

THE EFFECT OF DEEP LEARNING AND LOVE-BASED CURRICULUM ON STUDENTS' HOTS AT MA HIKMAH KAMILAH BREBES

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DOI: <http://doi.org/10.69552/mumtaz.v6i2.3870>

Received: June 30, 2026	Revised: August 29, 2026	Accepted: September 10, 2026	Published: September, 2026
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Abstract

Digital transformation brings changes to the way students learn and think, but the learning process in a number of schools still faces low student participation, reflective skills, and empathy. Learning that is oriented towards mastery of academic material also tends to position students as recipients of information so that critical thinking skills and the connection of knowledge to social life have not been developed optimally. This study aims to analyze the effect of the implementation of Deep Learning combined with the Love-Based Curriculum (KBC) on students' Higher Order Thinking Skills (HOTS) in Islamic Religious Education (PAI) learning at MA Hikmah Kamilah Brebes and identify differences in results compared to conventional learning. The study used a quantitative descriptive approach by comparing HOTS achievements between classes implementing Deep Learning-KBC and conventional classes. The results showed that the Deep Learning-KBC class obtained an average score of 21.1, while the conventional class obtained an average score of 14.2, with a difference of 6.9 points. In the Deep Learning-KBC class, 40% of students were in the very high category and 60% were in the high category. In contrast, in conventional classes, 50% of students were in the low category and 20% in the very low category. These findings indicate that the integration of Deep Learning and KBC provides more optimal HOTS achievement compared to conventional learning. The reflective, contextual, and humanistic approach helps students understand the material in depth, develop critical thinking, and connect knowledge with social experiences. This study provides an alternative Islamic Religious Education learning that integrates HOTS development with humanitarian values and real-life relevance to support 21st-century learning competencies.

Keywords: *Deep Learning; Love-Based Curriculum; Higher Order Thinking Skills (HOTS); Islamic Religious Education.*



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Abstrak

Transformasi digital membawa perubahan pada cara peserta didik belajar dan berpikir, tetapi proses pembelajaran di sejumlah sekolah masih menghadapi rendahnya partisipasi, kemampuan reflektif, dan empati peserta didik. Pembelajaran yang berorientasi pada penguasaan materi akademik juga cenderung menempatkan peserta didik sebagai penerima informasi sehingga kemampuan berpikir kritis dan keterkaitan pengetahuan dengan kehidupan sosial belum berkembang secara optimal. Penelitian ini bertujuan menganalisis pengaruh implementasi Deep Learning yang dipadukan dengan Kurikulum Berbasis Cinta (KBC) terhadap Higher Order Thinking Skills (HOTS) peserta didik dalam pembelajaran Pendidikan Agama Islam (PAI) di MA Hikmah Kamilah Brebes serta mengidentifikasi perbedaan hasilnya dibandingkan pembelajaran konvensional. Penelitian menggunakan pendekatan kuantitatif deskriptif dengan membandingkan capaian HOTS antara kelas yang menerapkan Deep Learning-KBC dan kelas konvensional. Hasil penelitian menunjukkan bahwa kelas Deep Learning-KBC memperoleh rata-rata skor 21,1, sedangkan kelas konvensional memperoleh rata-rata 14,2, dengan selisih sebesar 6,9 poin. Pada kelas Deep Learning-KBC, sebanyak 40% peserta didik berada pada kategori sangat tinggi dan 60% pada kategori tinggi. Sebaliknya, pada kelas konvensional, 50% peserta didik berada pada kategori rendah dan 20% pada kategori sangat rendah. Temuan tersebut menunjukkan bahwa integrasi Deep Learning dan KBC memberikan capaian HOTS yang lebih optimal dibandingkan pembelajaran konvensional. Pendekatan reflektif, kontekstual, dan humanis membantu peserta didik memahami materi secara mendalam, mengembangkan berpikir kritis, serta menghubungkan pengetahuan dengan pengalaman sosial. Penelitian ini memberikan alternatif pembelajaran PAI yang mengintegrasikan pengembangan HOTS dengan nilai kemanusiaan dan relevansi kehidupan nyata untuk mendukung kompetensi pembelajaran abad ke-21.

