

**THE DIFFERENCE IN CRITICAL THINKING SKILLS WITH THE  
MODEL OF GUIDED DISCOVERY LEARNING (GDL) AND  
PROBLEM BASED LEARNING (PBL) IN THE BASIC ACCOUNTING  
SUBJECT FOR CLASS X ACCOUNTING STUDENT IN PUBLIC VHS  
46 JAKARTA**

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**Abstract**

*Nowadays, student's critical thinking skills are still considered low, even though this is really needed in 21st century education. This is because learning is still done classically (lectures), so that students have not been maximized in discover knowledge and solving problems. This research aims to describe of Critical Thinking Skills, Guided Discovery Learning (GDL), problem based learning (PBL), to examine the difference in critical thinking skills with model of Guided Discovery Learning (GDL) and Problem Based Learning (PBL). The research conducted in public VHS 46 Jakarta. The method used in this research is experimental method. The research design used True Experimental Design with Posttest Only Control Design. Data collection techniques using a questionnaire instrument. Hypothesis testing using SPSS 26 shows that the value of Sig. (2-tailed) is 0,021 or smaller than 0,05, it can be concluded that H0 rejected and H1 is accepted. The conclusion from result of this research, there are differences in critical thinking skills with Guided Discovery Learning (GDL) and Problem Based Learning (PBL) in Basic Accounting Subject of Class X Accounting Student in Public VHS 46 Jakarta, which the GDL model has a bigger effect than the PBL model on critical thinking skills.*

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**Abstrak**

Saat ini kemampuan berpikir kritis siswa masih dianggap rendah, padahal hal ini sangat dibutuhkan dalam pendidikan abad 21. Hal ini dikarenakan pembelajaran masih dilakukan secara klasikal (perkuliahan), sehingga siswa belum maksimal dalam menemukan pengetahuan dan memecahkan masalah. Penelitian ini bertujuan untuk mendeskripsikan Keterampilan Berpikir Kritis, Guided Discovery Learning (GDL), Problem Based Learning (PBL), untuk menguji perbedaan keterampilan berpikir kritis dengan model Guided Discovery Learning (GDL) dan Problem Based Learning (PBL). Penelitian dilakukan di VHS umum 46 Jakarta. Metode yang digunakan dalam penelitian ini adalah metode eksperimen. Desain penelitian yang digunakan adalah True Experimental Design dengan Posttest Only Control Design. Teknik pengumpulan data menggunakan instrumen angket. Pengujian hipotesis menggunakan SPSS 26 menunjukkan bahwa nilai Sig. (2-tailed) sebesar 0,021 atau lebih kecil dari 0,05 maka dapat disimpulkan bahwa H0 ditolak dan H1 diterima. Kesimpulan dari hasil penelitian ini, terdapat perbedaan kemampuan berpikir kritis dengan Guided Discovery Learning (GDL) dan Problem Based Learning (PBL) pada Mata Pelajaran Akuntansi Dasar Siswa Kelas X Akuntansi SMK Negeri 46 Jakarta yang model GDL memiliki pengaruh yang lebih besar dibandingkan model PBL terhadap keterampilan berpikir kritis.

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## How to Cite

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## PRELIMINARY

Education Observer from the Center for Education Regulations and Development Analysis (CERDAS), Indra Charismiadji, World Bank data, classes in Indonesia are economical categories of speech compared to other countries. This is one indicator that not many schools have implemented 21st Century learning in their classrooms. 21st century skills include critical thinking (critical thinking), creative (creativity), collaboration (collaboration) and communication (communication) or commonly called 4C (Ramadhan, 2020). Illustrated by the results of the 2015 PISA study, the score for Indonesian student literacy was 397. Neighbors of other Southeast Asian countries such as Vietnam scored 487, Malaysia 431, and Thailand 409. While Singapore was at the top of the world in terms of reading, with a score of 535. The learning process was still carried out classical, only lectures in front of the class (Salim, 2018). Education professor at Georgia State University, Amy Seely Flint, said that teaching children to think critically can help develop children's reasoning abilities, creativity and innovation. Although a lot of teaching starts at school, parents can improve these skills at home. (Nurlaila, 2019)

News from [tribunnews.com](http://tribunnews.com), Manish Gidwani, Founder and CEO of the London School of Accountancy and Finance (LSAF) Global, states that accounting education in Indonesia is still focused on stagnant knowledge. Though accounting graduates need real skills in dealing with problems that arise in increasingly complex businesses (Sutriyanto, 2018). Quoted from [alinea.id](http://alinea.id), that the ability of HOTS can be trained in the learning process in the classroom. Namely, by giving space to students to find the concept of activity-based knowledge. This can encourage students to build creativity and critical thinking. Teachers may choose various learning models, such as discovery learning, project based learning, problem based learning, and inquiry learning. All of these models teach and develop students' critical reasoning (K. A. Santoso, 2019). Rusffendi in Aqib & Murtadlo (2016:258) emphasizes the existence of educator guidance in learning discovery. Students are not scientists and something that is faced is really something new for students so instructors' instructions or instructions are needed by students.

