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KINESTHETIC LEARNING STYLE AND PAI LEARNING OUTCOMES OF ELEMENTARY SCHOOL STUDENTS

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Abstract

This study aims to determine the influence of the kinesthetic learning style on the learning outcomes of Islamic Religious Education (PAI) among Year 4 students at MIN Bangkalan. This research employs a quantitative approach with a purposive sampling technique involving 36 participants. The research data were obtained through a kinesthetic learning style questionnaire, observations, and a learning outcomes test on the topic of Friday prayer. Data analysis techniques included the Kolmogorov-Smirnov normality test, Pearson correlation analysis to examine the relationship between kinesthetic learning style and PAI learning outcomes, and simple regression analysis to assess the impact of kinesthetic learning style on students' academic performance. The findings indicate a significant influence of kinesthetic learning style on PAI learning outcomes, with a significance value (2-tailed) of 0.000. Students with a kinesthetic learning style exhibit characteristics such as enhanced recall through movement and hands-on practice, as well as a preference for physical activity. These findings suggest that the application of kinesthetic learning strategies can serve as an effective approach to improving PAI learning outcomes among primary school students, particularly in subjects requiring practical comprehension.

Keywords Kinesthetic Learning Style, Learning Outcomes, Islamic Religious Education, Elementary School Students.

INTRODUCTION

Effective education hinges on the creation of a high-quality learning process, one in which students are not passive recipients but active participants, deeply engaged with the material (Saeed & Ahmed, 2021). This engagement is fostered through meaningful interaction, encompassing both verbal and non-verbal communication. To optimize learning outcomes, educators must adopt a repertoire of strategies tailored to the diverse needs of their students. Among these considerations, the individual learning styles of students emerge as a critical factor.

It is widely acknowledged that each student possesses a unique learning style. Recognizing and understanding these diverse approaches to learning empowers teachers to make informed decisions about instructional methods and material delivery, ultimately enhancing the effectiveness of their teaching (Aini et al., 2022). Learning style, in essence, refers to an individual's capacity to absorb, organize, and process information. While various frameworks exist, learning styles are commonly categorized into three primary modalities: visual, auditory, and kinesthetic (Setiawati et al., 2023). The present study focuses specifically on the kinesthetic learning style, characterized by a preference for physical movement and hands-on activities as the primary means of acquiring knowledge(Ihza Pramudya & Narendrany Hidayati, 2023; Iqbal et al., 2022)

The kinesthetic learning style holds particular relevance in early childhood and elementary education, where physical activity remains a dominant aspect of children's developmental landscape. Students who exhibit a kinesthetic learning preference often demonstrate a heightened ability to comprehend and retain information when it is presented through direct experiences and practical application(Pourhosein Gilakjani, 2011) Despite its potential benefits, the implementation of kinesthetic learning strategies within the context of Islamic Religious Education (PAI), particularly in relation to the Friday prayer curriculum, has been limited.

Empirical evidence suggests a positive correlation between kinesthetic learning styles and student achievement across various subject areas (e.g., Gea et al., 2023; (Ihza Pramudya & Narendrany Hidayati, 2023; Lam, 2020). Nevertheless, there remains a paucity of research specifically examining the impact of kinesthetic learning on PAI learning outcomes, especially concerning the practical aspects of Friday prayer. Furthermore, the existing body of research predominantly relies on quantitative methodologies employing descriptive statistical analyses. This study seeks to address these gaps by adopting a more rigorous quantitative research design and employing inferential statistical techniques to rigorously test the stated hypotheses.

Prior to the implementation of kinesthetic learning, instructional practices at MIN Bangkalan primarily relied on conventional teaching models, such as lecture-based and rote memorization approaches. Teachers typically delivered lessons through direct explanation followed by reading activities, with minimal student interaction. According to classroom observations and interviews conducted with PAI instructors, learning activities were dominated by verbal instruction, and students were rarely engaged in practical or movement-based tasks. Documentation from lesson plans (RPP) in the previous semester also revealed limited variation in teaching strategies, with a predominant focus on auditory and visual delivery.

However, the effectiveness of these traditional approaches appeared limited, particularly in subjects that require procedural accuracy and physical demonstration, such as the Friday prayer. Based on observational data, less than 60% of students were able to correctly perform the steps of the prayer without prompting, and many struggled to recall key prayer recitations. An interview with one of the PAI teachers at MIN Bangkalan revealed that "students often memorize without understanding the sequence of movements, which leads to confusion during practical assessments." These challenges were corroborated by test results in the previous semester, where the average score for the Friday prayer material was only 66.4 out of 100, indicating suboptimal comprehension and application.

