



INFLUENCE OF LEARNING STRATEGY AND STUDENT'S THINKING STYLES ON THE LEARNING OUTCOMES OF COMPUTER ORGANIZATIONS

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Abstract

The purpose of this study was to determine the effect of learning strategies and student's thinking styles on the learning outcomes of computer organizations. The learning strategy used in this research is the expository learning strategy which will be compared with the STAD learning strategy, while the thinking style used is the convergent style which will be compared with the divergent style. The method used is quasi experimental method using 2 x 2 design. Independent variable is learning strategy and attribute variable is thinking style, while the dependent variable is the result of learning computer organization. The result is learning computer organization on students who are taught using STAD learning strategy is higher when compared with expository learning strategy, the student's computer learning outcomes that have divergent thinking styles are higher when compared with convergent thinking styles, there is an interaction between learning strategies and thinking styles on the learning outcomes of computer organizations, where learning strategies and thinking styles are independent variables that can affect student computer learning outcomes, the result of studying of student computer organization which have divergent thinking style which is taught using STAD learning strategy higher, when compared with expository learning strategy, the learning result of student computer organization which has convergent thinking style which is expressed using expository learning strategy is significantly higher than the convergent thinking style used by STAD learning strategy, the learning result of student computer organization that has divergent thinking style which is taught using STAD learning strategy is significantly higher when compared with student computer learning result of student who has tendency of convergent thinking style which is learned using STAD learning strategy, students who have divergent thinking styles that are learned by STAD learning strategies get higher computer organizational learning outcomes when compared to students who have divergent thinking styles that are taught by expository learning strategies.

Key Words: Learning Strategy, Thinking Style, Interaction Between Learning Strategy and Thinking Style, Learning Outcomes

Introduction

Learning strategy is an action plan (series of activities) which includes also the use of methods and utilization of various resources / strengths in learning process.

In this study, we will see whether there is a difference between the results of Computer Organization learning between students who are taught using learning strategies of Student Teams-Achievement Divisions (STAD) with students in learning using expository learning strategies.

The style of thinking is a mindset that distinguishes the way a person receives and processes information, and use the information to organize our life in a certain way.

Learning outcomes are one of the basic elements that can improve the quality of education, as well as behavioral changes that can generally be grouped into three categories namely cognitive, affective, and psychomotor domains

The purpose of this study was to determine the effect of learning strategies and student's thinking styles on the learning outcomes of computer organizations. The learning strategy used in this study is an expository learning strategy that will be compared with the STAD learning strategy, while the thinking style used is a convergent style that will be compared with the divergent style.

Methodology

Operationally this research aims is answering the problems associated with learning strategies, students' thinking styles and their influence with the results of learning Computer Organization. The method used is quasi-experimental method using 2 X 2 design. This method is used to view or test the free variable that is suspected to have an effect on the dependent variable that is the learning result of Computer Organization. Free variables in this study is the learning strategy and attribute variable is the style of thinking, while the dependent variable is the result of learning Computer Organization.

Result

1. Learning Results of Computer Organization with Learned Using Learning Strategy STAD

The level of learning achievement in this group is 68.88%. The lowest score obtained was 15 and the highest 39, the average score reached was 27.55 with the mode 29.73 and median 28.5. The standard deviation for this group of data is 7.09 with a score range of 24.

2. Learning Results of Computer Organization with Learned using Learning Strategy Expository

Achievement level of learning in this group is 64,70%. The lowest score obtained was 16 and the highest 39, the average score reached was 25.88 with mode 27.50 and median is 29.90. The standard deviation for this group of data is 5.64 with a score range of 23.

3. Learning Results of Computer Organization Students who have Divergen Thinking Style

The level of learning achievement in this group is 71.85%. The lowest score obtained was 16 and the highest 39, the average score reached was 28.74 with mode 30.61 and median 29.90. The standard deviation for this group of data is 6.43 with a score range of 23.

4. Learning Results of Computer Organization Students who have Convergen Thinking Style

Achievement level of learning in this group is 61,72%. The lowest score obtained was 15 and the highest 36, the average score reached was 24.69 with 25.93 mode and median 24.83. The standard deviation for this group of data is 5.65 with a score range of 21.

5. Learning Results of Computer Organization Students who have the Thinking Style Divergen with learned using STAD Learning Strategy

The level of learning achievement in this group is 81.08%. The lowest score obtained was 22 and the highest 39, the average score reached was 32.43 with the mode 31.10 and median is 32.25. The standard deviation for this group of data is 4.56 with a score range of 17.

6. Learning Results of Computer Organization Students who have Convergent Thinking Style with learned using STAD Learning Strategy

The level of learning achievement in this group is 58.58%. The lowest score obtained was 15 and the highest 32, the average score reached was 23.43 with mode is 25.50 and median of is 23.88. The standard deviation for this group of data is 5.37 with a score range of 17.

