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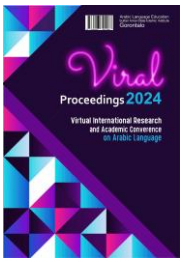

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The Effectiveness of the Use of OIC Jawi Manuscripts, Prang Sabi Hikayat and Palembang War Poems in Sumatra Pegon Instruction: An Experimental Study on Improving the Reading Ability of Religious Texts of MTs Al Huda Gorontalo Students

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ABSTRACT

This study examines the effectiveness of Pegon Sumatra orthography in improving students' ability to read religious texts at MTs Al Huda Gorontalo. The research arises from the difficulty experienced by MTs students in decoding Arabic based texts that do not align with local phonological patterns. Guided by the Orthographic Depth Hypothesis, Simple View of Reading, and Dual Route Model, the study focuses on the role of Pegon Sumatra in strengthening decoding accuracy, reading fluency, and comprehension. The research uses a quasi experimental pretest posttest design involving two balanced groups of seventh grade students with a total of forty six participants. The experimental group received structured instruction through direct phonics, guided reading, and repeated reading using Pegon Sumatra, while the control group received regular instruction without Pegon. Data analysis was conducted using Shapiro Wilk, Levene, independent samples t test, and N Gain. The results show a significant improvement in the experimental group with a posttest mean score of 78 compared to 66 in the control group and an N Gain value of 0.41 in the moderate high category. Statistical tests confirm a strong effect of Pegon based instruction on reading performance with p less than 0.001. The study concludes that Pegon Sumatra is an effective instructional orthography for enhancing decoding, fluency, and comprehension in Islamic literacy education.

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Introduction

The ability to read religious texts at the MTs level requires more than just mastery of vocabulary and sentence structure.[1], [2] The compatibility of the orthographic system with local phonology plays a role in determining the smoothness of decoding, clarity of sound mapping, and stability of word representation for novice readers. The Pegon Arabic writing tradition in Sumatra shows a creative adaptation of classical Arabic letters through the addition of grapheme that reflects the phonological needs of the Acehnese, Malay, Jawi, and Minangkabau peoples. This system produces letter shapes such as ڬ، ڮ، ڤand ڠ that reflect the sounds p, c, g,

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and ŋ that are not found in classical Arabic [3], [4] The creation of the graphem shows an effort rooted in the need for communication, the transmission of religious knowledge, and the continuity of local intellectual traditions [5], [6]

Pegon in Sumatra functions as a literacy tool that is present in traditional educational environments such as pesantren and surau. This system is also a symbol of the archipelago's Islamic identity which lives through the practice of reading books that combine religious teachings with the mother tongue of the learning community [7], [8], [9] Philological research shows the existence of tafsir texts, fiqh, Sufism, and judicial documents written in the Pegon script so as to show the great role of the orthographic system in the formation of local religious discourse. The content of the manuscript illustrates the close relationship between language structure, social norms, and scientific authority so that Pegon cannot be separated from the literacy ecosystem of the Sumatran people.[10]

In learning practice, Pegon facilitates the process of accessing meaning through the ngabsahi method that provides a word-by-word explanation. This approach results in a stronger relationship between graphemic representation and phonological forms thus increasing the affordability of Arabic sentence structure for novice readers. This mechanism has a positive influence on the understanding of religious texts that have a dense structure and often use technical vocabulary [11], [12], [13]. Pegon literacy programs carried out in schools, Islamic boarding schools, and educational communities show an increase in interest in learning, strengthening motivation, and an increase in reading and writing skills in the Pegon script [14], [15], [16], [17], [18]. However, the available research is still dominant in the qualitative aspect, so it is necessary to support quantitative data that tests its impact on the reading performance of madrasah students.

The Orthographic Depth Hypothesis framework asserts that the degree of regularity of grapheme and phoneme relationships determines the decoding load on novice readers. Transparent mapping systems result in a lighter decoding process so that cognitive resources can be diverted to the understanding process. Cross-orthographic research shows that grapheme-phoneme transparency improves phonological access speed and word recognition accuracy [19], [20], [21]. In the Sumatran Pegon system, this regularity can be seen in the consistency of graphemic which represents local sounds starsely.

