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Basics of Accounting Learning with Scientific Approach

17 Lilik Sri Hariani and Endah Andayani
Universitas Kanjuruhan Malang, Jl. S Supriyadi 48, Malang, 65148 Indonesia
liliksrihariani@unikama.ac.id

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Abstract: This paper aims to analyze the improvement of students' critical thinking skills with a scientific approach. The experimental method used is quasi experiment with one group pretest-posttest design with 42 students from management program University of Kanjuruhan Malang. The instrument used is a critical thinking skill test. From the experiments conducted obtained the result that the introduction of accounting based on scientific approach can significantly improve students' thinking ability. 9 This is due to a scientific-based learning approach involving students 5 directly in the learning activities and requires high-order thinking skills so as to train students to develop the ability to think critically better. The results of this study are expected to contribute for improving accounting pursuits.

1 INTRODUCTION

8 A scientific approach is a learning process designed in such a way that learners actively construct concepts, laws, or principles with characteristics; 1) student-centered, 2) involves the process of science skills in constructing concepts, laws, or principles, 3) involves potential cognitive processes in stimulating intellectual development, especially high-level thinking skills, and 4) developing independent character (Daryanto, 2014; Hosnan, 2014). Critical thinking contains mental activity in terms of solving problems, analyzing assumptions, rationalizing, evaluating, conducting investigations, and making decisions. In the decision-making process, the ability to search, analyze, and evaluate information is very important. Critical thinking skills are able to meet the needs of future competitions where learners' abilities are needed that is communication, creative, and critical skills (Kendikbud 2013).

The critical thinking skills of learners need to be enhanced for the success in education and in community life. Critical thinking skills can be improved through the learning process with various models. Based on the results of research, critical thinking skills can be improved by the application of learning models in accordance with the characteristics of each learner, such as research conducted Wulandari, Sjarkawi, and M. Damris (2011), Fachrurazi (2011), Afrizon, Ratnawulan, and

Fauzi (2012), Syahbana (2012), Thompson (2011), Rasiman (2015).

The problem for some new students, learning introductory accounting is something that is less interesting and tend to be boring. They have difficulties in understanding about accounting. The learning process and misaligned understanding of accounting will hamper accounting and accounting development as a science that actually has a wide range, therefore accounting learning needs to emphasize the provision of direct experience to develop student competence. Providing direct experience is expected to improve students' critical thinking skills. Critical thinking skills of accounting students may be developed in learning by using a scientific approach, as it has been widely used in experiential learning.

Critical thinking is one of the higher-order thinking processes that can be used in the formation of a student's conceptual system, as Heong et al (2011) and Wardana (2010) have pointed out. In addition, critical thinking of learners can be developed through the provision of meaningful experience. The meaningful experience in question can be either verbal or written opinion. Meaningful experience can be done by using a scientific approach. Learning by using a scientific approach can make students active and creative, students not only listen but they can participate in the learning process (Hariani and Andayani, 2016)

19 Therefore, the purpose of research to analyze the improvement of students' critical thinking skills with scientific approach. The experimental method used was quasi experiment with 29 group pretest-posttest design with 42 management students. The instrument used is a critical thinking skill test. From the experiments conducted obtained the result that the introduction of accounting based on scientific approach can significantly improve students' thinking ability. This is because the learning-based scientific approach involves students directly in learning activities.

2 RESEARCH METHOD

28 The experimental method used is quasi experiment with one group pretest-posttest design. The sample of this research is the first semester students of management program of Economics and Business Faculty University of Kanjuruhan Malang which is taking course basics to Accounting 1. The instrument used is critical thinking ability test which consists of essay-based problem based on indicator that is 1) interpreting, that is categorizing and classify; 2) analyze, test and identify; 3) evaluate, that is consider and conclude; 4) draw conclusions, that is witness the data and explain the conclusion; 5) explanation, that is write the results and present the argument; and 6) independence, namely to make corrections and perform testing. This test is based on indicators developed from the function of critical thinking. This 22 is given to students before and after learning. The data obtained in this study is quantitative data in the form of critical skills test scores before and after learning. Improved critical thinking skills were calculated 15 with normalized gain scores. Data processing using statistical software package for social science (SPSS) for windows version 22.0 with 5% significance level.