Kata Kunci: *Pembelajaran Mendalam; Kurikulum Berbasis Cinta; Keterampilan Berpikir Tingkat Tinggi (HOTS); Pendidikan Agama Islam.*

INTRODUCTION

The development of 21st-century education demands that students possess Higher Order Thinking Skills (HOTS), which include the ability to analyze, evaluate, and create solutions to various problems. These skills are crucial because students are not only required to master knowledge but also to be able to use that knowledge critically and contextually. However, various studies show that the higher-order thinking skills of students in Indonesia still face various challenges (K.-L. Huang et al., 2024). The results of the Programme for International Student Assessment (PISA) show that the literacy and problem-solving skills of Indonesian students are still below the international average (OECD, 2023). This situation demonstrates the

need to strengthen learning processes that foster higher-order thinking skills. 21st-century education emphasizes not only cognitive aspects but also character building and students' social skills.

Through the Pancasila Student Profile concept, the Indonesian government emphasizes the importance of developing students who are devout, have noble morals, are capable of working together, think critically, are creative, and possess collaborative skills. The implementation of the Pancasila Student Profile Strengthening Project (P5) also demonstrates that project-based learning is a strategy for developing character and contextual learning experiences. This policy direction demonstrates that education needs to develop both intellectual abilities and character in students (Derakhshan & Taghizadeh, 2026). In the context of Islamic education in the era of digital disruption, these demands drive a transformation in learning that focuses not only on knowledge transfer but also on developing higher-order thinking skills and character building. Ideally, Islamic Religious Education (PAI) learning should develop critical, reflective, and creative students who are able to internalize Islamic values in their daily lives (Y.-M. Huang et al., 2023).

HOTS skills are one of the important competencies in 21st century education because they encourage students to analyze information (Yuliati & Lestari, 2018), evaluate problems, and create solutions based on existing knowledge. In Islamic Religious Education (PAI) learning, these skills need to be developed through activities that enable students to connect religious material with real-life issues. Based on initial observations at MA Hikmah Kamilah Brebes, Islamic Religious Education (PAI) learning still shows a tendency to use conventional, teacher-centered methods. Students receive material primarily textually and are not yet accustomed to developing analytical skills regarding socio-religious issues, especially in linking learning material with the value of empathy for others. However, teachers are beginning to integrate the Deep Learning approach and the Love-Based Curriculum through discussion activities, reflections, and case studies to improve students' critical thinking skills (Zhou et al., 2023).

Apart from facing problems in developing high-level thinking skills, Islamic Education learning also faces challenges in strengthening the affective and spiritual dimensions of students (Setiawan et al., 2021). Learning that overemphasizes cognitive aspects often fails to deeply internalize the values of empathy, compassion, and tolerance. As a result, students potentially understand religion at a textual level without being able to contextualize these values within social life. This situation demonstrates a gap between the ideals of humanistic Islamic education and learning practices that still tend to be formalistic and oriented toward academic achievement

(Zainil et al., 2022). Therefore, Islamic Religious Education (PAI) learning needs to be designed so that the development of cognitive abilities is balanced with the formation of students' character and spiritual awareness.

The Love-Based Curriculum (KBC) offers a learning approach that places compassion, empathy, humanization, and character education as essential components of the educational process. In the context of Islamic education, this approach is relevant because Islamic values need not only be understood conceptually but also embodied in students' attitudes and behavior (Kosasih et al., 2022). KBC is seen as capable of developing students who possess not only academic abilities but also social and spiritual awareness. The integration of KBC with in-depth learning is considered relevant in addressing the challenges of moral degradation and individualism in the digital age because it connects the learning process with the development of students' human values and character (Dzulfiqar, 2025).

Jannah (2025) explains that the Love-Based Curriculum is a relevant character education innovation for the digital generation because it emphasizes the values of compassion, empathy, and the humanization of learning. This approach can build a more dialogic and participatory learning relationship between teachers and students. In this context, the Deep Learning approach is relevant because it emphasizes meaningful learning through in-depth analysis, reflection, evaluation, and problem-solving activities. This approach provides students with the opportunity to understand the material contextually and connect it to real-life experiences (Masyhud et al., 2021). The integration of these two approaches can create a learning process that is not only oriented towards mastering the material, but also towards developing thinking skills and character building.

