

Learning Strategies for High School Students: Differences in Learning Outcomes Problem Based and Expository

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Abstract

This paper aims to determine the economics learning outcomes of students who are taught with problem-based learning strategies with expository-based economics learning strategies for students. The problem of this paper lies in the strategy or process of the results of problem-based student learning activities with expository. The data in this study used a population of 116 students who became respondents. Research Quasi-experimental method with a comparative study approach with a 2x2 factorial design descriptive statistical test and continued to inferential statistics using two-way ANOVA with a significant level of signifikan=0.05. the results of the scheffe test (comparative study), followed by the scheffe test (comparative study) and the findings in the field that the economics learning outcomes of students taught with problem-based learning strategies were higher than the economics learning outcomes of students taught with expository learning strategies with a value of f-count = 4,879 > Ftable=3.99 at the significant level =0.05.

Keywords

learning strategies; problem based learning; expository based learning



I. Introduction

The results of the problem-based student's economics learning activities with the expository-based student's economics learning outcomes reap significant differences. This study discusses the problem of strategy or process from the results of problem-based student learning activities with expository. Students when doing their learning get a signal in the form of data results found in the field in research, that the results of the Scheffe test (comparative study), followed by the Scheffe test (comparative study) and findings in the field related to the economics learning outcomes of students taught with problem-based learning strategies are higher than the economics learning outcomes of students who are taught with expository learning strategies with a value of Fcount = 4.879 > Ftable = 3.99 at a significant level = 0.05.

1.1 Learning Strategies

Learning strategies, students have strategies in their daily learning process. Learning strategy is an approach that is divided into 2, namely expository (explanation) and inquiry or discovery (discovery), learning strategies, and independent learning skills can be successful (Halawa, Greene, & Mitchell, 2014; Littlejohn & Milligan, 2016), because no face-to-face lectures, or private tutoring with teachers. Students can study independently and complete a bachelor's degree with MOOCs (Ho et al., 2014); Independent learning skills during student studies require in-depth analysis to obtain information about independent learning strategies (Gutiérrez-Rojas, Alario-Hoyos, Pérez-Sanagustín, Students who undergo learning at school

are essentially motivated to learn. In problem-based learning variables (Sanagustín, Leony, & Delgado Kloos, 2014) (Alario-Hoyos et al., 2017) found the level of a large effect ($d = 1.21$) on the learning strategy has a positive effect of 26.8% on student achievement. (Yildirim et al., 2019). This meta-analysis learning strategy revealed that interactive learning, game-based learning, collaborative learning, and experiential learning are the dominant strategies. (Hanid et al., 2020) student motivation and learning strategies are positively and significantly correlated. (Hariri et al., 2020)) learning strategies are used by students to increase learning motivation, (Ghalebi et al., 2020) learning strategies are positively related to student achievement. (Suwanarak, 2019) learning strategies are positively related to student academic performance (Salazar Malerva & Heredia Escorza, 2019) student learning strategies must be changed continuously related to working on practice questions (Biber et al., 2020) active and interesting learning strategies to teach systems musculoskeletal to students (Singh et al., 2019) Research cites from domestic and foreign journals gives the value that Learning Strategies can increase students' learning motivation.

1.2 Problem Based Learning

Problem Based Learning there is a relationship between MPSA and MSC, with an indication of students showing a positive opinion of the PBL (Problem Based Learning) approach. (Anazifa & Djukri, 2017) Two-way ANOVA test and Post Hoc-LSD test analysis test it is known that the average mathematics learning outcomes of students who are taught using FPBLM based on Google Classroom LMS have increased (Ramadhani et al., 2019) problem-based learning model by using a virtual learning environment (VLE) of student learning at 80/83.93, which is in accordance with the hypothesis and the instructional systems design (ISD) instructional systems design (Phungsuk et al., 2017). Problem-based learning is the use of various kinds of intelligence that are needed to perform a confrontation against real-world challenges, the ability to deal with everything new and existing complexities (Utomo, 2020). PBL is a learning approach that begins with authentic and meaningful problems for students to find information on the solution and problem solving (Khairani, 2020). The environment provides input to students in the form of assistance and problems, while the brain's nervous system functions to interpret such assistance effectively so that the problems faced can be investigated, assessed, analyzed, and the solutions sought well (Pohan, 2020). PBL model as a learning method has an effect on students' learning attitudes according to multiple linear regression analysis, the F value is 16,732 and the significance is 0,000. (Munawaroh, 2020) PBL. LSS improves student experience and can control the nature and frequency of scaffolding according to their needs and abilities, (Kim et al., 2019) students are able to get better grades by using blended problem based learning (Nurkhin et al., 2020) there is a significant effect PBL model significantly affects students' lateral thinking skills. (Mustofa & Hidayah, 2020) Problem Based Learning has a better influence on students (Darhim et al., 2020) with the PBL approach, students get better grades and students show positive opinions towards PBL approach. (Hendriana et al., 2018) problem-based learning affects students' creativity and critical thinking. (Anazifa & Djukri, 2017) assessment of problem-based learning is considered by students that the PBL methodology is a learning strategy that facilitates and motivates, helps them build and integrate knowledge. (Sepulveda et al., 2021)