Simple View of Reading (SVR) emphasizes that decoding and language comprehension interact multipliedly. Improvements in decoding through graphemic mapping that are more in tune with local sounds will theoretically encourage improved literal and inferential understanding (Gough & Tunmer 1986) [22], [23], [24], [25], [26]. In the context of MTs novice readers who have not yet built word recognition automation, orthographic support is a factor that determines the stability of important word representations in religious texts. Cutting-edge research adds to the role of executive functions such as working memory and inhibition that contribute to the success of reading comprehension [27], [28], [29]. Text processing that uses orthography that is less aligned with local phonology requires a greater inhibition burden to withstand grapheme-sound conflicts, thereby reducing the cognitive capacity for the process of understanding.

At the word level, the Dual Route Model describes two processing paths running concurrently. The lexical path allows for quick recognition of familiar words, while the nonlexical path processes the conversion of grapheme into phonemes in new words. Neurolinguistic and eye-tracking research show the interaction of the two influenced by orthographic regularity, word frequency, and reading experience [30], [31], [32], [33] Typical grapher-focused Sumatran Pegon reading exercises have the potential to reinforce the nonlexical pathway in the early phase and then encourage the formation of more automatic lexical pathways for the religious vocabulary that is often encountered.[34], [35]

The sociolinguistic dimension provides an additional foundation through the Linguistic Interdependence Hypothesis which states the transfer of skills across languages. The compatibility of the Pegon grapheme with local sounds strengthens the phonological mapping ability thus facilitating the transition from the regional language writing system to the modified Arabic script [36], [37], [38], [39]. The principles of Culturally Responsive Teaching show that learning materials and strategies that are in harmony with students' cultural practices increase participation and learning effectiveness [40], [41], [42]. In Gorontalo, the use of the Pegon script is more often found in the older generation so that the student generation shows a significant gap in Pegon literacy. The teaching of Sumatran Pegon was chosen as an instructional strategy because it has a higher level of graphemic regularity, wider availability of references, and potential for cross-regional compatibility [43], [44], [45].

This study applied an experimental design with the experimental group and the control group through pretest and posttest measurements in grade VII students of MTs Al Huda Gorontalo. A total of forty-six students were divided equally. Interventions included structured decoding exercises, guided readings, and repeated readings using Sumatran Pegon parallel texts. The source text is in the form of Jawi manuscripts from Ogan Komering Ilir, Sulam al-Mubtadi, Hikayat Prang Sabi Aceh, and Palembang War Poems written in Malay Arabic [46], [47], [48], [49]. The research hypothesis predicts that the experimental group will show improved

decoding accuracy, reading fluency in words per minute, and higher literal and inferential comprehension than the control group. These predictions are in line with the SVR, Dual Route Model, and Orthographic Depth Hypothesis.

The findings of the study are expected to enrich the literature with empirical evidence regarding the effectiveness of Sumatran Pegon in learning to read religious texts in the context of madrassas outside Sumatra. The results of the research have the potential to be the basis for curriculum development, improving teacher training, and strengthening students' cultural identity through orthography that optimally supports phonological processes. This study places Pegon Sumatra as a systematic instructional tool for strengthening religious reading competence while providing space for the sustainability of Pegon Gorontalo as part of advanced development. The study of Islamic literacy in the archipelago received empirical support through a culturally responsive and data-based approach [11], [14], [16], [18].

Method

This research method was designed as a quantitative experiment with a pretest-posttest design in two equal groups, namely one class as an experimental group that received the teaching of Sumatran Pegon and one class as a control group that received regular learning without Pegon modification. This design was chosen to assess causally the influence of intervention on three main indicators of reading ability, namely decoding accuracy, fluency in reading in words per minute, and literal and inferential comprehension. The research was carried out at MTs Al Huda Gorontalo because this school represents the context of madrasas outside Sumatra being controlled uniformly between classes. The research population is all grade VII students for the 2025/2026 school year, with the selection of purposive samples in two study groups that have comparable academic characteristics. Class VII C with twenty-three students was designated as the experimental group and Class VII D with twenty-three students was designated as the control group; both had never received formal training reading Pegon before so the starting point of the ability was relatively homogeneous for the purpose of measuring changes between time.