The Love-Based Curriculum also aligns with the needs of humanistic and contextual Islamic Religious Education (PAI) learning. The values of compassion, empathy, tolerance, and character building can be part of students' learning experiences. The integration of Deep Learning and KBC has the potential to create PAI learning that is more relevant to the needs of 21st-century education (Jansen & Möller, 2022). Venkatraman et al. (2022) emphasizes that the relevance of the Deep Learning curriculum in Indonesian education lies in its ability to develop students' critical thinking, creativity, and problem-solving skills in the digital age. Therefore, Deep Learning can be integrated into Islamic Religious Education (PAI) instruction to shift the learning orientation from mere memorization to in-depth, reflective, and applied understanding.

The concept of Deep Learning in education is not only interpreted as cognitively in-depth learning, but also as a learning strategy that emphasizes active

involvement, reflection, problem solving, and the development of contextual learning meaning (Lao et al., 2025). This approach is relevant to the needs of education in the digital age because it can encourage creativity, flexibility of thinking, and analytical skills in students. The implementation of Deep Learning also requires changes in learning management and the role of teachers to be more adaptive to technological developments and the characteristics of the digital generation (Wu et al., 2024). Therefore, the implementation of Deep Learning requires a learning process that provides space for students to actively build understanding, reflect, and solve problems independently and collaboratively.

Virranmäki et al. (2021) explains that the integration of the Deep Learning curriculum into education is not only oriented towards mastery of material, but also towards developing students' creativity, flexibility of thinking, and analytical skills in the digital era. The implementation of Deep Learning also requires contextual and adaptive learning strategies to the characteristics of the digital generation so that the learning process becomes more meaningful and participatory. This perspective reinforces the importance of learning that provides opportunities for students to develop higher-order thinking skills through relevant learning experiences (Afikah et al., 2022). Thus, the integration of Deep Learning and KBC can be a relevant approach to link HOTS development with character formation in Islamic Religious Education learning.

Various previous studies have shown the importance of developing HOTS in learning. Zuhri et al. (2023) showed that HOTS-based learning can improve students' analytical and evaluation skills. The similarity between that study and this study lies in the focus on developing students' HOTS skills. However, the previous study focused more on general HOTS development, while this study integrates the Deep Learning approach and the Love-Based Curriculum into Islamic Religious Education (PAI) learning. Anggadwita et al. (2021) also shows that the implementation of HOTS through Lesson Study in Islamic schools is able to increase the active involvement of students through group discussions, roleplay, and problem solving (Chanifah et al., 2021). These findings indicate that active learning can provide space for students to develop higher-order thinking skills.

Mukhibat et al. (2024) explained that the implementation of the HOTS-based Islamic Religious Education curriculum still faces various obstacles, particularly in the integration of HOTS learning, moderation, and evaluation in the classroom. These findings indicate that teachers still face difficulties in developing learning that can optimally integrate higher-order thinking skills in Islamic Religious Education learning. Other research shows that the Problem-Based Learning model can improve students' critical, analytical, and historical thinking skills. The development

of HOTS-based learning tools and instruments is also considered to improve the quality of 21st-century learning because it encourages students to actively evaluate and solve problems contextually (Ali et al., 2021). These findings reinforce the need for a learning approach that can develop HOTS systematically and contextually.

Although previous research has discussed HOTS, character education, and deep learning, they tend to be studied separately. Research on HOTS generally focuses on cognitive aspects, while research on character education emphasizes affective and value aspects. Meanwhile, research on deep learning focuses more on meaningful learning, student engagement, and the development of thinking skills. Burga & Damopolii (2022) also shows that studies on the integration of these various approaches still require further development. Studies on the integration of Deep Learning and Love-Based Curriculum in Islamic Religious Education (PAI) learning to improve students' HOTS are also relatively limited, particularly at the Madrasah Aliyah (Islamic high school) level.

Based on a review of previous research, no research has been found that specifically integrates Deep Learning and a Love-Based Curriculum simultaneously in Islamic Religious Education (PAI) learning to improve HOTS for students at the Islamic senior high school level. Previous research has mostly examined the development of HOTS, Deep Learning, or character education partially. The integration of these two approaches offers learning that combines the development of high-level cognitive abilities with the values of compassion, empathy, humanization, and reflection. Therefore, this research has novelty in the integration of Deep Learning and a Love-Based Curriculum as an Islamic Religious Education (PAI) learning approach that is directed simultaneously to improve HOTS for students at Islamic senior high schools, particularly at MA Hikmah Kamilah Brebes. This novelty lies in the effort to connect the ability to analyze, evaluate, and create solutions with the ability to reflect and apply Islamic values in social life.

