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The Effect of the Use of Pegon Banyumas on the Motivation To Learn Religion for Grade VIII Students of MTs Al-Khairaat Nuangan

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ABSTRACT

This study aims to assess the effectiveness of the use of Pegon Banyumas text in increasing the motivation to learn religion of MTs Al-Khairaat Nuangan students in a non-Pegon context. The method used is a quantitative approach with a quasi-experiment design of *the non-equivalent control group* type involving two classes VIII totaling 60 students. The experimental class learned using the Banyumas Pegon text, while the control class used conventional media. Motivation data was collected through a validated Likert scale questionnaire. The results showed that there was a greater increase in motivation in the experimental class than in the control class. The *independent samples t-test* produced a $p < 0.001$ and a very large *effect size*, indicating that Pegon Banyumas has a significant influence on the motivation to learn religion. These findings suggest that Pegon-based media serves as a cultural stimulus capable of increasing student interest and engagement, although the research still has limitations on the design, location, and duration of the intervention.



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Introduction

Religious learning at the Madrasah Tsanawiyah (MTs) level has a fundamental role in shaping students' religious identity as well as being a means of internalizing Islamic values. Various studies confirm that Islamic educational institutions, both pesantren and formal madrasahs, play a role in strengthening the religious character and understanding of Islamic values of students through structured learning [1], [2], [3]. The Islamic Religious Education (PAI) curriculum at MTs is also directed at strengthening religious moderation, tolerance, and a culture of peace in response to modern social challenges [4], [5]. The integration of pesantren values into the formal curriculum has also been proven to strengthen religious literacy and student character, making it relevant for the context of madrasahs that want to enrich their learning traditions [6], [7].

In the tradition of pesantren, Pegon Arabic is the main medium for understanding the yellow book and classical religious texts, especially through learning methods such as sorogan, wetonan, and bandongan. The use of Pegon makes it easier for students to interpret Arabic texts into Javanese or Malay in the form of transliteration that is easy to follow [8]. Studies on learning the yellow book show that traditional methods such as sorogan can improve the understanding of the text, although it requires time and intensive educators [9]. In addition, innovations in Pegon learning, such as the use of media such as *crossword puzzle* It has also been proven

to improve the ability to read Pegon in students [10]. This reinforces the view that Pegon is an effective instrument of religious literacy and has long contributed to the formation of the ability to read religious texts [11].

In the context of Pegon diversity, Pegon Banyumas is one of the variants of Javanese Pegon that is widely used in local Malay-Javanese texts. This variant is known to be relatively stable in its grapheme system and writing structure so it is easy to teach to beginners. Although specific research on the Banyumas Pegon grapheme is still limited, various studies of Pegon literacy show that the use of the Pegon script in learning the yellow book can improve students' understanding of classical religious texts [8], [10], [11]. Thus, Pegon Banyumas has the potential as a medium for religious learning outside its home area, especially when used as a tool to read basic religious texts.

From the perspective of educational theory, local tradition-based media is believed to be able to increase students' motivation to learn. Contextual education and cultural literacy theory emphasize that learning that is relevant to students' experiences, culture, and social environment will result in higher motivation as well as increase their involvement in the learning process [6], [12]. A number of studies on character education in Islamic boarding schools have also shown that the integration of local cultural values can strengthen students' understanding and learning motivation for religious teachings [4], [5], [7]. With this understanding, the use of Pegon Banyumas in religious learning can be seen as a tradition-based innovation that has the potential to increase literacy as well as student learning motivation.

In the context of MTs Al-Khairaat Nuangan, the use of Pegon is new because this madrasah is located in an area that does not have a Pegon tradition. Therefore, the introduction of Pegon Banyumas is an innovative step to enrich religious learning media. This innovation is in line with various research findings that emphasize the importance of adapting the yellow book learning method to the local context in order to strengthen religious literacy while shaping students' moderate and religious behavior [6], [11], [12]. Thus, the use of Pegon Banyumas at MTs Al-Khairaat Nuangan can be understood as an effort to adopt the Islamic literacy tradition of the archipelago in order to strengthen the motivation and religious understanding of students.

In general, the literature that specifically assesses the effectiveness of Pegon Banyumas in religious learning in MTs students, especially in areas that do not have Pegon traditions, is still very limited. The existing study discusses more general use of Arabic Pegon in Islamic boarding schools or madrasahs, without explicitly distinguishing certain variants of Pegon such as Pegon Banyumas or new geographical contexts such as Gorontalo and its surroundings [13], [14]. Therefore, the claim that Pegon Banyumas is effective as a medium of religious learning in MTs, especially in areas that are not the base of Javanese culture, is still not supported by adequate empirical evidence [14], [15].

In addition, the impact of the use of Pegon on religious learning motivation has not been studied directly. Most research on Pegon focuses more on improving Pegon and yellow book reading, writing, or literacy skills, rather than on the motivational aspects of students in religious learning [13], [16]. On the other hand, the literature on cultural literacy and pesantren culture shows that learning motivation is influenced by the literacy climate, school culture, and values that are lived in educational institutions, not just by one type of learning media [14], [17], [18], [19]. Thus, the direct relationship between the use of Pegon, especially Pegon Banyumas and increased motivation to study religion, is still an area that has not been firmly mapped.

Another limitation can be seen in the lack of study on MTs students' responses to Pegon media when Pegon is not part of their local culture. Research on the integration of Pegon in a curriculum based on local wisdom, for example in Gorontalo, shows that local cultural and linguistic factors have an effect on the acceptance and effectiveness of Pegon teaching [15]. However, most of these studies are still conceptual or general descriptive, and do not provide a detailed picture of how students from non-Pegon cultures respond to the Pegon learning experience, both in terms of comfort, interest, and perception of its usefulness [14], [20], [21]. This creates a blank space in the understanding of the psychological and cultural dynamics of MTs students when they are introduced to Pegon Banyumas outside their home environment.

