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Examining Students' Attitudes Towards iPads as Interactive Multimedia Tools and their Impact on Learning Quality in Indonesian Private Secondary School

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ABSTRACT

This study explores students' attitudes toward using iPads as interactive multimedia tools in learning Islamic education (PAI) and examines the impact of this approach on learning quality. With the growing integration of technology in education, understanding the effects of interactive multimedia like iPads on students' learning experiences is critical. A mixed-methods approach was employed, involving both quantitative and qualitative analysis. A sample of 123 students from grades 7 to 9 was selected through stratified random sampling from a school that uses iPads in its learning system. Additionally, ten students were purposively chosen for interviews based on varying levels of iPad engagement. Quantitative data were analyzed using descriptive statistics and regression analysis, while qualitative data were analyzed thematically. The findings indicated that students generally had a positive attitude toward using iPads in PAI learning. In both quantitative and qualitative assessments, students described iPad-based learning as "fun," "interesting," "flexible," and preferred over traditional textbooks. Regression analysis revealed a significant positive effect of students' attitudes on PAI learning quality (Sig = 0.000 < 0.05). Qualitative data further showed that using iPads improved comprehension, learning effectiveness, and outcomes. The positive attitudes toward iPads suggest that interactive multimedia can enhance student engagement and learning in PAI. This study highlights how the use of iPads positively impacts both the learning process and outcomes, supporting more effective Islamic education. This research demonstrates that students' positive attitudes toward iPads significantly improve the quality of PAI learning. The findings underscore the importance of incorporating interactive multimedia tools like iPads in teaching to enhance student learning experiences.

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1. INTRODUCTION

Islamic education (PAI) is a compulsory subject for all students in Indonesia, as mandated by Chapter V, Article 12(1)(a) of Law No. 20/2003 on the National Education System. The primary goal is to cultivate faithful and pious individuals, achieved through formal and informal education supported by parents, teachers, and adequate facilities. Despite these efforts, PAI has not fully succeeded in shaping students' character, particularly in fostering religious moderation (Faruq, 2020). This issue must be countered with various solutions, such as improving teacher capability and innovative learning using information technology and communication-based media, such as the iPad, as interactive multimedia.

The use of media in learning is important and influences students' motivation, attitude, and academic performance (Farisa, Sunggingwati, & Susilo, 2023). Learning media, especially those based on information communication and technology (ICT), facilitates learning and provides wide access to users (Panigrahi, Srivastava, & Sharma, 2018). iPad is one example of ICT-based learning media. Its use in learning is an interesting subject (Alzaidiyeen, 2017), especially in the 5.0 era, where every activity, not only education, uses internet-connected ICT-based media, including iPads, laptops, smartphones, and other devices.

iPad has become an important element in improving learning quality, but its use has been limited among teachers and students because of its cost. Research on the use of iPads in education and their outcomes is still limited (Kucirkova, Messer, Sheehy, & Fernández Panadero, 2014). Past studies have shown that ICT use in learning has not brought about positive attitude among students, with some studies showing their abnormal attitude, especially when it was used in online learning during the COVID-19 pandemic (Muflih et al., 2021). Another study showed that the attitude of students is moderate, and in fact they encounter a high obstacle in online (IT-based) learning (Hussein, Daoud, Alrabaiah, & Badawi, 2020). However, the study was only concerned with the general use of online-based media. As a matter of fact, students at some schools have already been accustomed to the use of certain ICT devices, such as iPads, prior to the pandemic. This particular aspect was overlooked by that study.

