The Effect of Blended Learning Model and Students' Thinking Level on Students’ Learning Achievement

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The Effect of Blended Learning Model and Students' Thinking Level on Students' Learning Achievement

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Abstract. The traditional learning model makes students only as spectators and listeners so that the learning process becomes passive, besides that limited time is also the cause of the lack of maximum material delivered to students, causing a lack of students' absorption of the material presented. The purpose of this study was to compare students learning outcomes The PAI teaching method uses a blended learning model with that using a traditional learning model. This study used a quasi-experimental approach with a nonequivalent factorial pre-test post-test control group design. Documentation and tests are used to collect data. The instruments included tests of higher-order thinking skills and learning achievement tests, and interest test instruments were validated a class experiment selected from three subjects to assess higher-order vs. low-order thinking. Prerequisite test with normality test and homogeneity test is used in the study, followed by a t test if the data is normally distributed, and a two-way ANOVA test if the data is not normally distributed. The results of the study show that the blended learning model has a large influence on student achievement with the PAI teaching style. This can be seen from the post test testing the hypothesis of student success in the experimental and control classes obtained t-count > t-table, then H0 is rejected and Ha is approved. As a result, there is a sizable difference in student achievement between the experimental class taught by the blended learning model and the control class taught by the traditional learning model. The concept of blended learning is very good for teaching. This article will help lecturers understand how to apply the blended learning paradigm during lectures

***Keyword**: Blended Learning Model, High Order Thinking, Achievement*

Abstrak. Model pembelajaran tradisional menjadikan mahasiswa hanya sebagai penonton dan pendengar sehingga proses pembelajaran menjadi pasif, selain itu waktu yang terbatas juga menjadi penyebab kurang maksimalnya materi yang disampaikan kepada mahasiswa sehingga menyebabkan berkurangnya daya serap mahasiswa terhadap materi yang disampaikan Tujuan penelitian ini adalah untuk membandingkan hasil belajar siswa Metode Pengajaran PAI yang menggunakan model blended learning dengan yang menggunakan model pembelajaran tradisional. Penelitian ini menggunakan pendekatan quasi-experimental dengan desain kelompok kontrol dua arah nonequivalent factorial pre-test post-test control group design. Dokumentasi dan tes digunakan untuk mengumpulkan data. Instrumennya meliputi ujian kemampuan berpikir tingkat tinggi dan tes prestasi belajar, dan instrumen tes minat yang divalidasi di kelas percobaan dipilih dari tiga mata kuliah untuk menilai siapa yang berpikir tingkat tinggi vs siapa yang berpikir tingkat rendah. Uji prasyarat dengan uji normalitas dan uji homogenitas digunakan dalam penelitian ini, dilanjutkan dengan uji t jika data

berdistribusi normal, dan uji ANOVA dua jalur jika data tidak berdistribusi normal. Hasil penelitian menunjukkan bahwa model blended learning memiliki pengaruh yang besar terhadap prestasi belajar siswa dengan gaya mengajar PAI. Hal ini terlihat dari post test pengujian hipotesis keberhasilan siswa pada kelas eksperimen dan kontrol diperoleh nilai t-hitung > t-tabel, maka H0 ditolak dan Ha disetujui. Akibatnya, terdapat perbedaan yang cukup besar pada prestasi belajar siswa antara kelas eksperimen yang diajar dengan model blended learning dan kelas kontrol yang diajar dengan model pembelajaran tradisional. Konsep blended learning sangat baik untuk pengajaran. Artikel ini akan membantu dosen memahami bagaimana menerapkan paradigma blended learning saat perkuliahan

Key word : Model Blended Learning, Berfikir Tingkat Tinggi, Prestasi

INTRODUCTION

The process of teaching and learning activities in the model's application is an important component since learning is essentially a science that continues to evolve and is in accordance with the needs of the times, including the development of technological knowledge. The advancement of technology has resulted in several improvements that can aid in the process of learning activities in the field of education (Millionshchikov, 1974). One of them is the growing variety of learning material available as a consequence of substantial technology advancements, which can assist lecturers in continuing to create and integrate relevant learning models in order to attain student accomplishment results in education (Kristiawan et al., 2021).

Success in education is inextricably linked to success in the learning process, which becomes a process of watching, seeing, and comprehending a learning material (Agung, 2021). To ensure that students understand and know the material well, the lecturer must have knowledge, ability, and expertise in teaching so that they can hone thinking skills and improve the achievement abilities of the students themselves, because students are also expected to have high intellectual abilities, potential, and achievement, as well as some higher order thinking skills. Students are expected to be able to compete outside if they have the ability to think at a high level and influence their learning accomplishment (Zakaria & Iksan, 2020).

Research that has been done discusses the effect of blended learning models on learning achievement. This research does not include higher order thinking. In addition, there is research on the effect of blended learning models on learning motivation. Distinguishing this research is between motivation and learning achievement. Based on previous research, this research is a new thing that examines blended learning models, higher order thinking and learning achievement. Besides that, it is a new thing for the PAI teaching methodology course.