Furthermore, there is no empirical data available that explicitly compares learning motivation between classes taught with Pegon Banyumas and classes taught without Pegon. Although studies related to learning motivation in MTs and Islamic boarding schools have highlighted the role of madrasah leadership, organizational culture, curriculum, and learning media on student motivation (RAHMAH et al., 2025; São Paulo, 2025; Ali & Halim, 2023; Siahaan et al., 2024), there is no comparative quantitative research design that specifically places Pegon Banyumas as a treatment variable measured on religious learning motivation [13], [16], [17], [18], [22]. As a result, the specific contribution of Pegon Banyumas to the increase or decrease in learning motivation can only be assumed theoretically, it cannot be inferred statistically through a comparison of two class groups [20].

Finally, the ease or difficulty of the Pegon Banyumas grapheme structure for MTs students outside Java is also still unclear. Studies on the learning of the Pegon basic script show that the Pegon grapheme has a certain complexity that requires specific teaching methods, variations of techniques, and supporting media in order for beginners to master it well [23], [24]. Android-based media development and educational games such as *Pegon-Glyph Game* is one of the strategies to reduce these barriers, but the research still focuses on the context of Javanese culture or the environment that is familiar with Pegon [15], [20]. Without data that directly tests how students at MTs Al-Khairaat Nuangan respond to and master the Pegon Banyumas grapheme, the claim that the grapheme structure is easy to study outside Java is still hypothetical and requires further empirical verification [20], [24].

Filling the research gap on Pegon Banyumas in the context of MTs is very important because there is no empirical evidence showing how the Pegon script works as a medium of religious learning in schools that do not have Pegon traditions. The absence of concrete data makes schools, teachers, and curriculum developers have no scientific basis to assess the feasibility of Pegon Banyumas as a religious learning innovation. By conducting research focused on the context of MTs Al-Khairaat Nuangan, this methodological gap and geographical context can be answered directly, thus allowing for an initial mapping of the influence of Pegon Banyumas outside its home region.

In addition, this research is important because it can help schools understand whether the introduction of Pegon Banyumas is able to increase students' interest, involvement, and religious motivation in religious learning. Learning motivation is strongly influenced by cultural relevance and the proximity of the learning experience to students' identities, but there has been no research that has tested whether Javanese tradition-based media such as Pegon Banyumas will be positively received by students in other areas such as Gorontalo. With a quantitative approach and comparison between Pegon and non-Pegon classes, this study can provide scientific evidence of changes in student motivation and engagement, which has not been studied in a structured manner so far.

The results of the research also have strategic value as a foundation for religious teachers and local curriculum developers to build a more contextual learning model based on the archipelago's traditions. If Pegon Banyumas proves to be effective and positively accepted, then this learning model can be adapted and developed to strengthen religious literacy by utilizing the traditional heritage of the archipelago in a more creative way. On the other hand, if certain obstacles are found, the results of the research are still useful as a basis for method improvement, material development, or teacher training. Thus, filling this gap not only serves to enrich the scientific literature, but also supports religious learning innovations that are relevant, applicative, and sensitive to the cultural context of MTs.

This research offers a new contribution by incorporating Pegon Banyumas, a variant of Pegon that is firmly rooted in the Javanese literacy tradition, into the context of formal education in MTs that are outside the cultural area. No previous research has directly tested the effectiveness of Pegon Banyumas in religious learning in Gorontalo, so this study presents a transcultural approach in religious literacy. This novelty places Pegon Banyumas not only as a language medium, but as a pedagogical strategy that is tested in a completely new learning environment that does not yet have an established Pegon tradition.

The contribution of this research also lies in its focus on *the motivation for religious learning*, not just the ability to read or understand texts as previous Pegon studies. By quantitatively measuring motivational aspects using validated instruments, this study expands the scope of Pegon studies from the realm of literacy to the realm of psychopedagogy. This approach allows the identification of the impact of Pegon Banyumas on students' intrinsic drive, religious interest, and active involvement in religious learning a dimension that has been underpaid in Pegon's literacy studies.

In addition, this research makes a practical contribution to the development of an archipelago-based curriculum in MTs, especially in areas that are seeking religious learning innovations. The results of this study have the potential to be a model for madrasahs that want to introduce classical literacy traditions in an adaptive and contextual manner. The novelty of the research is not only in the testing of the Pegon Banyumas grapheme system, but also in how the system can be integrated into the religious learning process effectively and accepted by students who do not have a Pegon cultural background. Thus, this research provides an empirical basis for efforts to revitalize the Pegon tradition in modern Islamic education.

This research also makes an important theoretical contribution through the development of new perspectives on the use of Pegon Banyumas as a modern learning medium outside its cultural home area. So far, the study of Pegon has focused more on linguistic and historical aspects, while its pedagogical dimension, especially in

the context of formal religious learning, is still rarely discussed in depth [15], [25]. By placing Pegon Banyumas in the framework of religious literacy theory and learning based on local wisdom, this study expands the understanding of how traditional alphabets can function as a tool to form religious literacy for MTs students in non-Javanese regions.

In addition, this study strengthens the literature on the relationship between the archipelago's tradition-based media and religious learning motivation, something that has received less attention in empirical research [19], [26]. The theoretical approach offered combines the study of the Pegon grapheme with a contemporary pedagogical perspective, thus resulting in a more comprehensive understanding of how the Pegon script can be a bridge of religious literacy and contextual learning media for students in areas that do not have the Pegon tradition. Thus, this study fills the study gap that tends to dominate Pegon literature from a philological and linguistic point of view, without exploring its potential in supporting formal religious learning [23], [27].

Practically, this study provides direct benefits to students by identifying the extent to which the use of Pegon Banyumas can increase their religious interest, engagement, and motivation in religious learning. Previous studies have shown that local tradition-based media can influence student motivation, but specific findings related to Pegon Banyumas in MTs are still not available [16], [19]. Therefore, this study fills this gap through an empirical approach that assesses students' learning experiences when interacting with the traditional Pegon script but new to them.

The findings of this study can also explain whether the use of Pegon helps to make it easier to understand religious material for students who have never known this script before. Previous studies on Pegon literacy have shown that the proper use of media can improve the ability to read and understand religious texts [10], [21]. By testing the Pegon Banyumas media in a non-Pegon MTs environment, this study provides a real picture of how students respond to new literacy media that enriches their learning experience.