Based on the description above, researchers are motivated to conduct research under the title "Differences in the ability to think critically with guided discovery learning (GDL) and problem based learning (PBL)".

Based on the background of the problem described, the problem statement is concluded: "Are there differences in students' critical thinking skills with the Guided Discovery Learning (GDL) model and the Problem Based Learning (PBL) model?".

## RESEARCH THEORETICAL

### Critical Thinking Skills

According to E. B. Johnson (2011:183), critical thinking is a directed and clear process used in mental activities such as solving problems, making decisions, persuading, analyzing assumptions, and conducting scientific research. Critical thinking is the ability to think in an organized way. Critical thinking is the ability to systematically evaluate the weight of personal opinions and the opinions of others.

\_\_\_\_\_. Meanwhile, according to Teays (2005:3), Critical thinking is a form of mental

gymnastics: It helps us solve problems, ask questions, organize our thoughts, and express ourselves clearly and defensibly. And according to Richard Paul in Al-Hakim et al (2018:180), Critical thinking is a mode of thinking about any matter, subsistence or problem. The thinker enhances the quality of his thinking by handling skillfully the structures inherent in thinking and applying intellectual standards to him.

Based on several definitions of experts regarding the understanding of critical thinking skills, it can be synthesized (concluded) that critical thinking skills are critical ways of thinking in the form of a systematic process that involves mentally helping problem solving, asking questions, analyzing, and making decisions with standards intellectually defensible.

And it can be synthesized (concluded) that the indicators in measuring critical thinking skills consist of gathering information, asking questions, solving and analyzing problems, and making decisions.

### **Guided Discovery Learning**

According to Hamalik (2008:188), a two-way system involves students in answering teacher questions. Students make discoveries while the teacher guides them in the right direction. This style of teaching, by Gagne, is called guided discovery, even in a class of 20 to 30 students. And according to Aqib & Murtadlo (2016:256 & 261), the guided discovery method is a learning method popularized by Bruner. This method requires the active involvement of students in understanding concepts and principles, while educators encourage students to have experience and conduct experiments that allow them to find principles for themselves. During the discovery process, students get educator guidance, both verbal and written instructions that are poured in the form of learners' worksheets.

Meanwhile, according to A. P. Johnson (2010:113), The second type of discovery learning is guided discovery. Student here construct their understanding of a concept with the help of the teacher who guides them along the way. This guidance comes in the form of questions, hints, modeling, and short bits of instruction. Learning is somewhat open-ended in that students often discover things beyond the objective objective. With guided discovery discovery (GDL), the reaction as a coach to correct misinformation, to supply necessary missing information; and to make sure students get to the right conceptual place.

Based on several definitions of experts regarding the understanding of Guided Discovery Learning (GDL), it can be synthesized (concluded) that Guided Discovery Learning (GDL) is a learning model where students make meaningful discoveries of learning in learning and involve them in questions to be active in learning, while the teacher guides during learning.

And it can be synthesized (concluded) that the syntax of Guided Discovery Learning (GDL) consists of stimulus orientation with questions, students formulate problems, guide proposing hypotheses, analyze and process data with the help of teachers, and drawing conclusions.

### **Problem Based Learning**

According to Krissandi et al (2017:107), problem based learning (PBL) is one of the innovative models of problem based learning. PBL is a learning centered strategy where students work together to solve problems and reflect on their experiences, and discuss ways to solve problems.

Meanwhile, according to Efendi (2008:125), PBL is a learning method that uses problems as a first step in collecting and integrating new knowledge. Like CL (Collaborative Learning), this method also focuses on the activeness of students in learning activities. And according to Boud & Feletti (1997:15), Problem-based learning is an approach to structuring the curriculum involving confronting students with problems from practice with providing a stimulus from learning.

