The Eastasouth Journal of Learning and Educations
Vol. 2, No. 02, July 2024, pp. 84-96
ISSN: 3025-2504, DOI: 10.58812/esle.v2i02

Application of Educational Technology and Teachers' Competence in Improving Teaching Effectiveness in Islamic Education Curriculum in Madrasah Aliyah in Indonesia

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Article Info

Article history:

Received Jul, 2024
Revised Jul, 2024
Accepted Jul, 2024

Keywords:

Educational Technology
Islamic Religious Education
Madrasah Aliyah
Teacher Competence
Teaching Effectiveness

ABSTRACT

This study investigates the application of educational technology and teacher competence in enhancing teaching effectiveness within the Islamic religious education curriculum at Madrasah Aliyah in Indonesia. Utilizing a quantitative analysis approach, data were collected from a sample of 180 respondents using a Likert scale ranging from 1 to 5. The data were analyzed with Structural Equation Modeling with Partial Least Squares (SEM-PLS 3). The findings reveal that the relationships between educational technology and teaching effectiveness (H1), teacher competence and teaching effectiveness (H2), as well as teaching effectiveness and the Islamic education curriculum (H3), are all positive and significant. These results underscore the critical role of both educational technology and teacher competence in improving teaching effectiveness, which in turn positively impacts the Islamic education curriculum. This study provides valuable insights for policymakers and educators aiming to enhance the quality of Islamic religious education through the strategic application of educational technology and the development of teacher competencies.

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1. INTRODUCTION

In Indonesia, the quality of education, especially within Islamic religious education like Madrasah Aliyah, is a significant focus for improvement [1]–[5]. Efforts to enhance teaching effectiveness in these institutions involve addressing various challenges such as teacher qualifications, curriculum management, and infrastructure development. Studies highlight the importance of aligning educational practices with national standards and policies to elevate the quality of education services in Madrasah Aliyah. Internal factors like staff competence and leadership support, along with external factors such as community engagement and economic conditions, impact the effectiveness of teaching in these institutions. To achieve educational goals and shape students' moral and religious values effectively, a holistic approach integrating curriculum improvements, teacher training, and community involvement is essential in advancing the quality of education in Indonesian Madrasah Aliyah.

Educational technology plays a crucial role in modern education by enabling instructors to utilize new tools and technologies to enhance teaching methodologies, engage students, and improve overall academic performance [6]–[8]. It emphasizes the importance of aligning technology with pedagogical goals, promoting active learning, and addressing diverse student needs [9]. Moreover, educational technology is viewed as both a product and a process, aiming to provide teachers with reliable guidelines for effective teaching and problem-solving, ultimately enhancing the quality of education [10]. While the impact of educational technology on teaching effectiveness in Islamic religious education requires further empirical investigation, the existing research underscores the need for continuous innovation, stakeholder engagement, and professional development to ensure responsible and effective integration of technology in diverse educational contexts [9].

Teacher competence plays a crucial role in enhancing teaching effectiveness by encompassing the skills, knowledge, and attitudes necessary for delivering quality instruction and creating a supportive learning environment [11]–[15]. Competent teachers exhibit proficiency in utilizing educational technology, adapting to diverse teaching situations, and catering to the individual needs of students. Research highlights the importance of pedagogical competency, which encompasses the ability to create optimal learning settings, develop activities tailored to various learning styles, and use educational technology into teaching methods to actively include students in meaningful learning experiences [13]. Research suggests that teacher skills encompass several areas, such as pedagogical, personality, professional, and social competence, significantly impact student learning outcomes, highlighting the pivotal role of teachers in the educational process [14]. Enhancing teacher competence through training programs is essential for educational improvement, ensuring that teachers are well-equipped to meet the evolving demands of the 21st-century education landscape [12], [13], [15].

The evolving educational landscape in Indonesia necessitates immediate attention to the factors that can significantly enhance teaching effectiveness [16], [17]. With the rapid advancement of technology and its potential to transform educational practices, there is an urgent need to integrate educational technology into teaching methodologies. Madrasah Aliyah, being pivotal institutions for imparting Islamic religious education, must keep pace with these advancements to provide high-quality education that meets the contemporary needs of students. Moreover, the competence of teachers remains a critical determinant of educational success. Ensuring that teachers are adequately skilled and equipped to utilize educational technology effectively is essential for fostering a conducive learning environment [18], [19]. Addressing these aspects is crucial for the overall improvement of the Islamic education curriculum, which in turn will have a profound impact on the students' academic and moral development.

