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The Effect of the UbD-Based Problem-Based Learning Model on the Critical Thinking Skills of Grade IV Students in IPAS Subject at Elementary School

Anastasya Putri Aristanti✉[1] & Arum Fatayan[2]

[1,2] Elementary School Teacher Education, University of Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia

✉ tasyanas613@gmail.com

Abstract. The ability to think critically in the 21st century is a skill that must be possessed by every individual. This study, uses a UbD-based problem-based learning model with a conventional learning model to see which learning model has more influence on the critical thinking ability of grade IV students in science subjects. The UbD approach was chosen to be a supporter in the implementation of the problem-based learning model because it is considered to have the same goal, which is to provide students with a deep understanding so as to encourage students to be more active in the learning process which also encourages students to think critically. The research method used in this study is quasi-experimental. Researchers used all students in class IV A totaling 25 students as the control class and IV B totaling 32 students as the experimental class. The experimental group was given UbD-based problem-based learning model treatment while the control class was given conventional model treatment. The results showed that the experimental class with UbD-based problem-based learning model treatment was superior to its post-test value compared to the control class. The findings of this study can help teachers or instructors to find a suitable learning model that has a deep impact on students, so that students can improve their critical thinking skills, which is a must-have ability in the 21st century.

Keywords: Elementary School; Problem-based Learning; Critical Thinking; UbD.

1. Introduction

Due to Merdeka Curriculum, the UbD model of curriculum development is being used in Indonesia. This curriculum emphasizes diverse intracurricular learning and optimizes content so that students have sufficient time to learn concepts and strengthen their abilities. Teachers have the freedom to choose learning methods that suit students' needs and interests. In addition, the independent curriculum emphasizes student-centered learning, or student-centered learning. Teachers should adapt activities to students' situations and characteristics so that students can reach their best potential and gain a rewarding learning experience (Natala et al., 2023). Critical thinking skills are essential for students' development because they allow them to use rationality to choose better answers. In addition, critical thinking helps them in dealing with everyday situations. To improve the critical thinking skills of underprivileged learners, teachers need to provide support and choose learning models that encourage active participation. Learning models such as Problem-Based Learning (PBL) can facilitate student understanding and reflection by presenting problems, encouraging questions, guidance in inquiry, and dialogue. By working together using the Understanding By Design (UbD) approach, problem-based learning methods can help achieve the desired learning goals. According to Wiggins and McTighe, the design-based comprehension approach is a method of learning process that aims to actively engage students and improve their understanding (Wati, 2022). Likewise, Problem-based learning is a learning model that emphasizes finding answers to problems. It enhances students' ability to think critically and their ability to solve problems. It makes students an important part of the learning process, with the teacher acting as a facilitator (Nurfahrani et al., 2023)

Critical thinking is essential in dealing with today's problems. The characteristics of individuals who think critically are their ability to face problems with logic and the ability to make accurate

decisions to solve those problems (Akwantin et al., 2022). People face increasingly complicated problems as time goes by. The problems faced today are not the same as the problems encountered in the past. Addressing this problem requires advances in science and technology. As a result, it is imperative to change the pattern of Natural and Social Sciences (IPAS) education so that the younger generation can acquire the necessary skills and knowledge to face and deal with future challenges. Natural and social sciences (IPAS) studies the interaction between living things and inanimate objects in the universe. IPAS also studies human life, both as individual beings and as social beings who interact with their environment (Kemendikbud, 2022).

Critical thinking is essential in dealing with today's problems. The characteristics of individuals who think critically are their ability to face problems with logic and the ability to make accurate decisions to solve those problems (Akwantin et al., 2022). However, as can be seen, The ability to think critically in Indonesia is still in the low category based on the Progamer for International Student Assessment (PIZA), in 2015 Indonesia ranked 62nd with a score of 397 with a total of 72 countries, while 2012 Indonesia obtained a score of 396 (Maslakhatunni'mah et al., 2019).