The results of this study have important significance for Islamic religious education teachers or Arabic teachers in developing creative and culturally based learning strategies of the archipelago. So far, some teachers in non-Pegon areas have not had references or empirical data on the effectiveness of Pegon media in religious learning, so this research can be a practical reference to expand more varied learning methods [15], [20]. The findings of the research can help teachers assess the extent to which the Pegon Banyumas text is effectively used in the classroom as a medium to support religious understanding and motivation.

In addition, this study provides guidelines on how Pegon Banyumas can be adapted by considering the cultural background of students, so that learning is more contextual and easy to accept. Empirical findings can also be used to design teacher training or the preparation of more relevant and effective Pegon teaching materials, especially in schools that do not have a Pegon tradition [27], [28].

In the institutional context, this research contributes to the development of curriculum and educational policies at MTs Al-Khairaat Nuangan. By providing empirical data on the effectiveness of Pegon Banyumas in increasing religious learning motivation, this study can be the basis for schools to consider the integration of Pegon into local content curricula or religious learning innovation programs [14], [29]. Strengthening the archipelago's literacy culture through Pegon can enrich the school's identity and provide added value in the educational process.

Furthermore, this research can help other schools in non-Pegon areas to adopt the Pegon learning model more systematically. The implementation model formulated from this study can be replicated in schools with similar cultural contexts, thus contributing to the development of more inclusive religious learning based on local wisdom [15], [20].

Socially and culturally, this research has an important contribution to the preservation of the Pegon script as the literacy heritage of the archipelago. By introducing Pegon Banyumas to students outside their traditional areas, this study shows that traditional scripts can be adapted across cultures and remain relevant for modern generations [15], [25]. This supports efforts to preserve local culture through formal education and expand the living space of the Pegon script in the contemporary literacy ecosystem.

This research also enriched the religious identity of the students by introducing them to the Islamic literacy traditions of the archipelago, while broadening their perspective on the diversity of Islamic culture in Indonesia [26], [30], [31]. In addition, the results of the study can increase cultural awareness in school and community settings, showing that traditional scripts can continue to live through relevant and sustainable learning innovations [27], [28].

The research entitled *"The Influence of the Use of Pegon Banyumas on the Motivation of Religious Learning of MTs Al-Khairaat Nuangan Students"* is generally directed to obtain an empirical understanding of how the introduction

of the Banyumas Pegon script can affect students' motivation in learning religious subjects. The focus of the study is not only on the aspect of reading ability, but especially on the psychological aspect of learning, such as interest, attention, and the level of student involvement in learning activities. In this context, Pegon Banyumas is treated as a form of intervention that is tested in a planned manner at MTs Al-Khairaat Nuangan to see the extent to which traditional literacy media of the archipelago can be integrated into religious learning in areas that do not have Pegon traditions.

In more depth, this study is intended to assess whether there is an increase in motivation to learn religion in students who get learning using the Pegon Banyumas text when compared to students who study without using Pegon. The research design allows for a direct comparison between the two groups so that an idea can be obtained so that an idea can be obtained whether the use of Pegon has a real influence on the religious motivation of students. This research also seeks to reveal how students respond to the use of Pegon Banyumas, including the extent to which they feel that the script is useful, easy to understand, or appropriate for their cultural background.

In addition, this study aims to assess the extent to which Pegon Banyumas is suitable for being applied as a medium of religious learning in madrasahs that do not have a Pegon tradition background. The empirical findings obtained are expected to provide an overview for teachers, schools, and curriculum developers regarding the potential use of Pegon Banyumas in enriching learning strategies based on local wisdom. Thus, the results of this research can be a foothold in developing a religious learning approach that is more culturally relevant, more creative, and can support efforts to strengthen Pegon literacy in the formal education environment.

Method

This study uses a quantitative approach with a quasi-experiment design of the non-equivalent control group type, namely a pretest–posttest model with a control group whose determination is not through interclass randomization. Through this design, changes in motivation to learn religion before and after the intervention could be monitored, as well as compared between the group that received learning with Pegon Banyumas and the group that participated in learning without Pegon. This kind of design is commonly used in educational research that utilizes existing classrooms in schools, as it still allows testing the effects of treatment in natural learning situations in the classroom.

The research was carried out at MTs Al-Khairaat Nuangan which is located in an area with a non-Pegon background. The research population is all grade VIII students consisting of two study groups, namely classes VIII A and VIII B, each totaling 30 students, so that the total population is 60 students. The entire population was also used as a research sample through the total sampling technique. Class VIII B was designated as an experimental group that obtained religious learning with the integration of Pegon Banyumas texts as the main medium of material presentation, while class VIII A functioned as a control group that underwent religious learning with conventional methods and media without involving Pegon. This arrangement is in line with the focus of the research, which is to test the application of Pegon Banyumas in madrasahs that do not have Pegon traditions, so that changes in motivation and student responses can be observed in different cultural contexts from Pegon's home area. The main media used is in the form of the Pegon Banyumas manuscript of the book of Fathul Qorib Mujib as shown in the following picture:

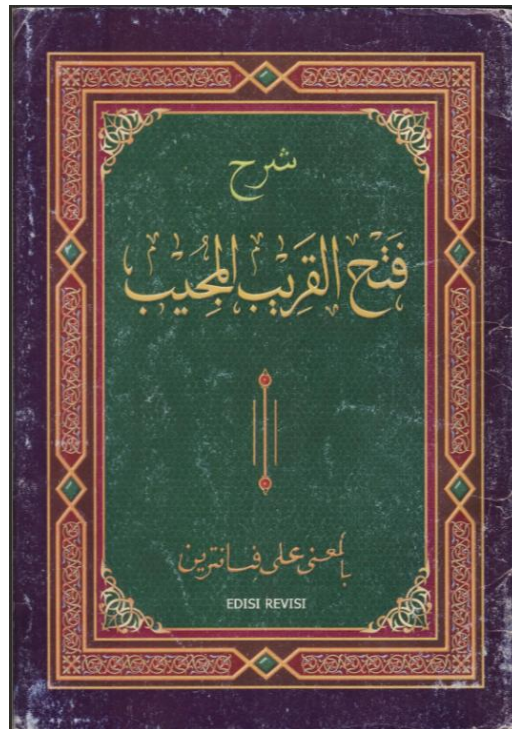


Figure 1. The cover of the manuscript of Pegon Banyumas of the book Fathul Qorib Mujib which is used as a learning medium.

