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Comparison of Critical Thinking Skills Using Active Deep Learning Experience and Inquiry Based Learning in Islamic Education

Marta Novika[1], Salmi Wati[1]
[1]Universitas Islam Negeri Sjech M. Djamil Djambek Bukittinggi, Indonesia
martanovika.lkn@gmail.com *

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Abstract

Critical thinking is a vital 21st-century skill that enables students to think creatively and logically. In Islamic Education, this skill often remains underdeveloped, especially in responding to higher-order thinking skills questions. This study examines differences in critical thinking skills between students taught using the Active Deep Learning Experience model and those taught with the Inquiry Based Learning model. Employing a quantitative quasi-experimental design, the research involved sixth-grade students. The findings reveal that: i) the Active Deep Learning Experience is more effective than Inquiry Based Learning for students with high prior ability, with a significance value of 0.049 (<0.05); ii) the Active Deep Learning Experience is also more effective for students with low prior ability, with a significance value of 0.032 (<0.05); iii) students with low prior ability showed significant improvement, with a significance value of 0.040 (<0.05); and iv) no significant interaction was found between learning models and prior ability, with a significance value of 0.325 (>0.05). Overall, the Active Deep Learning Experience consistently demonstrates superiority in enhancing students' critical thinking skills in Islamic Education, supported by its integration of national and integrated curricula to achieve holistic learning outcomes.

INTRODUCTION

Critical thinking and metacognitive skills are essential 21st-century skills that can be learned and practiced (Pasaribu et al., 2024). Critical thinking skills are vital for students to think creatively and logically (Rahim, 2023). The ability to evaluate the accuracy or truthfulness of a statement, to not simply accept all information at face value without considering its content, and to engage in reflective practice is crucial to this approach because it encourages students to revisit their experiences, identify patterns, and derive insights for future action thereby gaining a deeper understanding, which is vital for life (Ekyana et al., 2021; Jaiswal et al., 2025; Sapaat, 2020). Technological advances have made the

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learning process far more complex than before, requiring students to master the 4C skills: communication, collaboration, critical thinking, and creativity. All of these skills can be effectively honed, enabling students to adapt to any changes, particularly those driven by technological demands (Muharrami et al., 2023; Radhiyah et al., 2024). Students face numerous risks and uncertainties as a result of the rapid evolution of their environment. The results of the 2018 Program for International Student Assessment (PISA) show that Indonesian students have poor critical thinking skills, ranking in the bottom 7 out of 79 countries that participated in the survey (KPIN, 2025; Kyambade et al., 2025).

It is crucial for teachers to be at the forefront of the educational process in imparting knowledge, attitudes, behaviors, and skills one way to do this is by implementing effective models to foster metacognition. Learning models that focus on passive learning and rote repetition of material are no longer sufficient to equip students with 21st-century skills, which include the ability to analyze, evaluate, and create solutions to complex problems (critical thinking) (Aquina, 2024; Fikri et al., 2024; Firdaus et al., 2022).

According to Beyer, critical thinking skills can be cultivated from an early age because by the formal operational stage for ages 11–15 children have reached maturity and are capable of applying critical thinking (Armaijn et al., 2024; Sapaat, 2020). Elementary school students are already trained to think critically and logically during their learning. This is evident from the large number of Higher Order Thinking Skills (HOTS) questions (Abdullah, 2019; Nurhikmah et al., 2025).

For students to achieve maximum understanding, it is up to the teacher to prepare and guide them toward higher-order critical thinking. In the classroom, students should be provided with stimuli that encourage them to think more actively and connect concepts to real-life situations (Putri et al., 2023; Ruhana et al., 2023).

The same applies to Islamic Religious Education, one of the key subjects aimed at shaping individuals who are God-fearing and possess noble character, grounded in the Quran, the Sunnah, and the Hadith. The fundamental concept of critical thinking aligns with Allah's command in the Quran, Surah Al-Imran, verses 190–191, which states:

اِنَّ فِيْ خَلْقِ السَّمٰوٰتِ وَالْاَرْضِ وَاخْتِلَافِ الَّيْلِ وَالنَّهَارِ لَاٰيٰتٍ لِّاُولِى الْاَلْبَابِۙ الَّذِيْنَ يَذْكُرُوْنَ اللّٰهَ قِيَامًا وَّقُعُوْدًا وَّعَلٰى جُنُوْبِهِمْ وَيَتَفَكَّرُوْنَ فِيْ خَلْقِ السَّمٰوٰتِ وَالْاَرْضِۚ رَبَّنَا مَا خَلَقْتَ هٰذَا بَاطِلًاۚ سُبْحٰنَكَ فَقِنَا عَذَابَ النَّارِ.