1.1 Problem Statement

In the 21st century, education is becoming increasingly important to ensure students have the skills to learn and innovate, the skills to use information technology and media, and be ability to work and survive using life skills (Akhir et al., 2023). The 2011 TIMSS study showed that only 5% of secondary school students were able to solve problems that required critical thinking, while the remaining 95% were only able to solve rote problems. These results show that education is still limited to mere concepts and has not provided enough support to integrate critical thinking skills into learning (Congregation &; Davidi, 2020). Indonesian students have limitations in mastering high-difficulty questions (HOTS), which require analytical, creative, and critical thinking skills (Permata et al., 2019). Not only that, the ability of Indonesian students to apply reasoning is always lower than their ability to understand concepts (Gusmawan et al., 2021).
It is known that the learning activities used by teachers in the learning process are traditionally still teacher-centered (Paratiwi & Ramadhan, 2023). The role of the teacher is needed in the learning process, therefore the model applied also needs to be considered so that students can be more active in the learning process, one of which is by using the Problem Based Learning model (Dari & Taufina, 2021). This is in line with research conducted by (Rahmatia & Fitria, 2020) which states that there is an influence between the use of problem-based learning models and students' critical thinking skills because the problem-based learning model PBL model can provide opportunities for students to develop critical thinking skills. Education in Indonesia is currently implementing the Merdeka Curriculum as the latest, the presence of the Merdeka Curriculum is a response to the increasingly fierce competition for human resources globally in the 21st century (Indarta et al., 2022). UbD learning can be useful for teachers, although UbD is not the only framework that can be used to design lessons. At the University of Wyoning (UW) Graduate School, for example, prospective science teachers who have a science background but are more likely to have more Learning to design science lessons with UbD is part of her pedagogical background (Ramli & Argaswari, 2023). Learning provided by teachers is sometimes only limited to conveying a material, but the reality needed by students is a deep understanding of a problem, where by using a UbD-based problem-based learning model it can help teachers to carry out more meaningful learning, it is in accordance with the objectives and definitions of the problem-based learning model and UbD approach. Students need deep learning because in later life, the learning will be used in everyday life, whereas in the 21st century, the problems that occur are increasingly complex and require critical thinking skills to solve them.

1.2 Related Research

The first relevant research entitled "The Effect of Problem Based Learning Model on Critical Thinking of Elementary School Students" was conducted by Hasanah (2020). This study aims to evaluate the effect of problem-based learning models on students' critical thinking skills in learning theme VII Magnetic Force at SDN 056633, Gebang District. Using quasi-experimental methods, three parallel classes were made into populations, with VA and VB as the experimental group and VC as the control group. Data were analyzed through Covariate Analysis (ANACOVA) using SPSS 23.00. The results showed that the problem-based learning model (with problems chosen by students) was more effective than the problem-focused model given by the teacher and the direct instruction learning model. The critical thinking ability of students who received learning with the PBL model (students) achieved an average score of 88.20, higher than the PBL (teacher) model of 77.20 and direct instruction of 70.60.

The second relevant research, namely "The Influence of the Problem Based Learning Model on the Critical Thinking Ability of Class V Students on the Theme of Harmony in Society SDN Wora" conducted by Risnawati (2020) found that there was a positive and significant influence by using the problem-based learning model on students' critical thinking skills on the theme of harmony in society, this was shown by the results of data analysis using tests and The effect size test proved that there was a significant influence between critical thinking skills in experimental classes using problem-based learning models compared to control classes using conventional methods.

The third relevant research is "Implementation of problem-based learning on achievement motivation and critical thinking skills in integrated thematic learning in grade IV cluster IV Mendoyo District" conducted by Lestari (2021) this study identifies the influence of the implementation of the use of problem-based learning models on students' critical thinking where critical thinking is the most needed ability in the 21st century today.