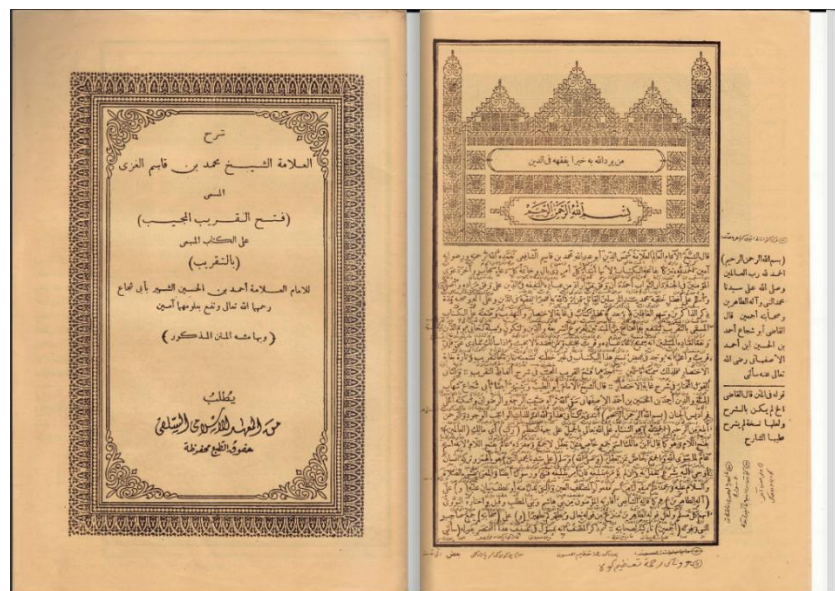


Figure 2. Example of the content page of the Pegon Banyumas text of the book of Fathul Qorib Mujib used in learning.

In this study, the free variable was the use of Pegon Banyumas in the religious learning process (learning with Pegon Banyumas text compared to learning without Pegon), while the bound variable was the motivation of religious learning for grade VIII students of MTs Al-Khairaat Nuangan. Motivation for religious learning is described into several dimensions, including students' interest, attention, involvement, and religious motivation in attending lessons, which are reflected through questionnaire scores. Each student obtained a motivation score at two measurement points, namely before the intervention (pretest) and after the intervention (posttest), so that the changes that occurred could be linked to the learning treatment given.

The main instrument used was a religious learning motivation questionnaire with a Likert scale that contained several response categories to describe the level of students' acceptance of statements related to religious motivation and participation in learning. The preparation of the questionnaire is based on the study of

learning motivation theory and literature on religious learning, then consulted with competent experts in the field of religious education and research methodology to assess the suitability of the items with the measured construct. Afterwards, the instrument was tested on a small group outside the study sample to obtain preliminary data used in the calculation of internal reliability (e.g. Cronbach's alpha coefficient), so that only the items that met the valid and reliable criteria were used in the primary data collection.

The data collection stage follows the pretest–treatment–posttest flow. In the initial stage, all students in the experimental class and the control class (a total of 60 students) filled out a religious learning motivation questionnaire as a pretest to photograph the basic conditions of motivation before treatment. The next stage is the implementation of interventions for approximately one month with a total of four religious learning meetings in experimental classes that integrate Pegon Banyumas in the presentation of materials, reading texts, and learning activities. At the same time, the control class followed religious learning in a pattern that teachers usually use without the use of Pegon texts. After the series of four meetings was completed, the two groups again filled out the same questionnaire as a posttest to see changes in motivation to learn religion after treatment.

The collected data is analyzed with the help of SPSS software. The first step includes an assumption test, i.e. a normality test (e.g. Shapiro–Wilk) of a motivation score and a variance homogeneity test (e.g. Levene) to ensure the feasibility of using a parametric test. If these prerequisites are met, the comparison of learning motivation between the experimental class and the control class is carried out using independent samples t-test on the posttest score, while still paying attention to the pretest score information as an illustration of the initial condition of the two groups. In addition to statistical significance, effect size such as Cohen's d is also calculated to assess the strength of the impact of the use of Pegon Banyumas on the motivation to learn religion practically. If a considerable difference in the initial score between the two groups is found, further analysis such as ANCOVA can be considered to control for the difference in pretest scores and obtain a more accurate estimate of the treatment effect in a quasi-experimental design in the madrasah environment.

Results and Discussions

1. Descriptive Research Data

Descriptive analysis was carried out to obtain an initial picture of the distribution of religious learning motivation scores in the control class and the experimental class before and after the implementation of Pegon Banyumas. The data was calculated using statistical baseline measures in the form of minimum, maximum, mean, standard deviation, and range scores for each group.

Table 1. **Descriptive Statistics of Control and Experimental Groups**

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Kontrol	30	9	55	64	59.30	2.654
Pos-Test Kontrol	30	9	58	67	62.03	2.671
Pre-Test Eksperimen	30	6	57	63	59.90	1.900
Pos-Test Eksperimen	30	9	74	83	78.37	2.456
Valid N (listwise)	30					

Table 1. In the control class that did not receive the intervention of Pegon Banyumas, the pretest score showed a minimum score of 55 and a maximum of 64, with a range of 9 points. The average pretest of 59.30 with a standard deviation of 2,654 indicates that students' learning motivation in the early stages is in the medium and relatively homogeneous category. After the learning took place without the use of Pegon Banyumas, the posttest score of the control class experienced a small increase, namely with a minimum score of 58 and a maximum of 67 and an average of 62.03. Almost the same standard deviation (2,671) showed that the variation in scores between students remained stable compared to the initial condition. The average increase in this control class can be understood as a result of normal regular learning without any special intervention.