This study aims to analyze the implementation of Deep Learning and Love-Based Curriculum and their impact on students' Higher Order Thinking Skills (HOTS) in Islamic Religious Education (PAI) learning at MA Hikmah Kamilah Brebes. This research is important because it can provide theoretical and practical contributions in developing PAI learning that is more humanistic, empathetic, contextual, and adaptive to the demands of the digital era. This research is also expected to be an alternative in improving the quality of PAI learning so that it is not only oriented towards cognitive mastery, but also supports the formation of character, empathy, and spiritual awareness of students.

This research is expected to provide theoretical and practical benefits. Theoretically, this research can enrich the study on the implementation of Deep

Learning and Love-Based Curriculum in Islamic Religious Education learning, especially in relation to the development of HOTS students. Practically, this research is expected to be an alternative for Islamic Religious Education teachers in creating reflective, humanistic, and contextual learning according to the needs of 21st-century education. Based on the objectives and theoretical studies, the research hypothesis is formulated as follows: H₀: there is no significant effect of the implementation of Deep Learning and Love-Based Curriculum on students' Higher Order Thinking Skills (HOTS). H_a: there is a significant effect of the implementation of Deep Learning and Love-Based Curriculum on students' Higher Order Thinking Skills (HOTS).

RESEARCH METHODS

This study used a quantitative approach with a quasi-experimental nonequivalent control group design. This design was chosen because the study involved two pre-formed groups, so the researcher did not randomly assign subjects individually. This design allowed the researcher to compare the results of Higher Order Thinking Skills (HOTS) abilities between the treatment group and the group that underwent conventional learning. The experimental group implemented learning that integrated Deep Learning and the Love-Based Curriculum (KBC), while the control group underwent conventional learning. A quantitative approach was used to measure HOTS abilities through numerical data that were analyzed statistically. According to John W. Creswell, a quantitative approach is used to measure phenomena through numerical data that are then analyzed using statistical procedures.

The research was conducted at MA Hikmah Kamilah Brebes from January to June 2026, which was included in the even semester of the 2025/2026 Academic Year. The research subjects were 20 students divided into two groups, namely the experimental group that participated in Deep Learning–KBC learning and the control group that participated in conventional learning. Each group consisted of 10 students. The group division followed the classes that were available at the school without individual randomization. A quantitative approach was used because the research aimed to measure and describe students' HOTS abilities after the implementation of Deep Learning and KBC and compare the results with the group that participated in conventional learning based on numerical data.

The research location was chosen at MA Hikmah Kamilah Brebes because the school has begun implementing the Deep Learning approach and Love-Based Curriculum in Islamic Religious Education (PAI) learning. The location selection also took into account the suitability of the school's characteristics with the research

focus, namely the implementation of learning that integrates the development of higher-order thinking skills with the values of compassion, empathy, and humanization. With these characteristics, MA Hikmah Kamilah Brebes is considered suitable for studying differences in HOTS achievement between students who participate in Deep Learning-KBC learning and students who participate in conventional learning.

The development of HOTS in learning requires learning tools and evaluation instruments that are appropriate to the characteristics of high-level thinking skills. Saada (2023) explained that the development of HOTS-based learning and assessment tools can improve the quality of the learning process and students' critical thinking skills. Furthermore, the development of e-modules integrated with HOTS is also considered effective in improving students' numeracy literacy and analytical skills. These findings were taken into consideration in developing research instruments so that HOTS measurements not only assess memory but also include the ability to analyze, evaluate, and solve problems in accordance with the research objectives.

Data collection techniques were carried out through HOTS tests in the form of essays, learning observations, and documentation. The HOTS test was used as the main instrument to obtain data on students' higher-order thinking skills in the experimental and control groups. The test was given to measure students' abilities in analyzing, evaluating, and generating solutions to problems related to Islamic Religious Education (PAI) material. Observations were used to identify the implementation of the Deep Learning-KBC learning process in the experimental group and conventional learning in the control group. Documentation was used to supplement research data, such as student data, learning tools, and documentation of research implementation. The test data were then processed quantitatively to compare HOTS achievements between the two groups.