1.3 Based learning Expose

Based on Expository learning in research (Elizabeth & Sigahitong, 2018) that the score of students' creative thinking skills who take part in learning with the Expository Learning model has no effect on students' creative thinking abilities. The validity test used is expert

judgment and product moment correlation test. Reliability test using Cronbach Alpha. Analysis of MANOVA data with a significance level of 0.05, the learning outcomes of students who received expository learning methods had an average of smaller than Project-based learning methods. (Yastika & Haryanto, 2016) Expository learning strategies are low in influence expository learning has a low effect compared to the Problem Based Learning strategy (Handayani, 2018) students' critical thinking skills there are significant differences between classes taught using problem based learning using expository learning (Anindyta & Suwarjo, 2014) Data analysis was carried out using Two-way ANOVA obtained Problem).

Based Learning (PBL) 82.16 while the expository learning model was 71.36. then the expository learning model has a lower effect on students (Kistian & Verawati, 2020) There is an interaction effect between aspects of the type of expository learning on the student learning process but has not been able to facilitate the process of conflict, discovery, social interaction, and student reflective processes. (Susilawati & Suryadi, 2020) hypothesis using two-way analysis of variance (ANOVA). The data analysis technique was carried out using 2x2 ANOVA that problem-based and expository learning methods had an effect on student learning outcomes (Hardiyanto et al., 2017) Student creativity in making interactive learning media whose learning using open-ended Visual Basic for Excel applications was better than learning using the expository method (Rohaeti et al., 2019) Learning based on the Brain Based Learning approach is better than students who receive expository learning (Maryati et al., 2020) the data obtained by f-count for learning is 119.653 with a significance of 0.000 <0.05 . Then H0 is rejected or Ha is accepted. This means that there is a difference in environmental-based improvement that is higher than students with expository learning. (Siagian & Sembiring, 2018).

II. Research Methods

This research method uses a population of 116 students who become respondents, a comparative study approach with a 2x2 factorial design descriptive statistical test and proceed to statistics inferensial using two-way ANOVA with a significant level of =0.05. the results of the scheffe test (comparative study), followed by the scheffe test (comparative study) and the findings in the field that the economics learning outcomes of students taught with problem-based learning strategies were higher than the economics learning outcomes of students taught with expository learning strategies with a value of Fcount = 4,879 >Ftable=3.99 at the significant level =0.05.

Table 1. Experimental Design 2x2 Factorial Design

Personality B	Learning strategy A	
	Problem Based Learning (A1)	Expository Learning (A2)
Ekstrovert (B1)	A ₁ B ₁	A ₂ ,B ₁
Introvert (B2)	A ₁ B ₂	A ₂ B ₂

Information

A = Learning Strategy

B = Personality Type

- A1 = Problem Based Learning Strategy
- A2 = Expository Learning Strategy
- B1 = Extrovert Personality Type
- B2 = Introvert personality type
- A1B1 = Students' Learning Outcomes Taught with problem-based learning strategies who have an extroverted personality type
- A1B2 = Student learning outcomes taught with problem-based learning strategies have an Introvert personality type
- A2B1 = Student learning outcomes taught with expository learning strategies who have extroverted personality types kepribadian
- A2B2 = Student learning outcomes who are taught with expository learning strategies who have an Introvert personality type.

Quasi-experimental method with a comparative study approach with a 2x2 factorial design descriptive statistical test and continued to inferential statistics using two-way ANOVA with a significant level of $\alpha=0.05$. the results of the scheffe test (comparative study), followed by the scheffe test (comparative study) and the findings in the field that the economics learning outcomes of students taught with problem-based learning strategies were higher than the economics learning outcomes of students taught with expository learning strategies with a value of $F_{count} = 4,879 > F_{table}=3.99$ at the significant level $\alpha=0.05$.

III. Results and Discussion

The field research found that the findings in the field related to the economics learning outcomes of students who were taught with problem-based learning strategies were higher than the economics learning outcomes of students who were taught by expository learning strategies with a value of $F_{count}=4.879 > F_{table}=3.99$ at a significant level of $\alpha=0.05$.

Table 1. Summary of Descriptive Statistical Results Calculation Data Histogram of Learning Outcomes for the treatment of problem-based learning strategies

Variable	Strategi pembelajaran		Total
	PBL (A1)	Ekspositori (A2)	
Kepribadian	Extrovert (B1)	Introvert (B2)	Total
	n = 20 $\bar{X} = 35,95$ $\sum X = 719$ $\sum X^2 = 25929$ S = 2,064	n = 16 $\bar{X} = 31,00$ $\sum X = 706$ $\sum X^2 = 23886$ S = 2,747	n = 36 $\bar{X} = 33,75$ $\sum X = 1215$ $\sum X^2 = 41377$ S = 3,255
	n = 20 $\bar{X} = 31,55$ $\sum X = 631$ $\sum X^2 = 19977$ S = 1,905	n = 17 $\bar{X} = 33,62$ $\sum X = 1202$ $\sum X^2 = 39334$ S = 2,815	n = 36 $\bar{X} = 32,61$ $\sum X = 1215$ $\sum X^2 = 41377$ S = 3,255
Total	n = 40 $\bar{X} = 33,75$ $\sum X = 1350$ $\sum X^2 = 45906$ S = 2,96864	n = 37 $\bar{X} = 32,49$ $\sum X = 1202$ $\sum X^2 = 39334$ S = 2,815	n = 37 $\bar{X} = 33,12$ $\sum X = 1202$ $\sum X^2 = 39334$ S = 2,815