In contrast to the control class, the experimental class that received treatment in the form of the use of Banyumas Pegon text showed a stronger distribution pattern. In the pretest stage, the learning motivation score has a minimum score of 57 and a maximum of 63, with an average of 59.90 and a standard deviation of 1,900.

The variation in scores in the early stages was relatively small, indicating a motivational condition comparable to that of the control class before treatment. After the intervention of Pegon Banyumas was given through four meetings in one month, the posttest scores of the experimental class showed a very significant improvement. The minimum posttest score reached 74 and the maximum was 83, with an average of 78.37 and a standard deviation of 2,456. The very large average increase shows that there is a strong positive change in students' learning motivation due to the use of Pegon Banyumas as a medium of religious learning.

In general, these descriptive results show a difference in the pattern of improvement between the two classes. The control class experienced a small increase in the average rate, while the experimental class showed a striking spike after the implementation of Pegon Banyumas. These initial findings are an important indication that Pegon Banyumas has the potential to have a substantive influence on the motivation of religious learning of students at MTs Al-Khairaat Nuangan. In addition, the stability of standard deviation in both groups suggests that increased motivation in the experimental class is not only experienced by a small percentage of students, but occurs relatively evenly within the group.

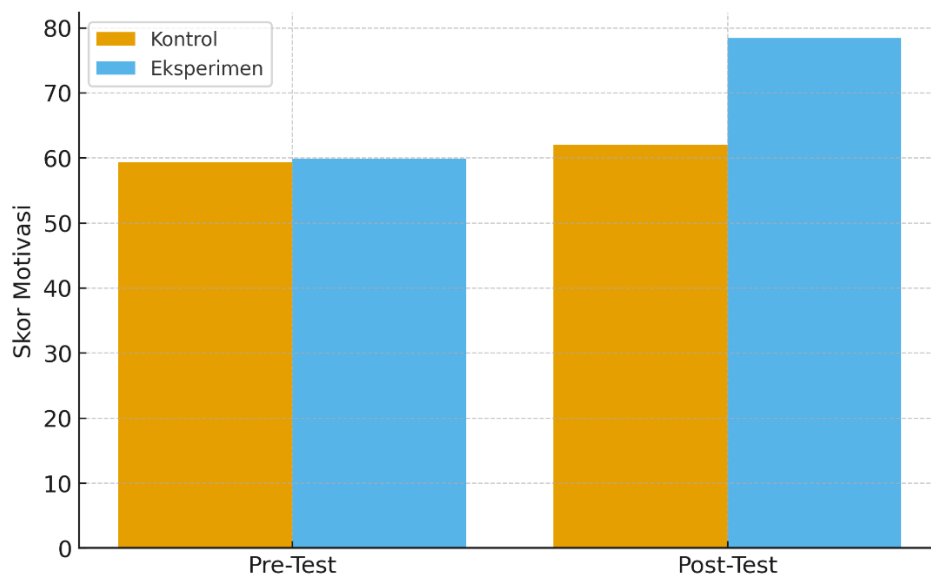


Figure 1. Comparison of Control Class and Experimental Class Motivation Scores

The diagram shows the difference in the pattern of changes in learning motivation between the control class and the experimental class at the pretest and posttest stages. It can be seen that the control class only experienced a relatively small increase in the mean, from 59.30 to 62.03. In contrast, the experimental class showed a huge jump in the mean, from 59.90 to 78.37. This visualization confirms that the use of Pegon Banyumas has a much stronger motivation increase impact than conventional learning, even before inferential tests such as independent samples t-test are carried out.

2. Normality Test

The normality test is carried out to determine whether the data of the pretest and posttest results in the control and experimental classes are normally distributed so that they meet the prerequisites for the use of parametric statistical tests, such as independent samples t-tests. The tests were carried out using the Kolmogorov-Smirnov and Shapiro-Wilk methods. In studies with small to medium sample counts ($N < 50$), the main indicator recommended is Shapiro-Wilk because it has a higher level of sensitivity in detecting normal distributions.

Table 2. Normality Test Results with Shapiro-Wilk

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pretest A (Kontrol)	.088	30	.200 [*]	.962	30	.343
	Posttest A (Kontrol)	.117	30	.200 [*]	.950	30	.172
	Pretest B (Eksperimen)	.119	30	.200 [*]	.938	30	.081
	Posttest B (Eksperimen)	.114	30	.200 [*]	.967	30	.465

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the normality test showed that all data groups had a significance value (Sig.) Shapiro–Wilk greater than 0.05. In the control class, the pretest data showed a value of Sig. = 0.343 and the posttest showed a value of Sig. = 0.172. Both values exceeded the significance limit of 0.05, so statistically the pretest and posttest data in the control class could be declared to be normally distributed. Thus, there was no indication of significant distribution deviations in the group that did not receive the Banyumas Pegon treatment.

In the experimental class, similar results were also found. The pretest Sig. value is 0.081 and the posttest Sig. value is 0.465. Both values were also above 0.05, indicating that the data at both stages of the experimental class measurement were normally distributed. These findings are important because they show that the distribution of motivation scores both before and after the use of Pegon Banyumas is in the right conditions for parametric testing.

Overall, the normality test results of the four data groups—the pretest and posttest of the control class, and the pretest and posttest of the experimental class—showed that the data in this study met the assumption of normality. With these prerequisites met, further analysis can use a parametric test, i.e. an independent sample t-test, to test the difference in religious learning motivation between the control and experimental groups.

3. Variance Homogeneity Test

The variance homogeneity test was performed to ensure that the variation (variety) of the data in the control class and the experimental class was in an equivalent condition (homogeneous). This test is important before conducting an independent sample t-test, because one of the prerequisites for the parametric test is the similarity of variance between groups. In this study, homogeneity was tested using Levene's Test, which measures the equality of variance based on several approaches, namely Based on Mean, Based on Median, Median and adjusted df, and Based on Trimmed Mean.

