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# Deep Learning Approach In Islamic Religious Education (Pai) Learning As An Effort To Improve Students' Understanding In Vocational High Schools

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***Abstract:*** *This study aims to examine the effect of the Deep Learning approach on improving students' understanding in Islamic Religious Education (PAI) at vocational high schools. The research was motivated by the low level of students' conceptual and applicative understanding, as well as their tendency to rely on memorization rather than critical thinking. A quantitative approach with a pre-experimental design was employed, involving pretest and posttest assessments to measure students' learning outcomes before and after the implementation of the Deep Learning method. The findings indicate a significant improvement in students' understanding after the application of the Deep Learning approach. Students demonstrated better ability to analyze concepts, relate learning materials to real-life contexts, and express ideas more critically and reflectively. Statistical analysis showed that the data were normally distributed and homogeneous, allowing for parametric testing. The t-test results revealed a significant difference between pretest and posttest scores, confirming that the Deep Learning approach has a meaningful effect on students' comprehension. In addition, correlation and regression analyses indicated a strong positive relationship between the implementation of Deep Learning and students' understanding. Beyond cognitive improvement, changes were also observed in students' attitudes, including increased participation, confidence, and engagement during the learning process. These results suggest that the Deep Learning approach promotes meaningful, student-centered learning that goes beyond rote memorization. Therefore, this method is recommended as an effective strategy to enhance the quality of PAI learning, particularly in fostering deeper understanding and critical thinking skills among vocational high school students.*
***Keywords:*** *Deep Learning, Students' Understanding, PAI Learning*

**Abstrak:** Penelitian ini bertujuan untuk mengkaji pengaruh pendekatan Deep Learning terhadap peningkatan pemahaman siswa dalam pembelajaran Pendidikan Agama Islam (PAI) di sekolah menengah kejuruan. Penelitian ini dilatarbelakangi oleh rendahnya tingkat pemahaman konseptual dan aplikatif siswa, serta kecenderungan mereka untuk mengandalkan hafalan dibandingkan dengan kemampuan berpikir kritis. Penelitian ini menggunakan pendekatan kuantitatif dengan desain pra-eksperimen, melalui pemberian pretest dan posttest untuk

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mengukur hasil belajar siswa sebelum dan sesudah penerapan metode Deep Learning. Hasil penelitian menunjukkan adanya peningkatan yang signifikan dalam pemahaman siswa setelah penerapan pendekatan Deep Learning. Siswa menunjukkan kemampuan yang lebih baik dalam menganalisis konsep, mengaitkan materi pembelajaran dengan konteks kehidupan nyata, serta mengungkapkan gagasan secara lebih kritis dan reflektif. Analisis statistik menunjukkan bahwa data berdistribusi normal dan homogen, sehingga memenuhi syarat untuk pengujian parametrik. Hasil uji t menunjukkan adanya perbedaan yang signifikan antara nilai pretest dan posttest, yang menegaskan bahwa pendekatan Deep Learning memiliki pengaruh yang bermakna terhadap pemahaman siswa. Selain itu, analisis korelasi dan regresi menunjukkan adanya hubungan positif yang kuat antara penerapan *Deep Learning* dan pemahaman siswa.Selain peningkatan aspek kognitif, perubahan juga terlihat pada sikap siswa, seperti meningkatnya partisipasi, kepercayaan diri, dan keterlibatan dalam proses pembelajaran. Temuan ini menunjukkan bahwa pendekatan Deep Learning mendorong pembelajaran yang bermakna dan berpusat pada siswa, yang melampaui sekadar hafalan. Oleh karena itu, metode ini direkomendasikan sebagai strategi yang efektif untuk meningkatkan kualitas pembelajaran PAI, khususnya dalam mengembangkan pemahaman yang lebih mendalam serta kemampuan berpikir kritis siswa di sekolah menengah kejuruan.
**Kata Kunci:** Deep Learning, Pemahaman Siswa, Pembelajaran PAI

**Introduction**

Education is a fundamental factor in improving the quality of human resources in the era of globalization. In the learning process, students are not only required to master knowledge cognitively, but also to develop critical, analytical, and applicative thinking skills. One of the subjects that plays a strategic role in shaping character and value understanding is Islamic Religious Education (PAI). PAI learning is not merely oriented toward the mastery of subject matter, but also toward the internalization and implementation of Islamic values in daily life. Islamic Religious Education (PAI) instruction in the 21st century encounters more intricate obstacles due to advancements in science and technology, necessitating that students

develop skills in critical, creative, and reflective thinking.[12] The 21st century demands transformation in learning, including PAI teaching materials in order to fulfill the required skills. PAI material is very flexible and PAI teachers play an important role in adapting to 21st-century learning models.[34] In this context, PAI learning should not only emphasize cognitive aspects in the form of memorization, but also deep understanding and the practice of Islamic values in daily life.[56] However, the reality in the field shows that PAI learning still tends to be teacher-centered, resulting in limited student engagement in the learning process.[7]

This condition shows the importance of developing appropriate learning strategies, because effective learning strategies can increase student involvement as well as the quality of the learning process and learning outcomes, as stated by Arman that learning strategies are an important component in creating active, innovative, and meaningful learning.[89] At the same time, Islamic Religious Education can be conducted through spoken or unspoken methods, written or oral formats, focusing on evaluating cognitive skills, social abilities, interpersonal skills, and spiritual growth. Thus, there is a need for creative teaching approaches that incorporate interactive media, making the educational experience more impactful and enhancing students'

[1] Een Saenah, "Pengaruh Modernisasi Abad 21 Terhadap Peran Guru Dalam Pembelajaran Pendidikan Agama Islam," *Jurnal Pendidikan Profesi Guru Agama Islam* 2, no. 1 (2022): 129–36.

[2] Luthfi Aulia Hidayat, Elan Sumarna, and Pandu Hyangsewu, "Inovasi Pembelajaran PAI: Penerapan Kecerdasan Buatan Meningkatkan Motivasi Siswa," *Journal of Education Research* 5, no. 4 (2024): 5632–40.