Based on several definitions of experts regarding the definition of Problem Based Learning (PBL), it can be synthesized (concluded) that Problem Based Learning (PBL) is learning that is centered and directs students to solve the problems presented, namely by digging various information needed to find solutions for the problem.

And it can be synthesized (concluded) that the syntax of Problem Based Learning (PBL) consists of orienting students to the problem, organizing students' knowledge, organizing students' knowledge, assigning knowledge to problem solving, and assessing problem solving process.

Based on the identification and frame of thinking outlined above, researchers can propose a hypothesis as follows: "There are differences in students' critical thinking skills with the Guided Discovery Learning (GDL) model and the Problem Based Learning (PBL) model".

## RESEARCH METHODOLOGY

The study was conducted at SMK Negeri 46 Jakarta. When this research was conducted for 2 months, namely February-March 2020. This research uses quantitative research methods with the type of research is experimental research. This experimental study aims to test whether certain variables can affect other variables in a study. The influence is assessed by giving special treatment to one group, and the other group is given another treatment, then determining how both affect the results.

Sugiyono (2015:502) proposed two forms of true experimental design, namely post test only control design and pretest group design. The research design used in this study is true experimental design, with the form of design that is post test only control design. In this study, the group that was given special treatment was the experimental class that would use the guided discovery learning model, while the other group, the control class, would use the problem based learning model. This treatment is applied by researchers to determine whether there are differences in the ability to think critically using guided discovery learning models and problem based learning.

This study uses quantitative data, and the source of the data used is primary data, because the data obtained directly from students will be examined through a questionnaire after experiments.

### Validity Test

conducting

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The technique used to determine the alignment is the product moment correlation technique proposed by Pearson. According to Arikunto (2017:85), there are 2 (two) product moment correlation formulas, namely: product moment correlation with deviation, and product moment correlation with rough numbers. In this study, to measure validity, we will use the product moment correlation formula with rough numbers.

Based on the results of the validity test conducted by researchers, of the 40 instruments of critical thinking ability (Y), it is known that the number of valid instruments is 33 items or 82.5% and invalid instruments are 7 items or 17.5%.

## Reliability Test

According to Sujarweni (2015:192), reliability is a measure of the stability and consistency of respondents in answering things related to the question constructs which are the dimensions of a variable and are arranged in a questionnaire. The reliability test in this study used the Cronbach Alpha coefficient formula. (Sugiyono, 2017:365)

After testing the validity of the critical thinking ability variable instrument (Y), the researcher conducted a reliability test on 33 items that were declared valid. Based on the reliability test calculation, the Cronbach Alpha value obtained is 0.93, which means it has a very high reliability in the range of 0.80-1.00. According to Sugiyono (2013:103), the formulation of statistical hypotheses is as follows:

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$

H<sub>0</sub>: There is no difference in critical thinking skills (critical thinking skills) with the guided discovery learning model and the problem based learning model

H<sub>1</sub>: There is a difference in the ability of critical thinking (critical thinking skills) with the guided discovery learning model and the problem based learning model

$\mu_1$ : The average critical thinking skills of the experimental class with the guided discovery learning model

$\mu_2$ : Average critical thinking skills (critical thinking skills) of the control class with a problem based learning model

## RESEARCH RESULT AND DISCUSSION

Critical thinking skills data in this study were obtained through research instruments in the form of questionnaires that were given only after giving treatment (post-test only) in class X AKL 1 as an experimental class with guided discovery learning, and class X AKL 2 as a control class with problem based learning.

### Normality Test

Normality test is conducted to determine whether the sample data in the study is normally distributed or not. Normality test is calculated using the Liliefors formula at a significant level  $\alpha = 0.05$ .

Table 1. Normality Test Table

Tests of Normality							
	Kelas	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Kemampuan Berpikir Kritis	Eksperimen X AKL 1	,115	36	,200*	,979	36	,723
	Kontrol X AKL 2	,077	36	,200*	,986	36	,910

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the results of the calculation of Test of Normality above, the experimental class that uses guided discovery learning (GDL) learning model states that the sample data is normally distributed. This can be seen from the SPSS 26 table, it is known that the significance (Sig.) of the experimental class X AKL 1 was 36 students totaling 0.200 or more than 0.05. And the calculation of the control class that uses the model of problem based learning (PBL) states that the sample data is normally distributed too. This can be seen from the SPSS 26 table, it is known that the significance (Sig.) of the control class X AKL 2 was 36 students totaling 0.200 or more than 0.05.