Table 3. Results of the Homoginitis Test

		Levene Statistic	df1	df2	Sig.
Hasil	Based on Mean	.269	1	58	.606
	Based on Median	.310	1	58	.580
	Based on Median and with adjusted df	.310	1	57.974	.580
	Based on trimmed mean	.254	1	58	.616

Based on the test results shown in the table, the significance value (Sig.) on Levene's Test for all approaches shows a number greater than 0.05. In the Based on Mean analysis, the value of Sig. = 0.606 was obtained, while the Based on Median approach showed Sig. = 0.580. The Median and adjusted df approach yields the same value of Sig. = 0.580, and Based on Trimmed Mean shows Sig. = 0.616. These four values are consistently above the significance limit of 0.05.

Thus, it can be concluded that there was no significant difference in variance between the control class and the experimental class in both the pretest and posttest scores. This shows that the data variance from both groups is homogeneous. The fulfillment of this homogeneity assumption allows the use of parametric t-tests (independent samples t-test) in the analysis of posttest score differences between the two groups.

This homogeneity result also strengthens the validity of the subsequent inferential analysis, as it shows that the change in religious learning motivation score that appears in the t-statistical test is not due to differences in variance between groups, but due to the learning treatment given.

4. Uji T (Independent Samples T-Test)

The Independent Samples T-Test was used to find out whether there was a significant difference between the posttest scores of the control class and the experimental class after the application of Pegon Banyumas learning media. This analysis was carried out because the data in both groups had met the assumptions of normality and homogeneity of variance, so the use of parametric tests could be justified.

Table 4. Independent Samples Test Results

		t-test for Equality of Means						95% Confidence Interval of the Difference	
		t	df	Significance		Mean Difference	Std. Error Difference	Lower	Upper
Nilai	Equal variances assumed	-24.651	58	<.001	<.001	-16.333	.663	-17.660	-15.007
	Equal variances not assumed	-24.651	57.596	<.001	<.001	-16.333	.663	-17.660	-15.007

The results of the t-test showed that the average score of the students in the experimental class was consistently higher than in the control class. This can be seen from the considerable difference in mean, namely 78.37 in the experimental class and 62.03 in the control class. This difference was statistically tested through the t-test for equality of means, which yielded a value of $t = -24.651$ at a degree of freedom (df) of 58, with a significance level of $p < 0.001$. A p-value well below the significance limit of 0.05 indicates that the mean difference between the two groups is statistically significant.

In the equal variances assumed and equal variances not assumed sections, both the t-value and significance showed the same result, so it can be affirmed that the results are stable and unchanged even though the assumption of variance equivalence is tested through two approaches. The mean difference of -16.333 with a standard error difference of 0.663 also strengthens the conclusion regarding the large difference in learning outcomes between the two groups. The 95% confidence interval shows a range between -17.660 to -15.007 , which means the entire range is at negative values, thus confirming that the experimental class consistently has a higher posttest value than the control class.

Thus, based on the results of this t-test, it can be concluded that the use of Pegon Banyumas in religious learning has a significant impact on increasing students' learning motivation. These very significant differences show that the Banyumas Pegon-based learning intervention is not only effective, but also has a strong influence on improving posttest outcomes compared to conventional learning approaches without Pegon.

In general, the results of descriptive and inferential analysis showed that the motivation of religious learning of students in classes that received Pegon-based learning in Banyumas experienced a much greater increase compared to classes that did not use Pegon. The average motivation posttest score in the experimental group was consistently higher than that of the control group, and the results of the independent samples t-test showed a statistically significant difference with a $p < 0.001$ and a very strong effect size. This condition indicates that the use of Pegon Banyumas texts does not only present a variety of media, but actually contributes to strengthening students' motivational aspects, such as interest in lessons, intensity of attention, and involvement in religious learning activities. Thus, it can be affirmed that Pegon-based interventions are effective in increasing motivation to learn religion when compared to conventional learning patterns without the use of Pegon.

The tendency to increase motivation more sharply in experimental classes is in line with the motivational theory framework that focuses on learning design, especially the ARCS model which highlights the role of the attention, relevance, confidence, and satisfaction components in the development of learning media. The distinctive visual and symbolic character of the Banyumas Pegon script and full of nuances of the archipelago's Islamic culture serves as a spark of students' attention and curiosity, as well as forming a learning experience that is considered more meaningful and relevant than the use of ordinary texts [20], [32], [33], [34], [35]. In the perspective of Self-Determination Theory, the learning experience with Pegon Banyumas also provides space to meet basic psychological needs such as competence and connectedness through gradual reading exercises, dialogical exploration of the meaning of the text, and introduction to local Islamic literacy traditions [36], [37], [38]. This synergy between media design and cultural context explains why the motivation spike in the experimental group appeared to be much stronger than in the control group.

On the other hand, the findings of this study make an important contribution in filling the empirical study gap regarding the application of Pegon Banyumas in non-Pegon MTs environment. Previous studies on Pegon have focused on the context of Islamic boarding schools or educational institutions that have historically developed the tradition of Pegon literacy and the study of the yellow book, while systematic empirical evidence on the implementation of Pegon Banyumas in formal madrassas outside its cultural area is still relatively limited [36], [37], [38]. The results of this study show that Pegon Banyumas can still be adapted in a pedagogical framework in different cultural contexts and is even able to significantly increase the motivation to learn religion. Thus, this study not only expands the horizon of Pegon-based learning practices to non-Javanese regions, but also provides an empirical foundation for the integration of Nusantara Islamic literacy in the non-Pegon MTs curriculum as a strategy that has a positive and measurable impact on students' learning motivation.

The results of this study are directly related to the research gaps identified in the What is Unknown section, namely the lack of empirical evidence regarding the application of Pegon Banyumas in non-Pegon MTs environments. So far, research on Pegon has been dominated by the context of pesantren as an institution that has historically maintained the archipelago's Islamic literacy tradition, so there is no certainty whether this media can function effectively in areas that do not have a Pegon cultural base, such as Gorontalo [39], [40]. The findings of this study close the gap by showing that Pegon-based learning in Banyumas is able to significantly increase motivation to learn religion, thus demonstrating its pedagogical feasibility outside the region of origin.

The findings also answer doubts about the ability of non-Pegon students to understand and operate the Pegon script. Differences in grapheme shapes, phonetic systems, and cultural distance were originally estimated to be inhibiting factors in the learning process. However, the increase in motivation scores in the experimental class proved that students could adapt well and even show a stronger positive response than the control class. This is in line with research that confirms that culture-based media is able to increase students' attention, relevance, and emotional involvement in the learning process [39], [40].