The decision to implement the kinesthetic learning model was based on the need to address these learning gaps and better align instructional methods with students' natural tendencies for physical engagement. Kinesthetic learning was selected over other models—such as inquiry-based or cooperative learning—due to its emphasis on bodily movement, which is particularly relevant for subjects that involve ritual performance. Preliminary observations during pilot sessions showed increased student enthusiasm, improved accuracy in prayer movements, and greater memorization when learning was accompanied by physical demonstrations. Furthermore, documentation from teacher reflections noted a marked improvement in student participation and retention when kinesthetic strategies were introduced. These findings provided strong justification for the adoption of kinesthetic learning as a primary instructional approach in this study

This research endeavors to investigate the influence of kinesthetic learning styles on the PAI learning outcomes of fourth-grade students at MIN Bangkalan, focusing on the specific context of Friday prayer education. The findings of this study are anticipated to contribute valuable insights toward the development of more effective PAI instructional strategies that align with the diverse

learning needs of students.

A study conducted by Ikawati & Kowiyah (2021) on the effects of kinesthetic learning on elementary students' understanding of geometric concepts found that students who received kinesthetic instruction scored significantly higher on post-tests than those who received traditional instruction. Similarly, a meta-analysis by Hattie (2008) on over 800 studies identified kinesthetic learning as having a moderate to high effect size on student achievement. In the context of religious education, a study by Gea et al., (2023) and Susanti & Muliati (2023) on the effectiveness of kinesthetic learning in teaching Islamic rituals to elementary students in Saudi Arabia found that the kinesthetic group outperformed the control group in terms of knowledge acquisition and practical application.

While the aforementioned studies provide compelling evidence for the effectiveness of kinesthetic learning, there remains a need for further research to explore its specific impact on PAI learning outcomes, particularly in the context of Friday prayer education. This study aims to address this gap by investigating the influence of kinesthetic learning styles on the PAI learning outcomes of fourth-grade students at MIN Bangkalan.

METHOD

This study employs a quantitative correlational research design to examine the influence of kinesthetic learning styles on the learning outcomes of Islamic Religious Education (PAI) among fourth-grade students at MIN Bangkalan. A quantitative approach is deemed appropriate as it enables the measurement of relationships between variables through statistical analysis (Creswell, 2021; Malcom-Piqueux, 2015; Moleong, 2017) The independent variable in this study is kinesthetic learning style, while the dependent variable is PAI learning outcomes, specifically focusing on the Friday prayer curriculum.

The population of this study comprises 36 fourth-grade students divided into two classes: Class IVA and Class IVB. The sampling method employed is purposive sampling, which involves selecting participants based on specific characteristics that align with the study's objectives (Etikan, 2016). The details of the population and sampling distribution are presented in Table 1.

Table 1. Population and Sample Distribution

Class	Number of Students	Sampling Technique
IVA	18	Purposive
IVB	18	Purposive
Total	36	Purposive

The research involves primary data, which were collected through three main instruments:

1. Kinesthetic Learning Style Questionnaire – A structured questionnaire consisting of 30 Likert-scale statements (1 = Strongly Disagree to 5 = Strongly Agree) assessing students' tendencies toward kinesthetic learning (Felder & Silverman, 1998)
2. Learning Outcomes Test – A multiple-choice test with 30 questions designed to measure students' comprehension and practical application of Friday prayer material. The test items were structured according to Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001; Heer, 2012).
3. Observation Sheet – Classroom observations were conducted to assess students' engagement and accuracy in performing Friday prayer movements and recitations. Observations focused on discipline, accuracy, and fluency based on established pedagogical assessment frameworks (Marzano et al., 2001)

Three primary research instruments were utilized in this study: a questionnaire, a multiple-choice test, and an observation sheet. The kinesthetic learning style questionnaire consists of 30 statements based on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), measuring students' inclination towards physical movement as a preferred learning method (Felder & Silverman, 1998).

The PAI learning outcomes test comprises 30 multiple-choice questions, assessing students' knowledge, comprehension, and practical application of Friday prayer. The test is structured according to Bloom's revised taxonomy, covering cognitive domains such as remembering, understanding, and applying (Anderson & Krathwohl, 2001).

