

Faith and Technology in the Classroom: Measuring the Impact of Digital Tools on Islamic Learning Outcomes

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<https://doi.org/10.23917/suhuf.v37i2.11624>

ARTICLE INFO

ARTICLE HISTORY

Received Month 07, 2025

Revised Month 10, 2025

Accepted Month 10, 2025

KEYWORDS

Short film-based learning

Islamic education

Project-based learning

Multimedia pedagogy

Affective domain

ABSTRACT

Background: Islamic Education in Indonesian secondary schools faces persistent challenges in engaging students beyond rote memorization, particularly in the affective and contextual dimensions of religious learning. Project-based learning using multimedia offers a promising yet underexplored pedagogical alternative. **Objective:** This study examines the effect of a short film project-based learning model on students' mastery of Islamic Education material at a vocational high school in Jepara, Central Java. **Methodology:** A quantitative survey was conducted among 80 grade XI students, drawn from a population of 385 using the Slovin formula (10% margin of error). Data were collected via structured questionnaires distributed through Google Forms and analyzed using simple linear regression in SPSS 23, preceded by validity, reliability, normality, heteroscedasticity, and linearity tests. Results: The regression equation $Y = 5.020 + 0.856X$ was statistically significant ($p = 0.000$), with an R Square of 0.508, indicating that the short film project-based learning model explained 50.8% of the variance in material mastery. **Conclusion:** Short film project-based learning significantly enhances students' mastery of Islamic Education content by integrating cognitive, affective, and psychomotor engagement. **Implications:** These findings support the integration of creative multimedia projects into Islamic Education curricula to foster student-centered, experiential learning aligned with 21st-century pedagogical demands.

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1. Introduction

Twenty-first-century education demands that educators cultivate competencies spanning students' cognitive, affective, and contextual dimensions. Skills such as collaboration, entrepreneurship, critical thinking, and creativity have become central to contemporary curricular frameworks [1]. Within this broader shift, Islamic Education (Pendidikan Agama Islam, hereafter PAI) occupies a

distinctive position: it must transmit doctrinal knowledge while simultaneously shaping students' moral character and religious disposition [2]. The affective domain, which governs the formation of attitudes, values, and commendable behavior in school, family, and community settings, is integral to this mission [3].

Conventional approaches to PAI instruction have drawn sustained criticism for their reliance on teacher-centered, text-heavy delivery that privileges memorization over experiential engagement [4], [5]. Such methods frequently fail to stimulate students' creativity and motivation, leaving the affective and psychomotor dimensions of religious learning underaddressed [6]. A growing body of literature has documented the potential of digital technologies to revitalize Islamic Education delivery, yet systematic evidence linking specific technology-mediated pedagogies to measurable learning outcomes remains sparse [7], [8].

Project-based learning (PjBL), which emphasizes real-world problem solving and student-centered inquiry, has emerged as a promising instructional model for bridging this gap [9]. Meta-analytic evidence indicates that PjBL yields a medium-to-large overall effect ($d = 0.71$) on academic achievement compared with conventional instruction, with positive effects extending to learning motivation ($SMD = 0.401$), interest ($SMD = 0.713$), and attitudinal outcomes ($SMD = 0.536$) [10]. Several studies have demonstrated that PjBL increases conceptual understanding [11], strengthens student engagement [12], and promotes collaborative, reflective learning [13]. When PjBL is combined with audiovisual media, the resulting integration activates both verbal and visual cognitive channels simultaneously, consistent with Mayer's Cognitive Theory of Multimedia Learning [14], [15].

Despite this growing evidence base, the application of short films as a project-based modality within PAI remains conspicuously underexplored. While studies have examined digital storytelling [16] and video production in general education [17], comprehensive reviews of video-based learning research confirm that student-produced video projects, as distinct from instructor-produced videos, constitute a minority of the empirical literature [18]. The intersection of student-produced short films and Islamic Education is narrower still, creating both a practical and a scholarly gap that this study addresses.

This study examines how a short film project implemented at State Vocational High School (SMK Negeri) 3 Jepara provides students with opportunities to collaborate, explore information about PAI material, and produce creative works that foster religious understanding and practical skills simultaneously. The contribution of this research is twofold: first, it offers quantitative evidence on the effect of short film PjBL specifically on PAI material mastery, an outcome category underrepresented in the existing PjBL-PAI literature; second, it situates this evidence within an integrated theoretical framework linking constructivism, multimedia learning, self-determination theory, and social cognitive theory.