Meaning: *Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding. Who remember Allah while standing or sitting or [lying] on their sides and give thought to the creation of the heavens and the earth, [saying], "Our Lord, You did not create this aimlessly; exalted are You [above such a thing]; then protect us from the punishment of the Fire* (QS. Ali-Imran: 190-191)

From the verse above, it can be understood that Allah SWT commands His servants to use their reason and intellect in reflecting on His creation. Topaji et al. explain that the Prophet Muhammad SAW also commanded his followers to make a habit of reflecting on His power, not on the essence of Allah SWT. Reflecting on creation fosters a sense of gratitude and humility (Barudin, 2020; Hidayati, 2021). The objectives of Islamic education are also grounded in the 1945 Constitution and Government Regulation in Lieu of Law *(PERPU)* No. 55 of 2007, Article 1, which states that education should provide

knowledge and shape attitudes, character, and skills in practicing religious teachings. This is implemented, at a minimum, through courses or lectures across all tracks, levels, and types of education, with teachers serving as facilitators and applying effective and engaging learning models (Novika & Sesmiarni, 2024; Wati et al., 2025; Yaqin, 2016).

Learning models that focus on passive learning and the repetition of material are no longer sufficient. In modern education, teachers are expected to be adults capable of solving complex problems and equipping students with intelligence, critical thinking skills, and the ability to adapt to an increasingly advanced world (Akhyar et al., 2024; Pasaribu et al., 2024; Sajiatmojo, 2022). At Cahaya Hati Integrated Islamic Elementary School (SDIT), which is part of the Indonesian Network of Integrated Islamic Schools (JSIT), the vision is to foster the development of individuals who are intelligent, critical thinkers, and logical thinkers through project-based learning, problem-solving, and the integration of digital technology. Its mission is to foster creativity and innovation capable of generating new ideas, solving problems in unique ways, and adapting to the changing times (Novika & Sesmiarni, 2024). Critical thinking skills are supported by the ability to read accurately and effectively (Wola & Charoen-In, 2025).

However, in reality, students' critical thinking skills are still far from adequate. This is influenced by their inability to comprehend what they read. As indicated by school reports showing difficulties in reading accurately, students easily become confused when asked to compare ideas, draw conclusions, or evaluate which information is correct and which is incorrect. Students are accustomed to memorizing material based on exam outlines distributed by teachers. As a result, students struggle to comprehend reading passages in their coursework, particularly when answering Higher Order Thinking Skills (HOTS) questions.

This challenge is also encountered in Islamic Religious Education classes. Students still struggle with answering open-ended or essay questions that require explanatory answers. This can be seen in the following Midterm Assessment for the Odd Semester of 2025:

Table 1. Percentage of Midterm Assessment for the Odd Semester of 2025

Class	Percentage
5 Arrahmah	77%
5 Arrayyan	84 %
5 Azzakah	79%

From the percentage data above, it can be seen that the scores on the Mid-Semester Assessment essays are low, which affects the overall grades; therefore, students need special attention in their Islamic Religious Education classes. Similarly, the use of technology in Islamic Religious Education still faces many challenges. Many schools still use conventional educational approaches, which tend to be unengaging for students. Often, this model concentrates on cognitive components, with methods that focus more on memorization than on deep understanding and the development of critical thinking (Adib, 2022; Datungsolang, 2018).

Therefore, to address these issues, the Cahaya Hati Integrated Islamic Elementary School (SDIT) has implemented an innovative learning model to replace the conventional one. This is the Active Deep Learner eXperience (ADLX) model, which will be fully implemented in 2025; in addition, teachers are also required to vary their teaching methods by incorporating Inquiry-Based Learning (IBL) to enhance students' critical and logical thinking skills.

This initiative is based on scientific research by Fadhlan and Shintawati on the effectiveness of this model (Fadhlan et al., 2023; Novaldo & Maulida, 2024; Shintawati, 2018).