The instrument used was a Pegon text-based reading test package that captured three performance indicators. The accuracy of the decode was assessed through the accuracy of the recognition of the typical Sumatran Pegon grapheme and its conversion to the correct phoneme. Reading fluency is measured by counting the number of words pronounced correctly per minute accompanied by observation of intonation and rhythm. Reading comprehension is assessed through items that demand explicit information retrieval and inferential reasoning from text pieces. The reading material was compiled from the adaptation of fragments of the manuscript of Sulam al-Mubtadi and the Saga of the Sabi War documented in the Sumatra Pegon convention, then normalized into a tiered parallel reading so that equality of difficulty levels can be maintained from pretest to posttest. The validity of the content of the instrument was obtained through peer review by Pegon philologists and Arabic language education; Internal reliability was checked for adequate measurement consistency for all three indicators. To support the decoding phase, grapheme-phoneme bridge sheets were also prepared so that students could map typical graphemes, such as symbols for the sounds p, c, g, and ŋ, to sound representations familiar to local speakers.

The research procedure follows the order of preparation, implementation, and evaluation. In the preparation stage, the researcher compiled a reading corpus, a visual card of the Sumatra Pegon grapheme, and a standardized assessment rubric. The implementation stage began with a pretest given simultaneously to both classes to photograph the initial ability. The experimental group then received a direct phonics instruction Sumatra Pegon teaching intervention emphasizing structured decoding exercises, guided readings, and repeated readings on parallel texts; meanwhile, the control group underwent regular learning using standard Arabic letters with similar religious topics but without the introduction of the Pegon system. After three sessions, both groups took a posttest with structure, scope, and level of difficulty aligned with the pretest. All sessions are delivered by the same instructor to minimize instructional variation, and the duration of the meeting is standardized between groups.

Data analysis is carried out in several steps. The Shapiro Wilk test is used to check the prerequisites for the normality of the score distribution, while the Levene test is used to ensure the homogeneity of variance. The effect of the intervention was estimated with a paired t-test on each indicator to compare pretest and posttest scores. The magnitude of the practical increase is calculated using N-Gain so that the degree of progress relative to the maximum potential can be interpreted more meaningfully. In addition, Pearson correlation analysis was carried out to assess the relationship between indicators, especially the functional relationship between decoding accuracy, fluency, and comprehension, as predicted by reading cognitive models. The results of the analysis are presented in a concise table and visualization of bar graphs and box plots to facilitate the inspection of patterns of changes and distribution of scores.

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All procedures comply with the ethical principles of educational research. Implementation permits are obtained from madrasah leaders, and written consent of parents or guardians is collected before data collection. Student participation is voluntary after receiving an explanation of the objectives, benefits, and governance of the research. The identity of the participant is anonymized at all stages of data processing and reporting. Interventions were structured so as not to create additional burdens outside of regular study hours, and results were reported honestly without manipulation or omission of findings that did not support the hypothesis. This series of steps ensures that the findings obtained reflect the instructional impact of Sumatra Pegon in a valid way in the context of the madrasah being studied.

Results and Discussions

This study was conducted to assess the effectiveness of the use of Sumatra Pegon in improving the reading ability of religious texts of MTs Al Huda Gorontalo students. This study focuses on three main indicators: decoding accuracy, reading fluency, and reading comprehension. The results of the study show that the use of a structured and local phonology Pegon writing system has a significant impact on improving these three aspects.

1. Deskriptif Data

Pretest measurements in both groups showed that students' initial reading ability was at a relatively similar level. This can be seen from the identical average pretest score, which was 63 in both the experimental and control groups. This equivalence suggests that before the treatment was administered, the two groups were at an equal starting point so it was worth comparing in the context of experimental research.