### Homogeneity Test

Homogeneity test is performed to determine whether the sample data in research in the experimental class and the control class have homogeneous variances or characteristics (not much different) or not. Homogeneity test in this study was carried out using the F-test with significance level  $\alpha = 0.05$ .

Table 2. Homogeneity Test Table

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Kemampuan Berpikir Kritis	Based on Mean	,147	1	70	,702
	Based on Median	,099	1	70	,754
	Based on Median and with adjusted df	,099	1	69,997	,754
	Based on trimmed mean	,133	1	70	,716

Based on the results of the calculation of Test of Homogeneity of Variances

above, the results of the calculation of sample data for the experimental class and the control class are homogeneous (not much different). This result can be seen from the SPSS 26 output table, that the significance value (Sig.) Based on Mean is 0.702 or greater than 0.05.

### Hyphotesis Test

Hypothesis testing is done after testing the data analysis requirements in the form of normality and homogeneity tests, with the results of data distributed normally and homogeneously. Researchers use t-test (t-test) to conduct hypothesis testing with a significance level  $\alpha = 0.05$ .

Table 3. Group Statistics Table

Group Statistics					
	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Kemampuan Berpikir Kritis	Eksperimen X AKL 1	36	125,69	10,658	1,776
	Kontrol X AKL 2	36	119,83	10,366	1,728

Based on the Group Statistics table, it is known that the average critical thinking ability of experimental class students is 125.69 and the average critical thinking ability of control class students is 119.83. The data is used to calculate differences in critical thinking skills between experimental class students who use guided discovery learning (GDL) and control class students who use problem based learning (PBL).

T-test criteria using SPSS 26, i.e. if the significance value or Sig. (2-tailed) is smaller than 0.05 then Ho is rejected and H1 is accepted, which means there is a difference in the ability to think critically with the guided discovery learning model (GDL) and the problem based learning (PBL) model. Whereas if the significance value or Sig. (2-tailed) is greater than 0.05 then Ho is accepted and H1 is rejected, which means there is no difference in the ability to think critically with the guided discovery learning model (GDL) and the problem based learning (PBL) model. The following is the Independent Sample Test table using SPSS 26.

Table 4. T-test Table

Independent Samples Test								
	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference



					)	rence	e	Lower	Upper	
Kemampuan Berpikir Kritis	Equal variances assumed	,147	,702	2,365	70	,021	5,861	2,478	,919	10,803
	Equal variances not assumed			2,365	69,946	,021	5,861	2,478	,919	10,803

Based on the results of the Independent Sample Test calculations above, it can be seen in the Equal Variances Assumed section, it is known that the significance value or Sig. (2-tailed) of 0.021 or smaller than 0.05. Then according to the t-test criteria using SPSS 26, it can be concluded that Ho is rejected and H1 is accepted, meaning that there is a difference in the ability to think critically between using guided discovery learning (GDL) and problem based learning (PBL) models.

### Discussion

In this study, researcher as teacher applied guided discovery learning (GDL) models to the experimental class X AKL 1 and problem based learning (PBL) models to the control class X AKL 2, each for 5 face-to-face meetings. The teacher divides students into heterogeneous groups consisting of students with high academic abilities as leaders in each group, each group is given a Student Worksheet (LKPD) as an assessment. The development of students' critical thinking skills during the learning process from the first meeting to the fifth meeting, can be seen from the graph below.

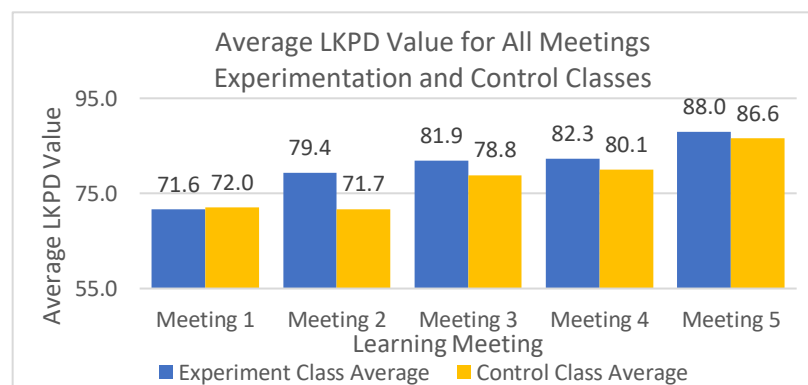


Figure 1. Histogram Graph of Average LKPD Value Experimentation and Control Classes

Based on the histogram graph above, it can be concluded that the development of critical thinking skills in the experimental class through the scores obtained is 71.6 - 79.4 - 81.9 - 82.3 - 88.0. Then, there was an increase in the first meeting to the second meeting by 10.86%, an increase in the second meeting to the third meeting by 3.22%, an increase in the third meeting to the fourth meeting by 0.47%, an increase in the fourth meeting to the fifth meeting by 6.88% . The total increase in the value of the experimental class with guided discovery learning (GDL) was 21.44%.