The Active Deep Learner eXperience (ADLX) model was formulated by Muhammad Bahgat, a motivational speaker and founder of SeGa Group. Bahgat states that the Active Deep Learner eXperience (ADLX) can help students cultivate their intrinsic motivation for critical thinking. In the Active Deep Learner eXperience (ADLX) learning model, the meaning of learning determines learning comprehension; this view is based on the theory presented by Roy V. H. Pollock. This can be seen in the table below:

Table 2. Theory presented by Roy V. H. Pollock

Purpose	Engagement	Impact
Approach	Experiential learning	Reflective learning approach
Inspiring sciences	Gamification	Coaching

Implementing the five domains of learning. The five domains include Focusing, Interacting, Reviewing, Sequencing, and Transforming. Meanwhile, the fifteen principles encompass Individualization, Probing and Assessing, Trust the Learner, Social Event, Positive Spirit, Motivation and Attention, Readiness Increase, Activity Facilitation, Active Reviewing, Structuring and Sequencing, Repetition, Linking and Summarizing, Reflection on Reality, Practicing and Experience, and Continuity and Follow-Up based on gaming and technology (Bahgat, 2018; Dewi et al., 2022; Hafiedh, 2025; Lailie & Dewi, 2022; Sari & Tanjung, 2025).

The Active Deep Learner eXperience (ADLX) learning framework is an integrated approach that serves as the foundational principle underlying the learning process at the Integrated Islamic School (SIT). With six stages Analysis, Exploration, Formulation, Presentation, Application, and Spiritual Reflection this model is designed to enhance student engagement and develop critical and analytical thinking skills. Each stage has specific objectives that support active and collaborative learning, in which students not only acquire knowledge but also apply it in a broader context, including its connection to worship and spiritual values (JSIT, 2019; Muhab & Fahmi Alaydrus, 2023).

The Inquiry-Based Learning (IBL) model, introduced by Bruner, involves asking critical questions about the material being studied, conducting observations, experiments, and analyses, while the teacher guides students to arrive at answers and develop understanding independently. This model encourages students to investigate and analyze information through critical thinking and can enhance critical thinking and problem-solving skills (Bruner, 2020; Engle, 2019; Hmelo-Silver et al., 2007; Utami & Sundari, 2019).

A simpler version of the Inquiry-Based Learning (IBL) model can be implemented through question-and-answer sessions, by determining whether to use group or individual methods, presenting the material and learning objectives, formulating potential problems, conducting investigations, and engaging in problem-solving. Students are given time to express their individual opinions before concluding the lesson (Halimah et al., 2024; Krit et al., 2024).

Based on the above discussion, it can be concluded that elementary school students should have already entered the formal operational stage of critical thinking. They have passed the early Phase C by taking the Computer-Based National Assessment and practicing during the final stage of Phase C learning, and are therefore considered capable of applying critical thinking skills. However, in reality, sixth-grade students at Cahaya Hati Integrated Islamic Elementary School in Bukittinggi are still not proficient in applying

critical thinking. Based on observations, they struggle to answer descriptive and essay questions, as well as questions requiring complex answers. This is due to a learning method that relies heavily on rote memorization based on study guides, which has become a requirement for answering questions on the Final School Exam. This is further supported by the 2024 Annual School Report, published in 2025, which shows a 3.66% decline in students' ability to understand, use, reflect on, and evaluate various types of texts.

The novelty of this study lies in its research location; no similar study has been conducted at Cahaya Hati Integrated Islamic Elementary School. Furthermore, the methodology employed a quasi-experimental design, with data collected from a sample of students' initial abilities grouped into an extreme group (27%), and data analyzed using the Shapiro-Wilk test in SPSS. Previous research used a descriptive qualitative method, whereas this study employed a quantitative experimental approach. Halimah's study employed a different method but addressed the same model (Halimah et al., 2024). The study conducted by Wahyuni utilized a quasi-experimental methodology but involved different settings and materials, yielding different research results as well (Wahyuni & Putra, 2020).

Therefore, based on the issues outlined above, this study aims to compare which model is most effective in enhancing students' critical thinking skills, using either the Active Deep Learner eXperience (ADLX) or Inquiry-Based Learning models. The implications of this study are that teachers, as facilitators, can implement learning models that have been scientifically proven to enhance students' critical thinking skills. For example, by implementing the Active Deep Learner eXperience (ADLX) or Inquiry-Based Learning models in their teaching, teachers can help hone students' creativity and logical thinking.