After the learning process took place, there was an increase in both groups, but with significantly different patterns. The experimental group showed a more substantial improvement, while the control group experienced only minimal improvement. Descriptive data on the average value of pretest, posttest, and N-Gain calculation are presented in the following table to make it easier to read the improvement patterns of the two groups.

Table 1. Summary of Average Pretest, Posttest, and N-Gain Scores

Group	Pretest	Posttest	N-Gain
Eksperimen	63	78	0.41
Control	63	66	0.09

The table above shows that the experimental group increased by 15 points, from 63 to 78. This increase is accompanied by an N-Gain value of 0.41, which is in the medium to high category, showing that the Sumatra Pegon learning intervention has a strong impact on improving students' reading skills. The control group saw only a 3-point increase, from 63 to 66, with an N-Gain value of 0.09 in the low category, indicating that regular learning did not result in significant improvement.

This overall pattern suggests that the difference in increase between the two groups is not accidental, but is a logical consequence of the difference in treatment applied. To strengthen a visual understanding of the difference in results between the two groups, the following is a comparative graph depicting changes in the average pretest and posttest scores.

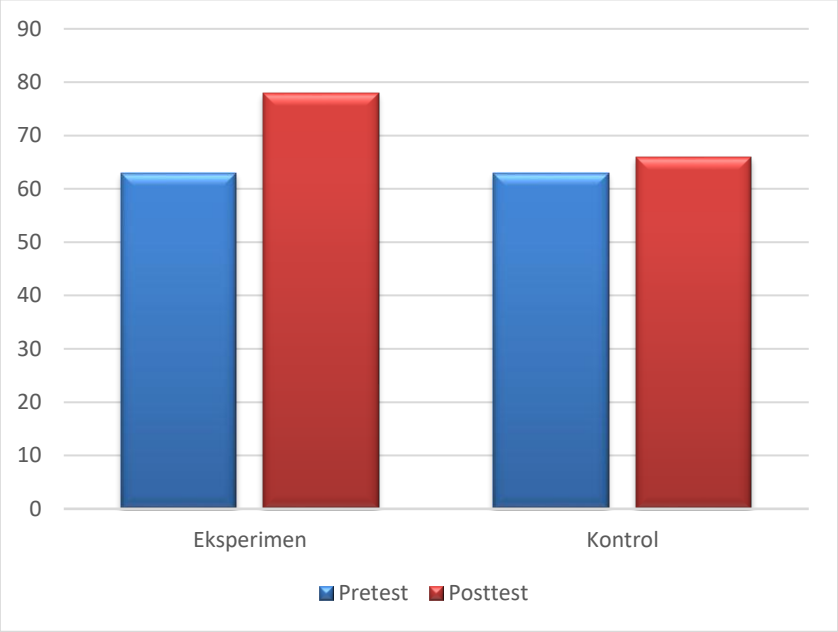

Figure 1. Comparison Chart of Pretest and Posttest Scores of Experimental and Control Groups

The graph shows that there was a clearly different pattern of reading improvement between the experimental group and the control group. The experimental group recorded a significant increase from an average score of 63 on the pretest to 78 on the posttest. This increase illustrates the success of Sumatran Pegon-based learning interventions that are able to have a substantial influence on the development of students' reading skills. In contrast, the control group experienced only a very limited increase, from 63 to 66. This minimal increase shows that regular learning does not make a meaningful contribution to improving reading skills. The striking difference between the posttest bar height of the two groups on the graph visually confirms the existence of a strong instructional effect that can be directly attributed to the implementation of the Sumatran Pegon learning method.