The latest relevant research entitled "Design-Based Differentiated Learning Understanding by Design (UbD) on the Learning Interests of Elementary School Students" conducted by Naldi (2023) in his research stated that the low interest in student learning is caused by learning that is not focused on students and learning needs that are not in accordance with the characteristics of students. Therefore, teachers must realize that each student has different needs, interests, learning styles, and skill levels so that differentiated learning using the Undestanding by Design (UbD) design can increase the interest in learning of grade 3 students of SDN 037 Sabang. This is evidenced by the increasing percentage of student learning interest starting from the initial or pre-cycle conditions to cycle I to cycle II.

This research is different from these studies, especially in terms of subject groups and curriculum used. In addition, this study uses an understanding by design approach as a tool for applying problem-based learning models, so that students are expected to be more active and have a deep understanding of learning. This study also uses quantitative research methodology to assess the effect of using UbD-based problem-based learning models on the critical thinking skills of elementary school students.

1.3 Research Objectives

Based on the research problems above, this study aims to determine the influence of the use of problem-based learning models based on understanding by design on students' critical thinking skills and students' deep understanding which is needed in the 21st century will be implemented in science subjects.

2. Theoretical Framework

2.1. Critical Thinking

Students possess critical thinking abilities that are important. It is expected of pupils with critical thinking abilities to be able to resolve issues that are either real-world or frequently arise in everyday life (Rubiyanti et al., 2020).

Facione argues that critical thinking is different from other thinking skills and asserts that only some cognitive skills such as interpretation, analysis, evaluation, inference, explanation, and interpretation should be focused on critical thinking (American Philosophical Association, 1990)

Critical thinking is essential for individuals in making everyday judgments, be it students at school or adults at work or family and critical thinking can also help students learn to draft concepts to solve various problems.

Critical thinking skills are the ability to process and evaluate information objectively, and reach appropriate and effective decisions. These skills are very important in everyday life, especially in the world of work and education. Critical thinking skills also help us to identify and solve problems in a more effective and efficient way (Ariadila et al., 2023).

The ability to think critically is defined as the "very important basic skill" that everyone should possess, and is defined as the ability of a person to carry out the thought process carefully through consideration of various sources to make the right and wise decisions (Ambarwati et al., 2021).

In conclusion, critical thinking skills are very important in everyday decision making, both for students at school and individuals in the work or family environment. Critical thinking also helps individuals in compiling concepts to solve problems so that they can be more objective about a problem.

2.2. Model Problem Based Learning

Problem-based learning is a student-oriented, student-centered approach to learning. This approach encourages students to apply their knowledge and skills by showing them problems in practice (Tang et al., 2020).

By using model problem based learning, learners are asked to participate more actively in the learning process, and the teacher only acts as a facilitator. This model will teach learners a variety of skills, including critical thinking skills, problem solving, and working in groups. It teaches learners a range of skills, including critical thinking, problem solving and working in groups, group skills, communication and interpersonal skills, and information seeking and processing skills (Manggalastawa & Nugraha, 2020).

According to Amin et al., (2020) In 1969, *Howard Barrows* at *McMaster University School of Medicine* in Canada proposed problem-based learning. In the learning process, a problem-based learning model is applied. This makes it possible to solve real problems scientifically by conducting a number of studies. Students are motivated to initiate problem-based learning activities through real problems occurring in their environment.

Arends in Muayyadatiddieny et al., (2015) stating that there are five syntaxes in the problem-based learning model, namely, orienting students to the problem of organizing students, guiding individual and group investigations, developing and presenting work, and analyzing and evaluating processes in problem solving.

In summary, Problem-based learning is a student-oriented approach encouraging the application of knowledge through real problem solving, with the aim of improving understanding, critical thinking skills, and learning independence. This model was introduced by Howard Barrows in 1969 and includes questioning, a focus on interdisciplinary interconnectedness, authentic inquiry, product production, and collaboration between students. According to Arends, there are five syntaxes in this model.

2.3. Understanding by Design

Wiggins & McTighe in (Wati, 2022) explain that Understanding by Design is a learning design approach that focuses on achieving the end of learning and considers the way learners think about the subject matter. This approach also places the learning process at the final stage of planning and aims to improve learners' understanding of the subject matter.