[3] M. Ruslan AL-Ulum and Wahab Wahab, "Membangun Keterampilan Abad 21 Pada PAI Dengan Pembelajaran Kolaboratif Dan Pemikiran Kritis," *Jurnal Inovasi, Evaluasi Dan Pengembangan Pembelajaran (JIEPP)* 5, no. 1 (2025): 74–82, https://doi.org/10.54371/jiepp.v5i1.662.

[4] Bambang Samsul Arifin Fitri Handayani, Uus Ruswandi, "Pembelajaran PAI Di SMA: (Tujuan, Materi, Metode, Dan Evaluasi)" 2, no. 1 (2021): 93–101.

[5] Ramayulis, "Ilmu Pendidikan Islam," 2019.

[6] Muchammad Iqbal Chailani et al., "Teori Belajar Humanistik Dan Implikasinya Dalam Pembelajaran PAI," *Jurnal Pendidikan* 33, no. 2 (2024): 583–94, https://doi.org/10.32585/jp.v33i2.5287.

[7] Majid, "Perencanaan Pembelajaran: Mengembangkan Standar Kompetensi Guru," 2019.

[8] Dedi Arman, "Pengembangan Strategi Pembelajaran Dalam Proses Pembelajaran Pendidikan Agama Islam," *Jurnal Ilmu Pendidikan & Sosial (Sinova)* 1, no. 2 (2023): 107–19, https://doi.org/10.71382/sinova.v1i2.120.

[9] Eva Safitri, Ema Pariati, and Eko Nursalim, "Strategi Guru Dalam Meningkatkan Pengembangan Pembelajaran PAI," *An-Nafis: Jurnal Ilmiah Keislaman Dan Kemasyarakatan* 2, no. 1 (2023): 41–54, https://doi.org/10.62196/nfs.v2i1.32.

motivation to learn (Purnomo & Gusmaneli).[1011] Conventional learning approaches have advantages in delivering material systematically and efficiently, but have weaknesses in developing students' higher-order thinking skills.[12] In addition, low student involvement in learning has an impact on the less optimal conceptual understanding and spiritual values of students.[13] Learning that is not contextual causes students to have difficulty relating material to real life. Therefore, learning innovation is needed that is able to overcome these weaknesses while maintaining existing strengths, and PAI learning needs to transform following the demands of the Society 5.0 era, which emphasizes the importance of technology integration and character strengthening in the learning process,[14] one of these methods is by using the Deep Learning technique.[15]

Along with the development of educational paradigms, there is a need for learning approaches that can encourage active student engagement and enhance the quality of their understanding. One relevant approach is Deep Learning. According to Biggs (1999), Deep Learning is a learning approach that emphasizes deep understanding through processes of analysis, reflection, and the interconnection of concepts. This approach enables students not only to memorize information but also to comprehend its meaning and apply it in various contexts.[16] Several previous studies have demonstrated that the Deep Learning approach plays a significant role in

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[10] Dimas Purnomo, Muhammad Afif Marta, and Gusmaneli Gusmaneli, "Pemanfaatan Media Interaktif Dalam Strategi Pembelajaran PAI Untuk Meningkatkan Motivasi Belajar Peserta Didik," *Al-Tarbiyah : Jurnal Ilmu Pendidikan Islam* 3, no. 2 (2025): 64–77, https://doi.org/10.59059/al-tarbiyah.v3i2.2183.

[11] Supardi Ritonga et al., "Strategi Pembelajaran Pendidikan Agama Islam: Telaah Dalam Perspektif Al-Qur'an," *Jurnal Inovasi, Evaluasi Dan Pengembangan Pembelajaran (JIEPP)* 5, no. 1 (2025): 143–51, https://doi.org/10.54371/jiepp.v5i1.768.

[12] Moh Restu Hoeruman, Mochammad Nginwanun, and Likullil Mahamid, "Pendekatan Deep Learning Dalam Pembelajaran PAI Berbasis Sejarah Islam Deep Learning Approach in Islamic History-Based Islamic Religious Education Learning" 5, no. 2 (2025): 516–23.

[13] Muchammad Nurhasyim Hasanuddin, Muhammad Ali Rohmad, and Hajar Nurma Wachidah, "Penerapan Deep Learning Dalam Pembelajaran Pendidikan Agama Islam Di Sekolah Menengah Atas Negeri" 31 (2025): 263–69, https://doi.org/10.33503/paradigma.v31i2.2130.

[14] Syamsul Bahri, "Konsep Pembelajaran PAI Di Era Society 5.0," *Edupedia* 6, no. 2 (2022): 133–45.

[15] Islamic Wahyudin NS, Nanang Hermawan, Muhammad Syahri Aziz et al., "Inovasi Pembelajaran Agama Islam Dengan Deep Learning Dalam Upaya Meningkatkan Pemahaman Dan Minat Belajar Siswa Di Sman 1 Cikarang Timur Islamic Religious Learning Innovation With Deep Learning In An Effort Increase To Students ' Understanding And Intere," 2024, 32–48.

[16] John Biggs and Catherine Tang, *Teaching for Quality Learning at University*, 2011.

improving the quality of education. Deep Learning emphasizes meaningful understanding through processes of critical analysis, reflection, and the integration of knowledge, enabling students to connect concepts with real-life contexts. In the context of Islamic Religious Education (PAI), this approach is particularly relevant as it supports not only cognitive mastery but also the internalization and application of Islamic values in daily life.