METHODS

This study employs a quantitative method using a quasi-experimental approach with quantitative data analysis; it is a research method grounded in the philosophy of positivism, with the aim of testing established hypotheses. (Anidar et al., 2026; Efendi et al., 2026; Engkizar et al., 2025, 2026; Knapp, 2025; Sugiono, 2019). The research subjects were students in Phase C that is, sixth-grade students who had already implemented the Active Deep Learner eXperience (ADLX) and Inquiry-Based Learning (IBL) models in their Islamic Religious Education classes. The reason for selecting sixth-grade students in Phase C as the research subjects is that at this level, the children are between 11 and 12 years old, at which age according to taxonomic classification they are already capable of studying abstract material and analyzing Higher-Order Thinking Skills (HOTS) questions.

The study employed a factorial design because it was an experimental study aimed at examining the cause-and-effect relationship between the independent variable and the dependent variable, as well as the impact of the interaction between these two variables (Noor, 2014).

Table 3. Students' Initial Ability

Learning Model	Initial Ability	
	Low (Y1)	High (Y2)
ADLX Introflex	X1Y1	X1Y2
Inquiry Based Learning	X2Y1	X2Y2

The target population of this study was all students at Cahaya Hati Integrated Islamic Elementary School, with a sample of 78 sixth-grade students. The researcher used total sampling, in which the entire population

was included, because the selection of respondents for the sample was based on specific criteria and considerations (Martono, 2019; Siregar, 2021). The research sample consisted of sixth-grade students in Phase C who were scheduled to take the Try Out (TO) and the Final School Exam (UAS), specifically from classes VI Arrahmah, VI Arrayyan, and VI Azzakah.

In this study, the researcher used a technique for grouping students based on their initial ability levels using the "extreme group" method, which involves selecting the top 27% and bottom 27% of students in each class based on their initial ability levels. This technique was used to clarify differences in students' initial ability levels so that the effect of the learning model on critical thinking skills could be analyzed more accurately. Based on this technique, using the extreme group method.

Thus, from each class, 8 students were selected from the high initial ability group and 8 students from the low initial ability group. Since this study focused its analysis on classes using the Active Deep Learner eXperience (ADLX) Introflex model and Inquiry-Based Learning, the sample size used in hypothesis testing consisted of 32 students: 16 students in the Active Deep Learner eXperience (ADLX) Introflex class and 16 students in the Inquiry-Based Learning class. Thus, all inferential statistical analyses in this study were conducted on the 32 students who met the initial ability grouping criteria.

For the independent variables X1 and X2 and the dependent variable Y, the author used 15 essay-type written questions for the Active Deep Learner eXperience (ADLX) Introflex model and 15 questions for the Inquiry model, for a total of 30 questions. The questions were specifically designed to cover the material on the Rightly Guided Caliphs and underwent validity and reliability testing.

The data analysis techniques used in this study began with descriptive statistical analysis to describe the profiles of all variables, namely the Active Deep Learner eXperience Introflex (X1), Inquiry-Based Learning (X2), and critical thinking (Y2) variables. Prerequisite tests were conducted to ensure the data were suitable for further analysis using parametric inferential statistics. These prerequisite tests included a normality test using the Shapiro-Wilk method, given that the sample size was small fewer than 50 students. In addition, a homogeneity test was also conducted using the One-Way ANOVA (Homogeneity of Variance Test) menu. The final step was hypothesis testing to draw conclusions regarding whether the research hypothesis was accepted or rejected (Engkizar et al., 2024; Masoud & Almajri, 2025; Spss, 2014).

RESULT AND DISCUSSION

Initial Abilities, Pretest, and Posttest

The curriculum in effect at Cahaya Hati Integrated Islamic Elementary School consists of the Ministry of National Education curriculum, the JSIT curriculum, and the Ministry of Religious Affairs curriculum. For critical thinking skills, the graduation standards are already outlined in the Graduation Competency Standards for Dimension 5 of Integrated Islamic Schools. It consists of 5 dimensions, 13 elements, 42 sub-elements, and six phases. This study focuses on the development of interest and critical thinking within Dimension 5, titled "Intelligent, Phase C: Critical and Digital Reasoning."

To meet these standards, Cahaya Hati Integrated Islamic Elementary School has begun implementing the Active Deep Learner eXperience (ADLX) Introflex and Inquiry-Based Learning (IBL) models as part of its efforts to improve the quality of education. The implementation of these models follows a training program provided by JSIT Indonesia to the schools under its umbrella.