Despite the recognized potential of educational technology to enhance learning outcomes, its application in Islamic religious education at Madrasah Aliyah in Indonesia remains limited and underexplored. Furthermore, the competence of teachers, which is a vital component of effective teaching, varies widely, resulting in inconsistent educational experiences for students. There is a significant gap in understanding how educational technology and teacher competence collectively influence teaching effectiveness within the Islamic education curriculum. Without empirical evidence and a clear framework, policymakers and educators struggle to implement strategies that can effectively integrate technology and improve teacher competencies. This study aims to fill this gap by investigating the positive and significant relationships between educational technology, teacher competence, and teaching effectiveness, thereby providing actionable

insights for enhancing the quality of Islamic religious education in Indonesia.

2. LITERATURE REVIEW

2.1 Educational Technology

Educational technology plays a crucial role in enhancing teaching and learning processes by providing diverse and flexible learning opportunities [8]. It offers unique advantages in presenting complex theological concepts in religious education, making them more engaging and accessible [6]. Studies have shown that integrating digital tools in teaching can lead to higher student motivation and improved academic performance, highlighting the positive impact of educational technology on teaching effectiveness [9], [10]. Additionally, educational technology enables differentiated instruction, catering to the diverse needs of students and ultimately improving learning outcomes [10]. By leveraging digital tools and resources, educators can create engaging learning environments that enhance student engagement and overall academic success.

2.2 Teacher Competence

Teacher competence is a multifaceted concept encompassing knowledge, skills, and attitudes crucial for effective teaching [11]. Competent teachers not only design and implement instructional strategies to foster student learning but also possess a deep understanding of religious texts in the context of Islamic education, enabling them to effectively convey meanings to students [20], [21]. Research emphasizes that teacher competence significantly influences teaching effectiveness, with pedagogical knowledge and the ability to engage students being key predictors of student achievement [21]. Moreover, competent teachers are adept at utilizing educational technology to enhance the learning experience, showcasing the importance of digital competencies in modern education settings [14].

2.3 Teaching Effectiveness

Effective teaching is crucial for achieving desired educational outcomes, encompassing not only content delivery but also the ability to inspire and motivate students [22]. Research emphasizes the importance of teacher competence and the integration of educational technology in enhancing teaching effectiveness [23]. Studies have shown that when teachers are skilled and proficient in utilizing educational technology, there is a notable improvement in teaching outcomes [23]. For instance, the use of interactive digital tools, coupled with high teacher competence, has been linked to enhanced student understanding and retention of complex subjects [24]. Therefore, the synergy between teacher competence and the strategic use of educational technology plays a significant role in elevating teaching effectiveness and fostering better student outcomes.

2.4 Islamic Religious Education Curriculum

The primary objective of the Islamic religious education curriculum of Madrasah Aliyah is to provide students with a holistic comprehension of Islamic doctrines, encompassing Quranic studies, Hadith, Fiqh, and Akhlaq, in order to cultivate their intellectual and spiritual development [25]. Integrating educational technology into this curriculum presents both challenges and opportunities. Technology can enhance accessibility and interactivity of religious texts, making learning more engaging for students [26]. However, it is crucial to ensure that the use of technology aligns with the pedagogical goals and values of Islamic education to maintain the integrity of the curriculum [27]. This integration requires a careful balance between leveraging technology's benefits while preserving the core principles and objectives of Islamic religious education [28]. Efforts to incorporate innovation and literacy into the curriculum development can further enhance the educational experience, ensuring that students are

prepared to lead lives grounded in Islamic values [29].