The use of iPads in educational settings remains limited, particularly in Indonesia. From the researcher's own observations, no public schools in Riau, Indonesia, have integrated iPads into their learning systems. However, empirical evidence highlights the promising potential of iPads as effective tools for enhancing the learning process and improving student academic performance (Elphick, 2018; Heflin, Shewmaker, & Nguyen, 2017; Kucirkova et al., 2014; Pratama, 2021; Şimşek & Doğru, 2014; Wario, Ireri, & De Wet, 2016). Research indicates that iPads not only foster academic success but also increase student engagement, making students more active participants in the classroom and paving the way for greater educational achievements (Haleem, Javaid, Qadri, & Suman, 2022; Mango, 2015). These benefits suggest that integrating iPads into educational systems, particularly in developing countries, could significantly improve students' learning experiences by leveraging the potential of information and communication technology (ICT).

For developing nations, where access to advanced technology is often limited, adopting ICT-based devices like iPads could be transformative for youth education. To ensure the successful implementation of such technologies, it is crucial to assess users' acceptance, as this influences the effectiveness of any technological intervention (Pratama, 2021). Several models of technology acceptance, such as the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Unified Theory of Acceptance and Use of Technology (UTAUT), identify four key factors in user acceptance: perceived ease of use, perceived usefulness, attitude towards technology, and behavioral intention (Fred & Davis, 1989; Pratama, 2021; Venkatesh & Smith, 2003). These models provide a strong foundation for understanding how students accept or reject new technology in learning environments, offering a framework for evaluating the introduction of iPads in schools.

This study focuses on one critical aspect of technology acceptance: students' attitudes towards using iPads in learning Islamic Religious Education (PAI) and its effect on the quality of learning. According to Venkatesh's theory, attitude towards technology refers to an individual's emotional response when interacting with a device such as an iPad. This study hypothesizes that students' attitudes towards using iPads as interactive multimedia tools in PAI lessons positively influence the overall learning quality. By examining this relationship, the research aims to shed light on how integrating iPads into religious education can enhance student engagement, learning outcomes, and overall educational quality. Understanding students' attitudes toward this technology will provide valuable insights for policymakers and educators looking to implement similar ICT-based solutions in schools.

Previous research has shown that students generally exhibit positive attitudes toward using iPads for language learning, with no significant differences based on age or gender (Alzaidiyeen, 2017). However, that study focused on a different subject, construct, and methodology compared to the present research. This study, guided by the Technology Acceptance Model (TAM), focuses specifically on Islamic Religious Education (PAI) and employs a mixed-methods approach to assess students' attitudes toward using iPads as interactive multimedia tools. The aim is to evaluate how these attitudes influence the quality of learning in PAI. By exploring this relationship, the research seeks to test the hypothesis that students' positive attitudes toward using iPads in PAI learning have a significant impact on the overall learning quality.

2. METHODS

This study employed a convergent parallel mixed-method design, as outlined by Creswell (2018), where both quantitative and qualitative data were collected independently and analyzed separately before being compared and integrated (Almalki, 2016). The strength of this approach lies in its ability to leverage both numerical and contextual data, providing a more comprehensive understanding of the research problem. While quantitative data provided descriptive insights into students' attitudes and the impact on learning quality, qualitative data offered deeper explanations for these findings. After being analyzed independently, the two sets of data were compared and discussed in conjunction to draw meaningful conclusions.

The quantitative data were primarily descriptive, utilizing percentages and means to summarize responses. These data were gathered using a questionnaire that aimed to assess students' attitudes and the quality of their learning experiences when using iPads. The qualitative data, on the other hand, were collected through semi-structured interviews and analyzed using Nvivo 12 Pro. Thematic analysis was employed to generate themes, codes, and excerpts from the interviews, which were used to provide explanatory context for the quantitative results. This integration of methods ensured a richer, more nuanced understanding of how iPads influenced learning in Islamic Religious Education (PAI).

The quantitative data collection was done through a questionnaire hosted on Google Forms, administered in Bahasa Indonesia. The questionnaire utilized a simplified three-point Likert scale, ranging from "agree" (3) to "disagree" (1), to ensure ease of understanding for respondents. The attitude items were adapted from Tago's (2012) technology acceptance model, while the learning quality items were based on Walsh's (2005) framework, both of which are widely recognized in educational research. Prior to deployment, the questionnaire was validated and found to be both reliable and valid. Stratified random sampling was employed to ensure a representative sample, with the research population consisting of 184 students, and a final sample size of 123 students, determined using Krejcie and Morgan's (1970) sample size table (Hasdiana, 2022; Robert V. Krecie, 1970).