Several past studies demonstrate that the Deep Learning method plays a significant role in enhancing the quality of education. Research by Hasanuddin et al. (2025) focuses on Islamic Religious Education learning in senior high schools and finds that the dominance of the lecture method causes students to only achieve low-level understanding, so an approach that encourages reflective and analytical thinking is needed . Research by Deny Khusnul Khotimah and Muhammad Rohmad Abdan (2025) emphasizes the integration of Islamic values in learning, with the result that reflection-based learning is able to increase spiritual awareness and students' understanding of PAI material . The study conducted by Hoeruman et al. (2025) examines the use of the Deep Learning method in teaching Islamic history and demonstrates a noteworthy improvement in both higher-order thinking abilities and student academic performance. Research by Wahyudin et al. (2024) shows that value-reflection-based learning has an effect on increasing students' understanding and religious awareness. Research by Sileuw and Faisal (year) shows that the integration of the Merdeka Curriculum in PAI learning encourages the use of more flexible, contextual, and student-centered learning approaches, so that it is able to improve the quality of students' understanding.[17]

These studies focus on aspects of student involvement, learning outcomes, and strengthening spiritual values, and are conducted at the general school level. These studies have not directly investigated how the Deep Learning method influences students' comprehension within the setting of vocational high schools (SMK). This research aims to examine how the Deep Learning method influences students' comprehension in Islamic Religious Education, particularly concerning both their conceptual and practical understanding at the vocational high school level. This research examines the impact of using the Deep Learning approach on students' comprehension in Islamic Religious Education in class X at SMK Negeri 1 Bulukerto. The aim of this study is designed to address the research question

[17] Junaidi, Marwan Sileuw, and Faisal, "Integration of the Independent Curriculum in Islamic Religious Education (PAI) Learning," *Indonesian Journal of Teaching and Teacher Education*, 2023, 40–47.

regarding the extent of the effect that the implementation of the Deep Learning approach has on enhancing students' understanding.

Accordingly, the objective of this study is to assess how significantly the application of the Deep Learning approach influences students' comprehension in PAI learning in class X at SMK Negeri 1 Bulukerto. The hypotheses in this study are arranged to examine whether or not there is an impact of the Deep Learning approach on students' understanding in learning Islamic Religious Education. The null hypothesis ($H_0$) states that there is no significant effect of the use of the Deep Learning method on students' understanding. Conversely, the alternative hypothesis ($H_1$) suggests that the use of the Deep Learning method significantly impacts students' comprehension of Islamic Religious Education in the tenth grade at SMK Negeri 1 Bulukerto. As for the framework of thinking in accordance with the variables, as follows:

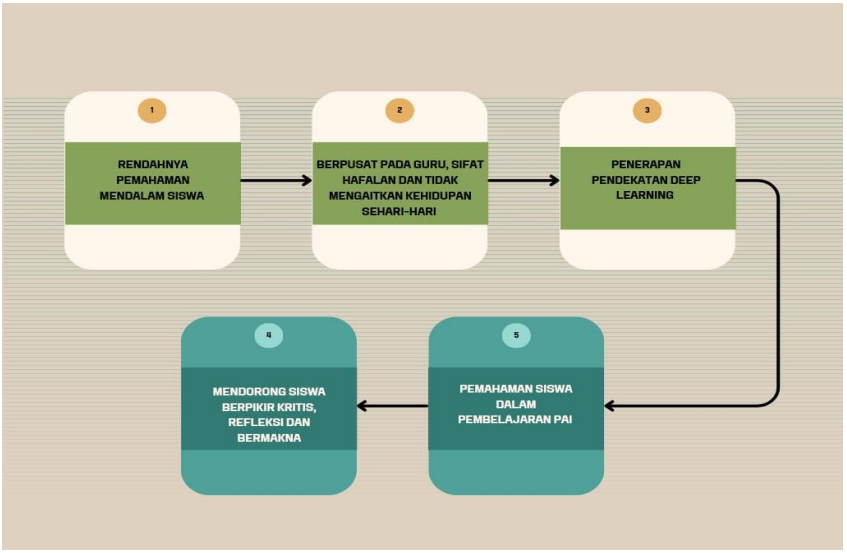



***Figure 1.1. Theoretical Framework***

According to the earlier description, the researcher determines that employing the Deep Learning approach holds significant promise for enhancing students' comprehension of Islamic teachings, both in theory and practice. An educational method that focuses on reflection, analysis, and teamwork can aid students in grasping the profound significance of religious values and applying them in real-world situations. Consequently, this study seeks to empirically examine the impact of the Deep Learning approach on students' understanding within the context of Islamic Religious Education at SMK Negeri 1 Bulukerto.

**Method**

This research employs This research employs a quantitative approach as it seeks to investigate the relationship and impact among variables in a measurable and objective way. Quantitative research is a systematic method used to gather numerical data that can be statistically analyzed to address the research problem formulation.[18] This method is utilized due to the examination of how the application of the Deep Learning method influences students' comprehension in Islamic Religious Education (PAI) studies. According to Creswell (2018), quantitative research aims to evaluate theories by measuring variables and analyzing statistical data to identify patterns in relationships among those variables. The research method being utilized is correlational research, which looks to find out how two or more factors relate to each other without actively treating the participants involved. According to Arikunto (2013), correlational research is carried out to understand how changes in one factor are connected to changes in another factor. In this situation, the factor that does not change is the use of the Deep Learning method, while the factor that is affected is the students' comprehension in PAI learning.

This research was conducted at SMK Negeri 1 Bulukerto, Wonogiri Regency, Central Java. This school was selected because it has characteristics as an educational institution that is innovative, reflective, and adaptive to the development of modern learning strategies. PAI teachers at the school have implemented learning that is oriented toward active student involvement, the use of digital media, and the development of higher order thinking skills. An academic environment that supports reflection activities and value exploration makes this institution appropriate as a research location.[19] The group involved in this research includes every student in grade X at SMK Negeri 1 Bulukerto for the academic year 2025/2026, totaling 216 students and consisting of two expertise programs, namely PPLG (Software and Game Development) with 108 students, and AKL (Institutional Accounting and Finance) with 108 students. Because the population is divided into two balanced groups, the sampling technique used is Proportionate Stratified Random Sampling. This technique allows proportional sampling from each class stratum so that the research results are representative. The sample size was determined based on the Krejcie and Morgan (1970) table with a 5% margin of error, resulting in 140 respondents consisting of 70 PPLG students and 70 AKL students.