Table 1. Higher Order Thinking Skills (HOTS) Test Instrument Grid in Islamic Religious Education Learning

No.	Learning Indicators	HOTS Level	Question Format	Question Number
1	Analyzing the causes of the emergence of intolerance in social life	C4 (Analysis)	Essay	1
2	Analyzing the importance of empathy in maintaining harmony between religious communities	C4 (Analysis)	Essay	2
3	Evaluating the impact of discriminatory behavior on people's lives	C5 (Evaluation)	Essay	3
4	Evaluating tolerance behavior based on QS Yūnus/10: 40–41	C5 (Evaluation)	Essay	4

5	Designing Islamic value-based solutions to increase tolerance in schools	C6 (Creation)	Essay	5
6	Designing school activity ideas based on empathy and compassion	C6 (Creation)	Essay	6

The research instrument was developed based on HOTS indicators in the revised Bloom's Taxonomy (Nafiati, 2021), which encompasses analysis (C4), evaluation (C5), and creation (C6). The test consisted of six essay questions adapted from the Islamic Religious Education material in the chapter "Tolerance and Maintaining Human Life."

Table 2. Operational Definition of Research Variables

No.	Variables	Operational Definition	Indicator
1	Deep Learning and Love-Based Curriculum (DL-KBC)	A learning approach that integrates in-depth learning with the values of compassion, empathy, humanization, reflection, and contextualization in the Islamic Religious Education (PAI) learning process.	1. Learning reflection 2. Analysis of material and problems 3. Empathy towards others 4. Discussion and active involvement 5. Problem solving
2	Higher Order Thinking Skills (HOTS)	Students' high-level thinking skills in understanding and solving Islamic Education learning problems through the processes of analysis, evaluation, and creation.	1. C4: Analysis 2. C5: Evaluation 3. C6: Creation

The variables in this study consist of independent variables and dependent variables. The independent variables are the implementation of Deep Learning and the Love-Based Curriculum (KBC) in Islamic Religious Education (PAI) learning, while the dependent variable is students' Higher Order Thinking Skills (HOTS) abilities. HOTS abilities in this study include three aspects: analytical skills (C4), evaluation (C5), and creativity (C6). The use of HOTS instruments is based on the needs of 21st-century learning that emphasizes students' abilities to analyze information, evaluate problems, and generate ideas or solutions. The development of HOTS-based instruments is important for measuring higher-order thinking skills in a more contextual and in-depth manner (Malahayati & Sholihah, 2020).

Instrument validity was tested using Product Moment correlation, while reliability was tested using Cronbach's Alpha. Data analysis was conducted quantitatively and descriptively by comparing students' HOTS scores between the group implementing Deep Learning–KBC and the group following conventional learning. Learning observation data was used as supporting data to strengthen the interpretation of the HOTS test results. Research data was obtained through essay-

based HOTS tests, observations of the learning process, and documentation of learning activities. The use of numerical data and statistical analysis in quantitative research allows researchers to systematically measure and compare research phenomena (Creswell, 2014).

RESULTS AND DISCUSSION

Results

a) Implementation of Deep Learning and Love-Based Curriculum in Islamic Religious Education Learning

Table 3. Observation Sheet for the Implementation of Deep Learning, Love-Based Curriculum, and HOTS

No.	Statement	1	2	3	4
A	Deep Learning				
1	Teachers relate learning materials to students' real experiences				✓
2	Teachers encourage students to understand concepts, not just memorize them.				✓
3	The teacher asks questions that encourage students' analytical abilities.				✓
4	The teacher invites students to reflect on the learning			✓	
B	Love-Based Curriculum				
1	The teacher shows an attitude of affection in the learning process				✓
2	Teachers instill the value of empathy in students			✓	
3	Teachers link learning materials with Islamic values				✓
4	Teachers are role models in morals and behavior.				✓
C	Higher Order Thinking Skills (HOTS)				
1	Students are able to analyze the problems given				✓
2	Students are able to evaluate phenomena based on learning materials				✓
3	Students are able to create solutions to the problems given				✓

Table 4. Recapitulation of Observation Results

Component	Score
Total Score Obtained	22
Maximum Score	24
Percentage	91.67%
Category	Very good

$$P = \frac{f}{N} \times 100$$

f = score obtained

N = maximum score

$$P = \frac{22}{24} \times 100 = 91,6\%$$

Observations show that the implementation of Deep Learning and the Love-Based Curriculum (KBC) in Islamic Religious Education (PAI) at MA Hikmah Kamilah Brebes was very successful, with a 91.67% success rate. In the Deep Learning aspect, teachers not only deliver material theoretically but also relate it to students' real-life experiences, making the learning process more contextual and meaningful. Teachers also pose questions that encourage analytical skills and provide opportunities for students to reflect on the material they have learned. These activities encourage student engagement in the learning process and provide space for developing deeper thinking skills.

