LEARNING OUTCOMES: HOW DOES THE EXPERIMENTATION OF THE MEA AND STAD MODELS?

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***ABSTRAK**: Pembelajaran PAI sangat penting untuk membentuk karakter dan moral peserta didik. Namun, hasil belajar peserta didik seringkali belum optimal karena penggunaan model pembelajaran yang kurang bervariasi. Salah satu cara untuk memperbaiki hasil belajar adalah dengan menerapkan model pembelajaran Means-Ends Analysis (MEA) dan Student Teams Achievement Division (STAD). Kedua model ini memiliki pendekatan yang berbeda, tetapi keduanya menekankan kerja sama dan analisis untuk meningkatkan hasil belajar peserta didik. Penelitian ini bertujuan untuk mengetahui apakah model pembelajaran MEA dan STAD efektif dalam meningkatkan hasil belajar siswa pada mata pelajaran PAI di SMA Negeri 10 Bandar Lampung. Penelitian ini menggunakan pendekatan kuantitatif dengan desain eksperimen semu. Sampel diambil secara acak menggunakan teknik simple random sampling, tanpa memperhatikan tingkatan kelas. Instrumen yang digunakan adalah soal tes pilihan ganda. Kelas X.1 digunakan sebagai kelas kontrol, sementara kelas X.5 dan X.7 sebagai kelas eksperimen. Hasil penelitian menunjukkan bahwa uji normalitas menghasilkan nilai 0,00 < 0,05, yang berarti data tidak terdistribusi normal. Oleh karena itu, uji yang digunakan adalah uji non-parametrik Mann-Whitney, dengan hasil 1,00 untuk model MEA dan 0,007 untuk STAD. Uji homogenitas menunjukkan nilai 0,407 > 0,05, yang berarti data bersifat homogen. Hasil uji hipotesis dengan ANOVA one-way menghasilkan nilai 0,376 > 0,05, yang berarti H0 diterima dan Ha ditolak, sehingga dapat disimpulkan bahwa tidak ada pengaruh signifikan dari model MEA dan STAD terhadap hasil belajar siswa. Penelitian ini memberikan kontribusi baru dengan membandingkan kedua model pembelajaran yang lebih sering diterapkan pada mata pelajaran matematika daripada PAI, serta merespon masalah seperti rendahnya motivasi belajar dan kurangnya inovasi dalam pembelajaran, sehingga diharapkan dapat memberikan kontribusi dalam dunia pendidikan, khususnya dalam pembelajaran PAI*

***Kata Kunci**: Metode Pengajaran, MEA, STAD, Pencapaian Belajar, PAI*

ABSTRACT: *Religious Education (PAI) plays a key role in developing students' character and values. However, students' academic results are often not as good as they could be because of the use of limited teaching methods. One way to enhance learning outcomes is by applying the Means-Ends Analysis (MEA) and Student Teams Achievement Division (STAD) teaching models. This study seeks to assess the effectiveness of the MEA and STAD learning models on students' learning outcomes in Religious Education (PAI) at SMA Negeri 10 Bandar Lampung. A quantitative approach with a quasi-experimental design was used in the research. The sampling method applied*

is probability sampling, specifically simple random sampling, where classes are selected randomly without regard to their grade levels. The research instrument is a multiple-choice test. Class X.1 was designated as the control group, while classes X.5 and X.7 served as the experimental groups. The findings revealed that the normality test showed a value of 0.00 < 0.05, indicating the data was not normally distributed. As a result, a non-parametric Mann-Whitney test was performed, yielding results of 1.00 for the MEA model and 0.007 for the STAD model. The homogeneity test showed a result of 0.407 > 0.05, indicating homogeneity of the data. The hypothesis test using one-way ANOVA resulted in 0.376 > 0.05, leading to the acceptance of H0 and rejection of Ha, suggesting no significant effect of the MEA and STAD learning models on students' learning outcomes. This research provides a unique contribution by comparing two learning models that are more commonly used in mathematics rather than in PAI. Furthermore, the study addresses educational challenges such as low learning motivation and the need for more innovative teaching methods, with the aim of contributing to the field of education, particularly in Religious Education (PAI).