Qualitative data were collected through face-to-face focus group discussions (FGDs) with two groups of five students each. These semi-structured interviews lasted 80 minutes per session and followed a structured protocol designed to explore students' feelings and perceptions about using iPads for learning PAI. Some key questions included: "How do you feel when learning PAI using iPads as interactive multimedia?", "Do you enjoy learning PAI with iPads? Why?", and "Do you think using

iPads improves your learning outcomes? Why?". These questions were aimed at understanding the subjective experiences of students and identifying factors that might influence their attitudes toward the use of iPads in the classroom.

To ensure the rigor of the qualitative analysis, a thematic analysis was conducted, with emergent themes and codes reviewed by both an expert in educational technology and an expert in educational sciences. This process added a layer of validation to the interpretation of the data. The integration of these two methods allowed for the comparison of descriptive statistics from the quantitative data with the rich, detailed responses from the qualitative data, leading to a more holistic understanding of the influence of iPads on students' learning experiences. The convergence of findings from both data sets provided deeper insights into how students' attitudes towards using iPads impacted the overall quality of their learning in PAI.

3. FINDINGS AND DISCUSSION

The findings of this research are explained in two categories, namely quantitative findings and qualitative findings.

3.1. Quantitative Findings

Table 1 summarizes the overall attitude of students towards the use of iPad as interactive multimedia. Most students (60.2%) agreed with the items, which means that most students had a positive attitude towards its use. Only a minority disagreed with the items, mostly with item A7 (4.9%) and A4 (0.8%). Around 21–33% of students had neutral attitude, perhaps because they were unsure about the technology that they were using, their lack of experience about using iPad for learning, or indifference about using any device. Nonetheless, the table shows that the students' attitude towards the use of iPad for PAI learning was mostly positive, seeing that 60,2% students agreed with the use of iPad in learning PAI while only 4.9% disagreed. Table 2 presents the mean and standard deviation for each item.

Table 1. The percentage of Item of student attitude towards iPad use

Statements	Agree	Neutral	Disagree
	n%		
Learning PAI using iPad is fun (A1)	65.9%	32.5%	1.6%
Learning PAI using iPad is interesting (A2)	66.7%	30.1%	3.2%
Learning PAI using iPad is effective (A3)	65.0%	31.7%	3.3%
Learning PAI using iPad increases knowledge and insight (A4)	81.3%	17.9%	0.8%
I like to learn PAI using iPad (A5)	63.4%	32.5%	4.1%
Learning PAI using iPad influences my learning achievement (A6)	60.2%	38.2%	1.6%
Learning PAI using iPad makes it easier to understand (A7)	61.0%	34.1%	4.9%
I prefer learning PAI using iPad compared to textbook (A8)	70.7%	27.6%	1.6%

Table 2. Mean and standard deviation of students' attitude towards iPad use

No	Item	SD	Mean
1	Learning PAI using iPad is fun (A1)	.51423	2.6423
2	Learning PAI using iPad is interesting (A2)	.54725	2.6341
3	Learning PAI using iPad is effective (A3)	.55101	2.6179
4	Learning PAI using iPad increases knowledge and insight (A4)	.41801	2.8049
5	I like to learn PAI using iPad (A5)	.57027	2.5935
6	Learning PAI using iPad influences my learning achievement (A6)	.52677	2.5854
7	Learning PAI using iPad makes it easier to understand (A7)	.58878	2.5610
8	I prefer learning PAI using iPad compared to textbook (A8)	.49803	2.6911