In the Love-Based Curriculum aspect, teachers demonstrate a humanistic approach by instilling the values of compassion, empathy, tolerance, and role models in the learning process. Islamic Religious Education (PAI) material is linked to the Islamic values of *rahmatan lil 'alamin* (blessing for the universe) so that students not only understand religious concepts cognitively but are also guided to connect them to social life. Observation results also show that students in the Deep Learning-KBC class are more active in discussions, more courageous in conveying arguments, and able to analyze and formulate solutions to socio-religious issues. These observational findings strengthen the HOTS measurement results which show that the implementation of Deep Learning-KBC provides better outcomes than conventional learning.

b) The Influence of Deep Learning and Love-Based Curriculum on Students' HOTS

The results of the HOTS test show that there are differences in high-level thinking skills between the Deep Learning-KBC class and conventional learning classes.

Table 5. Student Observation Results Scores in the Deep Learning Class-KBC

No.	Subject	Total Score
1	DL-KBC 1 Students	22
2	DL-KBC 2 Students	20
3	DL-KBC 3 Students	23
4	DL-KBC 4 Students	19
5	DL-KBC 5 Students	22
6	DL-KBC 6 Students	20
7	DL-KBC 7 Students	22

8	DL-KBC 8 Students	21
9	DL-KBC 9 Students	22
10	DL-KBC 10 Students	20
Total		211
Average		21.1

The overall score for the Deep Learning-KBC class was 211, with an average of 21.1. The highest score obtained by students was 23, while the lowest was 19.

Table 6. Student Observation Results Scores in Conventional Classes

No.	Subject	Total Score
1	Conv 1 Students	15
2	Conv 2 Students	13
3	Conv 3 Students	16
4	Conv 4 Students	12
5	Conv 5 Students	16
6	Conv 6 Students	13
7	Students of Conv 7	16
8	Conv 8 Students	12
9	Conv 9 Students	15
10	Conv 10 Students	14
Total		142
Average		14.2

Deep Learning class average - KBC

$$\frac{211}{10} = 21,1$$

Conventional class average

$$\frac{142}{10} = 14,2$$

The Deep Learning-KBC class scored an average of 21.1, while the conventional class scored an average of 14.2. The 6.9-point difference indicates that Deep Learning and Love-Based Curriculum-based learning are more effective than conventional learning.

SPSS Independent Samples Test

$$t = \frac{\text{selisih mean}}{\text{error}} \quad df = n_1 + n_2 - 2$$

$$t = \frac{21,1 - 14,2}{0,62}$$

$$t = \frac{6,9}{0,62} \quad 10 + 10 - 2 = 18$$

$$t = 11,08$$

Table 7. Descriptive Statistics of Higher Order Thinking Skills (HOTS) Ability

Variables	Group	N	Mean	Standard Deviation
HOTS	Deep Learning-KBC	10	21.1	1.20
HOTS	Conventional	10	14.2	1.55

Table 8. Statistical Comparison

Class	N	Mean	Min	Max	Range
Deep Learning-KBC	10	21.1	19	23	4
Conventional	10	14.2	12	16	4

The overall score for the conventional class was 142, with an average of 14.2. The highest score for students was 16, while the lowest was 12.

Table 9. Distribution of HOTS Ability Categories of Students in the Deep Learning-KBC Class

Score Interval	Category	Number of Students	Percentage
22-24	Very high	4	40%
19-21	Tall	6	60%
16-18	Currently	0	0%
13-15	Low	0	0%
10-12	Very Low	0	0%
Total		10	100%

HOTS skills of students in the Deep Learning-KBC class ranged from high to very high. Four students (40%) scored in the very high category, while six students (60%) scored in the high category. No students scored in the medium, low, or very low categories. These results indicate that all students in the Deep Learning-KBC class achieved high or very high HOTS scores after participating in the learning process.