Keywords: *Teaching Methods, MEA, STAD, Academic Performance, Religious Education (PAI)*

I. INTRODUCTION

The learning process is a key element of education, as it is the main way to reach learning objectives. Student performance is one of the factors that determine success in learning (Nikmah et al., 2024). However, challenges often arise, such as poor learning outcomes, which can be caused by various factors, including the use of limited teaching methods. Therefore, it is important to innovate teaching approaches to enhance students' learning results, particularly in Religious Education (PAI) (Y. Sari et al., 2023).

Based on Law No. 20 of 2003 on the National Education System, the aim of education is to develop students' potential to become individuals who are faithful and devoted to God, possess good character, are healthy, intelligent, and prepared to compete (Pelawi & Is, 2021). This goal is also in line with the objectives of PAI (Religious Education), which aims to develop students' character based on Islamic values, such as good morals, honesty, and productivity (Ulfan & Hasan, 2023). To achieve this goal, an innovative and effective teaching approach is required, in line with the mandate of the law.

Learning is strongly connected to the processes of studying and teaching, as all three activities occur simultaneously (Sutiah, 2020). Learning is the process of interactive activities between teachers and students, involving reciprocal communication that takes place in an educational setting to achieve learning objectives (Dhamayanti, 2022; Nabilah et al., 2023; Ni'amah & M, 2021; Pahru et al., 2023). At the conclusion of the learning process, students can evaluate the quality of their learning through tests, with the results serving as a reflection of their overall performance (Najah & Nurhalimah, 2023). The

goal of Islamic Education is to develop students with noble character, knowledge, diligence in worship, honesty, and productivity, while shaping their character to foster moral attitudes and behaviors aligned with Islamic values (Firsya Yunia Amanda et al., 2024; Munawir et al., 2024; Pitri et al., 2022; Salisah et al., 2024).

Learning outcomes refer to the accomplishments students achieve upon completing the learning process (Somayana, 2020). Learning outcomes are also defined as changes in a person's behavior or traits that can be observed and measured, encompassing knowledge, attitudes, and skills (Siti, 2023). This change can be interpreted as an improvement and progress, where something previously unknown becomes known (Yandi et al., 2023). Students must study diligently to achieve optimal learning outcomes (Hamilton et al., 2021; Pamungkas et al., 2023; Ryan et al., 2022). Enhancing learning outcomes requires skilled teachers and effective teaching methods. When educators demonstrate high teaching proficiency, students' learning achievements can improve substantially (Pebrianti & Irawati, 2024; Pipit Muliyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, 2020; Sutanto, 2024).

Initial observations and a series of interviews conducted at SMA Negeri 10 Bandar Lampung highlighted several challenges affecting students' learning outcomes in Islamic Religious Education (PAI). These issues include: (1) varying levels of material comprehension among students, which may contribute to lower learning outcomes in PAI subjects, (2) the use of traditional teaching methods, leading to boredom and reduced student engagement during lessons, (3) low learning motivation, resulting in a lack of enthusiasm and reluctance to study, and (4) poor classroom management, causing students to lose focus on the teacher’s explanations and even become drowsy during class.

