long term knowledge retention more effectively than single channel presentation.

It should be noted, however, that because the experimental and control groups consisted of pre-existing intact classes rather than individuals assigned through random sampling, part of the observed improvement may also be attributable to factors beyond the instructional medium itself. One plausible alternative explanation is a novelty effect, whereby students in the experimental group may have responded positively simply due to their exposure to an unfamiliar and technologically engaging medium, independent of its specific pedagogical content. Although this threat is partly mitigated by the fact that both classes were taught by the same teacher using an equivalent lesson-hour allocation, which reduces the likelihood that the results were driven by differences in teaching style, the possibility of a novelty effect cannot be entirely ruled out given the non-randomized, quasi-experimental design. Future studies employing random assignment or a longer implementation period would help to further isolate the specific contribution of the instructional medium from this potential confound.

44 The effectiveness of Google Sites may also be explained through the perspective of student-centered learning, which is closely related to the theoretical construct of self-directed learning characterized by learner autonomy, initiative, and responsibility for one's own learning process (Morris et al., 2025). Conventional classroom instruction frequently positions students as passive recipients of information, limiting opportunities for active participation during the learning process. In contrast, Google Sites encourages learners to become more independent by allowing them to explore learning resources, complete online activities, and review instructional materials whenever necessary, consistent with findings on the platform's capacity to support collaborative and self-directed learning in Islamic education settings (Febrian & Nasution, 2024). This flexibility promotes greater learner autonomy and increases students' responsibility for their own learning progress. As a result, students are more likely to develop meaningful understanding rather than relying solely on memorization of learning materials.

Another noteworthy finding concerns the consistency of students' academic performance. Although the primary focus of this study was the difference in mean achievement scores, the experimental group demonstrated a substantially lower standard deviation than the control group. This pattern suggests that Google Sites-based learning media benefited students with different academic abilities by providing equal opportunities to access instructional materials and practice learning independently (Hartari & Putra, 2023). Consequently, web-based interactive learning media may contribute not only to improving average learning achievement but also to reducing disparities in students' academic performance within the classroom.

The findings of this research are consistent with previous studies reporting positive educational outcomes associated with the implementation of Google Sites across various academic disciplines. Earlier investigations have shown that Google Sites contributes to higher learning motivation, increased classroom participation, and improved academic achievement (Hasnaa & Sahronih, 2022). Within the specific domain of Islamic education, similarly reported that Google Sites-based learning media proved effective at the elementary school level, reinforcing its suitability for young learners in religious instruction (Aeni et al., 2024). The present study extends these findings by providing empirical evidence specifically within Fiqh instruction at the Madrasah Ibtidaiyah level, employing a nonequivalent control group design and a Fiqh-specific achievement instrument rather than a general cognitive learning measure. Therefore, this research broadens the existing body of knowledge by demonstrating that the pedagogical benefits of Google Sites extend not only to Islamic education in general but to a specific, content-focused area of religious instruction, namely Fiqh, which has received comparatively limited empirical attention.

Nevertheless, the magnitude and pattern of the effect observed in this study may differ from those reported in studies conducted in Science, Social Studies, or Mathematics, such as Hasnaa & Sahronih (2022). Unlike general academic subjects that are primarily oriented toward factual or procedural mastery, Fiqh learning is oriented toward the internalization of religious values and the practice of worship, a cognitive-affective dimension that may respond differently to multimedia-based instruction. Furthermore, methodological differences between the present study and prior research, such as the use of a nonequivalent control group design as opposed to a one-group pretest-posttest design, and the use of a Fiqh specific achievement instrument rather

than a general cognitive outcome measure, may also contribute to differences in the observed effect. This value-laden and practice-oriented character of Fiqh instruction, combined with these design differences, may explain why the effect observed in this study, while consistent in direction with previous findings, should not be assumed to be identical in magnitude or mechanism to effects reported in general-subject research.

From a pedagogical perspective, the effectiveness of Google Sites should not be interpreted as the result of technology alone. Rather, its effectiveness depends on how teachers design meaningful instructional activities and organize learning resources that encourage students' active engagement. Digital technology functions as a supporting instructional tool, whereas teachers remain responsible for facilitating classroom interaction, guiding students' understanding, and connecting theoretical knowledge with authentic religious practices (Putri, 2023). Accordingly, successful technology integration requires an appropriate balance between pedagogical competence and technological proficiency.

The practical implications of this study are particularly relevant for Islamic elementary schools seeking affordable digital learning solutions. Google Sites is a free website-creation service from Google that allows teachers and students to easily create web-based learning media without requiring advanced programming skills (Taaraaungan et al., 2025). Furthermore, the platform enables continuous updating of instructional content and provides students with flexible access to learning materials beyond classroom hours. These advantages make Google Sites an appropriate alternative for supporting face-to-face, blended, and online learning within madrasah education.

Despite its valuable contributions, this study has several limitations that should be acknowledged. First, the research involved a relatively small number of participants from a single Madrasah Ibtidaiyah, which may limit the generalizability of the findings to other educational contexts. Second, the instructional intervention focused exclusively on one Fiqh topic, namely zakat, infaq, and sadaqah; therefore, the findings may not fully represent the effectiveness of Google Sites across other Fiqh topics. Finally, the intervention was conducted over a relatively short period, preventing the investigation of students' long-term knowledge retention and sustained learning outcomes. In addition, as the study employed intact classes rather than random assignment, the findings may be subject to a potential novelty effect, which represents a threat to internal

14 validity inherent to quasi-experimental designs of this kind. Future studies are therefore encouraged to involve larger and more diverse samples, examine a wider range of Islamic Religious Education topics, and evaluate the long-term effectiveness of web-based interactive learning media (Gustari, 2020).

Overall, the present study provides empirical evidence that Google Sites-based interactive learning media can enhance students' achievement in Fiqh while simultaneously creating a more engaging, flexible, and learner-centered instructional environment. The findings highlight the increasing importance of integrating digital technology into Islamic Religious Education and offer practical guidance for teachers seeking effective instructional strategies that support meaningful learning experiences in primary education.

Conclusion

3 This study investigated the effectiveness of Google Sites-based interactive learning media in improving the Fiqh learning achievement of fifth-grade students at a private Madrasah Ibtidaiyah in Ngawi Regency, Indonesia, and found a significant difference in favor of the experimental group, whose mean post-test score was 14 points higher than that of the control group (79.00 versus 65.00), indicating that students taught with Google Sites moved closer to the "good" performance category while those taught conventionally remained closer to the minimum mastery threshold (KKM); this effectiveness can be attributed to Google Sites' capacity to integrate multimedia resources and interactive activities within a single web-based platform, thereby fostering students' understanding, learning independence, active participation, and sustained engagement, and the study further contributes to the limited body of research on web-based interactive learning media in Fiqh instruction by offering empirical evidence that accessible digital technologies can enhance both instructional quality and learning experiences in Islamic Religious Education. However, this study is limited by its involvement of participants from only one Madrasah Ibtidaiyah, its focus on a single Fiqh topic, and the relatively short duration of the instructional intervention; future studies are therefore encouraged to involve larger and more diverse samples, examine additional topics within Islamic Religious Education, and investigate the long-term impact of Google Sites on students' cognitive achievement, learning motivation, and knowledge retention.

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