Higher order thinking skills (HOTS) according to Nugroho (2018), are a higher level of thinking than remembering information, presenting facts, or carrying out processes. Higher Order Thinking Skills necessitate the ability to perform something based on existing reality. Thinking skills are a mix of two terms with distinct meanings: thinking and skills. Knowing, remembering, planning, and preparing are all cognitive processes. Skill is the practice of gathering, selecting information, drawing conclusions, analyzing, assessing an argument or concept, making judgments, and reflecting (Fanani, 2018). Higher-order thinking skills are vital for children because they allow them to think critically and solve problems. In order to promote students' learning success, emotional factors, in addition to high-level thinking, are vital in

boosting learning performance. One of the features that students will require in the future is the quality of their learning success.

Higher order thinking skills are intimately tied to how pupils handle challenges in the classroom. In this situation, in accordance with the Regulation of Ministry Education No. 18 of 2013 about Curriculum Implementation, it is indicated that the capacity of the pupils required for future competitiveness, namely the ability to communicate, be creative, and think critically, is required. Lecturers play a vital role in organizing and pushing their pupils to think critically. Some of the motivations used by local lecturers include starting and ending lessons with questions that lead to higher-order thinking skills, including brainstorming activities in the middle of the lesson to encourage students to find ideas and think critically, and assigning open-ended assignments as a task to determine whether or not their creativity and understanding of the lessons learned are in accordance with the characteristics of higher order thinking (Conklin, 2012).

In this situation, high-level talents are divided into three categories: transfer of learning outcomes, critical thinking, and problem solving (Brookhart, 2010). According to Conklin, the features of higher order thinking include "Characteristics of higher order thinking talents involve both critical thinking and creative thinking." Higher order thinking talents are characterized by two characteristics: critical and creative thinking. According to several expert explanations, higher order thinking skills are a process of deep and extensive thinking skills that involve processing information critically and creatively in dealing with and solving complex problems, as well as involving students' analytical, evaluating, and thinking levels (Conklin, 2012). In an effort to promote higher-order thinking abilities and learning accomplishment through the use of technology advances as a support for learning practices that aim to engage active students in the learning process.

According to (Dosinaeng, W. N., Leton, S. I., & Lakapu, 2019), students can handle issues with numbers and related operations as well as algebra, but they encounter some difficulties while dealing with geometry, data analysis, and probability. According to Bloom's taxonomy, most pupils' abilities remain in the category of analyzing, with just two persons reaching the level of producing while solving algebraic problems. Based on this, a researcher suggests that secondary school teachers familiarize their students with working with non-routine questions to develop HOTS, that prospective teacher students become acquainted with working with HOTS-oriented problems, and that prospective teacher lecturers assist students in developing HOTS during college as a provision for when they become teachers later.

Blended Learning is a learning approach with adequate features that is effective, adaptable, and efficient in boosting overall student learning achievement. Blended learning is an English phrase that combines two terms, namely blended and learning. Blended is an excellent combination of words. Learning is simply learning. Because students are needed to actively monitor the changes in their class, blended learning is used to build and promote student engagement in the learning activities carried out. Using the learning resources supplied directly as well as the sources contained in the media. Blended Learning gives students with possibilities to study by utilizing current material and developing their thinking skills (Dwiyogo, 2014). According to Garrison, (2014), the Blended Learning model is also very appropriate for improving students' higher-order thinking skills because it allows students to discuss with each other and information obtained from various sources so that students' higher-order thinking skills can be facilitated. In this situation, blended learning refers to the combination of online and face-to-face learning in order to optimize student achievement in school.

According to the findings of interviews conducted by researchers with lecturers in PAI teaching methodology courses, Asri Karolina (27 June 2021), the current learning process is carried out conventionally, resulting in numerous flaws. These flaws include: "1) Students are more of listeners and audience, making the learning process more passive, 2) Students' power over the content is restricted since the lecturer delivers the material based on their skills, which is exacerbated by the lack of opportunities to access new sources during the learning process. 3) The existing learning method is space and time constrained, in the sense that students who are unable to attend will miss out on the opportunity to gain skills and information because students' talents are not refined because students are not accustomed to thinking beyond the context. 4) Students struggle to describe the subject using the findings of their analysis. Students' critical thinking abilities are still being developed to explain lecture content, students are still unable to form thinking ideas to express opinions and analyze material, and students cannot conceptually understand and analyze material for PAI teaching approach. We intend to undertake a study named "The Effect of Blended Learning and High Order Thinking Learning Models on Student's Achievement of PAI Teaching Methodology" (Istiningsih & Hasbullah, 2015; Sumarmi et al., 2021; Wardani et al., 2018).

The purpose of this study is to describe the differences in learning achievement of the PAI Teaching Methodology who study with the blended learning model and traditional learning models, the differences in learning achievement of the PAI Teaching Methodology of students who think at a high level with students who think at a low level, the effect of the interaction between learning models and students' thinking on PAI teaching methodology learning achievement, differences in learning achievement PAI Teaching Methodology with high-level thinking learning with blended learning learning models with students learning with traditional models and differences in learning achievement PAI Teaching Methodology with low-level thinking learning with blended learning learning models with students who studied with the traditional model.