2. Data Normality Test

Before the mean difference test is performed, the data is first examined using the Shapiro–Wilk test to see if the score distribution is within the limits of the normal distribution fairness. The relevant results can be summarized as follows (based on the Shapiro–Wilk column in the Tests of Normality table):

Tabel 2, Test of Normality

	Kelas	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	PreTest D (kontrol)	,213	23	,008	,880	23	,010
	PostTest D (Kontrol)	,203	23	,014	,822	23	,001
	PreTest C (eksperimen)	,142	23	,200*	,954	23	,352
	PostTest C (eksperimen)	,162	23	,121	,954	23	,356

The interpretation of these results is:

1. The distribution of experimental class scores met the assumption of normality, both in the pretest and posttest. This shows that the variation in reading ability in the classes treated with Sumatran

Pegon is proportionally spread around the mean, so the average results can represent the conditions of the classroom quite well.

2. The distribution of the control class scores deviated from normality, both before and after learning. This is common in education samples that are not too large, especially if student scores tend to accumulate in a certain range (e.g. accumulating in the middle or downwards).

Nonetheless, the number of subjects in each group (N = 23) was within the range that still allowed the use of parametric tests with consideration of the Central Limit Theorem. In the context of educational research, mild deviations from normality are often still tolerated, especially when the sample size is medium and both groups have the same sample size and homogeneous variance. On the basis of these considerations, the researcher continued the analysis using an independent t-test, accompanied by careful interpretation.

3. Uji Homogenitas Data

The second assumption that needs to be met before performing the t-test is the homogeneity of variance, i.e. whether the distribution of values from the two groups can be considered equal. This test is carried out using Levene's Test. A summary of the results in the Test of Homogeneity of Variance table shows:

Tabel 3, Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Hasil Qiraah	Based on Mean	,580	1	44	,450
	Based on Median	,557	1	44	,459
	Based on Median and with adjusted df	,557	1	32,588	,461
	Based on trimmed mean	,701	1	44	,407

Since the significance value is greater than 0.05, it can be concluded that the variance of qirā'ah ability score between the experimental class and the control class is homogeneous. This means that the degree of value spread in the two groups did not differ significantly, so the average differences found were not caused by differences in "irregularity" or "spread" of values, but rather reflected differences in treatment effects.

In practical terms, the results of this homogeneity test reinforce the belief that the average comparison of the two groups using an independent t-test is statistically valid, since two main prerequisites (balanced sample size and homogeneous variance) have been met.

4. Uji t (Independent)

Once the prerequisites of normality (in a limited way) and homogeneity of variance were considered, the researcher used an independent samples t-test to test the main hypothesis:

"There is a significant difference between the ability to read religious texts of students who are taught in Pegon Arabic and students who are taught without Pegon Arabic."

Tabel 4, Group Statistics

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Hasil Qiraah	PostTest-Kontrol	23	66,48	2,678	,558
	PostTest-Eksperimen	23	78,22	1,622	,338

Tabel 5, Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Hasil Qiraah	Equal variances assumed	1,223	,275	-17,982	44	,000	-11,739	,653	-13,055	-10,423
	Equal variances not assumed			-17,982	36,235	,000	-11,739	,653	-13,063	-10,415

Since the value of Sig. (2-tailed) = 0.000 < 0.05, H_0 is rejected and H_1 is accepted. This means that there is a statistically significant difference between the posttest scores of qirā'ah ability of students in the experimental class and the control class. A negative mark on the Mean Difference indicates that, in SPSS encoding, the average experimental class is about 11,739 points higher than the control class. The magnitude of this difference is not only statistically significant, but also pedagogically significant, as it illustrates a clear and consistent leap in achievement.

If the difference in i is measured by Cohen's effect size d using the mean and standard deviation of the two groups, the value d is close to 5, which in statistical convention is classified as a very large effect. In other words, the chances that a random student from the experimental class have better reading skills than a random student from the control class are very high. The findings of this t-test support the claim that the use of the Sumatran Pegon script in qirā'ah learning effectively improves the ability to read religious texts, not just "helping a little", but providing a clear advantage over ordinary learning without Pegon.