Table 2 shows that the item about students' attitudes towards iPad with highest mean was "learning PAI using iPad increases knowledge and insight" (*M* = 2.80). This suggests that the students were aware of the importance of iPads and had benefited from them to improve their knowledge. As the theory suggests, the device allows students to learn independently anyplace and anytime, offline or online (Al-Bogami & Elyas, 2020). Table 2 also shows the influence of iPads on students' learning achievement (M=2.58), as they were able to learn and gain knowledge from the devices. They were able to find online any topic that they were interested in. Table 2 also shows that item A8 ("I prefer learning PAI using iPad compared to textbook") had the second largest mean (*M* = 2.69). This indicates that students prefer learning with iPads compared to textbooks. Textbooks are less environmentally friendly as they are printed on paper. Additionally, textbooks are heavy and cumbersome, and students would carry at least five thick and heavy books to and from school. The third largest mean was for item A1 ("learning PAI using iPad is fun") (*M* = 2.64); item A2 ("learning PAI using iPad is effective") (*M* = 2.61). The lowest ranking item was A7 ("learning PAI using iPad makes it easier to understand") (*M* = 2.56). The results showed the differences in mean scores between the items. The highest score was the attitude of the students that using iPad would increase their knowledge and insight about PAI (*M* = 2,80). This also means that the students liked using iPad and had positive attitude towards its use.

Table 3. Mean and standard deviation of Learning Quality

No	Item	SD	Mean
1	Learning PAI using iPad improves my activeness in learning (Q1)	.578	2.63
2	Learning PAI using iPad improves my interactions in group (Q2)	.627	2.58
3	Learning PAI using iPad increases my learning independence (Q3)	.655	2.55
4	Learning PAI using iPad improves my comprehension of the materials (Q4)	.597	2.60
5	I obtain a better score in PAI when using iPad.	.493	2.74
6	Learning using iPad gives knowledge and skills that are in line with the learning objectives.	.513	2.76

Table 3 shows that the quality of PAI learning using iPad was high, *M* > 2.55. Item 6 ("Learning using iPad gives knowledge and skills that are in line with the learning objectives") was ranked first (*M* = 2.76). This confirms the previous results presented in Tables 1 and 2, which indicate that students felt that learning PAI using iPads improved their knowledge and insight. The lowest score was item 3 ("Learning PAI using iPad increases my learning independence"), *M* = 2.55.

Table 4. The influence of student attitude to Learning Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.557	1.929		4.435	.000
	Attitude	.346	.091	.326	3.797	.000

a. Dependent Variable: Learning Quality

Table 3 shows that the significance of the attitude variable is 0.000, which is smaller than 0.05. Thus it means that students' attitudes toward iPad as interactive multimedia influenced their PAI learning quality.

3.2. Qualitative Findings

Two main themes emerged regarding students' attitude towards using iPad as interactive multimedia in learning PAI. The themes and codes were rated by two experts: an education technology expert and an education sciences expert. They are discussed below.

3.2.1 Students' response

This theme relates to what the students felt when using iPad as interactive multimedia in learning PAI. This theme describes the impression of students and their emotions when using iPad to learn PAI. The emotions described by the students were "fun", "interesting", "like", "comfortable", and "light and portable". Table 5 summarizes the qualitative findings relating to this theme.

Table 5. Theme 1, codes, and sample excerpts (N = 10)