LKPD, teaching materials, learning media, and assessment tools are used as completeness of learning materials. UbD has the advantage of ensuring that there is a connection between learning assessments, learning objectives, and learning steps as well as helping students understand their needs and learning steps and helping students understand the need for (Setiyawati & Septiani, 2023).

The conclusion of the explanation above is Understanding by Design (UbD) emphasizes the final achievement of learning and the way students process lesson material and allows teachers to plan tasks from the end goal to achieve the desired understanding, ensuring focus on learning objectives in each activity.

3. Method

3.1. Research Design

In this study, researchers used a quantitative approach. The type of method used in this research is an experimental method with a quasi-experiment or pseudo-experiment design that is similar to a pure experiment but not completely the same. These experiments can control at least one variable, although often through matching the characteristics of the participants. Despite involving a control group, quasi-experiments were less successful in controlling for additional variables that could affect results (Hikmawati, 2020). The design of this study is illustrated in the chart below.

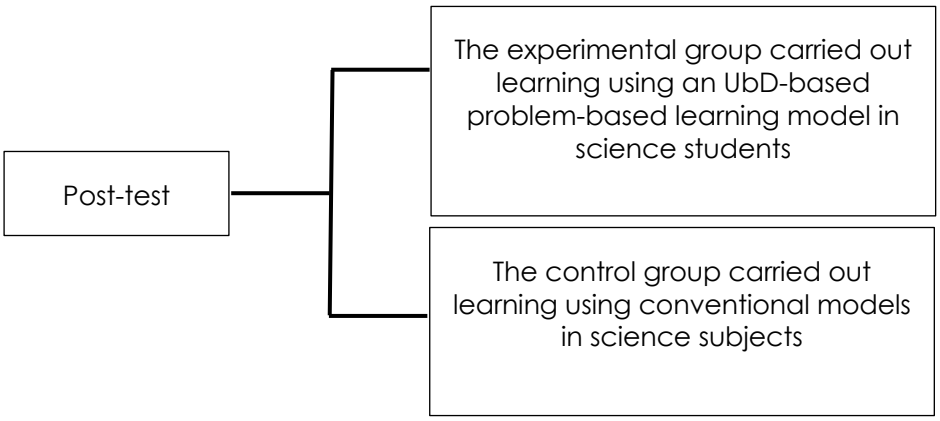

Figure 1. Design Research

Source : Sugiyono (2012)

Students are given a process of teaching and learning activities that use an UbD-based problem-based learning model in the experimental class and learning with a conventional learning model for the control class, then both classes, namely the experimental class and the control class, are given a post test to see the difference between the use of the UbD-based problem-based learning model and the conventional learning model. The subject group used to see students' critical thinking skills is IPAS. Because according to (Septiana & Winangun, 2023) it is explained that the merging of Science (Natural Sciences) and Social Studies (Social Sciences) into a single unit known as IPAS (Natural and Social Sciences) is expected to be a solution in developing students' thinking skills.

3.2. Participant

This research was conducted in a school located in East Jakarta. Sampling in this study was taken using a saturated sampling technique, which is a sampling technique if all members in the population are also used as samples. The class chosen is a class that has been observed for several weeks by researchers and the sample to Researchers used all students in class IV A totaling 25 students and IV B totaling 32 students aged between 10 - 12 years old. The study was conducted in the last week of March and mid-April. The study was carried out for 5 months from the beginning to the end of the study.

Table 1. Information of the Students Participating in the Study

No	Class	Number of Students		Male	Female	Information
		Populasi	Sample			
1.	IV A	25 students	25 students	10 Students	15 Students	Control Class
2.	IV B	32 Students	32 Students	19 students	13 students	Experimental Class

3.3. Data Collection

In this study, the data obtained from the questionnaire test results after following the learning process carried out in class. The experimental class was taught using Ubd-based problem-based learning model in class IV B. While the control class used conventional methods in class IV A. While for the control class using conventional methods in class IV A. Data in this study was collected using a post-test. In addition to the questionnaire in the form of tests, researchers also used observation and documentation techniques to collect research data.