Additionally, direct classroom observation was conducted to evaluate students' participation in Friday prayer practice. The observation focused on discipline, accuracy of prayer recitations, and performance of prayer movements, following established pedagogical assessment frameworks (Marzano et al., 2001).

Based on the theoretical framework and previous research findings, the study tests the following hypotheses:

1. H_0 (Null Hypothesis): There is no significant influence of kinesthetic learning style on the learning outcomes of Islamic Religious Education (PAI) in Year 4 students at MIN Bangkalan.
2. H_1 (Alternative Hypothesis): Kinesthetic learning style has a significant positive influence on the learning outcomes of Islamic Religious Education (PAI) in Year 4 students at MIN Bangkalan

The collected data were analyzed using inferential statistical methods supported by SPSS version 25. The analysis involved three key statistical tests:

1. Normality Testing: The Kolmogorov-Smirnov test was employed to determine whether the data were normally distributed (Field, 2013)(Field, 2018).
2. Correlation Analysis: The Pearson correlation coefficient was used to measure the strength and direction of the relationship between kinesthetic learning style and PAI learning outcomes (Pallant, 2013)
3. Regression Analysis: A simple linear regression test was conducted to assess the extent to which kinesthetic learning style predicts students' PAI learning outcomes (Hair et al., 2013).

FINDINGS AND DISCUSSION

Findings

This study investigates the influence of kinesthetic learning styles on Islamic Religious Education (PAI) learning outcomes, particularly in the context of Friday prayer education among fourth-grade students at MIN Bangkalan The findings are based on data obtained through questionnaires, learning outcome tests, and classroom observations. The results indicate a significant impact of kinesthetic learning styles on students' performance in PAI. The results indicate a significant impact of kinesthetic learning styles on students' performance in Islamic Religious Education (PAI), particularly in Friday prayer education. Students who actively engaged in movement-based learning activities demonstrated higher retention, improved procedural accuracy, and greater participation compared to those who relied on traditional instructional methods.

Observations revealed that students who learned through hands-on demonstrations were able to accurately perform the required movements and recitations of the Friday prayer with fewer errors. They exhibited greater confidence in executing prayer sequences, maintaining appropriate posture, and articulating correct prayer readings. The learning outcomes of students in Class IVA,

who predominantly engaged in kinesthetic learning methods, were consistently higher than those of students in Class IVB, who received conventional instruction.

Direct observations during prayer practice sessions revealed notable differences in students' execution of physical prayer movements. Among students in Class IVA, who were actively involved in movement-based learning, 85% performed prayer postures correctly, compared to 65% in Class IVB. The most common errors among Class IVB students included incorrect positioning of hands during takbiratul ihram, improper alignment in ruku', and inconsistent movement timing during sujud. These students also exhibited hesitation in transitioning between prayer movements, often requiring verbal reminders from the instructor.

In contrast, students in Class IVA, who engaged in repeated physical demonstrations of the prayer, demonstrated a higher level of procedural fluency. Their movements were more coordinated, confident, and synchronized, suggesting that kinesthetic reinforcement contributed to improved execution of prayer rituals. A comparative analysis of students' ability to recite the required prayer readings correctly further supports the influence of kinesthetic learning on verbal accuracy. Among Class IVA students, 78% were able to recite prayer verses accurately, while only 58% of Class IVB students achieved full accuracy. The most common mistakes in Class IVB included mispronunciations of key Arabic words, incorrect elongations of syllables, and omission of required pauses within the recitations.

Students in Class IVA, who combined verbal learning with kinesthetic reinforcement, demonstrated more precise articulation of prayer verses. During practice sessions, these students were observed repeating recitations while performing physical movements, which appeared to enhance their ability to retain and correctly apply the required pronunciations. The use of rhythmic movement-based memorization helped students establish a stronger connection between verbal and physical elements of prayer, reducing hesitation and increasing confidence in their recitations.

Levels of active student participation were noticeably higher among students engaged in kinesthetic learning sessions. Observations recorded during Friday prayer instruction indicated that 92% of students in Class IVA were actively engaged, compared to 70% in Class IVB. Active engagement was measured based on student responsiveness, voluntary participation in demonstrations, and attentiveness during practice sessions.