SMK Negeri 3 Jepara was selected as the research site because it is among the highest-performing vocational schools in the Jepara district, with an institutional mission emphasizing character values and religious education. The school had implemented the short film PjBL model in its PAI curriculum during the 2024/2025 academic year, providing a naturalistic setting for investigating the model's effect on material mastery.

2. Method

This research employed a quantitative survey design, collecting data from a sample of the population through structured questionnaires [19]. The study was designed to objectively measure the effect of a short film project-based learning model (independent variable X) on students' mastery of Islamic Education material (dependent variable Y).

The target population comprised all 385 grade XI students at SMK Negeri 3 Jepara in the 2024/2025 academic year who had participated in PAI instruction using the short film PjBL model. Table 1 presents the distribution of students across classes.

Table 1. Data on Grade XI Students at State Vocational High School 3 Jepara

Class	Number of Students
XI AKL 1	36
XI AKL 2	34
XI AKL 3	36
XI AKL 4	33
XI MP 1	35
XI MP 2	35
XI TKJ 1	36
XI TKJ 2	35
XI BISDIG 1	35
XI BISDIG 2	35
XI PSPT	35
Total	385

To optimize cost and time efficiency, the Slovin formula with a 10% margin of error was applied to determine the minimum sample size. The calculation yielded a minimum of 79.35, rounded up to 80 respondents, who were selected through simple random sampling using Microsoft Excel.

Data were collected through three instruments: questionnaires, documentation, and semi-structured interviews. The primary instrument consisted of 27 closed-ended statements using a five-point Likert scale (strongly agree to strongly disagree), with 14 items measuring the independent variable (short film PjBL model) and 13 items measuring the dependent variable (material mastery). Questionnaires were distributed via Google Forms.

Simple linear regression was employed to determine the extent to which variance in the dependent variable could be explained by the independent variable [19]. Prior to regression analysis, the data were subjected to prerequisite tests: validity (Pearson Product Moment Correlation), reliability (Cronbach's Alpha), normality (Kolmogorov-Smirnov), heteroscedasticity (scatterplot), and linearity. All statistical analyses were conducted using SPSS version 23.

3. Results and Discussion

3.1. Research Results

3.2. Validity Test

The statistical data derived from the questionnaires completed by the 80 respondents were first subjected to validity testing. Tables 2 and 3 present the validity test results for variables X and Y, respectively.

Table 2. Results of the Validity Test for variable X (Short film project-based learning model)

Item	r count	r table 0,05; n = 0.3610	Criteria
1	0,430	0.3610	Valid
2	0,552	0.3610	Valid
3	0,496	0.3610	Valid
4	0,732	0.3610	Valid
5	0,562	0.3610	Valid
6	0,745	0.3610	Valid

7	0,550	0.3610	Valid
8	0,772	0.3610	Valid
9	0,808	0.3610	Valid
10	0,435	0.3610	Valid
11	0,655	0.3610	Valid
12	0,762	0.3610	Valid
13	0,604	0.3610	Valid
14	0,371	0.3610	Valid

Table 3. Results of the validity test for variable Y (mastery of material)

Item	r count	r table 0,05; n = 0.3610	Criteria
1	0,513	0.3610	Valid
2	0,645	0.3610	Valid
3	0,594	0.3610	Valid
4	0,611	0.3610	Valid
5	0,414	0.3610	Valid
6	0,615	0.3610	Valid
7	0,544	0.3610	Valid
8	0,194	0.3610	Invalid
9	0,466	0.3610	Valid
10	0,778	0.3610	Valid
11	0,703	0.3610	Valid
12	0,673	0.3610	Valid
13	0,723	0.3610	Valid
14	0,611	0.3610	Valid

Using Pearson's Product Moment Correlation, all 14 statement items for variable X yielded r-calculated values exceeding the r-table threshold (0.2199 at $n = 80$, $\alpha = 0.05$), confirming their validity. For variable Y, 13 of 14 items were valid; item 8 (r -calculated = 0.117) fell below the threshold and was excluded from subsequent analysis.

3.2.1. Reliability Test

The reliability test assessed instrument consistency using Cronbach's Alpha. An instrument is considered reliable when its Cronbach's Alpha exceeds the r-table value.