This article is different from previous studies. It helps the educators apply blended learning to have good results on student's achievement. The more different of this article concerns on high order thinking skill for Islamic teaching approach. This article supports (Yuliati & Lestari, 2018), they state students still do not have good understanding in answering HOTS oriented questions and (Nadhiroh & Latifah, 2020) state problem solving skills are closely related to higher order thinking skills. The study of (Rahmi, U., Azrul, A., & Adri, 2019) found also there was the improvement of students' higher-order thinking skills in a blended learning environment, but it depends on the spot assessment done instantly, quickly and precisely. Furthermore, this article is supported by (Saefullah et al., 2020) that blended learning model has a better effect in HOTS than learning without blended learning in Thermodynamic material, where this article more deeply concerns on Islamic teaching approach.

METHOD

This study employed a quasi-experimental research design. The phrase "quasi-experimental" refers to the fact that study subjects are not chosen at random and that research is conducted using pre-defined classifications (Back & Hwang, 2005). This study's variables included independent factors, moderator variables, and dependent variables. An independent variable is

the learning model. The independent variables' aspects include traditional learning models and blended learning models. The moderator variable is high-level thinking, which is divided into two categories: high-level thinking and low-level thinking.

The learning achievement of the PAI teaching approach is the dependent variable in this study. The design used in this study is a two-way factorial design of nonequivalent pre-test post-test control group designs, because (Hastjarjo, 2019; Ratchna et al., 2019; Wulandari et al., 2021) states that if a study is conducted on a sample group that has almost the same characteristics, one of the sample groups is treated and the other is not treated.

Table 1. Two-way Factorial Research Design the Influence of Learning Models and Higher-Level Thinking on Learning Achievement

Learning Model	Conventional (A_1)	Blended Learning (A_2)
High Level Thinking (B_1)	A_1B_1	A_2B_1
Low Level Thinking (B_2)	A_1B_2	A_2B_2
∑Total	∑ A	∑ B

Notes:

(A_1) : Students in a traditional learning group

(A_2) : Students in a blended learning group

(B_1) : Students in high-level thinking group

(B_2) : Students in low-level thinking group

A_1B_1 : Students in traditional learning and high-level thinking group

A_1B_2 : Students in traditional learning and low-level thinking group

A_2B_1 : Students in a blended learning and high-level thinking group

A_2B_2 : Students in a blended learning and low-level thinking group

In this study, 210 students were dispersed over local A, B, C, D, E, F, and G. The sample approach utilized in this study was purposive sampling (Marsha & Ghozali, 2017). Local PAI A, PAI Local C, and local PAI G were decided based on the average value of computer science B, graduated from high school in 2019 and began studies at IAIN Curup in the 2019/2020 academic year. Furthermore, one experimental class, one control class, and one class were chosen from the three courses to assess the validity of the questions. The class is determined by drawing lots. The first class was designated as the experimental class, the second as the control class, and the third as the class for verifying the validity of the questions. The PAI class C is the experimental class, the PAI class A is the control class, and the PAI class G is the test validity class, according to the draw findings. The following table provides a description of the sample group.

Table 2. Number of Research Samples

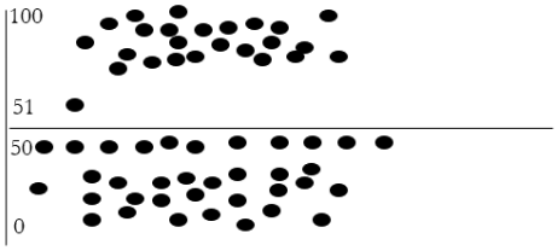
No	Class	Sample	Amount
1	PAI Class C	Experimental Class	30
2	PAI Class A	Control Class	30
Total			60

Following the selection of two classes as study samples, a test of hots questions and learning accomplishment of the PAI Teaching Methodology was conducted. The hots test was used to assess who thinks at a high-level vs who thinks at a low level. According to the findings of the hots test analysis, 13 students in PAI class C believed high-level and 17 students thought low-level, whereas 12 students in PAI class A thought high-level and 18 students thought low-level. The data is shown in the table below:

Table 3. HOTS in Test Results

HOTS	Experimental Class PAI Class C	Control Class PAI Class A	Amount
High	13	12	25
Low	17	18	35
Total	30	30	60

Furthermore, because this study employs factorial analysis, the sample group must be determined based on the similarity of the number of hots categories in each cell. To ensure that each group of students in each class receives the same number of samples, the number of samples is determined by the number of samples with the same value in each cell, namely 12 students. The sample group is chosen based on the hots value category, with a maximum value of 100 and a minimum value of 0. The high-value hots category has a value between 51-100, whereas the low-value hots category has a value between 0-50. Furthermore, 24 students with high hots are drawn from students whose scores are in the high upper range, and 24 students with low hots are drawn from students whose scores are in the low limit. The hots scores for 12 kids who were not assigned to a cell group were in the high and low ranges. Graph 1 depicts the distribution of the sample groups used.