2.5 *Hypotheses Development*

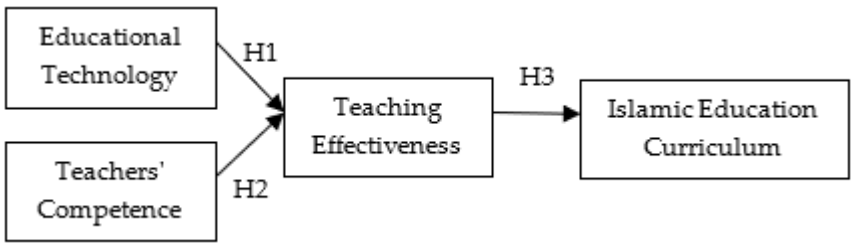

Figure 1. Conceptual Framework and Hypothesis

Based on the literature review, the following hypotheses are proposed for this study:

H1	:	There is a positive and significant relationship between educational technology and teaching effectiveness in Madrasah Aliyah.
H2	:	There is a positive and significant relationship between teacher competence and teaching effectiveness in Madrasah Aliyah.
H3	:	There is a positive and significant relationship between teaching effectiveness and the Islamic education curriculum in Madrasah Aliyah.

2.6 *Gaps in the Literature*

While existing studies have explored various aspects of educational technology, teacher competence, and teaching effectiveness, there is a lack of research specifically focused on the integration of these elements within the context of Islamic religious education in Indonesia. Furthermore, most studies have utilized qualitative approaches, with limited use of quantitative methods such as Structural Equation Modeling (SEM). This study addresses these gaps by employing SEM-PLS to quantitatively analyze the relationships between educational technology, teacher competence, and teaching effectiveness within the Islamic religious education curriculum at Madrasah Aliyah.

3. RESEARCH METHODS

3.1 *Research Design*

The study utilizes a quantitative research design to examine the proposed hypotheses. This approach is appropriate for testing the relationships between variables and providing empirical evidence through statistical analysis. Structural Equation Modeling with Partial Least Squares (SEM-PLS 3) is employed to analyze the data, as it is well-suited for complex models and small to medium sample sizes.

3.2 *Sample and Sampling Strategy*

The target population for this study includes teachers from various Madrasah Aliyah in Indonesia. A total of 180 teachers were selected as the sample using a stratified random sampling technique. This method ensures that the sample is representative of different regions and types of Madrasah Aliyah, thus enhancing the generalizability of the findings.

3.3 *Data Collection Procedures*

The data was gathered by administering a standardized questionnaire to the chosen teachers. The questionnaire was designed to capture information on the key variables of interest: educational technology, teacher competence, and teaching effectiveness. Participants were guaranteed the anonymity of their answers and provided informed consent before taking part.

3.4 Data Analysis

The data were analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS 3), a powerful statistical technique that allows for the simultaneous estimation of multiple relationships between variables, making it suitable for testing complex models. The analysis followed a two-step approach: (1) The Measurement Model Assessment involved assessing the reliability and validity of the measurement instruments. This was done through evaluating convergent validity, which was measured using factor loadings, composite reliability, and average variance extracted. Discriminant validity was also assessed using the Fornell-Larcker criterion; and (2) Structural Model Assessment, which involved testing the hypothesized relationships between the variables by examining path coefficients, t-values, and R^2 values to determine the significance and strength of the relationships, with bootstrapping of 5,000 resamples used to assess the significance of the path coefficients.

4. RESULTS AND DISCUSSION

4.1 Results

a. Demographic Profile of the Sample

The demographic profile of the sample provides insights into the characteristics of the respondents, which is essential for understanding the context of the study. This section presents the demographic data collected from the 180 respondents, including gender, age, educational background, and years of teaching experience. The data is summarized in Table 1.

Table 1. Demographic Profile of the Sample

Demographic Variable	Category	Frequency	%
Gender	Male	110	61.1%
	Female	70	38.9%
Age	20-29 years	45	25.0%
	30-39 years	60	33.3%
	40-49 years	50	27.8%
	50 years and above	25	13.9%
Educational Background	Bachelor's Degree	120	66.7%
	Master's Degree	50	27.8%
	Doctoral Degree	10	5.5%
Years of Teaching Experience	1-5 years	40	22.2%
	6-10 years	55	30.6%
	11-15 years	50	27.8%
	16 years and above	35	19.4%

Source: Results of processing data (2024)

The demographic data indicates a diverse sample of teachers from Madrasah Aliyah, with a majority being male (61.1%). The age distribution shows that the largest age group is 30-39 years (33.3%), followed by 40-49 years (27.8%). Most respondents hold a bachelor's degree (66.7%), while a significant proportion have advanced degrees (33.3% holding a master's or doctoral degree). Regarding teaching experience, the sample is fairly distributed, with the largest group having 6-10 years of experience (30.6%). This diversity in teaching experience and educational background provides a comprehensive understanding of the various perspectives on educational technology and teaching competence within the sample.

b. Measurement Model Assessment

The assessment of the measurement model involves evaluating the reliability and validity of the constructs used in the study, specifically Educational Technology, Teachers' Competence, Teaching Effectiveness, and Islamic Education Curriculum. This section discusses the reliability,

convergent validity, and discriminant validity of these constructs. The outer loadings of the indicators for each construct were examined to ensure they are sufficiently high, indicating good item reliability. Additionally, the Outer VIF values were assessed to check for multicollinearity.