The Active Deep Learner eXperience (ADLX) model is expected to create a more meaningful and in-depth learning experience so that students not only understand the material conceptually but are also able to connect it to real life. This is intended to increase student engagement in the learning process while developing critical thinking skills, which are among the key competencies needed to face the educational challenges of the 21st century.

Based on the results of a study comparing the Active Deep Learner eXperience (ADLX) Introflex and Inquiry-Based Learning models on students' critical thinking skills in Islamic Religious Education at Cahaya Hati Integrated Islamic Elementary School in Bukittinggi, it was found that there were variations in ability among students in each class. These variations are evident from the highest and lowest scores obtained by students before the intervention was implemented, as shown below:

Table 4. Comparison of the Active Deep Learner eXperience (ADLX) Introflex and Inquiry-Based Learning models

Class	Number of Students	Highest Score	Lowest Score	Average
VI Arrahmah	26	99	63	84.50
VI Arrayyan	26	99	44	84.25
VI Azzakah	26	99	66	85.14

Therefore, it is necessary to determine the initial ability distribution groups into the categories of high initial ability and low initial ability using the extreme grouping technique as follows:

Table 5. Initial Ability Distribution Groups

Group	Number
ADLX High Ability	8
ADLX Low Ability	8
Inquiry High Ability	8
Inquiry Low Ability	8
Total	32

The critical thinking skills measured in this study include the ability to identify problems, analyze information, provide logical reasoning, evaluate various problem-solving alternatives, and draw conclusions based on available facts. The pretest results were analyzed descriptively to determine the mean, standard deviation, minimum score, and maximum score of the students using SPSS, as shown below:

Table 6. Descriptive analysis of pretest results

Group	N	Mean	Standard Deviation	Minimum	Maximum
Group 1	26	61.35	6.37	46.00	72.00
Group 2	26	48.69	10.65	30.00	71.00
Total	52	55.64	12.79	35.00	91.00

Based on the pretest results, students' critical thinking skills still showed variation across the groups. Group 1 achieved an average score of 61.35 with a standard deviation of 6.37, while Group 2 achieved an average score of 48.69 with a standard deviation of 10.65. This difference in averages indicates that students' critical thinking skills prior to the intervention were still at varying levels. The lowest score obtained by a student was 30.00, and the highest was 91.00. Meanwhile, the overall average score for all students was 55.64 with a standard deviation of 12.79.

After the learning process using the Introflex Active Deep Learner eXperience (ADLX) and Inquiry-Based Learning (IBL) models was completed, students took a posttest to assess their level of critical thinking skills following

the intervention. The posttest results were used to examine the improvement in students' critical thinking skills as well as the effectiveness of the Introflex ADLX and Inquiry-Based Learning (IBL) models in Islamic Religious Education. The results of the intervention are as follows: First, a description of the posttest results for critical thinking skills in the Active Deep Learner eXperience (ADLX) Introflex class. The posttest data for the Active Deep Learner eXperience (ADLX) Introflex class were analyzed based on groups with high initial ability and low initial ability, as shown below:

Table 7. Posttest Results for the Active Deep Learner Experience (ADLX) INTROFLEX Class

Initial Ability	N	Mean	Standard Deviation
High	8	44.13	0.99
Low	8	42.50	2.67
Total	16	43.31	2.12

It was found that students with high initial ability achieved an average critical thinking score of 44.13 with a standard deviation of 0.99. Meanwhile, students with low initial ability achieved an average score of 42.50 with a standard deviation of 2.67.

Overall, students in the class using the Introflex Active Deep Learner Experience (ADLX) model achieved an average critical thinking score of 43.31 with a standard deviation of 2.12. These results indicate that the Introflex Active Deep Learner Experience (ADLX) model is capable of producing good results for students with both high and low initial ability levels.

Second, a description of the posttest results for critical thinking skills in the Inquiry-Based Learning class. The posttest data for the Inquiry-Based Learning class were analyzed based on groups with high and low initial ability levels. This analysis was conducted to determine differences in students' critical thinking achievement based on their initial ability levels prior to participating in the instruction. The results are as follows:

Table 8. Posttest Results for Critical Thinking Skills in Inquiry-Based Learning Classes

Initial Ability	N	Mean	Standard Deviation
High	8	41.00	4.63
Low	8	41.63	3.29
Total	16	41.31	3.89

It can be seen that students with high initial ability achieved an average critical thinking score of 41.00 with a standard deviation of 4.63. Meanwhile, students with low initial ability achieved an average score of 41.63 with a standard deviation of 3.29.