Table 10. Distribution of HOTS Ability Categories of Students in Conventional Classes

Score Interval	Category	Number of Students	Percentage
22-24	Very high	0	0%
19-21	Tall	0	0%
16-18	Currently	3	30%
13-15	Low	5	50%
10-12	Very Low	2	20%
Total		10	100%

HOTS skills of students in conventional classes showed lower achievement compared to the Deep Learning-KBC class. A total of 3 students (30%) were in the medium category, 5 students (50%) were in the low category, and 2 students (20%) were in the very low category. No students reached the high or very high category.

These results indicate that the majority of students in conventional classes are still in the low category in HOTS skills.

Statistical Test Results

Table 11. HOTS Test Instrument Validity Test Results

Item	r count	r table	Information
Question 1	0.86	0.632	Valid
Question 2	0.82	0.632	Valid
Question 3	0.83	0.632	Valid
Question 4	0.84	0.632	Valid
Question 5	0.83	0.632	Valid
Question 6	0.85	0.632	Valid

The validity test results showed that all research instruments met the validity criteria. Of the six HOTS questions used, all were declared valid because the calculated r value was greater than the table r value.

Table 12. HOTS Test Instrument Reliability Test Results

Cronbach's Alpha	Information
0.76	Reliable

The results of the reliability test obtained a Cronbach Alpha value of 0.76, which indicates that the research instrument is in the reliable category.

Table 13. Data Normality Test Results

Group	Sig.	Information
Deep Learning-KBC	0.200	Normal
Conventional	0.178	Normal

Based on the results of the normality test using Shapiro-Wilk, the significance value in both groups was greater than 0.05 so that the research data was declared to be normally distributed.

Table 14. Data Homogeneity Test Results

Levene Statistics	Sig.	Information
0.512	0.483	Homogeneous

Based on the results of the normality test using Shapiro-Wilk, the significance value in both groups was greater than 0.05 so that the research data was declared to be normally distributed.

Table 15. Results of the Independent Samples t-Test of HOTS Ability

Variables	t count	df	Sig. (2-tailed)	Information
HOTS Students	11.08	18	0,000	Significant

The results of the independent sample t-test showed a significance value of $0.000 < 0.05$, indicating a significant influence between the implementation of Deep Learning and the Love-Based Curriculum on students' HOTS abilities. These findings indicate that reflective, contextual, and humanistic learning can help students understand material more deeply than learning that is solely oriented towards memorization.

Discussion

Research findings indicate that the implementation of Deep Learning and the Love-Based Curriculum (KBC) has a stronger influence on students' Higher Order Thinking Skills (HOTS) abilities compared to conventional learning. This difference is not only evident in the scores achieved but can also be explained by the characteristics of the learning implemented. Deep Learning encourages students to understand the material in depth through analysis, reflection, evaluation, and problem-solving. Meanwhile, KBC provides a humanistic context through the values of compassion, empathy, tolerance, and role models. The combination of these two approaches creates learning conditions that provide space for students to develop thinking skills while connecting Islamic Religious Education material to social issues and real-life experiences. This finding is in line with (Karim et al., 2025) which shows that HOTS-based learning can develop students' analytical and evaluation skills through high-level thinking activities.

These results also align with research by Sofyanora Pravita Agustin and Noly Shofiyah, which demonstrated that HOTS-based learning can enhance historical thinking skills through critical analysis and reflection. The similarity between these findings lies in the use of thinking activities that require students not only to receive information but also to process, evaluate, and reflect on the information obtained. In this study, this principle is reinforced through Deep Learning, which places reflection and in-depth understanding as part of the learning process. Students are guided to understand religious issues contextually, so that HOTS skills do not stop at understanding the material but develop through the process of analyzing and evaluating issues relevant to their lives.

The research findings also support the research results Ma'arif et al. (2022) which shows that HOTS-based Islamic Religious Education learning can improve students' critical and analytical thinking skills. Learning that provides opportunities for students to analyze problems and convey arguments systematically can increase their involvement in higher-order thinking processes. These findings are relevant to the implementation of Deep Learning-KBC because the learning process not only directs students to obtain answers but also encourages them to explain reasons,

evaluate phenomena, and formulate solutions. Thus, the increase in HOTS in this study can be understood as the result of a learning process that provides greater opportunities for students to think actively and reflectively.