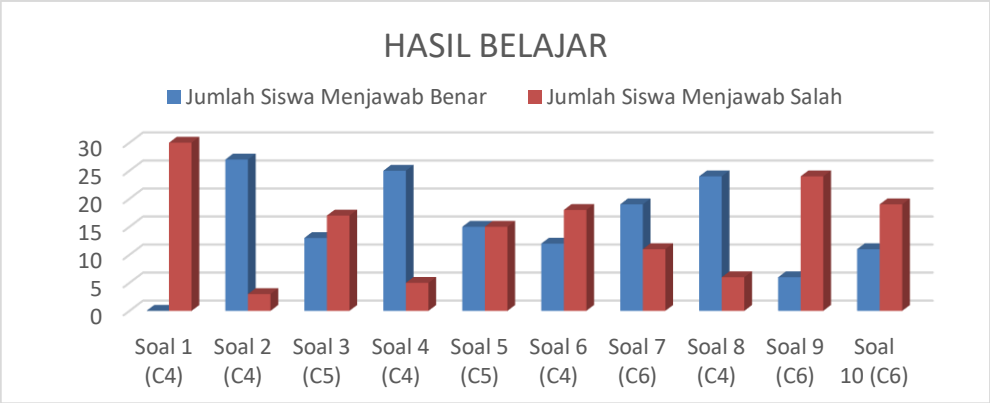

Figure 1

Bar Chart of Students' Learning Outcomes Test

The presented learning outcomes indicate that students' performance in the Islamic Religious Education (PAI) subject remains below expectations and has not met the Minimum Completion Criteria (KKM). According to Bloom's Taxonomy, the cognitive

domain is categorized into six levels: C1 (Knowledge), C2 (Comprehension), C3 (Application), C4 (Analysis), C5 (Synthesis), and C6 (Evaluation) (Mahmudi et al., 2022; Nani Widiyawati, 2019; Rofiq, 2024). At SMA Negeri 10 Bandar Lampung, students are expected to achieve these cognitive aspects and obtain learning outcomes above the Minimum Completion Criteria (KKM). In the Islamic Religious Education (PAI) subject at SMA Negeri 10 Bandar Lampung, the cognitive aspects (C4-C6) are still considered low. The use of traditional teaching methods is one of the factors contributing to low learning outcomes. This highlights the importance of adopting a teaching model that fosters a more interactive learning environment, allowing students to actively participate in the learning process. Implementing an interactive teaching approach can enhance the quality of education and positively impact students' learning outcomes.

One way to address this issue is by implementing a more creative teaching model, so that the learning process becomes more engaging and less monotonous. (Stiawan et al., 2024). A teaching model that can be utilized is the Means-Ends Analysis model (Kamila & Waluya, 2023). The MEA teaching model has a great potential to improve students' learning outcomes. In classroom learning, teachers should adopt more creative teaching methods to make lessons more interesting and break away from monotony (Anditiasari et al., 2021). The MEA teaching model is a flexible learning approach that blends problem-solving methods with a structured framework for presenting material. It uses a heuristic, problem-based strategy that breaks problems into smaller, achievable sub-goals (Apriatni et al., 2022). Implementing the MEA teaching model can enhance students' motivation to work together, engage actively, and stay focused during learning activities (Fahrurrozi & Edwita, 2022). Moreover, this model aims to help students develop problem-solving skills, think creatively and critically, and achieve a more meaningful learning experience (Pratama et al., 2017; Rositasari et al., 2020).

Besides applying the MEA teaching model, teachers can also utilize the Student Teams Achievement Division (STAD) model. This group-based learning approach involves organizing students into teams of 4-5 members from diverse backgrounds and delivering lessons through verbal and text presentations within each group during every session (Nurfaizah, 2023). This teaching model is implemented through group work, as there are several high-achieving students who serve as mentors, thereby resulting in high learning achievements (N. R. Ananda, 2022; Eriza & Selaras, 2023; Kusmawan et al., 202 C.E.). The implementation of the STAD teaching model is expected to encourage active student participation in the learning process, leading to improved learning outcomes