3.3.1. Post-test Critical Thinking

Post-tests are prepared to see and measure the level of student success in a learning process. The experimental group and the control group were given the same post-test questions, where the questions were given to determine the level of students' critical thinking skills when using problem-based learning models with conventional learning models. The post-test in this study refers to the indicators identified by Robert Ennis in (Wijayanti & Siswanto, 2020), Ennis mentioned that critical thinking skills are divided into 12 indicators which he grouped into the top five activities, which are as follows: 1) Provide simple explanations (elementary; 2) Build basic skills; 3) Summing up; 4) Make further explanations; 5) Set strategies and tactics. The question items used in this research post-test are also made with analysis and evaluation questions. The problem that requires analysis and evaluation is a higher order thinking skill (HOTS) problem (Puspitasari &; Saputri, 2021). Thinking process thinking process dimension, consisting of the ability: (1) knowing which is included in C1 cognitive level, (2) understanding which is included in the C2 cognitive domain, (3) applying or C3, analyzing C4, evaluate C5 and create C6. Basically, the indicators included in HOTS are C4, C5, and C6 (Kemendikbud, 2019).

Table 2. Distribution of post-test question items Critical thinking according to Ennis.

Indicator	Question Point										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Provides a Simple Explanation	**x**	**x**	**x**									
Building Basic Skills										**x**	**x**	
Conclude				**x**	**x**							
Making Further Explanations							**x**	**x**				**x**
Strategy and Tactics						**x**						

In this study, researchers used a type of questionnaire instrument in the form of essay questions to find out the problem solving skills obtained by students after they followed the learning process.

The instrument consists of 11 items where in items 1, 2 and 3 students are asked to explain the norms in a simple way about the norms that apply at home and at school, then in items 4 and 5 students are asked to make an analysis of conclusions about a story about norms and customs, for item 6 students are asked to take a solution to a problem, in items 7, 8 and 11 students are asked to make an explanation of norms and customs, and finally for items 9 and 10 a picture is presented and students are asked to analyze the link between the picture and the material of norms and customs.

3.4. Data Analysis

This study uses the Liliefors Test and Fisher Test.The Liliefors Test is to investigate the distribution of sample frequencies based on normal distributions on a single data set or Single frequency. While the Fisher Test is used to test whether the distribution of data of two or more variants comes from a homogeneous population or not, namely by comparing two or more variants. After conducting a normality test and homogeneity test, the next step is to test the hypothesis, in this study to test the hypothesis used the t-test formula.

3.4.1. Normality Test

The data normality test is used to determine whether the data collected have a normal distribution and whether they come from a population that has a normal distribution. This test uses a regression model that is normally distributed or a good regression model is close to normal (Gunawan, 2020). From the results of the sig data normality test. it is worth 0.200 Which can be underlined from the data above that the sig data. 0.200 > 0.05. Which means that the data in this study is normally distributed.

3.4.2. Homogeneity Test

The homogeneity test is used to determine whether some population variants are the same (Sianturi, 2022). In this study, researchers used the Fisher Test assisted by the SPSS 23 application to test the data obtained homogeneous or not. In this case, the data that will later be tested using the Fisher Test assisted by the SPSS 23 application is post-test data on critical thinking results. On the basis of decision making, if the significance value (sig) is based on mean < 0.05, then the research data is homogeneous and if the significance value (sig) is > 0.05, then the research data is not homogeneous. And the results of the homogeneity test are 0.06 > 0.05. Which means that the study was homogeneous.

3.5. Validity and Reliability

3.5.1. Content Validity

Data Validity Test is used to refer to the extent to which the instrument performs its function (Riyanto, 2020). This instrument is said to be valid if the instrument can be used to refer to what

will be measured, such as measuring whether the questionnaire submitted by the researcher is valid or invalid. Content validity employs Product Moment Correlation statistics as follows:

$$r_{XY} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{(N\sum X^2 - (\sum X)^2)(N\sum Y^2 - (Y)^2)}}$$

Where :

r_{XY}: Pearson correlation coefficient
N : Number of samples / observations
X : Free variable / first variable
Y : The dependent variable / second variable

After testing the validity of 20 items done by students, it can be seen that 11 items are valid and ready to be distributed for research. The instrument is declared valid or invalid because the validity value of each item is greater than the r-table value greater than 0.36.