7. Learning Results of Computer Organization Students who have the Thinking Style Divergen with learned using Expository Learning Strategy

The level of learning achievement in this group is 61.85%. The lowest score obtained was 16 and the highest was 34, the average score reached was 24.74 with the 29.50 mode and the median of 24.17. The standard deviation for this group of data is 5.61 with a score range of 18.

8. Learning Results of Computer Organization Students who have Convergent Thinking Style with learned using Expository Learning Strategy

The level of learning achievement in this group is 65.53%. The lowest score obtained was 16 and the highest 36, the average score reached was 26.21 with the 25.17 mode and the median 25.64. The standard deviation for this group of data is 5.73 with a score range of 20.

Discussion

The results showed that the learning result of Computer Organization that was learned using Student Teams-Achievement Divisions strategy was significantly higher than when we used the expository learning strategy.

Student Teams-Achievement Divisions learning strategy provides students with an active opportunity to learn independently and develop their own intellectual potential in self-developed learning activities. Student Teams-Achievement Divisions learning strategy focuses the learning process on cooperation among students in groups and inter-group collaboration. Each group should not allow one member of his or her group to be unaware of the issues being discussed. Learning process activities Student Teams-Achievement Divisions are centered on cooperation between students and between groups.

The Students who do not understand the subject matter, can ask to other students who have understood the material. Similarly on the other hand, Students who have understood the subject matter, must teach friends who do not understand. Student Teams-Achievement Divisions can also be used as a place to practice and discuss, mutual appreciation, acceptance and opinion on people or opinions of others, eventually arise confidence in each student. How to learn like this, causing knowledge gained Students can last long. So it can be concluded that for this case

the Student Teams-Achievement Division learning strategy is more effective and efficient in improving the learning outcomes of Computer Organization when compared with the expository learning strategy.

The results of testing research hypothesis, that revealed there is a difference between student computer learning outcomes of students who have divergent thinking style with students who have a convergent thinking style can be accepted. This shows that the learning result of student's computer organization that has divergent thinking style is higher compared to students who have convergent style. Thus the results of the study concluded that the learning outcomes of student computer organizations that have divergent thinking styles are significantly higher when compared with students who have a convergent thinking style.

Descriptive statistical analysis in this study has shown the interaction between learning strategy and thinking style to result of Computer Organization's learning, where learning strategy and thinking style is independent variable that can influence result of Student Computer Organization learning. The result of research stated that the achievement of learning result of Computer Organization really influenced significantly by the learning strategy applied by the lecturers and the thinking style of the Student.

The results of the advanced variance analysis with Tukey test, explaining that the degrees of freedom 4 versus 16, at a significant level $\alpha = 0.05$ price ($Q_h = 7,02$) > ($Q_t = 2.75$), while the significant level $\alpha = 0.01$ price ($Q_h = 7.02$) > ($Q_t = 4.10$), it means that there is a significant difference in the average of the two samples studying, for the learning result of Computer Organization which has divergent thinking style which is taught using Student learning strategy Teams-Achievement Divisions 32.43, were significantly higher if we compared with the Computer Organization learning outcomes with a divergent-mindedness tendency that was taught using an expository learning strategy of 24.74.

While the results of further variance analysis with Tukey Test explained that the degree of freedom 4 versus 16, at a significant level $\alpha = 0.05$ price ($Q_h = 2.32$) < ($Q_t = 2.72$), while the average learning outcomes of Student Computer Organization which has a convergent thinking style that is taught with Student Teams-Achievement Divisions strategy is 23.43, and the average of learning result of Student Computer Organization having convergent thinking style which is taught with expository learning strategy is 26.21.

Based on the description above we can be drawn a conclusion that the results of learning Computer Organization Students who have convergent thinking style learned using expository learning strategy is significantly higher than the learning results Computer Organization Students who have a convergent thinking style that is learned using Student Teams-Achievement Divisions.

Berdasarkan hasil analisis variansi tahap lanjut dengan Uji Tukey menunjukkan bahwa pada taraf signifikan $\alpha = 0,05$ harga ($Q_h = 7,51$) > ($Q_t = 2,75$) sedangkan untuk taraf signifikan $\alpha = 0,01$ harga ($Q_h = 7,51$) > ($Q_t = 4,10$), sementara rata-rata hasil belajar Organisasi Komputer Mahasiswa yang memiliki gaya berpikir divergen yang dibelajarkan menggunakan strategi pembelajaran *Student Teams-Achievement Divisions* adalah 32,43, sedangkan rata-rata hasil belajar Organisasi Komputer Mahasiswa yang memiliki gaya berfikir konvergen yang dibelajarkan menggunakan strategi pembelajaran *Student Teams-Achievement Divisions* adalah 23,43. Hal ini berarti secara signifikan terdapat perbedaan rata-rata dari dua sampel penelitian, untuk hasil belajar Organisasi Komputer Mahasiswa yang memiliki gaya berpikir divergen yang dibelajarkan menggunakan strategi pembelajaran *Student Teams-Achievement Divisions* lebih tinggi secara signifikan bila dibandingkan dengan hasil belajar Organisasi Komputer Mahasiswa yang memiliki kecenderungan gaya berpikir konvergen dibelajarkan menggunakan strategi pembelajaran *Student Teams-Achievement Divisions*.