These findings also strengthen the argument that the archipelago's traditional media can function effectively in a transcultural context. The implementation of Pegon Banyumas in Gorontalo reflects the shift of cultural media from the Javanese-Islamic literacy space to an area that historically does not have a tradition of using Pegon. Evidence regarding the successful use of Pegon among non-Javanese students (Aziz et al., 2022) and its use in the transmission of knowledge in various Islamic boarding schools in the archipelago (Sulistiani et al., 2023) shows that Pegon has cross-cultural flexibility. In fact, its integration in technology-based learning shows that this traditional media is able to adapt to modern pedagogical approaches (Nasution et al., 2024), thus providing a conceptual basis for its successful implementation in Gorontalo [39], [40], [41].

Theoretically, these findings reinforce the view in the ARCS model and Self-Determination Theory that culturally relevant learning media are able to increase motivation through the mechanisms of attention, relevance, competence, and connectedness. The use of Pegon Banyumas provides a meaningful learning experience because it presents the identity of Islamic literacy in the archipelago in a form that can be reached by students, even if they are in a non-Pegon environment. Practically, this success indicates that Pegon Banyumas can be integrated into the madrasah curriculum as a medium for strengthening religious literacy and a means of preserving the Islamic culture of the archipelago [39], [40].

Thus, this research not only fills the empirical gap regarding the implementation of Pegon Banyumas in non-Pegon areas, but also opens up a new discourse on the potential of Nusantara traditional media to be widely applied in the context of Indonesian education. The results of the research provide a strong foundation that Pegon Banyumas can function as an effective and transcultural learning medium, as well as enrich cultural-based pedagogical approaches in MTs and other Islamic educational institutions.

The findings of a much higher increase in motivation in classes that learned using Pegon Banyumas are in line with the theoretical framework of learning motivation, especially the ARCS model, Self-Determination Theory (SDT), and the concept of learning engagement. In the ARCS perspective, the significant differences between the experimental and control classes showed that the Pegon media-based intervention was able to activate the four main components of motivation, namely attention, relevance, confidence, and learning satisfaction, which in various studies have been reported to be an important foundation for increased motivation and learning effectiveness when the media is designed in an engaging and contextual manner [32], [33], [34], [42]. At the same time, the pattern of stable motivation increase in the experimental class is also consistent with SDT which emphasizes the importance of meeting the needs of autonomy, competence, and connectedness as the basis for the growth of sustainable intrinsic motivation [43], [44].

Within the framework of ARCS, the elements of novelty and uniqueness of Pegon Banyumas play a strong role in the aspects of attention and relevance. For non-Pegon MTs students, the Pegon script appears as a "foreign but Islamic" text, thus sparking curiosity while providing a visual experience that is different from standard Latin and Arabic characters. This is in line with the finding that unusual interactive or cultural-local media can capture students' initial focus and prevent boredom with previously routine material [32], [34], [35], [45], [46]. In the relevance dimension, Pegon Banyumas ties religious subject matter with the archipelago's Islamic literacy tradition and the history of Islamic boarding schools, so that the material is not only present as an abstract concept, but as part of a meaningful Islamic cultural heritage. Studies on cultural-based media have shown that when students feel the connection between the subject matter and their cultural identity, motivation and emotional engagement tend to increase [35], [44], [45], [47].

The increase in confidence and satisfaction in students in the experimental class can be explained through the Pegon learning design which emphasizes gradual progress. Students are invited to get to know the letters, read the syllables, then understand the meaning of the text and discuss it in the context of religious material. This process is in line with the confidence component in ARCS, where the experience of constant small successes reinforces a sense of accomplishment, and ultimately gives birth to learning satisfaction when students realize

that they can conquer texts that initially seem difficult [43], [44]. These findings are in line with research on the development of Pegon teaching materials and Pegon training for new students which shows that gradual practice in reading and writing Pegon has a positive impact on confidence and learning participation [36], [37], [38].

When viewed from Self-Determination Theory, learning using Pegon Banyumas meets three basic psychological needs of students. First, the need for autonomy is facilitated through reading, copying, and interpreting Pegon texts independently or in groups, which provides space for exploration and choice in the learning process [44]. Second, competency needs are met through the experience of mastering new skills of reading the Pegon script and understanding the meaning of religious texts which are getting stronger as learning progresses. Third, the need for connectedness arises when students feel that they are part of the wider Islamic literacy tradition of the archipelago, even though they are in a non-Pegon area, thus creating a sense of closeness with teachers, peers, and the scientific community who use Pegon [35], [43], [45]. The fulfillment of these three needs explains why motivation in experimental classes not only increases quantitatively, but also tends to be of more intrinsic quality.

These findings are also consistent with learning engagement theory, where learning engagement is understood as a combination of cognitive, affective, and behavioral dimensions. Pegon Banyumas media encourages cognitive involvement through decoding and text comprehension activities, affective involvement through pride and belonging to the archipelago's Islamic literacy tradition, and behavioral involvement through active participation in reading, copying, and discussing texts [32], [34], [47]. Various studies on interactive media, augmented reality, and culture-based educational games show that when media is designed with elements of novelty, cultural meaning, and exploratory activities, student engagement levels increase significantly and contribute to increased motivation and learning outcomes [33], [44]. In this context, Pegon Banyumas functions as a medium that combines motivational, cognitive, and cultural dimensions in one complete learning design.

This linkage is even stronger when research findings are placed in the framework of cultural literacy and contextual learning (CTL). Pegon Banyumas is not just a graphic code, but a representation of the archipelago's Islamic literacy heritage that brings historical narratives, identities, and religious values into the classroom. The integration of Pegon in religious learning in non-Pegon MTs makes the material more contextual, because students are invited to interact with texts that live in the Islamic scientific tradition in Indonesia, not just abstract texts without cultural roots [35], [45], [46]. The CTL principle that emphasizes the interconnectedness between the subject matter and the real-life context and the cultural environment of the students is clearly reflected in this learning design, where students in Gorontalo are introduced to the Javanese Nusantara literacy tradition as part of the national Islamic landscape that also belongs to them [41], [44]. Thus, Pegon Banyumas serves as a link between motivation theory, cultural literacy, and contextual learning that together explain the strong impact of interventions on students' motivation to learn religion.