3.5.2. Reliability Test

Data Reliability Test is a statement of the extent to which the results measured using the same object will create or produce the same data (Mokoagow et al., 2022). The Cronbach's Alpha technique was chosen because it can be used to determine the reliability of instruments in the form of scales or descriptive tests. The reliability formula using Cronbach's Alpha is as follows:

$$r11 = \left(\frac{n}{n-1}\right)\left(1\frac{\sum \sigma_{b^2}}{\sigma\frac{2}{t}}\right)$$

Where :

$\sigma\frac{2}{t}$: Total variance
$\sum \sigma_{b^2}$: Sum of item variances
n : Number of question items
*r*11 : Instrument reliability coefficient

By using σ = 5% if rcount is greater than rtable then the instrument is said to be reliable. This Instrument Reliability results of 0.68 > 0.36 which means the instrument can be declared reliable.

4. Findings

The distribution of test instruments is carried out after passing several stages, namely through a validity test carried out at different grade levels and schools with the class to be studied. then after that it passes the normality and homogeneity test stages which can be concluded that both tests have entered the requirements, then in the last stage a treatment or learning is carried out in the class under study.

This research was carried out twice, namely first conducted in a control class of 25 students, then carried out in an experimental class of 32 students. Before conducting the study, researchers had made raw observations in the control class and experimental class. And it was found that, as seen, the experimental class had lower critical thinking skills compared to the control class. The use of UbD-based problem-based learning models is expected to improve students' critical thinking skills. In two studies, researchers distributed Post-test questions to experimental classes and control classes, and the results of the post-test can be seen in the table below.

Table 6. Post-test Mean, Mode and Median Values

Information	Control Class	Experimental Class

Mode (numbers that appear frequently)	60	72
Median (Middle value)	48	82
Mean (rata-rata)	48,24	80,37

The next step, after looking at the average value obtained by the experimental class compared to the control class, the researcher continued to process the data using SPSS 23 to see the hypothesis test. In this study using a t-test at a significant level a = 0.05 to determine the effect of learning using a problem-based learning model on the critical thinking skills of grade IV students in science subjects.

Table 7. T-Test Results of Critical Thinking Skills

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Say.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Critical Thinking Results	Equal variances assumed	3,458	0,068	8,100	55	0,000	32,135	3,967	24,184	40,086
	Equal variances not assumed			7,740	40,531	0,000	32,135	4,152	23,747	40,523

Based on the table above, there is a significant influence on the use of UbD-based problem-based learning models on critical thinking skills. In the data it is stated that the value of sig. (2-tailed) which is 0.000 < 0.05, which means there is an influence.

From the data processing it can be said that the use of problem-based learning models with the help of UbD has an influence on students' critical thinking skills and the learning carried out has a deep meaning for students. because in this century the ability to think critically is needed in human life skills.

5. Discussion

The results of this study show that the use of UbD-based problem-based learning models in experimental classes affects students' critical thinking skills. This is because the learning process of students is used as the main object and has a full role in learning itself. So that students can better understand a learning in depth and can solve a problem appropriately. This is also in line with the results of the study. It is explained that through the application of the problem-based learning model can improve students' critical thinking skills in learning. In this study, the Post-test given to students is HOTS or refers to bloom's taxonomy where (Krathwohl, 2002) states that measures for measuring higher-order thinking skills include analysis (C4), evaluating (C5) and creating (C6). This is done so that students use their critical thinking skills to solve a problem. Students are required to be able to solve or solve a problem that occurs. This is reinforced by research conducted by (Setyawan & Koeswanti, 2021) High critical thinking of students can make students able to solve problems in learning and create a conducive and interactive classroom atmosphere during the learning process. Students can be interpreted as being required to think critically in order to find or find their own answers about their problems so as

to spur students to think critically. This can help think critically and encourage students to study hard so as to get maximum results. Approach by using Understanding by Design as a support rather than a problem-based learning model. Using the Understanding By Design approach in a learning model can help teachers to make a learning process more meaningful, so that students can apply the learning in their daily lives and solve existing problems. Research conducted by (Natala et al., 2023) Since what is most expected from UbD-based learning is student understanding, the expected results of UbD do not reach the highest ability instantly. Instead, results are achieved gradually and meaningfully.