3 RESULTS AND DISCUSSION

9 determine the occurrence of improvement of students' critical thinking skills, critical thinking skills test scores before and after learning first tested its normality. The critical thinking ability observed consists of six indicators, namely: 1) interpreting, that is categorizing and classifying transaction evidence; 2) analyze, test and identify evidence of transactions which are then recorded in the journal; 3) evaluate, that is consider and summarize notes in the next journal posted in the ledger and trial balance; 4) draw conclusions, that is watch the data and explain the conclusion, at this stage the activities undertaken by the students are making adjustments and adjusted trial balance; 5) explanation, that is write the results and present arguments, in this stage the activities undertaken by students is to make a trial balance until the compilation of financial statements; and 6) independence, namely to make corrections and perform testing, at this stage independently students can correct the activities that must be done in one accounting cycle.

Analysis of critical thinking skills earned an initial average score of 63.4 and a final test of 77.5. From the calculation result, all subjects of study experience improvement of critical thinking ability with N-gain of 0.59 which is middle category. This difference in critical thinking skills is supported by the average difference test results. The result of the difference of the average score of the initial test and the final test of students' critical thinking ability is outside the Z_{kritis} area for $\alpha = 0.05$ 21 of one party with Z_{tabel} 1.64 and $Z_{hitung} = 9.87$ so it can be concluded that students' critical thinking ability is different significantly between before and after learning. This is in line with research conducted by Wulandari, Sjarkawi, and M. Damris (2011), dan Fachrurazi (2011).

The critical thinking ability in this study include 12 six indicators. Each indicator is analyzed based on the initial test score at the final test, and the unlabeled gain. Analysis of initial test score scores and final tests of critical thinking skills for each indicator is presented in Table 1 below.

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Table 1: Average scores of initial test, final test and average gain comparison the ability of critical thinking.

No	Indicator	Average Scores		N-Gain	Category
		Initial Test	Final Test		
1	Interpret, that is categorize and classify	59	81	0,45	Medium
2	Analyze, test and identify	53	82	0,51	Medium
3	Evaluate, that is consider and conclude	55	79	0,55	Medium
4	Drawing conclusions, that is presenting data and explaining conclusions	45	61	0,21	Low
5	Explanation, that is write the results and present the argument	47	80	0,71	High
6	Independence, namely to make corrections and perform testing	49	78	0,47	Medium

Table 1 shows the results of preliminary and final tests of students' critical thinking skills on each indicator. However, to know the increase of students' critical thinking is done the normalized gain calculation of initial and final test scores as proposed by Ariyati (2010).

Based on the calculation of N-Gain as presented in Table 1 it can be concluded that the critical thinking skills of accounting students can be improved by using the scientific approach although there is still

one indicator that the improvement is still in the low category, that is the indicator presents the data and draw conclusions. The other four indicators are in the medium category and there is only one enhancement indicator in the high category, that is, write down the results and present the argument. This increase in critical thinking skills is supported by the average difference test results as presented in Table 2 below.

Table 2: Average differential test results preliminary test score and indicator's end test score.

No	Indicator	Z	Asymp.	Reception	Conclusion
			Sig	(Sig = 0,05)	
1	Interpret, that is categorize and classify	2,375	0	14 Reject Ho	Significantly different
2	Analyze, test and identify	1,014	0,014	Reject Ho	Significantly different
3	Evaluate, that is consider and conclude	0,897	0,001	Reject Ho	Significantly different
4	Drawing conclusions, that is presenting data and explaining conclusions	0,332	0,231	Accept Ho	Not significantly different
5	Explanation, that is write the results and present the argument	2,221	0,021	Reject Ho	Significantly different
6	Independence, namely to make corrections and perform testing	2,175	0	Reject Ho	Significantly different

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Based on Table 2 it can be concluded that the improvement of critical thinking ability shows that problem based learning with scientific approach can involve students in direct learning activities. With immediate activity can train students' higher thinking skills. If students' ability continues to be trained then

students can develop better critical thinking skills. As Liliyasi (2001) recalled that the ability to think of course can continue to grow through continuous learning process.

27
Improvement of critical thinking skills experienced by students after the learning process

caused students directed to develop critical thinking skills through direct learning in solving accounting problems. By direct learning, students are required to solve accounting problems independently so as to develop their critical thinking. This finding is in line with previous research on the influence of learning models in improving critical thinking skills.

4 CONCLUSIONS

Based on the findings in this study, it can be concluded that the introduction of accounting lessons through problem-based learning with scientific approach can significantly improve students' thinking skills in the medium category ($N\text{-gain} = 0.59$). The highest critical thinking ability indicator is analyzing, testing, and identifying accounting problems. While the indicator of the lowest ability to think is to draw conclusions, which presents the data and explain the conclusions. The weakness of most students is adjusting the adjusting journal, therefore for the next researcher can develop the model of learning that can make it easier for students to understand adjusting journal.

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