Based on the results of the advanced stage variance analysis with Tukey test shown that at significant level $\alpha = 0.05$ price ($Q_h = 7,51$) > ($Q_t = 2.75$), while the significant level $\alpha = 0.01$ price ($Q_h = 7, 51$) > ($Q_t = 4.10$), the average learning outcomes of Student Computer Organizations with divergent thinking styles that are learned using Student Teams-Achievement Divisions strategy are 32.43, whereas the average learning outcomes of Student Computer Organization has a convergent thinking style that is learned using Student Teams-Achievement Divisions strategy is 23,43. It means that there is a significant difference in the average of two samples studying, for the results of learning Computer Organization Students who have divergent thinking styles that are learned using Student Teams-Achievement Divisions learning strategy significantly higher, if we compared with the results of Student Computer Organization learning the tendency of convergent thinking style is taught using Student Teams-Achievement Divisions strategy

Based on the results of the advanced stage variance analysis with Tukey test shown that at significant level $\alpha = 0.05$ price ($Q_h = 1.32$) > ($Q_t = 2.75$), for the average learning outcomes Student Computer Organization that has divergent thinking style which is learned using expository learning strategy is 24.74, while the average learning outcomes of Computer Organization Students who have convergent thinking styles are taught using expository learning strategy is 26.21. It means that there are differences in the average of two samples of research that is less significant, for the results of learning Computer Organization Students who have divergent thinking styles that are learned using expository learning strategies, significantly lower, if we compared with the results of learning Computer Organization Students who have style tendency Convergent thinking is taught using an expository learning strategy.

The results of hypothesis testing of research which explains that Students who learned using STAD learning strategy obtained the results of learning Computer Organization higher than the students who learned with expository learning strategies at significant level $\alpha = 0.01$ and at significant level $\alpha = 0.05$ this is empirical evidence in accordance with the various theoretical frameworks presented earlier.

The results of this study empirically reinforce repository of previous theoretical review that a planning and learning activities that use the Student Teams-Achievement Divisions learning strategy as a classical learning supplement will be able to improve learning outcomes Computer Organization better when compared with planning and learning activities that use expository learning strategies.

Results of the research on students who have divergent thinking style that is learned by Student Teams-Achievement Divisions learning strategy get higher learning result of Computer Organization when compared with result of Computer Student Organization learning which has divergent thinking style which is taught by expository learning strategy, what has been described in the theoretical framework. For students who have divergent thinking styles will be more likely to open themselves to change experience in learning as well as more systematic learning environment.

At the time of making the planning in learning activities for the subjects of Computer Organization with Student Teams-Achievement Divisions strategy by combining material-oriented and student oriented approach, the learning materials should be developed in various forms using the Student Teams-Achievement Divisions learning strategy, for example in multimedia format which combines elements of text, graphics, animation in the form of power point, voice and video, so it can describe the facts, concepts and principles in Computer Organization.

In Student Teams-Achievement Divisions learning strategy the role and function of lecturers is more just as facilitator, mentor, motivator, and director in the process of learning

activity, while the existence of Student is really required to play an active role in learning process of reading, listening, doing exercises, answering various questions conveyed by friends in groups and friends outside his group, asking questions of material lesson, material less clear to the lecturer. Learning strategy Student Teams-Achievement Divisions will be able to provide stimulus cognitive development Students in solving problems Computer Organization learning more effective and efficient, so the results of learning Computer Organization will be better.

The above fact indicates that the learning process will run effectively and efficiently if the learning strategy that is used in accordance with the style of thinking that is owned by the Student, thus the learning achievement of Computer Organization achieved will be maximum. On the other hand, if the process of learning is not appropriate in using learning strategies with the thinking style of Students then the learning process will not take place effectively and efficiently, so that the learning result Computer Organization achieved will not be maximum.

Conclusion

The conclusion of this research is to improve the learning result of student computer organization can be done by several ways such as by choosing the right learning strategy by considering the thinking style owned the students. If students who have divergent thinking style, we can be improved learning result of computer organization with learning process using Student Teams-Achievement Divisions learning strategy, while the students who have convergent thinking style, computer organizational learning outcomes can be improved by applying the expository learning strategy.

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