Overall, students who participated in lessons using the Inquiry-Based Learning model achieved an average critical thinking score of 41.31 with a standard deviation of 3.89. These results indicate that the Inquiry-Based Learning model is also capable of developing students' critical thinking skills, although the average score obtained remains below that of the class using the Active Deep Learner Experience (ADLX) Introflex model. Next, a hypothesis test was conducted, beginning with a test of the analysis requirements, which included a normality test and a homogeneity test.

Normality Test

Table 9. Normality Test

Data Group	Shapiro-Wilk Statistic	Sig.	Description
Pretest ADLX Introflex	0.949	0.218	Normal
Pretest Inquiry Based Learning	0.952	0.263	Normal

Pretest Control Class	0.958	0.313	Normal
Posttest ADLX Introflex	0.906	0.121	Normal
Posttest Inquiry Based Learning	0.940	0.136	Normal
Posttest Control Class	0.961	0.365	Normal

Normality tests were conducted on the pretest and posttest data for critical thinking skills in each research class. All data sets had significance values greater than 0.05. The pretest significance values were 0.218 for the ADLX Introflex class, 0.263 for the Inquiry-Based Learning class, and 0.313 for the control class. Meanwhile, the posttest significance values were 0.121 for the ADLX Introflex class, 0.136 for the Inquiry-Based Learning class, and 0.365 for the control class. Since all significance values were greater than the significance level of 0.05, it can be concluded that the research data are normally distributed.

Homogeneity Test

Table 10. Homogeneity Test

Levene Statistic	df1	df2	Sig.	Description
2.183	3	26	0.112	Homogeneous

Based on the results of the homogeneity test, the significance value was 0.112. This value is greater than the significance level of 0.05 (0.112 > 0.05). Thus, it can be concluded that the data on students' critical thinking skills exhibit homogeneous variance. The first hypothesis test was conducted using an independent samples t-test on the group of students with high initial ability, with the following results:

Table 11. The first hypothesis test was conducted using an independent samples t-test

Group	N	Mean	Sig. (2-tailed)	Decision
ADLX High Initial Ability	8	44.00	0.049	H_a Accepted
Inquiry High Initial Ability	8	41.00		

The second hypothesis was tested using an independent samples t-test on the group of students with low initial ability, with the following results:

Table 12. Independent Samples t-Test

Group	N	Mean	Sig. (2-tailed)	Decision
ADLX Low Initial Ability	8	42.50	0.032	H_a Accepted
Inquiry Low Initial Ability	8	41.63		

The third hypothesis was tested to determine differences in students' overall critical thinking skills between the two learning models, without distinguishing between students with high and low initial ability levels. The test was conducted using an independent samples t-test on the entire research sample. Results of the third hypothesis test.

Table 13. Results of the third hypothesis test

Group	N	Mean	Sig. (2-tailed)	Decision
ADLX Introflex	16	43.31	0.040	H_a Accepted
Inquiry Based Learning	16	41.31		

The fourth hypothesis was tested using a two-way analysis of variance (Two-Way ANOVA). This analysis aimed to determine whether the effect of the learning model on critical thinking skills was influenced by students' prior abilities. The results of the two-way analysis of variance are as follows:

Table 14. The fourth hypothesis was tested using a Two-Way ANOVA

Source of Variation	F	Sig.	Decision
Learning Model × Initial Ability	1.003	0.325	H_0 Rejected

The results indicate that there is no significant interaction between the learning model and initial ability on students' critical thinking skills. The absence of such an interaction suggests that the ADLX Introflex model is more effective than Inquiry-Based Learning for both the high-ability and low-ability groups. In other words, the ADLX Introflex model's effectiveness in enhancing critical thinking skills is not dependent on students' initial ability levels.

A Comparison of Critical Thinking Skills Among Students with High Prior Knowledge Between the ADLX Introflex Model and Inquiry-Based Learning. The findings indicate that the ADLX Introflex model is more effective than Inquiry-Based Learning in enhancing the critical thinking skills of students with high prior knowledge. Students with high prior knowledge generally possess better foundational knowledge, learning experiences, and academic readiness compared to other students. A strong prior foundation enables students to more easily connect new information with their existing knowledge structure. According to Vygotsky's constructivist learning theory, the learning process is more effective when students can link new learning experiences to their prior knowledge. Therefore, students with high prior ability tend to be better prepared to engage in learning that requires higher-order thinking and independent problem-solving (Lailie & Dewi, 2022; Nim, 2025; Santrock, 2011; Shintawati, 2018).