[18] Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif Dan R & D*, 2022.

[19] Jaka Nugraha, "Peran Guru PAI Dalam Mengatasi Kesulitan Belajar," *JOTTER: Journal of Teacher Training and Educational Research* 1, no. 1 (2023): 18–24.

$$ni=Ni / N \times n$$

Description:
ni = number of samples in each class
Ni = number of population in each class
N = total population (216 students)
n = total sample size (140 respondents)

The research design utilized in this study is a quantitative correlational framework, which is employed to statistically analyze the relationship or impact between two variables. A correlational design helps to assess both the strength and the direction of the relationship between different variables. The purpose of this investigation is to evaluate how much the application of the Deep Learning method influences students' comprehension in PAI education. Data analysis was conducted using simple linear regression, because there is only one independent variable and one dependent variable.[20] The selection of research subjects is focused on grade X students because this group is at the early stage of adaptation to the learning process at the vocational level and has optimal cognitive readiness. Based on Piaget's theory of cognitive development (in Santrock, 2018), students at this age are in the formal operational stage, where they are able to think abstractly, logically, and reflectively. This is in line with the characteristics of Deep Learning which require students to analyze, evaluate, and connect concepts deeply. Therefore, grade X is viewed as the best indicator for evaluating how well the Deep Learning method is applied within the PAI learning framework.

The tool employed in this research is a Likert scale survey that features five response options: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). This survey aims to assess two primary aspects: the degree to which Deep Learning is applied and the extent of students' comprehension of PAI learning. The indicators of Deep Learning include five main aspects, namely deep understanding, reflection, collaboration, value application, and learning motivation, as stated by Biggs and Tang (2011). Meanwhile, the indicators of students' understanding refer to cognitive, affective, and applicative dimensions as explained by Bloom (1956) and Anderson and Krathwohl (2001). This is also in line with the concept of PAI learning evaluation which includes cognitive, affective, and psychomotor aspects integrated with the values of the Qur'an.[21]

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[20] Riduwan, "Skala Pengukuran Variabel-Variabel Penelitian," 2020.

[21] Tammam Sholahudin et al., "Evaluasi Hasil Pembelajaran Pendidikan Agama Islam (PAI) Tinjauan Terhadap Ayat Al-Qur'an Dalam Aspek Kognitif, Afektif, Dan Psikomotorik," *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)* 6, no. 1 (2025): 165–71, https://doi.org/10.54371/ainj.v6i1.808.

This finding is supported by Selamat et al., who emphasize that character education in Islamic educational institutions integrates cognitive, affective, and behavioral aspects in shaping students' character based on Islamic values.[22] Prior to distribution, the instrument was tested for validity and reliability. The validity test was conducted using Pearson Product Moment correlation, with the criterion that an item is considered valid if the calculated correlation coefficient (r-count) is greater than the critical value of r-table at a significance level of 0.05 (r-count > r-table). Meanwhile, the reliability test was performed using Cronbach's Alpha, where the instrument is considered reliable if the alpha coefficient (α) exceeds 0.60 (Sugiyono, 2021). These criteria ensure that each item in the instrument is both accurate in measuring the intended variables and consistent in producing stable results, thereby making it suitable for use in field research.

Data gathering was performed using three methods: surveys, observation, and record-keeping. The questionnaire was used to obtain primary data regarding students' perceptions of the implementation of Deep Learning and their level of understanding of PAI material. Observation was conducted to see the direct implementation of learning strategies by teachers in the classroom. Documentation was used to complement the data through the collection of grade archives, curriculum, and institutional profiles. The data obtained were analyzed using inferential statistical analysis with the help of the SPSS version 25 program. The stages of analysis include descriptive analysis to describe data distribution and mean scores, prerequisite tests of analysis (normality and linearity), and simple linear regression analysis to determine the effect of the implementation of Deep Learning on students' understanding. Hypothesis evaluation was performed utilizing the t-test with a significance threshold of 0. 05. The findings from this examination were subsequently analyzed in relation to deep learning principles and the idea of students' comprehension within PAI learning.

This research method aims to yield results that are unbiased, quantifiable, and widely applicable. Utilizing a structured framework and validated tools, this investigation is anticipated to offer practical insights into the advancement of PAI learning models grounded in the Deep Learning method, in addition to supplying scientific proof of its efficacy in enhancing students' grasp of concepts. The learning process begins with a well-prepared planning stage, including the preparation of learning tools, determination of methods, and adjustment of materials to students' needs. This planning plays

[22] S Selamat et al., "Model. Pendidikan Karakter Santri Di Pesantren Modern Muhammadiyah Kwala Madu," *… Jurnal Pendidikan …*, no. November (2023): 3141–52, https://doi.org/10.30868/ei.v12i04.5268.

a crucial role in enhancing the quality of PAI instruction, allowing for the best possible attainment of learning goals..[23]

**Result and discussion**

The findings of this study are based on data obtained from tests administered to students before and after the implementation of the Deep Learning approach in Islamic Religious Education (PAI) classes. The collected data were analyzed quantitatively to identify differences in students' levels of understanding and to test the proposed hypotheses. The results of the pre-test, conducted prior to the implementation of the Deep Learning approach, indicate that students' level of understanding was relatively low. This is reflected in the average pre-test score of 58.3, with only 32% of students achieving scores above the minimum competency standard. Furthermore, most students experienced difficulties in answering questions related to both conceptual and applicative understanding. Students tended to rely on memorization and were not yet able to connect the concepts they had learned to real-life contexts. In addition, the pre-test results revealed that students' critical thinking skills were still limited, as indicated by their low ability to analyze problems and provide logical reasoning in relation to Islamic Religious Education material.