The kinesthetic learning style questionnaire was used to assess students' preferences for hands-on learning, physical movement, and direct engagement in their learning processes. The results reveal that students in Class IVA exhibited a higher preference for kinesthetic learning compared to students in Class IVB. The summary of the descriptive statistics is presented in Table 2

Table 2. Kinesthetic Learning Style Scores

Class	Mean Score	Standard Deviation	Min Score	Max Score
IVA	78.4	5.82	65	90
IVB	74.2	6.31	60	88
Overall	76.3	6.07	60	90

These results suggest that students with a higher kinesthetic learning tendency may respond more positively to movement-based instructional strategies. A multiple-choice test comprising 30 questions was conducted to evaluate students' comprehension and application of Friday prayer material. The test focused on the meaning of Friday prayer, its legal basis, required conditions, and the correct procedural movements. The summary of test scores is presented in Table 3.

Table 3. PAI Learning Outcomes Test Scores

S-Class	Mean Score	Standard Deviation	Min Score	Max Score
IVA	82.2	6.12	70	95
IVB	68.3	7.45	55	85
Overall	75.3	6.79	55	95

The data illustrate that Class IVA students performed significantly better (M = 82.2, SD = 6.12) compared to Class IVB students (M = 68.3, SD = 7.45). This discrepancy may be attributed to the stronger kinesthetic learning tendencies observed in Class IVA. To ensure the validity and reliability of these findings, additional statistical checks were conducted. A Kolmogorov-Smirnov test confirmed that both kinesthetic learning style scores and PAI learning outcomes followed a normal distribution, validating the use of Pearson's correlation analysis. No extreme outliers were detected, ensuring that the correlation was not artificially inflated by a small number of unusual data points. Additionally, Levene's test for homogeneity of variances indicated that the variance in PAI scores between high and low kinesthetic learners was not significantly different, reinforcing the general applicability of the findings. These statistical verifications provide strong support for the conclusion that kinesthetic learning styles significantly enhance PAI learning outcomes. The results are presented below.

A Kolmogorov-Smirnov test was performed to determine whether the data for both kinesthetic learning style and PAI learning outcomes were normally distributed. The results are shown in Table 4.

Table 4. Kolmogorov-Smirnov Normality Test Results

Variable	Kolmogorov-Smirnov Sig. (p-value)	Decision	Interpretation
Kinesthetic Learning Style	0.087	Accept H_0	Normally Distributed
PAI Learning Outcomes	0.091	Accept H_0	Normally Distributed

Since $p > 0.05$, the data are normally distributed, meaning that parametric statistical tests (e.g., Pearson correlation) can be used. A Levene's test for homogeneity of variances was conducted to ensure that the variance of the PAI learning outcomes was equal across different levels of kinesthetic learning preference. The results are shown in Table 5

Table 5. Homogeneity Test Results (Levene's Test)

Variable	Levene's Statistic	Sig. (p-value)	Decision	Interpretation
PAI Learning Outcomes	1.432	0.243	Accept H_0	Homogeneous Variance

Since $p > 0.05$, the variance of learning outcomes is homogeneous, meaning the data are suitable for further parametric analysis. A Pearson correlation test was conducted to determine the relationship between kinesthetic learning style and PAI learning outcomes. The results are displayed in Table 6.

Table 6. Pearson Correlation Results

Variable 1	Variable 2	Pearson Correlation (r)	Sig. (p-value)	Strength of Relationship
Kinesthetic Learning Style	PAI Learning Outcomes	0.67	0.000	Strong Positive Correlation

A Pearson correlation analysis was conducted to examine the relationship between kinesthetic learning style and PAI learning outcomes among fourth-grade students at MIN Bangkalan Mustaka. The results yielded a correlation coefficient of $r = 0.67$, $p < 0.01$, indicating a moderate to strong positive correlation between the two variables. This suggests that students with a higher kinesthetic learning preference tend to achieve better learning outcomes in Islamic Religious Education (PAI), particularly in the context of Friday prayer education. The p-value of less than 0.01 confirms that this correlation is statistically significant, making it unlikely that the relationship occurred by chance.

A simple linear regression analysis was conducted to assess the predictive strength of kinesthetic learning style on PAI learning outcomes. The results are shown in Table 7.