The findings from the study conducted by Aflich Yusnita (2022), Sinta Purnamasari (2023), Syifa Nabilah (2023), Rizka Eriza (2023), dan Dyah Wardha Tsabita (2020) It is stated that the MEA and STAD teaching models have effectiveness in improving students' learning outcomes. This study makes a new contribution by filling the gap in previous

research on the application of MEA and STAD learning models. While the effectiveness of these models in enhancing learning outcomes has been established, most previous studies have concentrated on subjects like mathematics, particularly in fostering problem-solving skills. This research is unique because it applies both models to Religious Education (PAI), a field that has not been extensively studied. It examines not only cognitive aspects but also other dimensions, such as attitudes and skills that align with Islamic values. By implementing the MEA and STAD models, this study expands the existing body of knowledge and makes a significant contribution to innovative learning in PAI, especially in enhancing students' learning outcomes. It builds on prior research and provides a new perspective on the use of innovative teaching models in PAI to improve the overall quality of education in schools.

The decline in learning outcomes in PAI subjects, both in knowledge and skills, may stem from the use of conventional teaching methods that lead to passive student engagement in the classroom. Hence, this research aims to explore and identify effective teaching models suitable for PAI subjects. Implementing more creative teaching approaches can capture students' interest, fostering greater enthusiasm for learning. The study's findings confirm that the chosen teaching models enhance student engagement and ultimately improve learning outcomes in PAI subjects. These findings emphasize the importance of adopting effective teaching strategies in PAI education and encourage teachers to design more innovative learning activities to prevent monotony. This research not only expands understanding of the MEA and STAD teaching models but also contributes to shaping the future of education in Indonesia, driving it toward greater innovation and creativity.

II. RESEARCH METHOD

This research employs a quantitative approach using a quasi-experimental design with a posttest-only control-group design. The study was conducted during the odd semester of the 2024/2025 academic year at SMA Negeri 10 Bandar Lampung. Given the type of data collected, this research is classified as quantitative. The MEA and STAD teaching models were applied as independent variables by the researcher during the study at the school. Learning outcomes were measured as the dependent variable, assessed after the implementation of these teaching models in the experimental class.

The sampling method used in this study is probability sampling with a simple random sampling technique, where classes are selected randomly without considering their levels. The classes involved include class X.1, which used the conventional teaching model; class X.5, which applied the MEA teaching model; and class X.7, which implemented the STAD teaching model. A multiple-choice questionnaire consisting of 15 items was used as the instrument for this study. Before being administered to the control and experimental groups, the questionnaire was validated by a reviewer and then tested in a trial class outside the sample. The trial results underwent validity and reliability

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tests, leading to the selection of 10 valid items. These 10 items were then distributed to both the control and experimental classes. After data collection, the results were organized and tested for normality, homogeneity, and hypotheses using one-way ANOVA. Data analysis was performed using IBM SPSS Statistics 22, chosen for its suitability and ease of use.

III. THEORITICAL REVIEW

A. The Means Ends Analysis (MEA) Instructional Model.

The Means Ends Analysis (MEA) teaching model is derived from three terms: 'means,' which refers to a method, 'ends,' meaning a goal, and 'analysis,' which means to examine or study (Amin & Linda Yurike Susan Sumendap, 2022). Therefore, the MEA learning model is an approach that links each step to the intended goals, employing detailed analysis to ensure that every step is both effective and appropriate. The steps of the MEA teaching model are as follow.

a) The teacher teaches using a problem-solving approach based on discovery.
b) The teacher explains the desired outcomes or goals to be achieved.
c) Students identify the conditions needed to achieve those goals.
d) Students break down the main problem into smaller sub-problems.
e) Students describe the current situation based on the smaller sub-problems.
f) Students identify differences and connect the sub-problems to make them interrelated.
g) Students analyze the necessary methods to achieve the goals.
h) Students create and implement a plan.
i) Students choose the best strategy to solve the same problem.
j) Students conduct a review and evaluation (Sudarman & Linuhung, 2021).

Experts assert that the MEA learning model is a structured, analysis-driven approach, where each step is closely connected to the objectives to be achieved. This process involves thorough analysis to ensure that the steps are both efficient and relevant. By following this model, students are able to develop a deeper understanding of problems, while also fostering critical thinking, strategy formulation, and solution evaluation. Consequently, the MEA learning model proves to be an effective method for enhancing students' problem-solving skills in a systematic and independent way.