Following the application of the Deep Learning method in the educational process, there was a notable shift in the outcomes of the post-assessment. The implemented Deep Learning method highlights the importance of students actively participating in their education, prompting them to engage in profound, reflective, and significant thinking. In the learning process, students not only receive material passively, but are also invited to discuss, analyze cases, and relate the material to real-life experiences. This has a positive impact on improving students' understanding.[24] The posttest results 58.3 with only 32% of show that most students experienced improvement in understanding the material taught. Students began to be able to explain concepts more deeply, relate the material to real situations, and demonstrate better critical thinking skills compared to before the treatment was given. In addition, students also showed improvement in the aspect of applicative understanding, namely the ability to apply the values learned in daily life.

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[23] Pipit Ridiana et al., "Tahapan Perencanaan Peningkatan Mutu Pembelajaran Pendidikan Agama Islam Di Sekolah" 5, no. September (2024): 342–50.

[24] Alfi Rahmawati, Rina Priarni, and Ida Zahara Adibah, "Implementasi Model Pembelajaran Deep Learning Pada Pelajaran Pendidikan Agama Islam Kelas XI Perhotelan B Di SMK Negeri 1 Bawen," *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)* 6, no. 1 (2026): 324–36, https://doi.org/10.53299/jppi.v6i1.3539.

Additional analysis of the data was performed utilizing statistical tests to assess the significance of the differences observed between pretest and posttest outcomes. The findings from the normality test suggest that the data follow a normal distribution, therefore satisfying the criteria for parametric testing. Furthermore, the homogeneity test shows that the data have homogeneous variance, allowing the analysis to proceed to the hypothesis testing stage. Based on the results of hypothesis testing using the t-test, a significance value was obtained indicating a significant difference between pretest and posttest results. This means that there is a significant effect of the implementation of the Deep Learning approach on students' understanding in Islamic Religious Education learning. Consequently, the alternative hypothesis ($H_1$), which proposes that a meaningful impact exists, is acknowledged, while the null hypothesis ($H_0$) is dismissed.

The improvement in students' understanding is not only seen from the scores obtained, but also from changes in students' attitudes and ways of thinking during the learning process. Students become more active in participating in learning, more confident in expressing opinions, and more capable of relating learning material to personal experiences.[25] This indicates that effective communication strategies between teachers and students play an important role in creating interactive and meaningful learning. In addition, the Deep Learning approach also helps students in building more meaningful understanding. Students not only memorize material, but also understand the meaning behind the material. This is reflected in students' ability to re-explain the material in their own words as well as their ability to provide real examples relevant to daily life. Thus, learning becomes more contextual and not merely abstract.

In the realm of Islamic Religious Education, enhancing comprehension is crucial as it pertains not just to academic knowledge, but to shaping the attitudes and actions of students. By employing the Deep Learning method, learners gain insight into religious ideas and can incorporate these principles into their everyday existence. This serves as a measure of effective education that focuses not only on results but also on the significance and process of learning. The findings of this research indicate that using the Deep Learning method can serve as a valuable option for addressing issues related to traditional learning practices. Previously, the reliance on lectures for teaching has shown to be less successful in enhancing students' comprehension on a deeper level. By incorporating the Deep Learning approach, the educational

[25] Afwan Syahril Manurung Purbatua Manurung, "Strategi Komunikasi Efektif Dalam Pembelajaran Pendidikan Agama Islam Pesantren Darul Arafah" 00, no. 00 (2023): 42–47.

experience becomes more engaging, collaborative, and significant, leading to an improvement in the overall quality of education.[26] This aligns with the educational guidelines that promote adaptable, learner-focused, and context-based learning, particularly in the formulation of assessments for Islamic Religious Education.[27]

In general, the findings of this research show that using the Deep Learning method effectively enhances students' comprehension in Islamic Religious Education classes. This is evidenced by the improvement in students' learning outcomes, enhancement of critical thinking skills, and changes in students' attitudes to become more active and reflective in participating in the learning process. Consequently, the Deep Learning method is suggested as a successful educational strategy to enhance the learning experience, especially within the framework of Islamic Religious Education in vocational high schools. Descriptive tests are used to describe the research data in general, such as mean values, minimum, maximum, and standard deviation. This test aims to determine an initial overview of the level of students' understanding before and after the implementation of the Deep Learning approach.

Table 1.2. Descriptive Test

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| TOTAL_X | 140 | 76 | 94 | 87,69 | 6,418 |
| Y1 | 140 | 4 | 5 | 4,06 | ,233 |
| Y2 | 140 | 3 | 5 | 3,94 | ,560 |
| Y3 | 140 | 3 | 5 | 3,87 | ,507 |
| Y4 | 140 | 3 | 5 | 4,20 | ,670 |
| Y5 | 140 | 3 | 5 | 4,26 | ,790 |
| Y6 | 140 | 3 | 5 | 4,44 | ,603 |
| Y7 | 140 | 3 | 5 | 4,13 | ,477 |
| Y8 | 140 | 4 | 5 | 4,46 | ,500 |
| Y9 | 140 | 3 | 5 | 4,41 | ,600 |
| Y10 | 140 | 4 | 5 | 4,41 | ,494 |
| Y11 | 140 | 4 | 5 | 4,66 | ,476 |
| Y12 | 140 | 4 | 5 | 4,46 | ,500 |
| Y13 | 140 | 4 | 5 | 4,80 | ,401 |
| Y14 | 140 | 3 | 5 | 4,40 | ,708 |
| TOTAL_Y | 140 | 52 | 65 | 60,50 | 4,109 |
| Valid N (listwise) | 140 | | | | |

[26] Fathinatul Wafiqah Lubis and Meyniar Albina, "Urgensi Pengembangan Bahan Ajar Dalam Pembelajaran Pendidikan Agama Islam," *AL-MUADDIB: Jurnal Kajian Ilmu Kependidikan* 7, no. 1 (2025): 73–89, https://doi.org/10.46773/muaddib.v7i1.1465.