Table 4. Reliability Test Results

Variable	Cronbach's Alpha	Criteria
Short film-based learning model	0,869	Reliable
Mastery of material	0,861	Reliable

The Cronbach's Alpha values were 0.869 for variable X and 0.861 for variable Y, both exceeding the r-table threshold of 0.2199. These values indicate high internal consistency, confirming that both instruments are reliable for measuring the intended constructs.

3.2.2. Normality Test

Data normality was tested using the Kolmogorov-Smirnov test, with the criterion that data are normally distributed when the significance value exceeds 0.05.

Table 5. Normality Test Results

One-Sample Kolmogorov-Smirnov Test	One-Sample Kolmogorov-Smirnov Test	One-Sample Kolmogorov-Smirnov Test
N	N	Unstandardized Residual
Normal Parameters ^{a,b}	Mean	80
Normal Parameters ^{a,b}	Std. Deviation	,0000000
Most Extreme Differences	Absolute	4,04210530
Most Extreme Differences	Positive	,096
Most Extreme Differences	Negative	,096
Test Statistic	Test Statistic	-,057
Asymp. Sig. (2-tailed)	Asymp. Sig. (2-tailed)	,096
a. Test distribution is Normal.	a. Test distribution is Normal.	,066c
b. Calculated from data.	b. Calculated from data.	a. Test distribution is Normal.
c. Lilliefors Significance Correction.	c. Lilliefors Significance Correction.	b. Calculated from data.
		c. Lilliefors Significance Correction.

The Kolmogorov-Smirnov test yielded a significance value of 0.066, exceeding the alpha threshold of 0.05. This confirms that the residual distribution is normal, satisfying the normality assumption required for simple linear regression analysis.

3.2.3. Heteroscedasticity Test

The heteroscedasticity test was conducted using a scatterplot of standardized residuals against predicted values. The resulting plot ([Figure 1](#)) shows that data points are randomly dispersed above and below the zero line on the Y-axis, with no discernible systematic pattern. This indicates that the regression model satisfies the homoscedasticity assumption.

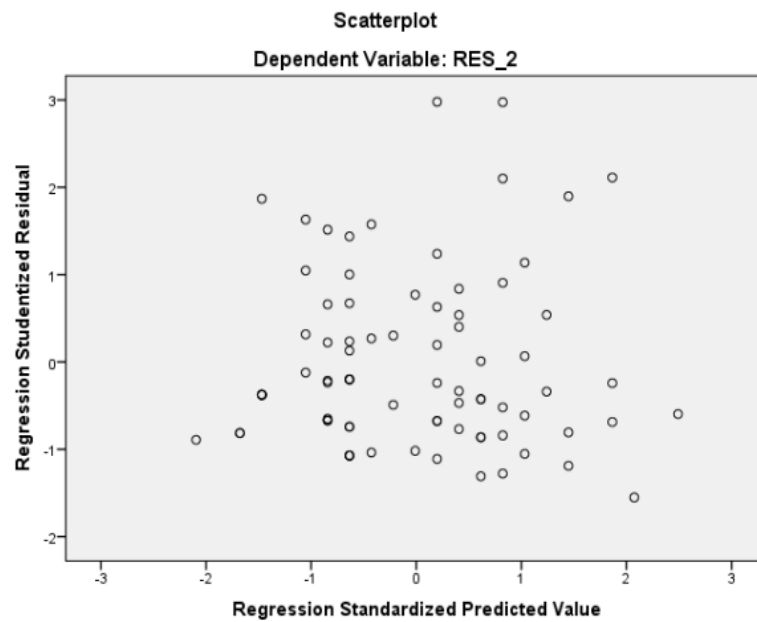


Fig. 1. Heteroscedasticity Test Results

3.2.4. Linearity Test

The linearity test assessed whether the relationship between variables X and Y follows a linear pattern. A significant linear relationship is indicated when the deviation from linearity ratio exceeds the alpha value (0.05).

		Sum of Squares	df	Mean Square	F	Sig.
PENGUASAAN MATERI * PROYEK FILM PENDEK	(Combined)	1520,402	18	84,467	4,673	,000
	Between Groups					
	Linearity	1332,237	1	1332,237	73,705	,000
	Deviation from Linearity	188,165	17	11,069	,612	,869
	Within Groups	1102,585	61	18,075		
Total		2622,988	79			

Fig. 2. Linearity Test Results

The linearity test confirmed a significant linear relationship between the short film PjBL model and material mastery, validating the use of a linear regression model for hypothesis testing.