Theme 1	Code	Frequency	Relevant excerpt
The response towards PAI learning	Fun	6	*This device is fun because there are also games. The materials as well as the games are fun, sir.* *Studying with iPad is fun, and that's why we're motivated to learn.* *Studying with this device is good, sir, because it's really simple for me to take notes and decorate them. It's really fun.*
	Interesting	7	*It's more interesting, so we're not bored. It's interesting, not boring, so it's easier for us to understand.* *It's not boring, sir. It's fun to learn with this device because there're lots of features to run, and learning is more interesting and can be repeated.*
	Like	9	*I like this kind of learning, sir, because it's fun to learn with an iPad.* *I like this device, sir, because learning can be recorded, and we can highlight the ebook.* *I prefer studying with iPad, sir, because it's simpler. All teaching materials are in it. We don't have to carry heavy textbooks, and we don't have to put many textbooks in the bagi, so it's not heavy.*
	Comfortable	6	*iPad is comfortable to use, and we can lock and activate the application to play games. Because we're not allowed to play games, we're focused on studying, and the games are locked.* *It's more comfortable for us to learn anytime, anywhere, sir. If we don't understand something, we can ask the group and find it using the search button.* *iPad is comfortable to use, both in class and outside of class, sir. We're more diligent in learning.*
	Flexible, light, and portable	9	*We don't have to carry a heavy bag to school, sir. The bag isn't filled with many books. It's easy and complete, everything's already in it.* *This device is easy, flexible. There is a notes app in the iPad to make notes because it's offline. Usually from home to school, it's offline, there's No. network, but you can*

			still open and read the ebook. The system is still accessible even at home. *This device can be carried in a bag and anywhere. If it's offline, I'll only take the iPad to school. This device can be used online and offline.* *It's easy to use anywhere. There are ebooks and notes in here, so they can open it anytime. If I'm not learning online anymore, like at night, I read using this device.*

3.2.2 Effect of iPad use on learning

The second theme was the effect of using iPad as interactive multimedia in learning PAI. This theme describes how the students felt about how using iPad affected their learning process and outcomes. Several codes emerged under this theme, including "easier to understand", "better academic results", and "effective learning". Table 6 summarizes the codes and excerpts of the theme.

Table 6. Theme 2, codes, and excerpts

Theme 2	Code	Frequency	Excerpt
Effect of iPad use on learning	Easier to understand	8	*I think that iPad is easier, easier to understand, sir.* *It's the same, sir, because I use my own iPad for self-study. It's easier to understand using it.* *Hmm... Yes, because if we're not using iPad, we need explanations from other than teachers. Using iPad we can search on Google, watch videos from other people, and even put them into practice.* *Yes, sir, it's really helpful, useful, easier to read and understand. We can find information more easily to find out more.*
	Academic achievement	7	*My academic performance is good, sir, above average.* *Thank God, sir, it's good. My academic performance is good, sir, above average.* *My academic achievement is well above average, sir.* *It depends, sir. For me, thank God it's above average.*
	Efective	6	*Yes, sir, because this device is more effective and simpler.* *Studying becomes easier to understand and more independent, sir.* *All materials are in the device. So when studying, we just need to open and click the materials that we want to learn.*

This study found that students' attitudes toward the use of interactive multimedia in learning PAI were quantitatively and qualitatively positive. The quantitative findings suggested that the students had a positive attitude towards using iPad as interactive multimedia in PAI learning, M = >2.5. In other

words, most students agreed with the use of iPad in learning PAI. The qualitative findings also showed the positive attitude of students. The qualitative data showed that the students felt that using iPad in learning PAI was "fun", "interesting", "comfortable", and "flexible". These suggest their positive attitude toward its use. These qualitative findings were aligned with and supported the quantitative findings, that the students generally had positive attitudes towards learning PAI using iPads. From the students' statements, it was found that they preferred using interactive multimedia to learn PAI compared to using textbooks. They claimed that textbooks are cumbersome and heavy, especially when going to and returning from school. iPads, on the other hand, are more convenient and lighter, and so their bags are no longer filled with heavy textbooks. Some expressions used by the students, as summarized in Table 5, included "fun", "interesting", "like", "comfortable", and "flexible". Those were their impressions from using iPad, indicating their positive attitude towards its use and their acceptance of the device in learning. Additionally, Quantitatively the students' attitudes toward using iPad as interactive multimedia had a positive significant effect on learning quality of Sig value is 0.000<0.05. The qualitative data also showed that iPad use influenced their understanding, academic performance, and effectiveness.