Graph 1. Distribution of Sample Group

The next table also shows the number of students divided into high-level thinking and low-level thinking groups.

Table 4. Grouping the Number of Students Based on the Hots Questions Test Results

HOTS	Sample of Experimental Class PAI Class C	Sample of Control Class PAI Class A	Amount
High	12	12	24
Low	12	12	24
Total	24	24	48

FINDINGS

Data from high-level thinking and low-level thinking studies were derived from the outcomes of student assessments in which they responded hot questions ranging from comprehending (C4) to evaluating (C5) and producing (C6) (C6). The research data on students' critical thinking skills were gathered using the self-HOTS instrument, which consisted of 10 question items, each with four assertions. The HOTS instrument is fr[20] the junior high PAI Learning and Materials course. According to the hots score data, [20] students in the experimental class have high hots and 17 students have low hots, while 12 students in the control class have high hots and 18 students have low hots. Furthermore, groups are formed by taking the same number of students, namely 12 students in each group in one class. In[6] he experimental class, 12 students with high hots and 12 students with low hots were treated with a blended learning model; in the control class, 12 students with high hots and 12 students with low hots were treated with a learning conventional model.

The findings of the pre-test in the Experiment and Control classes provided the initial data on learning achievement of PAI teaching approach for PAI[2] tudents. This initial data is used to determine the sample class's normality and homogeneity. The data is confirmed to be regularly distributed based on the test findings, as seen[2]y the sig value of the normality test, which is 0.100 with a sig value of 0.123 > 0.05, implying that the data is normally distributed.

Furthermore, to evaluate the homogeneity of the data, a Fisher test was performed by looking at the findings of F-count, with the assumption that if F-count, the sample is homogenous. The computation yielded F-count = 0.117 at the level of sig = 0.05 or 5%, with db of the numerator (v1) = 60-1=59 and db of the denominator (v2) = 60-1=59, and F-table = F (0 0.05) (3.15). The sample is judged homogenous because 0.117 1.575.

The findings of this study are divided into several[3] categories: a) a description of the learning achievement data of the PAI teaching methodology of students who study using the conventional learning model[6] (lecture) A1; b) a description of the learning achievement data of the PAI teaching methodology of students who study using the blended learning (A2) learning [6]odel; and c) a description of the learning achievement data of the PAI teaching methodology of students who study using the blended learning (A2) learning model, c) Data description of learning achievement data of PAI teaching methodology who learns with higher order thinking (B1); d) Data description of learning achievement data of PAI teaching methodology who learns with low-level thinking (B1) (B2), then e) A description of learning achievement data on PAI teaching methodology using conventional learning models (lectures) and high-level thinking (A1, B1); f) A description of learning achievement data on PAI teaching methodology using blended learning and high-level thinking learning models (A2, B1); g) A description of learning achievement data on PAI teaching methodology using conventional learning models (lectures) and low-level thinking (A1, B2), h) Learning accomplishment statistics on PAI teaching approach using blended learning and low-level thinking learning models (A2, B2);

The number of samples, the highest value, the lowest value, the mean, the median, the range of empirical values, the standard deviation, the class interval, many classes, and the median in the form of a classed frequency distribution are the results of the computation of the data provided. The data recapitulation of the outcomes of the PAI Teaching Methodology's computation of the learning accomplishment score is shown in the table below.

Table 5. Recapitulation of Calculation Results of Islamic Education Teaching Methodology Learning Achievement Scores

Learning Model	Mean	Median	Deviation	Variance	Min-Score	Max-Score	Range	N
Conventional (A1)	68.58	72.00	18.458	340.688	44	100	56	24
Blended Learning (A2)	82.25	84.00	13.848	191.761	62	100	38	24
High-Level Thinking (B1)	90.00	91,00	8.086	63.391	74	100	26	24
Low-Level Thinking (B2)	60,92	63,00	11,127	123,819	44	80	36	24
Conventional High-Level Thinking (A1, B1)	85,17	85,00	7,930	62,879	74	100	26	12
Conventional Low-Level Thinking (A1, B2)	52,17	50,00	7,697	59,242	44	70	26	12
Blended Learning High-Level Thinking (A2, B1)	94,83	95,00	4,783	22,879	88	100	12	12
Blended Learning Low-Level Thinking (A2, B2)	69,67	68,00	5,710	32,606	62	80	18	12

Hypothesis Testing

The following table shows the findings of calculations and data analysis about the effect of learning models and higher order thinking on learning accomplishment PAI teaching approach.