[27] Syamsul Arifin, Nurul Abidin, and Fauzan Al Anshori, "Kebijakan Merdeka Belajar Dan Implikasinya Terhadap Pengembangan Desain Evaluasi Pembelajaran Pendidikan Agama Islam," *Jurnal Manajemen Dan Pendidikan Islam* 7, no. 1 (2021): 65–78.

The Deep Learning method variable (X) recorded the lowest score of 76 and the highest score of 94. The mean value obtained was 87.69, which reflects that, in general, the Deep Learning approach has been well implemented in PAI learning. The student understanding variable (Y) obtained a minimum score of 52 and a maximum score of 65. The range of scores indicates differences in the level of understanding among students regarding PAI material. The mean value obtained was 60.50, which indicates that, in general, students have a good level of understanding of PAI learning material. This average indicates that learners can not only identify and remember fundamental PAI ideas, but they are also capable of grasping the significance of the content at a deeper level.

Validity testing is used to determine whether the test instrument used is truly capable of measuring students' understanding. The instrument is good if each item on the instrument has a correlation value that's higher than the value in the r-table for that item. This means we look at each item on the instrument and we check the correlation value for that item. The correlation value must be greater than the r-table value for the instrument to be considered valid. We do this for each item, on the instrument to make sure the instrument is valid.

Table 1.4. Validity Test
**Hasil Uji Validitas**

| **Variabel** | **Jumlah Item** | **r tabel** | **Rentang r hitung** | **Keterangan** |
|---|---|---|---|---|
| Pendekatan Deep Learning (X) | 20 | 0,166 | r hitung > 0,166 | Seluruh item valid |
| Pemahaman Siswa (Y) | 14 | 0,166 | r hitung > 0,166 | Seluruh item valid |

The findings indicate that every statement item is significantly linked to the overall score of the Deep Learning methodology variable. The validity test outcomes for the student comprehension variable (Y), which comprises 14 statement items, reveal that all computed r-values for each item exceed the r-table value of 0.166. This suggests that each statement item has a noteworthy correlation with the cumulative score of the student comprehension variable. Reliability testing aims to determine the consistency of the research instrument. An instrument is considered reliable if it has a reliability coefficient value (for example, Cronbach's Alpha), and it is considered reliable if $\alpha > 0.70$.

Table 1.5. Reliability Test

**Hasil Uji Reliabilitas**

| Variabel | Jumlah Item | Cronbach's Alpha | Kriteria | Keterangan |
|---|---|---|---|---|
| X (Deep Learning) | 20 | 0,93 | ≥ 0,70 | Sangat Reliabel |
| Y (Pemahaman Siswa) | 14 | 0,91 | ≥ 0,70 | Sangat Reliabel |

Referring to Figure 1.5 above, the results of the reliability assessment indicate that the measurement tool for variable X, which evaluates the application of the Deep Learning methodology, has a Cronbach's Alpha score of 0.93. This score significantly exceeds the minimum reliability benchmark of 0.70, suggesting that all statement items in variable X exhibit an exceptionally high level of internal coherence. Conversely, the reliability assessment results for variable Y, which gauges students' comprehension or learning achievements, yielded a Cronbach's Alpha score of 0.91. This score signifies that the measurement tool possesses excellent reliability and fulfills the necessary reliability standards in quantitative research.

The normality assessment performed using the Kolmogorov–Smirnov technique reveals a significance value of 0.110, exceeding 0.05. This result suggests that the data for this investigation exhibits a normal distribution, thereby satisfying the criteria for parametric statistical evaluation. The Kolmogorov–Smirnov test yielded an Asymp. Sig. (2-tailed) significance value of 0.11, surpassing the threshold of 0.05 (0.11 > 0.05). Hence, it can be inferred that the research data conforms to a normal distribution and fulfills the normality criterion.

Table 1.6. Normality Test

**NPar Tests**

**One-Sample Kolmogorov-Smirnov Test**

| | | Unstandardized Residual |
|---|---|---|
| N | | 70 |
| Normal Parameters[a,b] | Mean | ,0000000 |
| | Std. Deviation | 2,98519643 |
| Most Extreme Differences | Absolute | ,123 |
| | Positive | ,108 |
| | Negative | -,123 |
| Test Statistic | | ,123 |
| Asymp. Sig. (2-tailed) | | ,011[c] |

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

The linearity assessment seeks to confirm that the association between variables X and Y is linear, provided that the significance value of Deviation from Linearity exceeds 0.05.

Table 1.7. Linearity Test

**ANOVA Table**

**ANOVA Table**

| | | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| TOTAL_Y * TOTAL_X | Between Groups | (Combined) | 2154,222 | 8 | 269,278 | 182,985 | ,000 |
| | Within Groups | | 192,778 | 131 | 1,472 | | |
| | Total | | 2347,000 | 139 | | | |

Based on Figure 1.7 above, the linearity test results show a significance value of Deviation from Linearity of 0.139, which is greater than 0.05. Thus, the relationship between the Deep Learning variable and students' understanding is declared linear and meets the requirements for linear regression analysis. The findings from the Pearson Product Moment correlation analysis indicate a noteworthy positive correlation between the application of the Deep Learning strategy and students' comprehension in studying Islamic Religious Education. The significance level attained is

beneath the error threshold of 0.05, suggesting that the connection between these two variables is statistically meaningful.

Table 1.8.Correlations

**Correlations**

| | | TOTAL_X | TOTAL_Y |
|---|---|---|---|
| TOTAL_X | Pearson Correlation | 1 | ,678** |
| | Sig. (2-tailed) | | ,000 |
| | N | 140 | 140 |
| TOTAL_Y | Pearson Correlation | ,678** | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 140 | 140 |

**. Correlation is significant at the 0.01 level (2-tailed).

According to Figure 1.8, the results from the Pearson Product Moment correlation examination reveal a correlation coefficient of 0.678 accompanied by a significance value of 0.000. Given that this significance value is less than 0.05, we discard the null hypothesis. This suggests a meaningful association between the application of the Deep Learning method and students' comprehension. The correlation coefficient is categorized as strong, indicating that improved application of the Deep Learning method correlates with enhanced student understanding in Islamic Religious Education. The analysis of simple linear regression reveals that the adoption of the Deep Learning method significantly influences students' comprehension. The derived regression formula is Y = 23.603 + 1.509X, suggesting that with each unit rise in the adoption of the Deep Learning method, there will be a corresponding increase of 1.509 units in students' comprehension. The affirmative regression coefficient shows that the impact is direct and aligned in the same direction.