A Comparison of Critical Thinking Skills Among Students with Low Prior Knowledge Between the ADLX Introflex Model and Inquiry-Based Learning Based on the results of the second hypothesis test, it was found that students with low prior knowledge who learned using the Active Deep Learner Experience (ADLX) Introflex model achieved an average critical thinking score of 42.50, while students who learned using the Inquiry-Based Learning model achieved an average score of 41.63. The statistical test results showed a p-value of 0.032, which is smaller than the significance level of 0.05. Thus, the alternative hypothesis is accepted, meaning there is a difference in critical thinking skills between students with low initial ability who learned using the ADLX Introflex model and those who learned using the Inquiry-Based Learning model. These results indicate that the ADLX Introflex model is more effective in improving the critical thinking skills of students with low initial ability. From a constructivist perspective, each student constructs their knowledge through interaction with the learning environment.

Therefore, students with low prior knowledge require learning experiences that help them build their understanding gradually. Learning that involves exploration, collaboration, reflection, and feedback, as well as ongoing learning experiences, will be more effective in helping students understand concepts and develop critical thinking skills (Bahgat et al., 2024).

The difference in students' critical thinking skills regardless of their initial ability between the ADLX Introflex model and Inquiry-Based Learning was demonstrated by the acceptance of the alternative hypothesis. This means there is a difference in critical thinking skills between students who learn using the ADLX Introflex Model and those who learn using the Inquiry-Based Learning model, regardless of their initial ability. These results indicate that the ADLX Introflex model is more effective than Inquiry-Based Learning in improving students' critical thinking skills overall. Critical thinking is one of the higher-order thinking skills that is essential for 21st-century learning. This skill encompasses the ability to analyze information, evaluate arguments, identify cause-and-effect relationships, solve problems, and draw logical conclusions based on available evidence. In Islamic Religious Education, critical thinking skills are important because students are not only required to understand the

material textually but also to be able to examine religious values.

The interaction between learning models and prior knowledge on students' critical thinking skills. In constructivist learning theory, prior knowledge is indeed viewed as one of the factors influencing students' learning processes. Prior knowledge serves as a foundation for understanding new information and constructing more complex concepts. However, learning success is determined not only by prior knowledge but also by the quality of the learning experiences provided to students. If a learning model is able to provide meaningful learning experiences, then students with different levels of prior knowledge will still have the opportunity to develop optimally (Santrock, 2011).

The results of this study show that prior ability is not a factor that strengthens or weakens the influence of the learning model on critical thinking skills. These findings indicate that the effectiveness of the ADLX Introflex model in improving critical thinking skills is relatively stable across various categories of students. The ADLX Introflex model is designed to provide an active, reflective, and in-depth learning experience for all students, regardless of their initial ability levels. Through various activities such as concept exploration, group discussions, problem-solving, learning reflection, and connecting the material to real life, students have equal opportunities to develop their critical thinking skills.

Overall, the results of the above analysis indicate that the Introflex Active Deep Learner eXperience (ADLX) model has a more positive impact on students' critical thinking skills than the Inquiry-Based Learning model. This finding is evident in the group of students with high prior ability, the group of students with low prior ability, as well as in the overall analysis regardless of prior ability. Although no significant interaction was found between the learning model and prior ability, the research results prove that the ADLX Introflex model is capable of providing an effective learning experience for students with various characteristics.

According to Facione & Facione, (2008), critical thinking is an intellectual process involving interpretation, analysis, evaluation, inference, and the ability to systematically explain the results of one's thinking. In reality, students with high prior knowledge generally possess better foundational knowledge, learning experiences, and academic readiness compared to other students. Strong prior knowledge enables students to more easily connect new information with their existing knowledge structures.

Meanwhile, Rojano-Caceres et al., (2012) explains that in Vygotsky's constructivist learning theory, the learning process is more effective when students are able to connect new learning experiences with their prior knowledge. Therefore, students with high prior knowledge tend to be better prepared to engage in learning that requires higher-order thinking and independent problem-solving.