Table 2. Measurement Model Test

Variable	Indicators	Code	Loading Factor	Outer VIF
Educational Technology	Cronbach's Alpha = 0.901, Composite Reliability = 0.931, AVE = 0.772.	ET		
	1. Student Engagement	ET .1	0.868	2.433
	2. Academic Mobility	ET .2	0.910	2.574
	3. EdTech Implementation Success	ET .3	0.888	1.062
	4. EdTech Sector Development	ET .4	0.847	2.353
Teachers' Competence	Cronbach's Alpha = 0.879, Composite Reliability = 0.912, AVE = 0.674.	TC		
	1. Professional Competence	TC .1	0.835	2.261
	2. Pedagogical Competence	TC .2	0.878	2.063
	3. Cognitive-Based Criteria	TC .3	0.851	1.187
	4. Performance-Based Criteria	TC .4	0.805	2.198
	5. Problem-Based Learning (PBL) Competence	TC.5	0.728	
Teaching Effectiveness	Cronbach's Alpha = 0.845, Composite Reliability = 0.890, AVE = 0.619.	TE		
	1. Teacher Skills Measures	TE .1	0.775	2.443
	2. Learner Development	TE .2	0.711	2.164
	3. Learning Differences	TE .3	0.853	2.201
	4. Classroom Management	TE.4	0.802	
	5. Community Engagement	TE.5	0.786	
Islamic Education Curriculum	Cronbach's Alpha = 0.820, Composite Reliability = 0.880, AVE = 0.648.	IEC		
	1. Character Education	IEC .1	0.768	2.707
	2. Character Education	IEC .2	0.828	1.908
	3. Student Learning Interest	IEC .3	0.786	2.607
	4. Curriculum Development	IEC .4	0.828	2.763

Source: Results of processing data (2024)

These values exceed the recommended thresholds (Cronbach's Alpha > 0.70, CR > 0.70, AVE > 0.50), indicating that the constructs are reliable and demonstrate good convergent validity. The outer loadings for all indicators are above the recommended threshold of 0.70, indicating strong item reliability, and the Outer VIF values are below the critical value of 5, suggesting that multicollinearity is not a concern in this model.

c. Internal VIF Values

Internal VIF values are used to assess multicollinearity among the predictor variables in the structural model. Multicollinearity can inflate the variance of the estimated regression coefficients, making the model unstable and difficult to interpret. VIF values below 3000 indicate that multicollinearity is not a concern.

Table 3. Internal VIF

Variable	VIF Values
Educational Technology → Teaching Effectiveness	1.496
Teachers' Competence → Teaching Effectiveness	1.496
Teaching Effectiveness → Islamic Education Curriculum	1.000

Source: Results of processing data (2024)

The VIF values for the paths in the structural model are all below the critical value of 3000, indicating that multicollinearity is not a significant issue in this study. This ensures that the estimates of the path coefficients are reliable.

d. Discriminant Validity

Discriminant validity was assessed using the Fornell-Larcker criterion, which compares the square root of the AVE for each construct with the correlations between constructs. The results, shown in Table 2, indicate that the square root of the AVE for each construct is greater than the correlations with other constructs, confirming good discriminant validity.

Table 4. Fornell-Larcker Criterion

Variable	ET	IEC	TC	TE
Educational Technology	0.879			
Islamic Education Curriculum	0.634	0.805		
Teachers' Competence	0.576	0.715	0.821	
Teaching Effectiveness	0.653	0.783	0.694	0.787

Source: Results of processing data (2024)

The values on the diagonal (highlighted in bold) indicate the square root of the Average Variance Extracted (AVE) for each construct, while the values off the diagonal indicate the correlations between constructs. The square root of the average variance extracted (AVE) for each construct surpasses the correlations with other constructs, suggesting that each construct is separate and encompasses distinctive elements of the model.