Table 1.9. Linear Regression Test
Model Summary, ANOVA, Coefficients

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | ,678[a] | ,460 | ,456 | 4,734 |

a. Predictors: (Constant), TOTAL_Y

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2633,232 | 1 | 2633,232 | 117,489 | ,000[b] |
| | Residual | 3092,939 | 138 | 22,413 | | |
| | Total | 5726,171 | 139 | | | |

a. Dependent Variable: TOTAL_X

b. Predictors: (Constant), TOTAL_Y

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | 95,0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound |
| 1 | (Constant) | 23,603 | 5,926 | | 3,983 | ,000 | 11,886 | 35,319 |
| | TOTAL_Y | 1,059 | ,098 | ,678 | 10,839 | ,000 | ,866 | 1,252 |

a. Dependent Variable: TOTAL_X

According to the results of the significance testing, the p-value reached is less than 0.05, leading to the rejection of the null hypothesis and the acceptance of the alternative hypothesis. Therefore, it can be inferred that the application of the Deep Learning strategy greatly influences students' comprehension in Islamic Religious Education studies. The findings of this research reveal that adopting the Deep Learning approach significantly enhances students' comprehension in Islamic Religious Education. This outcome validates that education which prioritizes profound, contemplative, and significant cognitive processes can elevate the caliber of students' understanding both theoretically and practically. This advancement is observed not only through the grades attained by students but also through their capacity to connect the material to real-world situations.

These findings align with the deep learning principles articulated by Biggs and Tang (2011), asserting that Deep Learning prioritizes active participation by students in grasping significance rather than merely retaining facts. In this context, students not only receive knowledge passively, but also construct understanding through processes of analysis, reflection, and integration of concepts. This is clear in this research, where learners demonstrated a heightened capability to articulate ideas more thoroughly following the introduction of the Deep Learning methodology.[28] In addition, these findings are consistent with Bloom's taxonomy (1956), which emphasizes that understanding is part of a higher cognitive domain after

[28] Tang, *Teaching for Quality Learning at University*.

knowledge. The Deep Learning approach encourages students to reach deeper levels of understanding, such as analyzing, evaluating, and applying concepts in real situations. This is reinforced by the revised Bloom's taxonomy by Anderson and Krathwohl (2001), which places higher-order thinking skills as a key indicator in meaningful learning. Thus, the improvement in students' understanding in this study indicates that the learning process has reached a higher cognitive level.

The results of this research further align with the framework of Islamic Religious Education proposed by Ramayulis (2019), which asserts that PAI education seeks not merely to impart knowledge but also to cultivate a profound comprehension and the application of Islamic principles in everyday life. The Deep Learning methodology has demonstrated its capacity to fulfill these aims by incorporating cognitive, emotional, and practical dimensions into the educational experience. This aligns with findings from Laras et al., which indicate that the execution of Islamic Religious Education is crucial in enhancing students' ethical character, thereby ensuring that PAI instruction prioritizes not only intellectual elements but also the cultivation of character and conduct in accordance with Islamic principles.[29]

The findings of this research align with the perspective of Majid (2019), who asserts that impactful learning is characterized by the active engagement of students and the provision of significant learning experiences. In this study, students' active involvement in discussions, case analysis, and value reflection became important factors in improving their understanding of PAI material. This shows that the Deep Learning approach is capable of creating an interactive and participatory learning environment. Moreover, the findings of this research reinforce the conclusions drawn by Hasanuddin et al. (2025), indicating that PAI education primarily relying on lecture-based methods tends to yield shallow comprehension. However, with the application of the Deep Learning strategy, students transition from rote memorization to a profound grasp of concepts. This transition is highlighted by the enhancement in academic performance and the development of students' critical thinking abilities in this investigation.[30][31]

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[29] Irena Laras et al., "Implementasi Pembelajaran Pendidikan Agama Islam ( Pai ) Dalam Peningkatan Akhlak Siswa Sekolah Dasar," *Jurnal Primary Edu* 1, no. 2 (2023): 203–14.

[30] Hasanuddin, Rohmad, and Wachidah, "Penerapan Deep Learning Dalam Pembelajaran Pendidikan Agama Islam Di Sekolah Menengah Atas Negeri."

[31] N Hasanah, "Penerapan Pendekatan Deep Learning Pada Pembelajaran ...," *El-Banar (STAIB Anis Saleh)* 9, no. 1 (2026): 101–18, https://ojs.staibanisaleh.ac.id/index.php/ElBanar/article/view/539.

This research aligns with the results presented by Deny Khusnul Khotimah and Muhammad Rohmad Abdan (2025), indicating that the Deep Learning method can enhance spiritual consciousness and students' grasp of Islamic principles. In this analysis, the enhancement in students' comprehension is evident not just in their intellectual aspects but also in their capacity to apply religious values in everyday situations.[32] Moreover, this research is backed by findings from Hoeruman and colleagues (2025), indicating that the Deep Learning method enhances advanced thinking abilities. This is illustrated in the current investigation, where learners exhibited greater proficiency in scrutinizing and assessing educational content. Therefore, the Deep Learning method has been shown to be beneficial in fostering students' analytical skills.