B. Student Teams Achievement Division (STAD) TeachingModel

The Student Teams Achievement Division (STAD) teaching model is a cooperative learning approach in which students encourage and assist one another in understanding the material, leading to improved learning outcomes (Wijayama, 2023). The steps of the Student Teams Achievement Division (STAD) teaching model are as follows.

a) The teacher explains the learning objectives and motivates students to study.
b) The teacher divides the students into groups of 4-5 people, ensuring diverse abilities, backgrounds, and characteristics.
c) The teacher teaches the lesson and explains the objectives and importance of the topic to be studied.
d) Students discuss in their groups. The teacher prepares worksheets as a guide and provides feedback if anything is unclear.
e) Students share the outcomes of their group discussion with the class, while the other groups listen.
f) The teacher gives a quiz to assess students' individual learning outcomes, without collaboration, and sets a minimum score for material mastery.
g) The teacher rewards the groups. Students who are more capable help their peers understand the material, while students who struggle can ask their more knowledgeable peers for help (Wijayama, 2023).

Experts suggest that the STAD learning model is an effective cooperative strategy for enhancing students' learning outcomes. In this model, students encourage each other and collaborate in diverse groups to understand the material. Each stage of the STAD model, from defining objectives to individual assessments and group rewards, is structured to foster active engagement, mutual assistance, and collective responsibility in achieving learning goals. This method not only improves students' understanding but also strengthens their social skills through teamwork and productive discussions.

C. Learning Outcomes

According to Bloom, learning outcomes encompass cognitive, affective, and psychomotor abilities (Fatirani, 2022). Learning outcomes can be defined as the level of success students achieve in learning the subject matter in school, which is expressed in the form of scores obtained from tests on specific subject matter (Siti, 2023). In this study, the researcher will conduct an experiment with two teaching models, MEA and STAD, to evaluate their impact on student learning outcomes in the PAI subject at SMA Negeri 10 Bandar Lampung. The learning outcomes will be assessed based on cognitive aspects (C4-C6) using Higher Order Thinking Skills (HOTS) questions. In this study, learning outcomes are defined as the level of success students attain in comprehending the lesson material, which is evaluated through test scores to measure the depth of their understanding.

IV. RESULT AND DISCUSSION

A. RESULT

This research was conducted at SMA Negeri 10 Bandar Lampung, involving three sample classes: class X.1 as the control group, class X.5 as the experimental group using the MEA teaching model, and class X.7 using the STAD teaching model. Student learning outcomes were assessed based on the average scores of their learning results. The post-test questions given to the students included multiple-choice items focused on three indicators: C4 (analyzing), C5 (evaluating), and C6 (applying). Based on the data analysis

from the students in class X at SMA Negeri 10 Bandar Lampung, with learning outcomes as the research variable, the results are interpreted as follows.

1) Test for Normality

Normality testing is used to check if the collected data follows a normal distribution. The data is considered normally distributed if the significance value is greater than 0.05. A summary of the PAI students' learning outcomes in class X is shown in Table 1.

Table 1. Overview of the normality test results for the learning outcomes of class X PAI students at SMA Negeri 10 Bandar Lampung

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Hasil	Statistic	df	Sig.	Statistic	df	Sig.
Kelompok	Kontrol	.320	30	.000	.723	30	.000
	Eksperimen 1	.320	30	.000	.548	30	.000
	Eksperimen 2	.435	30	.000	.511	30	.000

a. Lilliefors Significance Correction

Based on the data in Table 1, the values for the experimental class using the MEA learning model are 0.000, and for the experimental class using the STAD learning model, the value is also 0.000. This indicates that the data is not normally distributed. Consequently, a non-parametric test, the Mann-Whitney test, was performed, yielding the following results.