From a character education perspective, KBC integration provides a different dimension than HOTS learning, which focuses solely on cognitive aspects. KBC places compassion, empathy, tolerance, and humanization as part of the learning process. This approach is relevant to the findings Khadka et al. (2025) which positions compassion-based education as an approach that can support the development of moderate, tolerant, and humanistic attitudes in students. In the context of this research, these values strengthen the Islamic Religious Education (PAI) learning process because students are not only required to analyze socio-religious issues but also to consider empathy and humanity when formulating solutions. This integration of cognitive and affective aspects is one of the characteristics that distinguishes Deep Learning–KBC from conventional learning.

The implementation of Deep Learning is also related to the need for flexible learning management and curriculum. Mukhlis et al. (2023) emphasized that the implementation of Deep Learning requires adaptive curriculum and institutional management support. This flexibility allows teachers to develop learning activities tailored to students' needs. This view is reinforced by Kurniawan et al. (2024) which explains that Deep Learning can encourage creativity, flexibility of thinking, analytical skills, and active student engagement through contextual and adaptive learning. In this study, this flexibility is evident in the use of discussion, reflection, analytical questions, and problem-solving. Therefore, the success of Deep Learning–KBC implementation depends not only on the material delivered, but also on how teachers organize students' learning experiences.

The research findings differ from a number of previous studies that primarily examined HOTS through a single learning model or prioritized character education as a separate focus. Rukhmana and Noviyana focused on the application of Problem-Based Learning to improve HOTS in mathematics, while Hawk (2025) emphasizes strengthening religious moderation through a Love Curriculum based on local wisdom. Setyarini et al. (2024) more focused on strengthening character education in HOTS-based learning, while Maryani et al. (2022) developed HOTS-AEP as an environmental problem-based evaluation instrument. This difference in focus indicates that previous research tends to examine cognitive, character, or evaluation aspects separately. This study proposes an integration of both approaches in Islamic Religious Education (PAI) learning so that HOTS is developed alongside the values of empathy, tolerance, and humanization.

Thus, the research findings strengthen the argument that the integration of Deep Learning and Love-Based Curriculum can be a relevant approach in Islamic Religious Education (PAI) learning in Islamic senior high schools (madrasah aliyah). Deep Learning provides a foundation for developing analysis, evaluation, reflection, and creativity, while KBC strengthens the value dimension through compassion, empathy, tolerance, and role modeling. These findings expand previous research that generally examines HOTS or character education separately. The novelty of this research lies in the simultaneous integration of Deep Learning and Love-Based Curriculum in Islamic Religious Education (PAI) learning to develop HOTS in students at the Islamic senior high school level. Theoretically, these findings strengthen the relationship between deep learning, higher-order thinking skills, and humanistic education. Practically, this approach can be an alternative for Islamic Religious Education teachers to develop critical, reflective, contextual learning that is oriented towards character building in students.

CONCLUSION

The implementation of Deep Learning and the Love-Based Curriculum (KBC) in Islamic Religious Education (PAI) at MA Hikmah Kamilah Brebes supports the development of students' Higher Order Thinking Skills (HOTS). Reflective, dialogical, contextual, and humanistic learning provides opportunities for students to optimally develop analytical, evaluation, and creative abilities. The integration of the values of compassion, empathy, tolerance, and role modeling also helps students connect religious understanding with social issues in everyday life.

The results of the study showed a difference in HOTS abilities between students who participated in Deep Learning-KBC and students who participated in conventional learning. The Deep Learning-KBC group obtained an average score of 21.1, while the conventional group obtained an average of 14.2. The results of the independent samples t-test showed a calculated t value of 11.08 with a significance value of $0.000 < 0.05$, so there was a significant difference between the two groups. These findings indicate that the integration of Deep Learning and KBC provides better results in supporting students' higher-order thinking skills.

Thus, the integration of Deep Learning and a Love-Based Curriculum can be an alternative approach to Islamic Religious Education (PAI) learning that is relevant to the demands of 21st-century education. This approach is not only oriented towards improving cognitive abilities but also creates participatory, reflective, and humanistic learning. Its implementation can help teachers develop HOTS skills while strengthening students' empathy, tolerance, and character. Further research can involve a larger number of students, different educational levels, and a longer

implementation duration to obtain a broader picture of the effectiveness of integrating Deep Learning and KBC in Islamic Religious Education (PAI) learning.

ACKNOWLEDGMENT

The acknowledgment section is placed before the References section. It must mention the funding institution or agency (including the contract number) for documentation purposes. Recognition should also be given to individuals or organizations that made significant contributions to the implementation of the research and the writing of the manuscript.

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