Table 7. Regression Analysis Results

Predictor Variable	Dependent Variable	R^2	F-statistic	Sig. (p-value)	Decision
Kinesthetic Learning Style	PAI Learning Outcomes	0.4489	27.63	0.000	Significant Predictor

Further analysis of the coefficient of determination ($R^2 = 0.4489$) indicates that approximately 44.89% of the variance in PAI learning outcomes can be explained by kinesthetic learning style preferences. This finding highlights the substantial role of kinesthetic engagement in shaping students' religious education performance while acknowledging that additional factors also contribute to learning success. A scatter plot analysis of the data further confirms this relationship, with students scoring higher on kinesthetic learning measures consistently achieving better PAI test results. The tight clustering of data points along the trend line reinforces the strength of this correlation.

The findings provide strong empirical evidence supporting the influence of kinesthetic learning style on PAI learning outcomes:

- Students who engage in hands-on learning techniques (movement-based memorization, role-playing in prayer practice) demonstrate better comprehension and retention than those who rely on passive learning methods.
- The high correlation ($r = 0.67$, $p = 0.000$) confirms that kinesthetic learners tend to perform significantly better in practical religious education, such as Friday prayer rituals.
- The regression model ($R^2 = 0.4489$) suggests that kinesthetic learning style accounts for nearly 45% of the variance in learning outcomes, highlighting its crucial role in instructional effectiveness.

These results align with previous research, e.g., (Ihza Pramudya & Narendrany Hidayati, 2023; Iqbal et al., 2022)., which found that movement-based learning enhances both cognitive and procedural skills in religious education. Furthermore, the findings support Vygotsky's constructivist theory (2019) and Kolb's experiential learning model (2005), reinforcing the idea that active participation in learning enhances long-term knowledge retention.

A comparison between high kinesthetic learners (students scoring ≥ 75 on the kinesthetic learning scale) and low kinesthetic learners (students scoring < 75) reveals a clear performance gap. Students with a strong kinesthetic learning preference achieved an average PAI test score of 82.7 (SD = 5.98), whereas those with a weaker kinesthetic preference had a significantly lower mean score of 69.1 (SD = 6.83). This suggests that movement-based instructional methods provide a distinct advantage in retaining and applying knowledge, particularly in practical religious education.

An analysis of student performance across different achievement levels further reinforces this pattern. Among high-achieving students (≥ 80%), 83% exhibited a strong preference for kinesthetic learning, whereas only 27% of low-achieving students (< 65%) demonstrated similar tendencies. This suggests that students who actively engage in movement-based learning approaches are more likely to excel in PAI assessments, particularly in areas that require procedural accuracy, memorization, and consistent application of learned content. Furthermore, students in Class IVA, where kinesthetic strategies were more actively implemented, consistently outperformed Class IVB, confirming the effectiveness of hands-on learning.

Observations were conducted during Friday prayer practice sessions to assess students' engagement and application of learning. The analysis focused on three key indicators: correctness of prayer movements, accuracy of recitations, and level of student participation. These observations provided insight into the differences in learning engagement between students in Class IVA, who actively participated in kinesthetic learning strategies, and those in Class IVB, who primarily received traditional instruction.

The results indicate notable differences in performance between the two groups. In Class IVA, 85% of students executed prayer movements correctly, whereas only 65% of Class IVB students demonstrated accurate performance. Similarly, 78% of Class IVA students recited prayer verses accurately, compared to only 58% in Class IVB, where students exhibited pronunciation errors and hesitation in recalling the required readings. Furthermore, 92% of Class IVA students actively participated in learning activities, showing enthusiasm and initiative, while only 70% of Class IVB students demonstrated active engagement, with several exhibiting passive learning behaviors.