This study applies a quasi-experiment design of the non-equivalent control group type, where class division is not carried out through a randomization process, but utilizes classes that already exist in the madrasah. This approach is realistic in the context of schools, but it carries methodological consequences in the form of possible disruptions to internal validity, especially related to selection bias and confounding factors between groups. Differences in students' initial characteristics, dynamics of interaction in the classroom, and teachers' teaching styles have the potential to contribute to differences in final scores, although pretest measurements have been used to control for the initial condition of the two groups. The literature on educational research methodologies confirms that quasi-experimental designs like this demand caution in attracting strong causal claims when compared to full-scale experimental designs [48], [49]. Therefore, the interpretation of the effectiveness of Pegon Banyumas on learning motivation needs to be read with an awareness of the limitations of this design.

In terms of contextual coverage, this research was only carried out in one madrasah, namely MTs Al-Khairaat Nuangan, so the findings obtained are still very contextual. A significant increase in learning motivation in the experimental classroom showed the success of the intervention in the environment, but it could not be claimed to be representative of all non-Pegon MTs in various regions with diverse socio-cultural backgrounds and school climates. Differences in school culture, institutional policies, and student profiles in other madrasahs are very likely to moderate the impact of the use of Pegon Banyumas. This is in line with the findings of quasi-experimental studies of education that position single-site-based research as findings with limited generalization power and require replication across multiple institutions before being expanded to more general conclusions [49], [50], [51]. Thus, the results of this study are more appropriately positioned as a starting point for further studies in more varied settings.

Another limitation arises from the aspect of the relatively short duration of the intervention, which is only four learning meetings. This time span is sufficient to capture the short-term effects of Pegon Banyumas on religious learning motivation, but it is not yet possible to assess the sustainability of these impacts in the medium or long term. It is uncertain whether the measurable increase in motivation at the time of the posttest will persist after a few months, or develop into more stable Pegon literacy habits and study persistence. Various studies of educational experiments that use learning media have also shown that short-term interventions often do not

reflect the dynamics of motivation and learning behavior over a longer period of time, so longitudinal studies or follow-up studies are recommended to capture the stability of intervention effects [48], [49], [51].

Substantially, this study focuses on learning motivation as the main variable, while other dimensions such as cognitive learning outcomes (e.g., mastery of Pegon reading or understanding of the content of religious materials) and broader affective aspects (e.g., attitudes towards the archipelago's Islamic literacy tradition or strengthening religious identity) have not been the focus of measurement. In fact, a number of studies on culture-based learning media show that this kind of intervention often has a simultaneous impact on the cognitive and affective domains, not only on the motivational aspects [50], [51], [52]. Thus, although the increased motivation found in this study makes an important contribution, the picture of the benefits of Pegon Banyumas on the overall development of students still needs to be complemented by measurements on the dimensions of learning outcomes and attitudes in future research.

Departing from these various limitations, further research is recommended to pursue a randomized design when the situation allows, expand the study location to several madrasahs in different regions, extend the duration of treatment, and add more comprehensive indicators of cognitive and affective achievement. These efforts are in line with recommendations in the literature regarding strengthening the internal and external validity of quasi-experimental research, as well as the importance of examining the effects of culture-based media from various aspects of motivation, academic achievement, and attitude formation [49], [50], [51], [52]. Thus, the effectiveness of Pegon Banyumas-based learning can be tested and understood more completely.

Conclusions

This study proves that the use of Pegon Banyumas as a learning medium has a significant impact on increasing students' motivation to learn religion at MTs Al-Khairaat Nuangan. The results of the descriptive analysis showed a greater spike in motivation in the experimental class compared to the control class. This finding was strengthened by the results of the independent samples t-test which showed a very significant difference ($p < 0.001$) with a high effect size. This indicates that Pegon Banyumas is not only an alternative visual media, but also able to function as a motivational spark that increases students' attention, curiosity, and active participation in religious learning.

In terms of theory, the results of this research are in line with the concept of ARCS, Self-Determination Theory, and the theory of learning engagement which emphasizes that elements of novelty, cultural closeness, and relevant learning experiences can develop intrinsic and extrinsic motivation of students. The use of Pegon Banyumas texts provides visual and cultural stimuli that support the fulfillment of students' basic psychological needs, such as the need for attention, competence, and a sense of connection. This condition creates a more meaningful and contextual learning process, so that religious materials can be accepted more easily and felt to be more relevant to the Islamic cultural identity of the archipelago.

From a pedagogical and cultural perspective, this research makes an important contribution to efforts to integrate the archipelago's literacy heritage in madrasah learning, especially in areas that do not have a tradition of using Pegon. The successful implementation of Pegon Banyumas in Gorontalo shows that traditional literacy media can be applied cross-culturally as long as it is combined with the right learning strategies. These findings directly answer the lack of previous research regarding the lack of empirical evidence on the use of Pegon in formal educational institutions outside Java, as well as showing that learning media based on local culture has great potential to improve the quality of religious learning.

Nevertheless, this study has some important limitations. Quasi-experiment design without class randomization opens up the possibility of selection bias. In addition, research conducted only in one madrasah limits the level of generalization of findings. The relatively short duration of treatment (four meetings) was also not enough to assess the sustainability of the motivational effect in the long term. The focus of the research that only assesses learning motivation does not include other cognitive and affective aspects, so further research is needed that is able to provide a more complete picture of the influence of Pegon Banyumas.

Overall, this study concludes that Pegon Banyumas is an effective and potential learning medium in increasing students' motivation to learn religion, especially in madrasahs with non-Pegon cultural backgrounds. The integration of media based on the archipelago's Islamic tradition can be used as an innovation in the development of a more contextual curriculum and learning strategy. The research findings are the initial foothold for the development of local culture-based learning programs and encourage further research to optimize the use of Pegon in formal education.

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