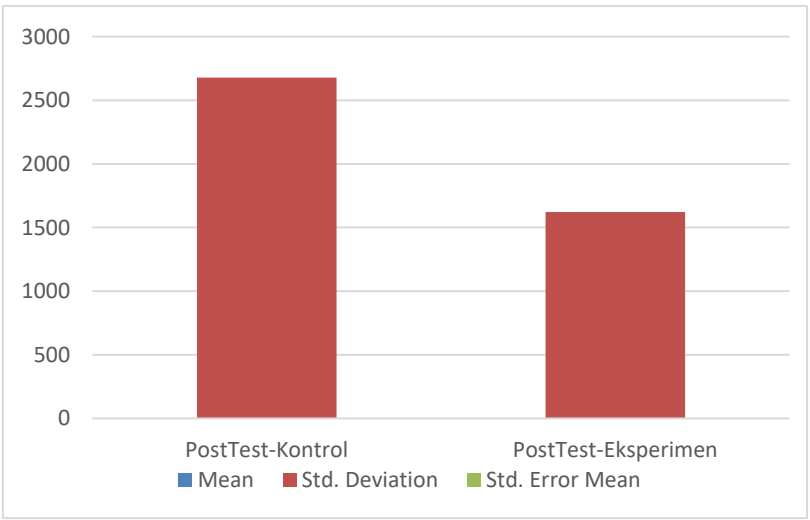

Figure 3. Comparison Graph of Mean Posttest Experimental and Control Groups

The graph shows a stark difference between the average posttest scores of the experimental group and the control group. The experimental group scored an average of 78, much higher than the control group that only achieved a score of 66. This descriptive difference indicates that the treatment of learning based on the Sumatran Pegon script has the potential to have a significant influence on

improving students' reading skills. However, visual differences alone are not enough to ensure statistical significance. Therefore, independent t-tests are used to test whether the differences are really meaningful or just natural variations in the distribution of data. The results of the t-test obtained will then determine whether the intervention given empirically has a significant influence on students' ability to read religious texts.

5. N-Gain

N-Gain analysis was used to assess the level of effectiveness of the learning treatment given to the experimental group compared to the control group. N-Gain is a proportional improvement indicator that takes into account the student's initial ability, so that it not only indicates an increase in grades, but also describes the extent to which the improvement is close to the maximum potential that can be achieved. The calculation of N-Gain refers to the formula of Hake (1998) as follows:

$$g = \frac{(Posttest - Pretest)}{(Skor\ Maksimal - Pretest)}$$

This formula allows for a more objective analysis because it measures the effectiveness of an intervention based on actual improvement versus ideal improvement. In this study, both groups had the same average pretest score, which was 63, so that the N-Gain analysis became a valid evaluation tool to compare the impact of Sumatran Pegon script-based treatment. Before reviewing the chart, a summary of the N-Gain values of both groups is presented as the basis for the interpretation of the increase.

Table 6, Mean Value of N-Gain of the Experimental and Control Groups

Group	N-Gain Value	Category
Eksperimen	0.41	Medium–High
Control	0.09	Low

The table shows that the experimental group obtained an N-Gain value of 0.41, which belongs to the medium to high category, indicating that the intervention through the Sumatran Pegon script has a strong effectiveness in improving students' reading skills. Meanwhile, the control group only achieved a value of 0.09, which was in the low category, so the increase that occurred can be said to be pedagogically insignificant. The difference between these two values indicates that learning treatment is the main factor that causes an increase in the experimental group.

Discussion

The findings of this study show that the application of Sumatra Pegon provides a significant improvement in students' religious text reading skills, especially in the aspects of decoding, reading fluency, and literal and inferential comprehension. This improvement fills the gap in previous research that tends to focus on philological, historical, and cultural studies related to the Pegon script, while quantitative studies that test the effectiveness of Pegon as a pedagogical instrument are still very limited. In particular, there has been no research that has tested the Sumatran Pegon variant in the context of learning madrasas outside its distribution area, including Gorontalo. Thus, this research makes a new empirical contribution that places Pegon not only as a cultural heritage, but as an instructional component that can improve religious reading competence in a measurable way.