Table 6. Two Way ANOVA Hypothesis Test Results

No	Variance	Number of Squares	db	MK	F-Count	Score Sig	Conclusion
1	Among A	2214.083	1	2214.083	49.865	0,000	There is Difference
2	Among B	10150.083	1	10150.083	228.598	0,000	There is Difference
3	Among AB	184.083	1	184.083	4.146	0,048	There is Interaction

Table 7. Univariate of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	12548.250[a]	3	4182.750	94.203	.000
Intercept	273310.083	1	273310.083	6155.422	.000
Learning Model	2214.083	1	2214.083	49.865	.000
High-Level Thinking	10150.083	1	10150.083	228.598	.000
Learning Model * High-Level Thinking	184.083	1	184.083	4.146	.048
Error	1953.6	44	44.402		
Total	287812.000	48			
Corrected Total	14501.917	47			
a. R Squared = .865 (Adjusted R Squared = .856)					

The following table shows the results of the pre-test hypothesis testing of students' critical thinking skills in the experimental and control groups.

Table 8 Hypothesis Testing Pre-Test Learning Achievement Experimental Class and Control Class

Code	N	Mean	Std. Deviation	Std. Error Mean
Experimental	4	46.04	17.640	3.601
Control	4	48.13	18.525	3.781

Table 9. Hypothesis Validation Achievement in Pre-Test Learning Experiment and Control Classes

		F	ig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test Student Achievement Experiment and Control Class	Equal variances assumed	120	730	.399	46	.692	-2.083	5.221	-12.594	8.427
	Equal variances not assumed			-.399	45.890	.692	-2.083	5.221	-12.594	8.428

The results of the pretest hypothesis testing on student accomplishment in the experimental and control classes produced a t-count of -0.399, as shown in the table. While the value of t-table for =0.05 with df = 46, t-count t-table (-0.399 2.012), H0 is approved and Ha is denied. As a result, there is no significant difference in the pretest scores of students' learning achievement in the experimental and control groups. As a result, there is no significant difference in student accomplishment between the experimental class before utilizing the mixed learning model and the control class before using the conventional learning model.

The following table shows the results of post-test hypothesis testing of students' critical thinking skills in the experimental and control groups:

Table 10 Hypothesis Testing Post-Test Learning Achievement Experimental Class and Control Class

Code	N	Mean	Std. Deviation	Std. Error Mean
Experimental	**24**	82.25	13.848	2.827
Control	**24**	68.17	18.253	3.726

Table 11. Hypothesis Validation Achievement in Post-Test Learning Experiment and Control Classes

	F	ig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper

Pre-test Student Achievement Experiment and Control Class	Equal variances assumed	.496	068	.011	46	004	14.083	4. 677	4,669	3,497
	Equal variances not assumed			3.011	42.887	004	14.083	4. 677	4,651	3,516

The findings of post-test hypothesis testing on student success in the experimental and control classes received a t-count of 3.011 in the table. When t-table for = 0.05 and df = 46, it indicates that t-count > t-table (3,011 > 2,012), thus H0 is rejected and Ha is approved. As a result, there is a substantial difference between the post-test scores of students' learning achievement in the experimental and control groups. As a result, there is a substantial difference in student accomplishment between the experimental class taught using the blended learning model and the control class taught using the traditional learning model.

DISCUSSION

Based on the findings of the previously disclosed data analysis and hypothesis testing, it is possible to conclude that the learning model and thinking skills influence the learning accomplishment of the PAI Teaching Methodology.

Several findings need to be addressed more so that they may be utilized as a reference in order to enhance PAI Teaching Methodology learning. These findings will be utilized as a starting point for further research on: 1) the superiority of the mixed learning model over traditional learning models 2) The dominance of higher-order thinking skills over lower-order thinking skills, 3) In the PAI Teaching Methodology, there is an effect between the learning model and thinking skills on student accomplishment, 4) The benefits of the Blended Learning model for students with higher-order thinking skills above traditional learning models for students with high-level thinking skills, 5) The benefits of Blended Learning models for students with low-level thinking skills above traditional learning models for children with low-level thinking skills (Sumarmi et al., 2021; Yunus & Syafii, 2020).

The first finding indicates that there are disparities in learning accomplishment between students who use the mixed learning model and students who use the traditional learning model. According to statistical analyses, the mixed learning model outperforms the traditional learning paradigm. This is demonstrated by the fact that the learning accomplishment of the group of students who use the mixed learning model is greater than the learning achievement of the group of students who use the conventional learning model.

The continuous blended learning strategy can motivate students to increase their learning achievement and attain mastery in learning (V. K. Sari & Wibowo, 2021). The use of a blended learning strategy can improve students' attention and performance in the PAI Teaching Methodology topic. Blended Learning is a new learning technique that can assist students because it is also a type of ICT support for new learning. Even blended learning is regarded to as one of the top 10 presenting methods growing in the information delivery sector (I. K. Sari, 2021).

According to the description, studying Blended Learning may boost attractiveness and encourage students to continue learning and following the learning process. This learning model can also assist instructors develop lessons based on students' learning patterns and prepare pupils for future problems. The use of Blended Learning can aid in the development of superior learning processes based on learning styles and preferences (Widayanti & Suarnajaya, 2021). Learning with traditional methods, on the other hand, encourages pupils to be more passive

because they only hear the lecturer discuss the content and examples in the book. When the instructor just concentrates on instances from the book, the learning becomes tedious, and students lose interest in paying attention and acquiring the content. This keeps pupils inactive, and their recall of what the lecturer says does not stay long, affecting student learning performance.