Table 2. Outcomes of the Mann-Whitney Test for the MEA Experimental Group of PAI Students in Class X at SMA Negeri 10 Bandar Lampung

Test Statistics[a]

	Hasil
Mann-Whitney U	450.000
Wilcoxon W	915.000
Z	.000
Asymp. Sig. (2-tailed)	1.000

a. Grouping Variable: Kelompok

Table 3. Results of the Mann-Whitney Test for the STAD Experimental Group of PAI Students in Class X at SMA Negeri 10 Bandar Lampung

Test Statistics[a]

	Hasil
Mann-Whitney U	287.000
Wilcoxon W	752.000
Z	-2.697
Asymp. Sig. (2-tailed)	.007

a. Grouping Variable: Kelompok

2) Test for Homogeneity

The homogeneity test is used to check whether the variances of the data distribution are the same (homogeneous) or different (heterogeneous). The data is considered homogeneous if the significance value is greater than 0.05.

Table 4. Overview of the Homogeneity Test results for the learning outcomes of class X PAI students at SMA Negeri 10 Bandar Lampung.

Test of Homogeneity of Variances

Hasil

Levene Statistic	df1	df2	Sig.
.908	2	87	.407

According to Table 4, the homogeneity test results indicate a significance value of 0.407, which is greater than 0.05. Therefore, it can be concluded that the learning outcomes data of PAI students in class X at SMA Negeri 10 Bandar Lampung are homogeneous. This conclusion is further supported by the fact that the significance value (2-tailed) is 0.407, which is also greater than 0.05.

3) Test for Hypothesis

In this hypothesis test, the One-Way Anova test is used. Anova is a comparative analysis method for interval or ratio data, which utilizes the variance of group means to assess whether there are differences between the groups being studied. The One-Way Anova test is applied to evaluate the effect of an experiment involving one factor with three or more groups.

Table 5. Summary of the one-way ANOVA test results on the learning outcomes of class X PAI students at SMA Negeri 10 Bandar Lampung.

ANOVA

Hasil

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.622	2	2.311	.990	.376
Within Groups	203.200	87	2.336		
Total	207.822	89			

Based on the One-Way ANOVA test results in Table 5 using SPSS, the application of the MEA and STAD learning models on student learning outcomes yielded a value of 0.376, which is greater than 0.05. Therefore, it can be concluded that H0 is accepted and Ha is rejected, indicating that the MEA and STAD learning models do not have an effect on student learning outcomes.

B. DISCUSSION

The purpose of this study is to evaluate the effectiveness of the MEA and STAD learning models in enhancing students' learning outcomes in Religious Education (PAI) at SMA Negeri 10 Bandar Lampung. Additionally, the study aims to examine data distribution, test for variance equality, and compare the learning outcomes between the experimental and control groups using relevant statistical methods, including the normality test, Mann-Whitney test, homogeneity test, and One-Way Anova.

Table 6. An overview of the One-Way Anova test results for the learning outcomes of PAI students in grade X at SMA Negeri 10 Bandar Lampung.

ANOVA

Hasil

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.622	2	2.311	.990	.376
Within Groups	203.200	87	2.336		
Total	207.822	89			

According to Table 6 above, the learning outcomes of students in this study indicate that both the control and experimental groups obtained high scores. The One-Way ANOVA test yielded a value of 0.376, which is greater than 0.05. Based on these results, it can be concluded that the MEA and STAD learning models do not have a significant impact on students' learning outcomes in Religious Education (PAI) at SMA Negeri 10 Bandar Lampung. This indicates that the conventional teaching model is effective if the teacher is able to explain the material clearly, according to the characteristics of the subject matter, such as theoretical concepts or memorization, and students have the ability to learn independently, leading to high learning outcomes. On the other hand, the MEA and STAD models did not show effectiveness on learning outcomes, which could be attributed to several factors: 1) the limited duration of the MEA and STAD models; if the research duration is only a few meetings, students may not have fully understood or become accustomed to the teaching models, 2) the initial ability of students being the same, making it difficult to observe differences in learning outcomes since the students already have a strong foundational knowledge, and 3) the material being too easy; if the material taught is not challenging, students can grasp it using any method, causing the innovative teaching models not to produce better results (D. Ananda et al., 2020; Jus, 2024; Yandi et al., 2023).