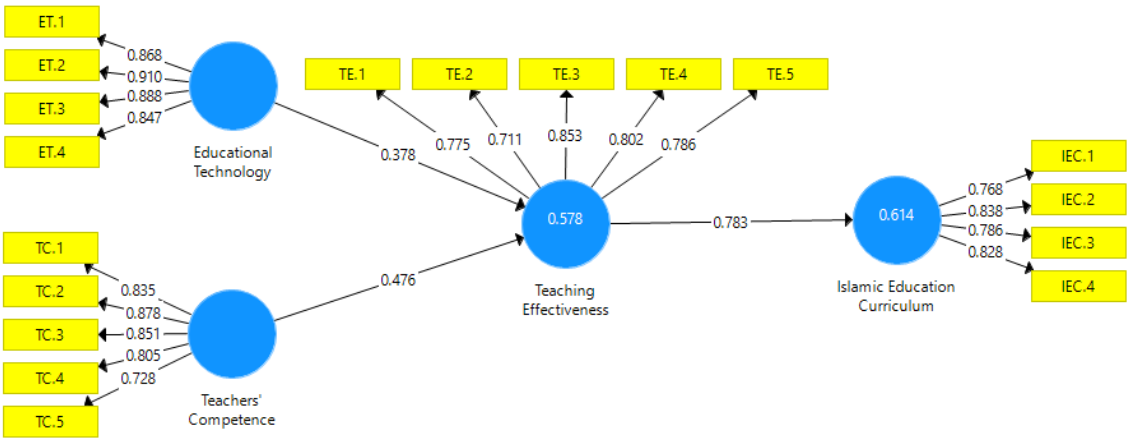

Figure 2. Model Internal Assessment

e. Model Fit Assessment

Model fit assessment is crucial in evaluating how well the proposed model represents the data. Several indices are used to assess the model fit, including the Standardized Root Mean Square Residual (SRMR), d_ULS, d_G, Chi-Square, and the Normed Fit Index (NFI). These indices provide different perspectives on the model's fit to the observed data.

Table 5. Model Fit

	Saturated Model	Estimated Model
SRMR	0.091	0.099
d_ULS	1.408	1.686
d_G	0.453	0.489
Chi-Square	473.099	496.972
NFI	0.801	0.791

Source: Results of processing data (2024)

The Standardized Root Mean Square Residual (SRMR) values for both the Saturated Model (0.091) and the Estimated Model (0.099) are below the acceptable threshold of 0.10 (Hu & Bentler, 1999), indicating an acceptable fit. The d_ULS (Squared Euclidean Distance) values for the Saturated Model (1.408) and the Estimated Model (1.686) suggest that the model reasonably approximates the data, though there is room for improvement. The d_G (Geodesic Distance) values for the Saturated Model (0.453) and the Estimated Model (0.489) also indicate an acceptable fit, with the Saturated Model performing slightly better. The Chi-Square values for the Saturated Model (473.099) and the Estimated Model (496.972) suggest that while the model does not perfectly fit the data, it is reasonably close, though Chi-Square is sensitive to sample size. The Normed Fit Index (NFI) values for the Saturated Model (0.801) and the Estimated Model (0.791) are slightly below the recommended threshold of 0.90 (Bentler & Bonett, 1980), indicating that while the model fit could be improved, it still reflects a moderate fit.

R-Square and Adjusted R-Square R-Square values are utilized to evaluate the degree to which the structural model can explain the observed data. They quantify the amount of variance in the dependent variable that can be accounted for by the independent variables. Greater values indicate that the model have a higher degree of explanatory capability.