The increase in N-Gain in the experimental group indicated that the consistency of the Sumatran Pegon graphemic provided a more transparent orthographic environment, resulting in a lighter decoding burden for students. This is consistent with the Orthographic Depth Hypothesis which asserts that the regularity of grapheme-phoneme mapping facilitates the decoding process and makes novice readers more efficient at recognizing words. In line with the Simple View of Reading, when decoding is strengthened, reading comprehension also increases because the two components are multiplied by each other. The improvement in reading fluency observed in the experimental group supports the Dual Route Model, as structured exercises

based on Sumatran Pegon strengthen nonlexical pathways (grapheme-phonemes) before the automation of lexical pathways (direct access to words). Thus, the results of this study confirm that Sumatra Pegon provides appropriate orthographic conditions to accelerate the stage of reading development in MTs students.

The explanation of phonological transfer can be understood through the Linguistic Interdependence Hypothesis, which emphasizes that phonological awareness can transfer between languages when there is a match of sounds. In this case, representations of local sounds such as /p/, /c/, /g/, and /ŋ/ symbolized by the Pegon letters (ڤ، چ، ڮ، ڠ) reinforce the student's phonological mapping. The findings of this study support the view that a writing system that is close to the phonology of students' first language can improve their second language literacy or other writing systems that they are learning.

The Jawi Ogan Komering Ilir manuscript, for example, contains a typical structure of Sumatran Pegon which is characterized by the use of local grapheme such as ڤ، چ، ک، and ڠ. The opening snippet of the manuscript shows this consistency:

بسم الله الرحمن الرحيم
اما بعد، فهٰذا علم نافع علم الحال بسروفة الله تعالى ...

Transliterasi:
Bismillāh al-Raḥmān al-Raḥīm … fahaẓā ‘ilm nāfi‘ …

The availability of grapheme that corresponds to these local phonemes makes Pegon Sumatra have high orthographic superficiality, so that the decoding process becomes lighter. The consistency of the graphe-phoneme mapping is in line with the Orthographic Depth Hypothesis, which explains that transparent orthography accelerates word recognition and reduces the cognitive burden of novice readers. This match caused the students in the experimental group to develop decoding accuracy faster than the control group.

The improvement of reading fluency in the experimental group was also supported by the text patterns used, for example in Hikayat Prang Sabi Aceh which was full of religious vocabulary repetitions and mixed Malay-Arabic word structures. This can be seen in the following snippet of the manuscript:

مكا اچه تَرْسَبوْتْلَه سَتُو هِكايَت فَرَڠ سَبِي ...

.
... سَغَلاَ أُورَغْ مُؤْمِنْ ... وَاجِبْ جِيْهْ بَرْجِهَادْ

Transliterasi:
So the story is a story of the Sabi War... Must be warned...

The repeated appearance of terms such as believers, jihad, and the easily recognizable Arab-Malay mixed structure help students in developing nonlexical bands (grapheme-phonemes) as explained by the Dual Route Model. With intensive training, lexical paths are also formed through the automation of words that often appear in religious texts. This explains the findings of the study in the form of a significant improvement in reading fluency (words per minute) in the experimental group.

The reading comprehension aspect has also improved as a direct consequence of strengthening decoding and fluency. Simple View of Reading sees comprehension as the result of the interaction between decoding and language comprehension. With decoding made easier due to the orthographic support of Pegon Sumatra, students can devote greater attention to the process of interpreting texts. This is evident when students read the Palembang War Poem written in Malay Arabic which has a dense syntactic structure and is loaded with abstract religious concepts, as in the following excerpt:

... وقال بعض العلماء رحمهم الله تعالى، إن السالك إلى طريق الحق ينبغي له أن يحفظ آدابه، ويلازم ذكر ربه في كل حين

Translation:
Some scholars say that a person who walks the path of truth is obliged to maintain his manners and always reverence to his Lord...

The complex sentence structure in the manuscript requires the ability to understand the logical relationship between clauses and inferential understanding. The experimental group showed a better ability to capture the meaning because the decoding barrier had been significantly reduced.