Blended learning focuses on overcoming difficulties experienced by students connected to feelings, experiences, and understanding in learning without a lecturer, or in other words, the lecturer gives answers to student problems that are chosen by the student in question. A favorable relationship between professors and students, such as offering attention and excitement, is thought to make it simpler for students to embrace the lecturer's learning and, as a result, can boost student learning accomplishment (Adri et al., 2021; Dwiyogo, 2014; Garrison, 2014).

According to the description, blended learning may captivate students' attention, causing them to become eager and active learners, and the knowledge and material received will be more incorporated into students' minds. This can boost students' willingness to learn, which in turn improves student learning success. Learning with traditional methods, on the other hand, causes pupils to be more passive and just listen to the lecturer add content and examples in the book or write on the chalkboard. When lecturers simply use examples from books or blackboards, which might be repetitive, students' excitement or interest in acquiring content suffers. This keeps pupils inactive, and their recall of what the lecturer says does not stay long, affecting student learning performance (Awaluddin, 2018; Istiningsih & Hasbullah, 2015; Wardani et al., 2018).

Furthermore, with students playing a passive part in the learning process, the influence on student mastery of learning information is limited, students must study actively and be able to improve their memory in order to reach the objective (Utama, 2020). Maximum learning achievement indicates effective learning; if students are inactive in their learning, the reverse will occur.

In relation to students' active participation in classroom learning, it can be demonstrated that students actively correlate each new subject matter with a range of prior knowledge and experiences that exist in everyday life or experiences discovered in real life. As a result, pupils find it easier to translate the meaning of the information, which improves learning accomplishment.

The second finding in this study is that there are disparities in learning accomplishment between PAI Teaching Methodology students who have higher-order thinking abilities and PAI Teaching Methodology students who have lower levels of thinking, based on the findings of the analysis. PAI Teaching Methodology's learning accomplishment with higher-order thinking skills is greater than PAI Teaching Methodology's learning achievement with low-order thinking abilities. The person with high-order thinking abilities will enhance his/her self-achievement and well-being through a variety of tactics, such that pupils with higher learning levels tend to attain greater levels as well (Dinna Ririn Agustina, 2019).

Students with higher order thinking abilities pick more difficult assignments, are persistent in addressing new problems, and work more to attain their goals. This demonstrates that kids with higher-order thinking skills strive for success, are more optimistic, and are continually looking for answers to challenging problems. Students with inadequate thinking skills, on the other hand, lack confidence in their abilities, readily give up on finishing the tasks assigned, and prefer to avoid work with a high level of complexity because they lack confidence in completing larger projects and only feel capable of doing easy tasks.

These findings are consistent with those of (Mahmudi & Suroso, 2014), who discovered a positive association between higher-order thinking skills scores and lower-order thinking skills scores in their study. However, these findings contradict to other findings that thinking capacity had no substantial influence on student accomplishment.

The third finding, in the third hypothesis, demonstrates that traditional and blended learning and thinking abilities have an impact on student accomplishment in PAI Teaching Methodology. The learning model is a conceptual framework that specifies how to organize learning events in order to attain learning goals. The effectiveness of applying the learning model is determined by both internal and external factors. In this situation, the internal condition is the student's memory (Irman, 2019). Student memory is linked to both higher-order and lower-order thinking. The use of the appropriate learning model can help pupils think more clearly (Leung & McGrath, 2010). It is possible that enhancing students' thinking skills will have an influence on their learning achievement. It may be inferred that the learning model and level thinking have an impact on learning accomplishment.

The fourth finding in this study demonstrates that there are disparities in learning accomplishment between PAI Teaching Methodology students who have higher-order thinking skills and learn utilizing blended learning models against traditional learning models. PAI Teaching Methodology students with higher order thinking skills who study with a mixed learning model outperform PAI Teaching Methodology students with higher order thinking skills who learn with traditional learning models. Students who have higher-order thinking abilities will boost their self-achievement and well-being in numerous techniques, so that students who have the capacity to Higher order thinking tend to have high achievement as well.

The fifth conclusion in this study, based on the analysis findings, demonstrates that there are disparities in learning accomplishment of the PAI Teaching Methodology for students with low-level thinking skills, studying with the blended learning model (Qasrawi & Beniabdelrahman, 2020). PAI Teaching Methodology Pupils with low-level thinking abilities who study with the mixed learning model learn better than students with low-level thinking skills who learn with conventional learning models.

The main characteristic of students with low-level thinking skills is that they are doubtful about their own abilities, so they easily give up on doing the given task, even though these students are capable of doing it, students with low-level thinking skills lack confidence in completing the task. Traditional learning tends to make students more passive since they merely listen to the lecturer's information, therefore the conventional learning model is consistent with the characteristics of students who have low-level thinking skills (Qasrawi & Beniabdelrahman, 2020). Furthermore, it can be stated that PAI Teaching Methodology pupils with lower-order thinking skills obtain greater learning achievement while studying using the blended learning model rather than the conventional approach.