3.2.5. Simple Linear Regression Test

After all prerequisite assumptions were satisfied, a partial hypothesis test (t-test) was conducted. The hypotheses were formulated as follows:

H0: There is no effect of using a short film project-based learning model (X) on mastery of the material (Y).

Ha: There is an effect of using a short film project-based learning model (X) on mastery of the material (Y).

The decision criterion is as follows: if the significance value is less than 0.05, the null hypothesis is rejected, indicating a significant effect; if it is equal to or greater than 0.05, the null hypothesis is accepted.

Table 6. Simple Linear Regression Test Results

		Coefficients ^a	Coefficients ^a	Coefficients ^a
Model	Model	Unstandardized Coefficients	Unstandardized Coefficients	Standardized Coefficients
Model	Model	B	Std. Error	Beta
1	(Constant)	5,020	4,699	
1	PROYEK FILM PENDEK	,856	,095	,713

The regression output yielded a constant of 5.020 and a regression coefficient of 0.856, producing the following equation:

$$Y = 5.020 + 0.856X$$

The constant of 5.020 indicates that when the short film PjBL variable (X) equals zero, the predicted material mastery score (Y) is 5.020. The regression coefficient of 0.856 indicates that each one-unit increase in the PjBL variable corresponds to a 0.856-unit increase in material mastery. The significance value of 0.000 ($p < 0.05$) confirms that this effect is statistically significant, leading to the rejection of H0.

Table 7. Results of the Level of Influence Between Variables

Model Summary			
Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	,508	,502	4,06793

The coefficient of determination (R Square) of 0.508 indicates that 50.8% of the variance in material mastery is explained by the short film PjBL model. The remaining 49.2% is attributable to factors beyond the scope of this study, such as prior knowledge, family environment, individual learning styles, and teacher instructional quality.

3.3. Discussion

The results of this study, which show a positive and significant effect of using the short film project-based learning model on the mastery of Islamic Education material at State Vocational High School 3 Jepara, can be understood more deeply through the lens of various relevant learning and educational psychology theories. First, when linked to the constructivism theory developed by Jean Piaget and Lev Vygotsky, learning is considered most effective when students are not only passive recipients but also play an active role in constructing knowledge through concrete experiences and social interactions [20], [21]. In the context of the short film project-based learning model, students are directly involved in the creative process, from planning and scriptwriting to film production, which requires them to integrate their understanding of Islamic concepts into visual and narrative works. This aligns with the concept of "learning by doing," which emphasises the importance of practical involvement in internalising material [20]. Vygotsky even added that optimal cognitive development occurs within the Zone of Proximal Development (ZPD), where students can achieve a higher level of understanding with the help of scaffolding from teachers or peers [21]. In this short film project, teachers act as facilitators, providing adequate support to help students overcome the challenges they face during the production process, ensuring their understanding of the material is not only superficial but also truly deep and applicable.

The positive and significant effect of the short film PjBL model on PAI material mastery ($R^2 = 0.508$, $p = 0.000$) can be interpreted through several complementary theoretical lenses. From a constructivist perspective, Piaget and Vygotsky posit that learning is most effective when students actively construct knowledge through concrete experience and social interaction rather than passively receiving transmitted information [20], [21]. In the short film project, students are directly involved in a creative cycle spanning planning, scriptwriting, and film production, requiring them to integrate their understanding of Islamic concepts into visual and narrative outputs. This aligns with the principle of "*learning by doing*," which foregrounds practical involvement as the mechanism for internalizing abstract content [22]. Vygotsky's Zone of Proximal Development (ZPD) is particularly relevant here: teachers function as facilitators who provide calibrated scaffolding during the production process, enabling students to attain higher levels of understanding than they could achieve independently [23].

The short film PjBL model also aligns with 21st-century learning frameworks that emphasize student-centered instruction and the development of critical thinking, creativity, communication, and collaboration [24]. During the filmmaking process, students exercise critical judgment in selecting and synthesizing PAI content, creative skill in designing visual narratives, communicative competence within the production team, and collaborative capacity in completing the project [25]. These observations are consistent with prior findings that PjBL increases overall student engagement and strengthens problem-solving abilities [14], [26]. The motivational dimension can be further explained through Deci and Ryan's Self-Determination Theory (SDT): intrinsic motivation arises when students' psychological needs for competence, autonomy, and relatedness are met [27]. The short film project satisfies all three needs, as students experience competence upon completing project milestones, autonomy in determining creative direction, and relatedness through collaborative group work [28].