The study by Made Rika Mulasari (Mulasari et al., 2020) involving a sample of 5th-grade elementary school students shows that the MEA learning model is effective in enhancing mathematics learning outcomes. Research by Tri Rositasari (Rositasari et al., 2020) conducted with students from the University of Muhammadiyah Palembang, found

that the MEA learning model is effective in improving English language skills. The study by Arif Wahyu Hidayat (Hidayat et al., 2020) demonstrates that the MEA model can enhance reasoning skills in mathematics. Research by Dhyah Wardha Tsabita (Tsabita et al., 2023) using a systematic literature review, indicates that the STAD learning model positively impacts students' learning outcomes. Finally, the research by Putri Mayang Sari (P. M. Sari & Musdi, 2023) shows that the STAD learning model is effective in improving the learning outcomes of eighth-grade mathematics students at SMP Negeri 24 Padang.

The distinction between this study and previous research is notable, as the MEA and STAD models were found to be more effective in enhancing learning outcomes compared to conventional models. However, my study shows that there was no significant impact from applying the MEA and STAD models on learning outcomes. This may be due to suboptimal learning conditions and the limited time available for implementing these models, which required students to adjust to new teaching methods. This highlights that not all teaching models work effectively in every context, and modifications must be made based on the characteristics of the students, teachers, and learning environment. (Putra et al., 2022; Sofia Ayu Lestari et al., 2022).

This study indicates that the use of the MEA and STAD learning models is a new approach for the researcher. Future studies should explore additional factors that may affect the implementation of these models in relation to student learning outcomes in PAI (Islamic Education) subjects. By giving more attention to the learning environment and students' psychological conditions, a noticeable difference between conventional teaching methods and the MEA and STAD models may emerge. This research aims to provide a foundation for future researchers to develop more effective teaching models that enhance student learning outcomes, especially in PAI subjects.

This study aims to evaluate the effectiveness of the MEA and STAD models on PAI learning outcomes at SMA Negeri 10 Bandar Lampung. The key findings reveal that the MEA model does not significantly improve learning outcomes when compared to traditional methods. In contrast, the STAD model yields better results, though the differences are not substantial. The conventional method produces achievement levels nearly identical to the MEA, but slightly lower than the STAD model.

This study faced various challenges, stemming from both internal and external factors related to the students. A significant obstacle was the difficulty in adjusting to the new learning model, particularly MEA, as it demands more complex analytical thinking. Moreover, the limited time for implementing the models during the study also impacted the effectiveness of the learning process. Variations in academic abilities among students within the same class also influenced the success of collaboration in the STAD model.

V. CONCLUSION

Based on the results and discussion, the application of the MEA and STAD learning models to student learning outcomes in PAI subjects at SMA Negeri 10 Bandar Lampung did not demonstrate effectiveness in improving learning outcomes, as shown by the One-Way ANOVA test where Ho was accepted and Ha was rejected. However, the lack of effectiveness of these models in this context does not imply that they are ineffective in general. This highlights that learning outcomes are influenced by various factors, not solely by the learning model used.

Future researchers should explore the implementation of the MEA and STAD learning models more thoroughly, especially in terms of enhancing student engagement and academic performance. Studies could also investigate ways to boost student motivation, which is essential for improving learning outcomes. It is important for researchers to examine classroom management in the context of MEA and STAD, focusing on creating more effective learning environments. Additionally, employing diverse assessment methods, such as group projects or discussions, could provide better insights into students' critical thinking abilities. Long-term studies, if possible, could offer valuable data on the lasting impact of the MEA and STAD models.

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