These findings support past results and the UTAUT model. Positive impressions and emotions are termed in the UTAUT model as hedonic motivation, i.e., pleasure perceived by students when using ICT in learning (Venkatesh & Smith, 2003). Additionally, students who use iPad for learning are more interested and enthusiastic in doing class assignments (Burden, Hopkins, Male, Martin, & Trala, 2012), and are more motivated and interested in class (Amelia & Abidin, 2018). The findings of this study further enrich the model because the characteristics of the research population differ from other UTAUT research. The population of this study was junior secondary students in Indonesia, focusing on the Islamic education subject. Other UTAUT studies have not considered this population or subject. In the Indonesian context, where school facilities and infrastructure vary across rural and urban areas, and where schools are located in remote or underdeveloped areas, it is difficult to implement this approach. However, the findings contradict Muflih et al. (2021), who found students' negative attitudes towards using ICT in online learning. In summary, the perception of the participating students towards iPad use was "interesting", "fun", "like", "comfortable", and "flexible".

The findings support TAM and Mayer's learning multimedia theory (Mayer, 2021; Venkatesh, Morris, Davis, & Davis, 2003). Mayer argued that using interactive multimedia influences students' academic results (Mayer, 2021). The use of interactive multimedia is important in learning PAI because it influences the cognitive response of students, shaping their attitude and perception towards the device used by teachers. The perception and attitude then influence learning effectiveness and success. Therefore, the positive attitude of students towards the use of iPad as interactive multimedia in learning PAI helps to improve students' comprehension and academic performance (i.e., learning effectiveness).

The positive attitude of students towards interactive multimedia use encourages them to learn the materials of PAI and facilitates the interests of students with high learning motivation. Students can use such multimedia to study anytime and anyplace. This is one of the advantages of ICT-based learning devices like iPad. The students' positive attitude also leads to their higher intention to integrate the use of technology in learning. Eventually, the use of iPad contributes to the improvement of students' academic performance.

This study presents several limitations. First, the sample was confined to a single Indonesian school that integrates iPads into its learning system, which may restrict the broader applicability of the findings. Additionally, potential bias could stem from the data collection process or the use of a three-point Likert scale, potentially influencing the generalizability of the results. Despite these limitations, the study offers valuable practical insights for PAI teachers, encouraging the use of ICT-based tools such as iPads, laptops, and similar devices in their instruction. These tools should be complemented by more innovative teaching methods and approaches. Incorporating technology in the classroom is especially relevant in the current era of technological advancements, as it has the potential to enhance both students' attitudes and the overall quality of learning. The sample school is encouraged to continue

utilizing these devices, while other schools may benefit from adopting interactive multimedia like iPads. Furthermore, the government and relevant stakeholders should prioritize enhancing teachers' proficiency in using ICT-based multimedia tools.

4. CONCLUSION

The study concluded that students generally exhibited a positive attitude toward the use of iPads in PAI learning, valuing the devices for their engaging and flexible nature, both quantitatively and qualitatively. The results also demonstrated that students' attitudes had a significant positive impact on the quality of PAI learning, with a statistical significance of Sig=0.000<0.05. Qualitative findings further revealed that most students found iPads to be enjoyable, interesting, and adaptable, while enhancing their comprehension, academic performance, and overall learning effectiveness. Students also expressed a preference for learning PAI with iPads over traditional textbooks. Thus, the continued integration of iPads in PAI learning is recommended. However, implementing iPads in other schools will require thorough planning and sufficient resources. It's important to note that students' learning effectiveness and performance are influenced by both internal and external factors beyond the use of iPads. The use of interactive multimedia through iPads can serve as a viable alternative learning system for PAI and other subjects in both public and private schools. As education trends evolve, adopting current and emerging technologies can further improve learning quality. This positive impact can be strengthened by incorporating more effective pedagogical approaches, such as problem-based and project-based learning, which encourage greater student independence and engagement. Nevertheless, successful implementation of this system necessitates careful planning, consideration of guardians' perspectives, and ensuring the readiness of infrastructure and human resources.

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