Economics learning outcomes for the treatment of problem-based learning strategies that based on the data obtained it can be seen that the economic psychotest learning outcomes of students who are taught with problem-based learning strategies are the lowest 28, the highest 40, the average score 3.75, the mode value 32 and the median 34, while the variance 8.80 and 8.97 standard deviation of economic learning outcomes for problem-based learning strategies. Shown in the table above.

Table 2. Frequency Distribution of Economic Learning Outcomes for the Treatment of Problem-Based Learning Strategies

No.	Kelas Interval	f-i	f relatif (%)
1	27 - 28	2	5,00
2	29 - 30	5	12,50
3	31 - 32	8	20,00
4	33 - 34	11	27,50
5	35 - 36	8	20,00
6	37 - 38	4	10,00
7	39 - 40	2	5,00
Jumlah		40	100,00

Table 2. above shows that there are about 37.5 of the economic learning outcomes scores for the treatment of problem-based learning strategies are below the average, 27.50% = average and 35% above the average

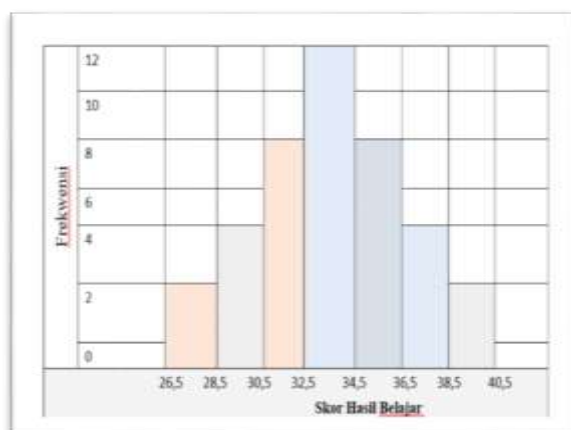


Figure 1. Histogram of Economics Learning Outcomes of Students Taught with Problem-Based Learning Strategies

Economics learning outcomes for the treatment of expository learning strategies based on the data obtained, it can be seen that the economics learning outcomes test scores of students who were taught with expository learning strategies were the lowest 28 and the highest 38 the average was 32.49. Mode value 32 and median value 32 variance 7.92 standard deviation 2.81. While the learning outcomes for learning Economics for expository learning strategies are shown in the table below and it can be seen that the score there is 32.43% of the Economics learning outcomes for the treatment of expository learning strategies at an average score of 27.03% equal to an average of 40.54% above the average average.

Table 3. Frequency Distribution of Economic Learning Outcomes for the Treatment of Expository-Based Learning Strategies

No.	Kelas Interval	f-i	f relatif (%)
1	28 - 29	4	10,81
2	30 - 31	8	21,62
3	32 - 33	10	27,03
4	34 - 35	8	21,62
5	36 - 37	5	13,51
6	38 - 39	2	5,41
Jumlah		37	100,00

The frequency distribution of the score of learning outcomes in Economics with the expansion of expository learning strategies can be described as follows

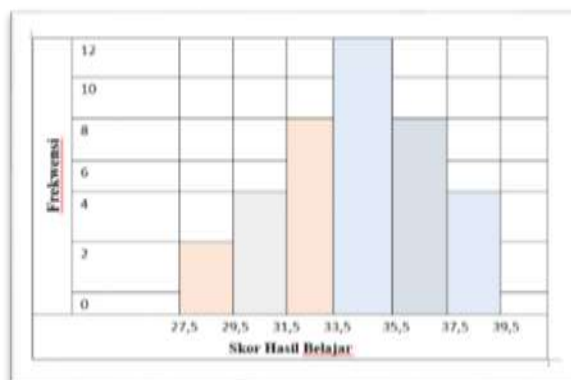


Figure 2. Histogram of Economic Learning Outcomes of Students Taught with Expository-Based Learning Strategies

The discussion of this research is that the learning outcomes of students who are taught with problem-based learning strategies are higher than those of students who are taught using expository learning strategies. Many factors affect student learning outcomes, problem-based learning strategies have several advantages including problem solving, this technique is good enough for students to better understand the problem, while the expository learning strategy is done by receiving subject matter, simulating the material presented and understanding it. This makes students have different levels of understanding caused by their level of affective, cognitive and psychomotor knowledge.

So that it can be taken data that problem-based learning strategies are higher than students who are taught by expository learning strategies.

IV. Conclusion

The conclusion of this study is that the economics learning outcomes of students with problem-based learning strategies are higher than those with expository learning strategies, the value obtained is = 32.486 and the problem-based learning strategy is obtained a higher value is = 33.750.

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