From the perspective of instructional media, Mayer's Cognitive Theory of Multimedia Learning provides a strong explanatory framework for the observed effect. Drawing on more than 200 experimental studies, Mayer and colleagues have identified 15 principles governing how learners process words and graphics through dual cognitive channels with limited capacity [15]. Short films function as an integrated multimedia medium combining images, sound, and text, engaging verbal and visual processing channels simultaneously [29]. This dual-channel activation is particularly valuable in PAI, where traditionally text-heavy and abstract material can be contextualized in concrete, emotionally resonant audiovisual form. Recent research on emotional design in multimedia learning confirms that depicting key elements with positive affective features enhances both engagement and retention [30], a mechanism that operates naturally when students produce films dramatizing Islamic values they personally find meaningful.

Bandura's social cognitive theory adds a further explanatory layer: learning occurs through observation and modeling, and student-produced short films serve as modeling tools that allow peers to learn from visual representations of religious values within a broader social context [31], [32], [33]. The experiential learning cycle described by Kolb [34], [35] is also enacted through the short film project, where concrete experience (film production), reflective observation (reviewing footage), abstract conceptualization (synthesizing Islamic concepts), and active experimentation (editing and revision) form an integrated learning sequence.

These findings contribute to a growing body of evidence on digital technology integration in Islamic Education. A recent systematic review of Scopus-indexed publications on digital transformation in Islamic religious education (2010-2025) identified a marked increase in scholarship following the COVID-19 pandemic, with mobile learning, digital learning media, and learning management systems emerging as dominant themes [8]. The present study extends this literature by demonstrating that student-centered, production-oriented digital projects can yield measurable learning gains in PAI, consistent with findings from research on digital learning ecosystems in Islamic Education [7] and meta-analytic evidence that PjBL generates substantial positive effects on both cognitive achievement and affective attitudes [10]. Research on affective-domain learning objectives through PjBL further corroborates that project-based modalities simultaneously develop cognitive, emotional, and behavioral competencies [36].

The effectiveness of this model, however, remains context-bound. The findings are limited to a single vocational high school in Jepara, and the cross-sectional survey design precludes causal inference in the strict experimental sense. The R Square of 0.508, while substantial, indicates that nearly half of the variance in material mastery is determined by factors external to the PjBL model. Replication across schools at different educational levels, in diverse socio-cultural settings, and with experimental or quasi-experimental designs would strengthen the generalizability of these findings.

As a practical implication, teachers can adopt this model as an instructional innovation that integrates technology, creativity, and religious values within PAI. Curriculum developers may consider incorporating creative project-based approaches, including short film production, into PAI curriculum design to align instruction with the pedagogical expectations of a generation raised on visual media. Future research should investigate the moderating roles of teacher digital competence, institutional technological infrastructure, and student motivation profiles in shaping the effectiveness of this model.

4. Conclusion

This study provides quantitative evidence that the short film project-based learning model has a positive and significant effect on students' mastery of Islamic Education material at SMK Negeri 3 Jepara. The regression equation $Y = 5.020 + 0.856X$ ($p = 0.000$) and an R Square of 0.508 indicate that the model explains approximately half of the variance in material mastery. Theoretically, the observed effect is well accounted for by the convergence of constructivist learning principles, multimedia cognition, self-determination theory, and experiential learning theory, each of which is operationalized through the filmmaking process. The remaining unexplained variance underscores the multifactorial nature of learning outcomes in religious education and signals productive directions for future multivariate investigations. These findings add to the emerging evidence base on technology-mediated pedagogies in Islamic Education and support the call for curriculum designers to integrate creative, student-centered digital projects into PAI instruction.

Author Contribution: The first author contributes to the first draft of the article, while the other authors improve the existing content. All authors have read and approved the final paper.

Acknowledgment: Not related.

Conflicts of Interest: The authors declare no conflict of interest.

Declaration of Generative AI: The authors used generative artificial intelligence solely to assist with language refinement, grammar correction, and improving the clarity of the manuscript during the writing process. All research design, data collection, statistical analysis, interpretation of findings, and conclusions were conducted independently by the authors. The authors carefully reviewed, verified, and take full responsibility for the final content of this manuscript.

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