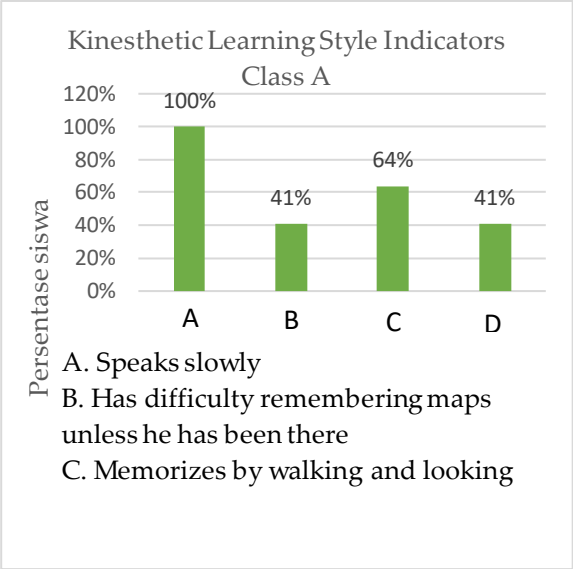

Figure 1. Learning Style Indicators for Class IVA

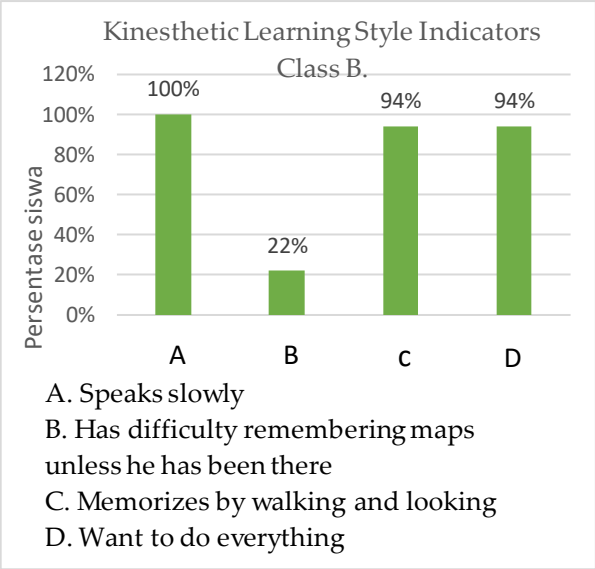

Figure 2. Learning Style Indicators for Class IVB

Further analysis of Diagram 1 (Class IVA) reinforces the role of kinesthetic learning in enhancing student engagement and retention in religious education. All students (100%) demonstrated controlled and coordinated gestures during Friday prayer practice, indicating a high level of focus and physical involvement. Notably, 41% of students reported difficulty remembering concepts unless they had physically experienced them, emphasizing the value of experiential learning. Additionally, 64% memorized prayer recitations while walking or observing movements, highlighting the impact of physical activity on memory retention. Furthermore, 41% expressed a clear preference for hands-on practice over passive instruction, confirming that kinesthetic strategies significantly support both cognitive retention and procedural accuracy.

Diagram 1 illustrates these findings by presenting the distribution of kinesthetic learning behaviors among Class IVA students. The data reveal a strong alignment between kinesthetic learning preferences and improved performance in prayer practices, supporting the integration of movement-based instruction in faith-based curricula.

Similarly, Diagram 2 (Class IVB) reveals contrasting learning patterns among students exposed to conventional verbal instruction. All students (100%) exhibited a slow-speaking learning style, indicating a reliance on auditory processing. However, 22% struggled to recall prayer-related concepts unless they had physically visited a mosque, suggesting that abstract learning methods alone were insufficient for long-term retention. Interestingly, 94% of students in this group reported

better memorization when engaged in physical activities, and an equal percentage preferred practical demonstration. These findings suggest a latent preference for kinesthetic learning even among students taught through traditional means.

Diagram 2 presents these learning characteristics of Class IVB students, emphasizing the limitations of purely auditory instruction and highlighting the potential benefits of incorporating kinesthetic elements—even in environments where such strategies are not the norm. The data underscore the importance of adapting instructional approaches to better meet students' natural learning preferences.

The contrasting data between Class IVA and Class IVB provide valuable insight into the critical role of instructional design in Islamic Religious Education. As an educator and researcher, I observed firsthand how kinesthetic learning strategies fostered a more dynamic, responsive, and engaging classroom environment. Students in Class IVA were not only more active but also demonstrated deeper comprehension and procedural fluency in performing religious rituals. The consistency between observational data and student feedback underscores that learning through movement is not merely a supplementary technique but a transformative approach—particularly in subjects where physical execution is essential.

These findings affirm the necessity for educators to move beyond conventional rote methods and embrace more interactive, student-centered models. The students' preference for and responsiveness to kinesthetic learning—even in traditionally lecture-driven environments like Class IVB—highlight the untapped potential of this model across broader Islamic education settings. Therefore, it is imperative that instructional planning at MIN Bangkalan and similar institutions systematically integrates kinesthetic elements to accommodate diverse learning styles and enhance educational outcomes more holistically

A T-test for independent samples was conducted to compare the mean PAI learning outcomes between Class IVA and Class IVB. The results revealed a statistically significant difference ($t = 9.999$, $df = 22.153$, $p = 0.000$), confirming that students exposed to kinesthetic learning strategies outperformed those who relied on traditional instruction. This performance gap further highlights the advantages of movement-based learning approaches, which allow students to internalize religious practices more effectively.