Table 6. R Square

Variable	R Square	R Square Adjusted
Islamic Education Curriculum	0.614	0.612
Teaching Effectiveness	0.578	0.573

Source: Results of processing data (2024)

The R-Square value for Teaching Effectiveness is 0.578, indicating that 57.8% of the variance in Teaching Effectiveness can be explained by Educational Technology and Teachers' Competence, with an Adjusted R-Square value of 0.573 accounting for the number of predictors in the model. These values suggest substantial explanatory power, confirming that Educational Technology and Teachers' Competence are significant determinants of Teaching Effectiveness, thus supporting hypotheses H1 and H2. For the Islamic Education Curriculum, the R-Square value is 0.614, meaning 61.4% of the variance can be explained by Teaching Effectiveness, with an Adjusted R-Square value of 0.612, indicating minimal impact from the number of predictors. This high explanatory power supports hypothesis H3, demonstrating that improvements in Teaching Effectiveness significantly contribute to the successful implementation and quality of the Islamic Education Curriculum.

f. Hypothesis Testing

The hypothesis testing results provide insights into the strength and significance of the relationships between the constructs in the structural model. The path coefficients (Original Sample), Sample Means, Standard Deviations, T-Statistics, and P-Values for each hypothesis are presented in Table 5.

Table 7. Bootstrapping Test

Hypothesis	O	M	STDEV	T	P
H1: ET -> TE	0.378	0.372	0.067	5.673	0.000
H2: TC -> TE	0.476	0.484	0.057	8.371	0.000
H3: TE -> IEC	0.783	0.787	0.027	29.137	0.000

Source: Results of processing data (2024)

The path coefficient for the relationship between Educational Technology and Teaching Effectiveness is 0.378, with a T-Statistic of 5.673 and a P-Value of 0.000, indicating a significant positive relationship and supporting Hypothesis 1 (H1). Similarly, the path coefficient for the relationship between Teachers' Competence and Teaching Effectiveness is 0.476, with a T-Statistic of 8.371 and a P-Value of 0.000, confirming a significant positive relationship and supporting Hypothesis 2 (H2). Furthermore, the path coefficient for the relationship between Teaching Effectiveness and the Islamic Education Curriculum is 0.783, with a T-Statistic of 29.137 and a P-Value of 0.000, indicating a significant positive relationship and supporting Hypothesis 3 (H3). The high T-Statistics and low P-Values in all cases confirm that these relationships are statistically significant, underscoring the critical roles of Educational Technology, Teachers' Competence, and Teaching Effectiveness in improving teaching practices and the quality of the Islamic Education Curriculum.

4.2 Discussion

The results of this study provide compelling evidence on the critical role of educational technology and teacher competence in enhancing teaching effectiveness within the Islamic religious education curriculum at Madrasah Aliyah in Indonesia. The significant relationships between these variables, as demonstrated by the path coefficients and the high explanatory power of the model, offer several important insights and implications.

a. Educational Technology and Teaching Effectiveness

The significant positive relationship between educational technology and teaching effectiveness underscores the importance of integrating digital tools and resources in educational settings. With a path coefficient of 0.378 and a highly significant T-Statistic of 5.673, the findings indicate that educational technology plays a crucial role in improving instructional quality and student engagement. Educational technology has been recognized for its transformative potential in enhancing traditional teaching methods and improving learning outcomes. Studies emphasize the importance of integrating technology with pedagogical goals to promote active learning and address student diversity [9]. Research has shown that technology-enabled integrated fusion teaching significantly outperformed traditional teaching methods in terms of academic performance, highlighting the positive impact of technology on student learning [30]. Additionally, the correlation between technology integration and transformative innovation in education has been established, indicating that technology plays a crucial role in driving educational reforms and opportunities [31]. Furthermore, technology-based education has been found to positively impact student learning outcomes, including academic achievement, knowledge retention, and critical thinking skills, underscoring the potential of

technology to enhance educational experiences [32].

For policymakers and educational institutions, this result highlights the need for strategic investments in educational technology. Schools should be equipped with the necessary digital infrastructure, and teachers should be provided with adequate training to effectively utilize these tools. By doing so, the overall teaching effectiveness can be significantly improved, leading to better educational experiences for students.

b. Teacher Competence and Teaching Effectiveness

The relationship between teacher competence and teaching effectiveness is also found to be significant, with a path coefficient of 0.476 and a T-Statistic of 8.371. This suggests that higher levels of teacher competence are strongly associated with greater teaching effectiveness. The literature consistently highlights the significance of teachers' pedagogical knowledge, skills, and attitudes in providing effective instruction [13], [33]–[36]. Teachers' pedagogical competence, including the ability to integrate educational technology, subject-matter expertise, and effective pedagogical practices, plays a crucial role in creating engaging learning environments, promoting academic performance, and meeting the diverse needs of students. Research underscores the necessity for teachers to possess a deep understanding of content and pedagogy, utilize appropriate teaching strategies, and continuously improve their skills through training and support programs. Moreover, the literature emphasizes the need for a comprehensive approach to evaluating teachers' competences, incorporating various assessment methods to capture both technical and pedagogical knowledge effectively.