While based on the histogram graph above, it can be concluded that the development of critical thinking skills in the control class through the values obtained is 72.0 - 71.7 - 78.8 - 80.1 - 86.6. Then, there was a decrease in the first meeting to the second meeting by -0.46%, an increase in the second meeting to the third meeting by 10.00%, an increase in the third meeting to the fourth meeting by 1.55%, an increase in the fourth meeting to the fifth meeting by 8.12 %. Total increase in the value of the control class with problem based learning (PBL) was 19.21%. So it can be concluded, that there are differences in the ability to think critically, where the experimental class with guided discovery learning (GDL) is better than the control class with problem based learning (PBL).

From the calculation results of the critical thinking skills questionnaire, there are indicators and sub-indicators with the largest score and the smallest score. The following table averages the scores from the two classes.

Table 5. Average Calculate Indicators of Critical Thinking Ability  
Experimentation Class

No	Indicator	Total Score	n	Average	Percentage
1	Gather information	852	6	142	25,90
2	Asking question	1492	10	149,20	27,21
3	Solve and analyze problems	1062	8	132,75	24,21
4	Make decision	1119	9	124,33	22,68
Total		4526	33	548,42	100

Table 6. Average Calculate Indicators of Critical Thinking Ability  
Control Class Class

No	Indicator	Total Score	n	Average	Percentage
1	Gather information	793	6	132,17	25,30
2	Asking question	1398	10	138,90	26,59
3	Solve and analyze problems	1038	8	129,75	24,81
4	Make decision	1094	9	121,56	23,27
Total		4314	33	522,37	100

From the results of the calculation of the critical thinking skills questionnaire, it is known that the indicator asking questions obtained the largest score for the experimental class which is 1492 or 27.21% of the total score of 4525, and the indicator asking questions also obtained the biggest score for the control class which is 1389 or 26.59% of total score of 4314.

## CONCLUSION

### Conclusion

Based on the results of the analysis of research data and discussion, then the conclusions obtained from this study.

There is a significant difference in students' critical thinking skills using the guided discovery learning (GDL) model and students who use the problem based learning (PBL) model. Through the method with two comparison groups in this study, the experimental class that uses guided discovery learning (GDL) produces an average score of higher critical thinking skills when compared to the control class that uses the problem based learning (PBL) model. This means that the Guided Discovery Learning (GDL) model is better than the Problem Based Learning (PBL) model in improving students' critical thinking skills, but both of them can improve students' critical thinking skills so that they can be used in learning.

### **Implication**

Based on the results of research conducted by researchers, it is known that the ability to think critically is most highly influenced by indicators asking questions in the experimental class and the control class. With the highest sub-indicator understanding the issue carefully in the experimental class, as well as the highest sub-indicator asking and answering by clarifying the control class. This shows that students in the experimental class in general are able to ask questions by first understanding the issue carefully, while students in the control class in general are able to ask questions by asking and answering by clarifying various things first in learning.

Furthermore, it is known that the lowest critical thinking ability is influenced by indicators of decision making in the experimental class and the control class. With the lowest sub-indicators communicating decisions to others in the experimental class and the control class. This shows that students in the experimental class and the control class in general have not been able to make decisions through communicating decisions to others.

### **Recommendation**

Based on the conclusions and implications stated above, there are suggestions that researchers can give. The results showed that the highest influential indicator was asking questions. To maintain this, schools and teachers should be able to provide learning that provokes students' curiosity, also provide questions or deeper problems so students are able to think deeper and raise critical and rational questions during learning.

The results of this study also show that the lowest influential indicator is making decisions. To improve and improve this, schools and teachers should pay more attention to students as a whole when learning takes place, because only a few students are able to lead when group learning takes place, and the majority of other learners are accustomed to follow it and have not been able to take turns to make decisions in the discussion, this makes it difficult for many students to communicate their decisions to others because they are used to being passive and only following others who are used to leading.

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