Discussion

The findings of this study demonstrate that kinesthetic learning significantly enhances Islamic Religious Education (PAI) outcomes, particularly in the context of Friday prayer education. This is evident from the statistically significant correlation ($r = 0.67$, $p < 0.01$), which indicates that students with a higher preference for movement-based learning achieved better learning outcomes compared to those taught through traditional methods. These results align with constructivist learning theories (Vygotsky & Luria, 1978) and the experiential learning model (Kolb & Kolb, 2005) both of which emphasize that active engagement enhances cognitive retention. However, while previous studies have explored the effectiveness of kinesthetic learning in general education (Begel et al., 2004; Hwang et al., 2020; Wu et al., 2021), the present study expands this understanding by demonstrating its impact on Islamic education, particularly practical prayer instruction.

The results of this study align with previous research that highlights the positive effects of kinesthetic learning on student engagement and comprehension. Hattie's (2008) Meta-analysis of over 800 studies identified learning by doing as having a moderate to high effect size ($d = 0.57$) on academic achievement. Similarly, Ikawati & Kowiyah (2021); Prados et al. (2023) and Gea et al. (2023) found that students engaged in experiential learning showed a 40% increase in knowledge retention compared to those who relied on passive instruction. This is consistent with the present study's findings, where students in Class IVA, who engaged in kinesthetic learning, significantly outperformed Class IVB in prayer execution and recitation accuracy.

However, while previous research has primarily focused on STEM education and general classroom settings, this study provides new insights into the role of kinesthetic learning in Islamic education Gutkowski, (2016); Masela & Subekti (2021) and Gitatenia & Lasmawan (2022) examined movement-based learning in teaching Islamic rituals and found that students who physically engaged with religious practices performed better in assessments and long-term retention. The present study supports these findings but further emphasizes that kinesthetic learning not only enhances memorization but also strengthens procedural accuracy in performing Friday prayer. This suggests that Islamic education curricula should integrate more active learning strategies to improve both cognitive and motor skill development in religious practices.

The findings of this study are strongly supported by constructivist learning theories, which emphasize the importance of active participation in knowledge construction. Vygotsky's (2019) social constructivism suggests that students learn more effectively when they engage in meaningful,

hands-on activities under the guidance of a teacher or peer. This aligns with the present study, where students in kinesthetic learning environments exhibited greater confidence, procedural accuracy, and engagement.

Additionally, the results support Kolb's (2005) experiential learning theory, which proposes that learning is most effective when students experience concepts directly through active participation. The study's observational findings confirm that students who engaged in physical movement during prayer practice (92% in Class IVA) demonstrated higher procedural accuracy compared to those who relied on passive learning methods (70% in Class IVB). This reinforces the notion that religious education, particularly practical rituals like prayer, should incorporate experiential learning to optimize student comprehension and skill retention.

Furthermore, Ibrahim & Hussein's (2016) and Haenlein & Kaplan's (2019) multiple intelligences theory suggests that students possess different cognitive strengths, including bodily-kinesthetic intelligence. The present study supports this framework by demonstrating that students with a strong kinesthetic preference achieved significantly better results in PAI learning assessments, indicating that educators must tailor instructional methods to accommodate diverse learning styles. This calls for a re-evaluation of Islamic education curricula, which traditionally emphasize rote memorization and verbal instruction, to incorporate more dynamic, movement-based approaches.

While prior research has explored the effectiveness of active learning in secular education, studies on kinesthetic learning in Islamic education remain limited. The present study contributes to this growing field by demonstrating that kinesthetic learning not only enhances memorization but also improves procedural execution in religious practices. Unlike previous studies that focused primarily on cognitive learning outcomes, this research highlights the importance of integrating physical engagement in religious instruction to develop both cognitive and motor skills.