The strengths of the ADLX Introflex Model can be explained through its learning characteristics, which are oriented toward deep learning and the learner's experience (Learner eXperience) through reflection. This model provides students with opportunities to actively engage in the learning process through exploration, discussion, reflection, collaboration, and problem-solving activities. Students do not merely receive information from teachers but also construct knowledge through meaningful learning experiences. These activities encourage students to conduct a more in-depth analysis of the learning material, thereby allowing their critical thinking skills to develop optimally (Azis et al., 2025; Hajjah et al., 2022).

Meanwhile, Khalaf and Setiawan & Airlanda, in their research (Khalaf &

Zin, 2018; Setiawan & Airlanda, 2023), state that the Inquiry-Based Learning model also emphasizes students' activities of seeking and discovering knowledge. However, the primary focus of the inquiry model is more directed toward the process of finding answers to a problem through investigative activities. For students with high prior knowledge, this approach is indeed effective in developing critical thinking skills.

The results of this study align with research conducted by Roudlo, (2020), who found that active, experience-based deep learning significantly enhances students' critical thinking skills because it provides students with ample opportunities to reflect on, analyze, and evaluate the material being studied. The study indicates that the higher the students' engagement in the learning process, the greater the critical thinking skills that can be developed.

The findings of this study are also supported by research conducted by (Darmawati & Mustadi, 2023), which concluded that student-centered learning models have a positive impact on improving the critical thinking skills of elementary school students. The results of that study showed that learning activities involving discussion, exploration, and problem-solving can significantly improve the quality of students' thinking.

Furthermore, a study by Linsih et al., (2025) found that instruction that provides students with opportunities to collaborate, discuss, and engage in systematic reflection can significantly improve critical thinking skills. The results of this study indicate that instruction that positions students as active participants in the learning process yields better thinking skills compared to instruction that focuses solely on mastering the subject matter.

Based on observations of classroom conditions during the study, students with high prior knowledge in the ADLX Introflex class appeared more active in expressing their opinions, providing reasons for their answers, and connecting the learning material to real-life situations. These activities indicate a deeper level of cognitive engagement during the learning process. Conversely, although students in the Inquiry-Based Learning class also demonstrated good learning activity, the process of reflection and reinforcement of learning meaning was not as deep as it was in the ADLX Introflex Class.

According to the researchers' analysis, the difference in critical thinking skills between the two groups occurred because the ADLX Introflex model was able to optimize the potential of students who already possessed high prior knowledge. Students not only had the opportunity to discover new knowledge but also to reflect on their learning experiences, thereby deepening their understanding. A strong baseline serves as a crucial foundation for students to fully utilize all stages of the ADLX Introflex learning process. Therefore, the ADLX Introflex model can be viewed as a more effective learning model than Inquiry-Based Learning in enhancing the critical thinking skills of students with both high and low baseline abilities in Islamic Religious Education at the Cahaya Hati Integrated Islamic Elementary School in Bukittinggi. Thus, the ADLX Introflex model can be recommended as an alternative instructional model for Islamic Religious Education that supports the development of students' critical thinking skills in elementary school.

Advantages of the Introflex Active Deep Learner eXperience (ADLX) model in the field: i) The Active Deep Learner eXperience (ADLX) model focuses on student engagement by applying a variety of learning methods; ii) The Active Deep Learner eXperience (ADLX) model taps into students' potential by providing opportunities for independent learning and encouraging deeper thinking when studying a concept, as well as engaging in reflection to deepen the meaning of experiential learning; iii) The Active Deep Learner

eXperience (ADLX) model is supported by adequate learning resources, such as the use of projectors, gaming, and teachers sourcing learning modules from multiple sources. iv) The Active Deep Learner eXperience (ADLX) model applies the principle of integrating worldly and spiritual knowledge. This Integrated learning approach, through its instructional framework, internalizes Islamic values by combining the Learning Outcomes and Learning Objectives from the Ministry of Education's curriculum with the Integrated Curriculum developed by the Integrated Islamic Schools Network. Consequently, the expected outcomes align with the goals of Islamic education.

CONCLUSION

There is a difference in critical thinking skills between high-ability students who learn using the Introflex Active Deep Learner Experience (ADLX) model and students who learn using the Inquiry-Based Learning model. The results of the hypothesis testing showed a significance value of 0.049, which is less than 0.05; therefore, the alternative hypothesis was accepted. These findings indicate that the ADLX Introflex model is more effective in developing the critical thinking skills of students with both high and low initial abilities because it provides a more active, reflective, and meaningful learning experience.

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