CONCLUSION

The following conclusions can be formed based on the study findings and discussion of the research findings 1) the learning accomplishment of PAI teaching methodology students who study with Blended Learning is higher than the learning achievement of PAI teaching methodology students who study with traditional learning models; 2) Learning PAI teaching methodology achievement of students with high-level thinking skills is higher than learning PAI

teaching methodology achievement of students with low-level abilities; 3) There is an interaction effect between learning model and thinking ability on learning achievement of PAI teaching methodology; 4) PAI teaching approaches with high-order thinking abilities learning with blended learning models outperform those with traditional learning; 5) Studying achievement of the PAI teaching style is higher among students with lower-order thinking skills when learning with the blended learning model than when learning with conventional methods.

Recommendation

Recommendations in this study are addressed to, 1). Lecturers for other subjects to apply the blended learning learning model because this model is proven to increase learning achievement, 2). Future researchers, to add intellectual intelligence variables or IQ variables.

REFERENCES

Adri, F. M., Giatman, M., & Ernawati. (2021). Manajemen Pembelajaran pada Masa Pandemi Covid-19 Berbasis Blended Learning. *JRTI: Jurnal Riset Tindakan Indonesia*, *6*(1), 110–118.

Agung, D. A. G. (2021). Pembelajaran Sejarah Di Era Revolusi Industri 4.0. *Jurnal Pendidikan Sejarah Indonesia*, *4*(1), 1. https://doi.org/10.17977/um0330v4i1p1-8

Awaluddin, Y. (2018). Efektivitas Program Guru Pembelajar Dalam Peningkatan Kompetensi Guru Ips Smp Dengan Moda Daring Murni Dan Daring Kombinasi: Studi Evaluatif Dan Komparatif. *Jurnal Pendidikan Dan Kebudayaan*, *3*(1), 1. https://doi.org/10.24832/jpnk.v3i1.717

Back, S. G., & Hwang, E. H. (2005). A quasi-experimental research on the educational value of performance assessment. *Asia Pacific Education Review*, *6*(2), 179–190. https://doi.org/10.1007/BF03026786

Brookhart. (2010). *How to Asess Highter Order Thinking Skills in your Classroom. Ascd, Alexanderia*.

Conklin, & M. (2012). *Hoghter Order Thinking Skills to Developmen 21st Century Learners. Shell Education Publishing.*

Dinna Ririn Agustina, R. P. W. (2019). Peran Pendidikan Berbasis Higher Order Thinking Skills (Hots) Pada Tingkat Sekolah Menengah Pertama di Era Society 5.0 Sebagai Penentu Kemajuan Bangsa Indonesia. *EQUILIBRIUM : Jurnal Ilmiah Ekonomi Dan Pembelajarannya*, *7*(2), 137. https://doi.org/10.25273/equilibrium.v7i2.4779

Dosinaeng, W. N., Leton, S. I., & Lakapu, M. (2019). Kemampuan Mahasiswa dalam Menyelesaikan Masalah Matematis Berorientasi HOTS. *Jurnal Nasional Pendidikan Matematika*, *Vol.3 No.2*.

Dwiyogo, W. (2014). *Pembelajaran Berbasis Blended Learning.* : PT. Raja Grafindo Persada.

Fanani, M. Z. (2018). Strategi Pengembangan Soal Hots Pada Kurikulum 2013. *Edudeena*, *2*(1), 57–76. https://doi.org/10.30762/ed.v2i1.582

Garrison, R. (2014). *Heather Kanuka Blended Learning It's Transvormatife Potential in Highter Education*.

Hastjarjo, T. D. (2019). Rancangan Eksperimen-Kuasi. *Buletin Psikologi*, *27*(2), 187. https://doi.org/10.22146/buletinpsikologi.38619

Irman, I. (2019). the Effectiveness of Mind Mapping Techniques in Counseling of Enhancement Ability Memory Students in Learning. *Ta'dib*, *22*(2), 131. https://doi.org/10.31958/jt.v22i2.1424

Istiningsih, S., & Hasbullah, H. (2015). Blended Learning, Trend Strategi Pembelajaran Masa Depan. *Jurnal Elemen*, *1*(1), 49. https://doi.org/10.29408/jel.v1i1.79

Kristiawan, M., Aminudin, N., & Rizki, F. (2021). Optimalisasi Pembelajaran Daring Berbasis Aplikasi Online bagi Calon Guru Pendidikan Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *5*(2), 1905–1914. https://doi.org/10.31004/obsesi.v5i2.942

Leung, A. S. M., & McGrath, S. (2010). An Effective Learning Model to Support People Development: The Emerging Approach of The Hong Kong Institute for Vocational Education. *International Education Studies*, *3*(4), 94–106. https://doi.org/10.5539/ies.v3n4p94

Mahmudi, M. H., & Suroso, S. (2014). Efikasi Diri, Dukungan Sosial dan Penyesuaian Diri Dalam Belajar. *Persona:Jurnal Psikologi Indonesia*, *3*(02), 183–194. https://doi.org/10.30996/persona.v3i02.382

Marsha, F., & Ghozali, I. (2017). Pengaruh Ukuran Komite Audit, Audit Eksternal, Jumlah Rapat Komite Audit, Jumlah Rapat Dewan Komisaris Dan Kepemilikan Institusional Terhadap Manajemen Laba. *Diponegoro Journal of Accounting*, *6*(2), 91–102.