From a sociolinguistic perspective, the use of Sumatran Pegon scripts in learning also shows the occurrence of positive phonological transfer as described in the Linguistic Interdependence Hypothesis. The compatibility between the representation of local phonemes and the Pegon grapheme makes it easier for Gorontalo students to activate their first language phonological awareness when reading the Pegon text. In addition, because these texts are part of the Islamic literacy of the archipelago, their use in the classroom increases the cultural connection of students with local scientific traditions. This is in line with the principles of Culturally Responsive Teaching which emphasizes the importance of using culturally relevant teaching materials to increase student engagement and learning motivation.

Overall, the findings of this study show that Sumatran pegon not only has historical and cultural value, but is also effective as a modern pedagogical instrument in qirā'ah learning. The use of Pegon manuscripts strengthens a combination of cognitive aspects (decoding and comprehension), linguistics (grapheme-phoneme mapping), and affective (cultural connection) so as to result in an improvement in overall reading skills. These results provide an empirical basis for the development of Pegon-based qirā'ah curriculum and learning, including the potential revitalization of Pegon Gorontalo as part of the archipelago's Islamic literacy heritage.

Conclusions

The results of this study show that the use of Sumatra Pegon has been proven to be effective in improving the reading ability of religious texts of MTs students, especially in the aspects of decoding, reading fluency, and literal and inferential comprehension. This finding clearly answers the research problem that the main obstacle for students in reading religious texts lies not only in mastery of Arabic vocabulary and structure, but also in the orthographic gaps that arise when the writing system is not in harmony with local phonology. Through structured interventions based on Sumatra Pegon, these obstacles can be minimized so that the reading process takes place more efficiently and meaningfully.

Theoretically, this study shows that Sumatran Pegon can be a relevant orthographic model for the context of Islamic education outside the Pegon tradition area. These findings confirm the predictions of the Orthographic Depth Hypothesis, Simple View of Reading, and Dual Route Model, as well as show that traditional orthography of the archipelago can be integrated with modern literacy approaches. The significant improvements achieved by the experimental group students indicated that grapheme-phoneme alignment strengthened word processing pathways, reduced the cognitive load of novice readers, and improved access to comprehension of text content. Thus, this study not only answers the empirical question of Pegon's effectiveness, but also expands the scope of the study of local orthography within the framework of contemporary reading theory.

In the future, these findings have important implications for madrasah education and the preservation of Islamic literacy in the archipelago. First, the results of the study show that Sumatran Pegon can be used as a pedagogical alternative to overcome the difficulty of reading religious texts in beginner students, especially in areas that do not have strong Pegon traditions. Second, the use of authentic manuscripts such as Jawi, Hikayat Prang Sabi, and Syair Guerra Palembang has been proven to be able to increase motivation, cultural closeness, and cognitive involvement of students. This opens up space for the development of a curriculum that is more responsive to the local linguistic and cultural context. Third, Pegon integration can be a bridge strategy before students switch to standard Arabic texts that have high orthographic depth.

Based on these findings, several recommendations can be proposed. First, educational institutions, especially madrasas, are advised to adopt more transparent orthographic-based learning such as Pegon Sumatra for the initial level of learning to read religious texts. Second, teachers need to be given training on Pegon teaching, including the use of authentic manuscripts and structured decoding methods to make the learning process more systematic and measurable. Third, further research needs to be conducted to evaluate the long-term effects of Pegon use, including the response of students at higher education levels as well as its effect on the ability to understand classical texts. Fourth, local governments and religious institutions can use Pegon as part of the revitalization of Islamic literacy in the archipelago, not only as cultural heritage, but as a relevant learning instrument for the current generation.

Overall, this study shows that the integration of Sumatran Pegon in learning to read religious texts makes a significant contribution to both the development of theory and educational practice. These findings confirm that an orthographic approach that is sensitive to local phonology not only increases learning effectiveness, but also strengthens the cultural identity and sustainability of Islamic literacy in Indonesia. With a strong empirical foundation, Pegon Sumatra can be positioned as a strategic instructional tool for Islamic education in the future.

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