The outcomes of this research align with the conclusions drawn by Wahyudin and colleagues (2024), who suggest that learning centered on value reflection enhances students' comprehension and awareness of religious concepts. In this research, the reflective activities conducted during the learning process aid students in grasping the material's significance on a deeper level and connecting it to their everyday experiences. This demonstrates that the Deep Learning method can foster learning that is both relevant and impactful.[33] Furthermore, these results align with the PAI learning methodology introduced by Zuhairini in 2018, which suggests that religious education should encompass both comprehension and actionable components. The Deep Learning method used in this research has demonstrated its ability to combine these two elements, ensuring that learning is both theoretical and practical.[34]

In statistical evaluation, the findings from the correlation test indicate a robust link between the Deep Learning method and the comprehension of students. This supports Riduwan's (2020) argument that in quantitative studies, the connections between variables can be quantified using correlation coefficients to assess how strong those connections are. Moreover, the outcomes of the linear regression analysis reveal a noteworthy impact, aligning with Sugiyono (2022), who mentions that regression analysis assesses how much independent variables affect dependent variables.

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[32] Pendidikan Agama Deny Khusnul Khotimah, Muhammad Rohmad Abdan, "Analisis Pendekatan Deep Learning Untuk Meningkatkan Efektivitas Pembelajaran PAI Di SMKN Pringkuku" 5 (2025): 866–79.

[33] Wahyudin NS, Nanang Hermawan, Muhammad Syahri Aziz et al., "Inovasi Pembelajaran Agama Islam Dengan Deep Learning Dalam Upaya Meningkatkan Pemahaman Dan Minat Belajar Siswa Di Sman 1 Cikarang Timur Islamic Religious Learning Innovation With Deep Learning In An Effort Increase To Students ' Understanding And Intere."

[34] Zuhairini, "Metodologi Pembelajaran Pendidikan Agama Islam," 2018.

Therefore, the findings of this research not only support current theories but also offer concrete contributions to advancing Islamic Religious Education using the Deep Learning method. This method has demonstrated its effectiveness in enhancing students' understanding in a holistic manner, covering cognitive, emotional, and practical dimensions. A key element in elevating the quality of education is also the teachers' pedagogical skills in facilitating the learning experience.[35] Overall, this conversation illustrates that using the Deep Learning method is a beneficial educational technique for enhancing students' comprehension. The combination of theoretical insights and research results indicates that education focusing on active participation, contemplation, and the creation of significance can lead to a richer and more profound understanding. Thus, the Deep Learning method is an advisable option to consider as an alternative teaching strategy in Islamic Religious Education, particularly in vocational high schools.

**Conclusion**

The conclusion According to the findings from the study, the researcher determines that applying the Deep Learning method in Islamic Religious Education significantly enhances students' comprehension. The results reveal that students engaged in the Deep Learning approach show a notable improvement compared to their understanding prior to its introduction. This is supported by the data analysis results, which reveal a strong connection and notable impact of the Deep Learning method on students' comprehension. The progress in students' comprehension is shown not just by their test results, but also by their capacity to connect learning ideas to everyday situations, articulate the content in greater detail, and exhibit critical and reflective thinking abilities. Therefore, the Deep Learning method has shown to be successful in promoting a form of learning that goes beyond simple memorization, focusing instead on significant and applicable knowledge.

However, this research has numerous constraints that should be acknowledged. First, the investigation was carried out in a single class with a small group of participants, which means that the results cannot be broadly applied outside of comparable situations. Second, the study concentrated solely on the cognitive dimension regarding students' comprehension, and

[35] Hasan Sodikin, Ahmad Sukandar, and Marwan Setiawan, "Management of Teacher Pedagogical Competence Development in an Effort to Improve The Quality of The Process PAI Learning Manajemen Pengembangan Kompetensi Pedagogik Guru Dalam Upaya Meningkatkan Mutu Proses Pembelajaran PAI," *The Journal of Educational Research* 2, no. 1 (2022): 69–87, http://journal.medpro.my.id/index.php/edukasi.

did not thoroughly explore emotional and physical elements, which are also vital components of learning in Islamic Religious Education. Third, the brief timeframe of the research restricted the ability to assess the lasting effects of using the Deep Learning method. Furthermore, this research is restricted to employing assessment tools as the primary method for evaluating students' comprehension, which means it does not thoroughly capture the process of internalizing values that takes place during the learning experience. Additionally, elements such as the preparedness of teachers to apply the Deep Learning method and the state of the learning settings are factors that have not been investigated thoroughly in this study.

Considering these constraints, it is suggested that upcoming studies broaden the focus of the investigation by including a bigger and more varied group of participants, which would enhance the generalizability of the findings. Furthermore, future studies should take a deeper look into the emotional and physical dimensions, particularly in exploring how the Deep Learning method influences students' religious beliefs and actions. Another recommendation is that future research should focus on the implementation of Deep Learning over a longer period of time, so that the sustainability impact of the approach on the development of students' understanding and character can be identified. Research can also be directed toward the development of more structured and contextual Deep Learning-based learning models in accordance with the characteristics of Islamic Religious Education learning.

Furthermore, it is important for future researchers to examine more deeply the role of teachers in implementing the Deep Learning approach, including pedagogical competence and strategies used in creating meaningful learning. The use of mixed methods research is also recommended in order to obtain a more comprehensive picture of the learning process and outcomes. The use of mixed methods is recommended because this approach is able to combine the strengths of quantitative and qualitative methods in a complementary manner. In this study, quantitative data only show an increase in students' understanding through numerical results, such as test scores, correlation, and regression. However, these data do not fully explain how the improvement process occurs in learning activities. By adding a qualitative approach, researchers can explore more deeply the learning process, such as how students understand the material, how they respond to the Deep Learning approach, and how interactions between teachers and students occur during learning. This qualitative data can be obtained through observation, interviews, or documentation, thereby providing a more comprehensive and contextual understanding. This study contributes to the development of more effective and meaningful Islamic Religious Education

learning strategies, and serves as a basis for future research to develop broader and more in-depth studies related to the implementation of the Deep Learning approach in the field of education.

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