This result underscores the critical need for continuous professional development and training programs for teachers. Ensuring that teachers are well-prepared and competent in their roles is essential for achieving high teaching effectiveness. Educational institutions should focus on enhancing teacher competence through targeted training programs, workshops, and ongoing support, which will ultimately benefit student learning outcomes.

c. Teaching Effectiveness and Islamic Education Curriculum

The study also finds a significant positive relationship between teaching effectiveness and the Islamic education curriculum, with a path coefficient of 0.783 and a remarkably high T-Statistic of 29.137. Effective teaching practices play a crucial role in the successful implementation and quality of the Islamic education curriculum. Research emphasizes the significance of competent teachers in creating an optimal learning environment and managing classes effectively, ultimately enhancing student learning outcomes [37]. Multicultural Islamic education in public schools aims to improve teacher quality and emphasize understanding and respecting differences, fostering tolerance and mutual acceptance among students [38]. Managing change in Islamic education involves steps like curriculum renewal, professional development, and effective communication, highlighting the importance of adapting teaching practices to meet evolving educational needs [39]. Additionally, the effectiveness of Islamic religious education is linked to creating a conducive learning environment that considers students'

backgrounds and cultures, ensuring the transmission of knowledge aligns with national education standards [40]. PAI teachers' role in implementing the Independent Curriculum is crucial, requiring them to facilitate active and creative student participation to achieve educational goals [41].

The high explanatory power of the model, with an R-Square value of 0.614 for the Islamic Education Curriculum and 0.578 for Teaching Effectiveness, suggests that the variables studied (educational technology and teacher competence) are crucial determinants of teaching effectiveness and curriculum success. These findings provide valuable insights for policymakers and educators, emphasizing the need to focus on improving teaching practices as a means to enhance the overall quality of the Islamic education curriculum.

4.3 Implications for Policy and Practice

The significant findings from this study have important implications for policy and practice in the Indonesian educational system. By recognizing the critical roles of educational technology and teacher competence, stakeholders can take informed actions to improve teaching effectiveness and curriculum implementation. Specifically:

a. Investment in Educational Technology: Schools should be equipped with modern digital tools and resources. Policymakers should allocate funds and support initiatives that promote the integration of technology in classrooms.
b. Professional Development for Teachers: Continuous training and development programs should be implemented to enhance teacher competence. These programs should focus on both pedagogical skills and the effective use of educational technology.
c. Curriculum Improvement: Efforts should be made to ensure that teaching practices align with the goals of the Islamic education curriculum. This includes providing support and resources to teachers to help them deliver the curriculum effectively.

4.4 Future Research Directions

While this study provides valuable insights, future research could explore additional variables that may influence teaching effectiveness and curriculum implementation. Longitudinal studies could examine the long-term impact of educational technology and teacher competence on student outcomes. Additionally, qualitative research could provide a deeper understanding of the experiences and perceptions of teachers and students regarding the use of technology and the effectiveness of teaching practices.

5. CONCLUSION

The results of this study underscore the pivotal role of educational technology and teacher competence in enhancing teaching effectiveness within the Islamic religious education curriculum at Madrasah Aliyah in Indonesia. The significant positive relationships between these variables suggest that strategic investments in educational technology and continuous professional development for teachers are essential for improving instructional quality and student engagement. The high explanatory power of the model demonstrates that educational technology and teacher competence are substantial determinants of teaching effectiveness, which in turn significantly contribute to the successful implementation and quality of the Islamic education curriculum. These findings provide critical insights for policymakers, educators, and stakeholders in the Indonesian educational system. The study emphasizes the need for targeted initiatives to integrate educational technology in classrooms and enhance teacher competence through continuous training programs. By focusing on these areas, educational institutions can significantly

improve teaching effectiveness, leading to better educational experiences and outcomes for students. Future research should explore additional variables and consider longitudinal studies to examine the long-term impact of these factors on student outcomes. Qualitative research could also provide a deeper understanding of the experiences and perceptions of teachers and students regarding the use of technology and the effectiveness of teaching practices.

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