Millionshchikov, M. D. (1974). The development of science and technology and the training of young specialists. *Soviet Education*, *16*(3), 72–79. https://doi.org/10.2753/RES1060-9393160372

Nadhiroh, N., & Latifah, S. (2020). Higher Order Thinking Skills (HOTS)-Based Students' Worksheets in Thermodynamics Materials. *Indonesian Journal of Science and Mathematics Education*, *3*(1), 87–95. https://doi.org/10.24042/ijsme.v3i1.6082

Nugroho, R. A. (2018). *Higher Order Thinking Skill*. Pt Gramedia.

Qasrawi, R., & Beniabdelrahman, A. (2020). The Higher and Lower-Order Thinking Skills in Unlock English Textbooks (1st and 2nd Editions) Based on Bloom'S Taxonomy: an Analysis Study. *International Online Journal of Education and Teaching (IOJET)*, *7*(3), 744–758.

Rahmi, U., Azrul, A., & Adri, M. (2019). The evaluation of higher-order thinking skills in blended learning discussion at university level,. *372(ICoET)*, *372*(ICoET), 29–31.

Ratchna, S., Suriah, & Saleh, L. M. (2019). Earthquake Disaster Preparedness Education in Elementary School Students in Majene Regency. *Hasanuddin International Journal Of Health Research*, *1*(01), 3–6. https://journal.unhas.ac.id/index.php/HIJHRS/article/view/7247

Saefullah, A., Fitriyani, A., Ruhiyat, Y., & Rostikawati, D. A. (2020). Blended Learning: The Effect on Higher Order Thinking Skills (HOTS) in Thermodynamics. *Indonesian Journal of Science and Mathematics Education*, *3*(3), 262–271. https://doi.org/10.24042/ijsme.v3i3.6666

Sari, I. K. (2021). Blended Learning sebagai Alternatif Model Pembelajaran Inovatif di Masa Post-Pandemi di Sekolah Dasar. *Jurnal Basicedu*, *5*(4), 2156–2163.

Sari, V. K., & Wibowo, A. (2021). Hubungan Kecerdasan Intrapersonal dengan Minat Belajar Matematika Kelas V Madrasah Ibtidaiyah di Karanganyar. *JENIUS (Journal of Education Policy and Elementary Education Issues)*, *2*(1), 1–9. https://doi.org/10.22515/jenius.v2i1.3647

Sumarmi, Bachri, S., Irawan, L. Y., & Aliman, M. (2021). E-module in blended learning: Its impact on students' disaster preparedness and innovation in developing learning media. *International Journal of Instruction*, *14*(4), 187–208. https://doi.org/10.29333/iji.2021.14412a

Utama, M. (2020). Student Motivation in Thematic Learning At Elementary Schools. *Southeast Asian Journal of Islamic Education*, *3*(1), 1–20.

Wardani, D. N., Toenlioe, A. J. ., & Wedi, A. (2018). Daya Tarik Pembelajaran di Era 21 dengan Blended Learning. *Jurnal Kajian Teknologi Pendidikan*, *1*(1), 13–18.

Widayanti, N. K. A., & Suarnajaya, I. W. (2021). Students Challenges in Learning English Online Classes. *Jurnal Pendidikan Bahasa Inggris Undiksha*, *9*(1), 77. https://doi.org/10.23887/jpbi.v9i1.34465

Wulandari, D., Rahayuningtyas, W., & Widyawati, I. W. (2021). Pengaruh Model Project Base Learning terhadap Kemampuan Berpikir Kreatif pada Materi Bermain Alat Musik Sederhana di SMP Negeri 3 Singosari. *JoLLA: Journal of Language, Literature, and Arts*, *1*(3), 320–330. https://doi.org/10.17977/um064v1i32021p320-330

Yuliati, S. R., & Lestari, I. (2018). Higher-Order Thinking Skills (Hots) Analysis of Students in Solving Hots Question in Higher Education. *Perspektif Ilmu Pendidikan*, *32*(2), 181–188. https://doi.org/10.21009/pip.322.10

Yunus, A. A., & Syafi'i, A. (2020). Google Classroom as Learning Platform in Teaching Writing. *British (Jurnal Bahasa Dan Sastra Inggris)*, *9*(1), 48–64.

Zakaria, N. I., & Iksan, Z. H. (2020). Computational thinking among high school students. *Universal Journal of Educational Research*, *8*(11 A), 9–16. https://doi.org/10.13189/ujer.2020.082102

AUTHORS' CONTRIBUTION

Author	Contribution
Guntur Gunawan	As a conceptualization, providing ideas for research
Johanes Sapri	Develop and design a research methodology
Hadiwinarto	Develop and design a research methodology
Yuyun Yumiarty	Provide financial assistance for scientific publications.

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