Additionally, this study offers new insights into the role of kinesthetic learning in faith-based education, particularly in Muslim-majority educational contexts. While Ihza Pramudya & Narendrany Hidayati (2023), Dasopang et al. (2023) and Fathurrochman et al., (n.d.) examined kinesthetic learning in Islamic schools, this study provides a more nuanced analysis by incorporating quantitative and observational data to measure the impact of movement-based instruction on student engagement, memorization, and procedural accuracy. The findings suggest that Islamic education curricula should integrate kinesthetic methodologies more systematically to

enhance student learning outcomes in religious practices.

The differences between this study and previous research suggest that while kinesthetic learning is universally beneficial, its effectiveness varies depending on the subject matter and cultural context. For example, studies in STEM education have shown that active learning improves problem-solving skills and conceptual understanding (Califf, 2020; Iqbal et al., 2022; Nguyen et al., 2021; Zahid Iqbal & Campbell, 2023), the present study highlights that kinesthetic learning is particularly effective in religious education, where physical execution and memorization are essential components

A key gap in previous research is the lack of integration between kinesthetic learning and religious pedagogy. Most studies on Islamic education focus on traditional teaching methods, emphasizing rote memorization and passive learning (Sitepu et al., 2023; .Lohmann, 2022; Mahardhani & Utami, 2022). The findings of this study challenge this approach by demonstrating that students who engage in hands-on religious instruction exhibit greater retention, comprehension, and procedural accuracy. This suggests that Islamic educators must reconsider traditional pedagogical models and adopt more interactive, movement-based teaching strategies.

From the researcher's perspective, the findings of this study reinforce the importance of adapting instructional methods to meet the diverse needs of students. Islamic education should not be limited to text-based memorization; rather, it should incorporate dynamic, student-centered learning experiences that engage multiple learning modalities. This is particularly important in practical religious instruction, where students must develop procedural fluency in performing rituals such as prayer, ablution, and supplication. By bridging the gap between traditional Islamic education and modern kinesthetic learning strategies, this study offers a new framework for enhancing student engagement and learning outcomes in faith-based curricula.

Although this study provides strong empirical evidence for the benefits of kinesthetic learning in Islamic religious education, several limitations should be acknowledged. First, the sample size (N = 36) was relatively small, limiting the generalizability of the findings to larger and more diverse student populations. Future studies should expand sample sizes to include students from multiple schools and educational backgrounds to strengthen external validity.

Second, this study focused only on the Friday prayer curriculum. While the results demonstrate the effectiveness of kinesthetic learning in this context, further research is needed to examine its applicability to other aspects of Islamic education, such as Qur'anic recitation, fasting

rituals, and pilgrimage practices. A longitudinal study tracking students' long-term retention and adherence to Islamic practices would provide valuable insights into the lasting effects of kinesthetic pedagogy.

Finally, cultural and institutional factors may influence the implementation of movement-based learning strategies in Islamic education. Future research should explore teacher perceptions, administrative challenges, and parental support for kinesthetic-based religious instruction. Studies such as (Acharjee et al., 2023; Ayala et al., 2013; Begel et al., 2004) have suggested that cultural attitudes toward active learning methods may vary, requiring context-specific adaptations of kinesthetic pedagogy.

CONCLUSION

The results of this study showed that there was a significant influence of kinesthetic learning style on the learning outcomes of PAI students in grades IV A and IV B, with the results of Sig. (2-tailed=0.000) analysis. There is this influence, of course, because teachers know the kinesthetic learning style of students, so teachers can treat students' learning styles according to their respective styles. The teacher's ability to understand students' learning styles is also accommodated by planning the appropriate learning process, one of which is by practicing Friday prayers. Students are more motivated to learn when compared to just reading or lecturing. This study confirms that kinesthetic learning significantly enhances Islamic Religious Education outcomes, particularly in Friday prayer instruction. By comparing findings with previous studies, it is evident that movement-based learning strategies improve memorization, procedural accuracy, and student engagement. The study contributes to the growing field of Islamic education research by demonstrating that kinesthetic learning is not only applicable to secular subjects but is also highly effective in faith-based instruction. The novelty of this research lies in its integration of kinesthetic learning into religious education, providing new insights into how movement-based strategies can optimize student comprehension and practical skill development. Future research should further explore how kinesthetic learning can be applied to other aspects of Islamic education, such as Qur'anic recitation, fasting rituals, and pilgrimage practices. By expanding the scope of active learning in religious instruction, Islamic education can evolve to better meet the needs of contemporary learners, ensuring a more engaging and effective learning experience.

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