In contrast to the control class which uses conventional learning models as a learning reference. By using conventional learning models, students are more silent and listen to the teacher explain only. They tend to be less active during the learning process. This is reinforced by research conducted by (Prameswara & Pius X, 2023) Yang mentioned that the weakness of this model is that it makes students passive and less active in learning because they only listen to the teacher speak in class. In addition, students will be bored because they do not listen to what is discussed by the teacher in class so that students are not focused, so the learning process does not run well. Whereas in today's century students are required to have the ability to think critically in order to solve complex problems. In the 21st century, learning skills are very important for human resource development by improving the quality of learning and learning concepts. assuming that student-centered learning is integrated with society, critical thinking, collaborative, and contextual in line with research (Mardhiyah et al., 2021).

This research was conducted in class IV IPAS subjects, where the subject has meaning for students to live their lives. in the 21st century the ability to think critically is needed, because the problems that occur are increasingly complex. in IPAS also students are faced with various examples of problems that occur. by using the Ubd-based problem-based learning model, it can be said that the model is very influential to improve students' critical thinking skills and in-depth learning can be done in the real life of participants.

However, this research still has several weaknesses, namely the lack of literacy materials and sources regarding the understanding by design approach, so that information and data regarding understanding by design is still very lacking. The researcher hopes that with this research more and more people will research the understanding by design approach. so that education in Indonesia becomes more focused and advanced.

6. Conclusion

When the post-test mean of the experimental class and the control class is examined, it can be concluded that there is a significant difference. These results show that teaching using the UbD-based problem-based learning model has a significant effect on critical thinking skills in the experimental group. In HOTS-based problems. When the post-test mean of the control group was examined there was no significant effect. This is due to the use of conventional learning models, where critical thinking skills are less involved in the learning process. This means that the use of the UbD-based problem-based learning model for the experimental group is more successful in solving post-test questions that are HOTS in nature to improve critical thinking skills compared to the use of conventional models applied to the control group, where students only listen to the teacher listening which causes less stimulation of students' critical thinking skills. The use of problem-based leraning models with the help of an understanding by design approach also has an influence, where in UbD itself teachers are required to be able to make meaningful learning goals for students, so that in this study the purpose of learning is to improve critical thinking skills can be realized appropriately because teachers have planned learning objectives with an understanding by design before making learning designs.

This study was carried out in class IV IPAS subjects, which are meaningful to the students' daily life. Because problems in the 21st century are getting more complex, one needs to be able to think critically. Students encounter a variety of real-world problem cases in IPAS as well. Using the Ubd-based problem-based learning model, it can be claimed that the model has a significant impact on students' development of critical thinking abilities and that participants can engage in in-depth learning in their everyday lives.

Limitation

The study had several limitations: first, In this study, there is still little discussion about the UbD curriculum approach. Second, this study only focuses on one school and class and one subject, namely IPAS. Researchers only used different schools and classes when testing the validity of the post-test to be tested. Therefore, the results of this study may not be applicable to different schools and classes. And it may not be applicable to different subjects.

Recommendation

Recommendations given by researchers for further development based on research findings:

1. In this study there is still little discussion about the UbD curriculum approach, , it would be better for further research to add more detail about the Understanding By Design curriculum approach.
2. This study only focuses on one school and class and one subject, namely IPAS. It would be better if in future research using other subjects
3. This studi only used different schools and classes . It would be better if applied in different schools and classes according to needs.

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Conflict of Interest

The author states unequivocally and consciously that there is no conflict of interest related to this research.

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