

The Effect of Learning Management System (LMS) Assistance in Think-Pair-Share Strategy on Students' Learning Outcomes and Motivation

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Abstract: The purpose of this study was to determine the effect of Learning Management System (LMS) assistance in Think-Pair-Share (TPS) strategy and the effect of Think-Pair-Share (TPS) strategy on students' learning outcomes and motivation. Forty students of two science classes were involved in this study. The treatment instruments used in this study were acid-base teaching materials, syllabus, student worksheets (LKPD), lesson plans (RPP), and Learning Management System (LMS). The measurement instrument employed a test question sheet and a student motivation questionnaire. The results showed differences in learning outcomes between students who are taught with the assistance of LMS in TPS strategy compared to students who are taught using TPS only are observed. There are differences in motivation among participants. Students who are taught with the assistance of LMS in TPS strategy compared to students who are taught with TPS strategy only.

Keywords: think-pair-share, Learning Management System (LMS), hasil belajar, motivasi peserta didik, asam basa

One of the materials in chemistry that can be represented into three levels is acid-base material. Chemical materials that have certain difficulties are acid-base materials, which are symbolic, sub-microscopic, and macroscopic representations (Kousathana et al., 2002). Acid-base material is delivered through direct learning in the classroom. Face to face learning includes a direct face-to-face interaction between teachers and students in the learning activities (Hidalgo, 2010).

One of the efforts to improve the communication relationship between students and teachers is through technological facilities in learning. It can be done anywhere and anytime as long as an internet connection is well provided (Bencheva, 2010). Efforts in using technology in the learning process are assisted learning treatment with Learning Management System (LMS). The Learning Management System (LMS) used is <http://www.schoology.com/>. Development of a Learning Management System (LMS) to increase the effectiveness and efficiency of performance carried out following the learning process. LMS development is carried out by

adding features and maximizing the learning process (Putri, 2018).

In the learning process, the advantages of online learning can be used to optimize the learning process, enacted with the intended learning strategy. One of the learning strategies that could be applied with LMS is Think-Pair-Share (TPS) (Kothiyal et al., 2013). Previous research by Bamiro (2015) showed that the thinking stage in Think-Pair-Share (TPS) learning could develop students' answers to be more detailed to effectively improve chemistry learning outcomes.

Motivation has an important influence in giving enthusiasm, pleasure, and passion for the learning process so that it has a lot of energies to carry out learning activities (Imron, 2009). According to Sardiman (1990), motivation can be divided into two, basic motivation, which is nurtured from birth ages, and non-basic motivation, which exists because it is learned. The present study was designed to determine Learning Management System (LMS) assistance in the Think-Pair-Share (TPS) strategy on students' learning outcomes and motivation of a State

Islamic Senior High School in Tulungagung, East Java, Indonesia.

METHOD

This study employed an experimental research design. It tested a cause-and-effect relationship. To construe the relationship, a posttest-only control group was used. All students from grade 11 of a State Islamic Senior High School in Tulungagung, East Java, Indonesia, who were taking chemistry lesson consisting of two science classes were involved in this study. The research process was carried out at the end of the odd semester of the 2019/2020 academic year in November - December 2019. Two instruments were used in this study, namely, the treatment instrument and the measurement instrument. The treatment instruments were acid-base teaching materials, syllabus, student worksheets (LKPD), lesson plans (RPP), and learning management system (LMS). The measurement instrument was a test question sheet and a student motivation questionnaire. Data in this study were obtained from (1) the results of the answers on the learning outcome test questions; (2) the results of the

ongoing learning process; (3) questionnaire scores on students' motivation in each aspect; and (4) students' motivation questionnaire scores. The stages in this study include (1) planning and compiling a lesson plan (RPP), learning outcome test questions, student observation sheets, student motivation questionnaires and validation by expert validators; (2) the learning process in accordance with the RPP; (3) observation of the activities of students; (4) students' motivation questionnaire; and (5) student learning outcomes.

RESULTS AND DISCUSSION

The analysis showed the average score of the experimental class learning outcomes was 78.75, while the average score of the control class learning outcomes was 73.50. This score shows that the application of LMS assistance in the TPS for the experimental class is more effective than the application of TPS for the control class in obtaining better learning outcomes. Overall, the difference in scores of student learning outcomes between the experimental and control classes can be seen in Figure 1.

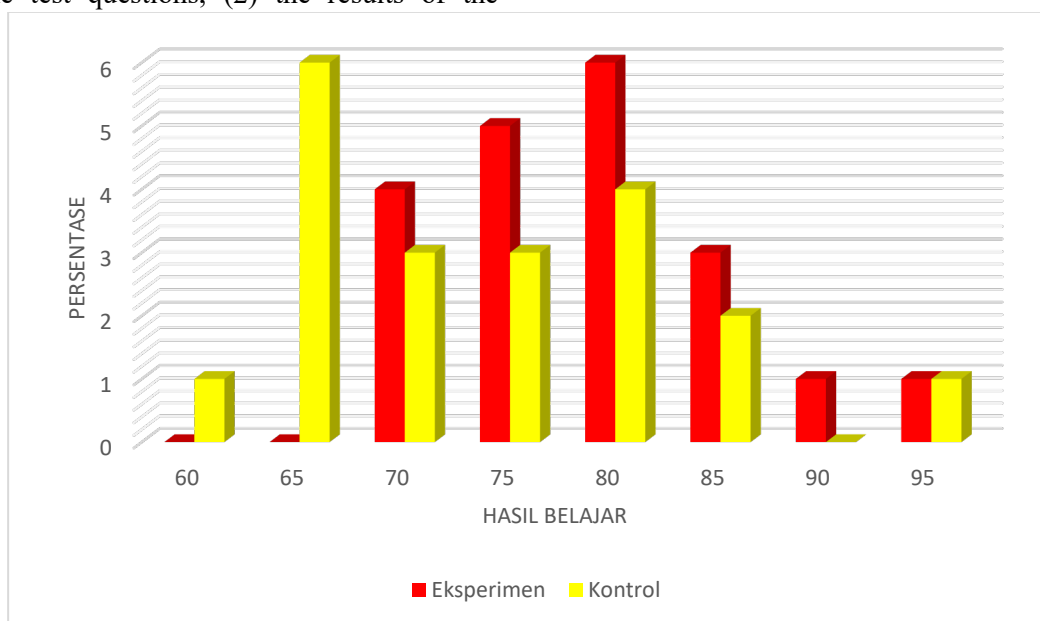


Figure 1. Difference in Score of Student Learning Outcomes between the Experimental Class and the Control Class

Differences occur in the thinking process that leads students to have opportunities to construct higher knowledge. The pairing process increases social interaction among the students. The process of sharing enhances the interactive learning environment and the activeness of

students in conveying ideas and the results of the discussion.

In the experimental class, students' answers are more diverse and varied but still in accordance with the context of the answers to the questions that have been given, rather than the control class which has answers that are not too

different or similar because they use the same source, namely the teaching materials that have been given.

This study also develops the potential of students to optimize interactions such as increasing the participation of students in discussing answers or ideas, providing input on concepts that have or have not been identified, developing a spirit of togetherness and fostering effective communication and learning motivation. The pairing process increases interaction between students by exchanging knowledge in a small scope.

Through sharing activities such as discussions and presentations, students gain new knowledge from presentations and use them to solve problems they encounter. The discussion process can compare the knowledge that students have acquired by paying attention to learning sources and the suitability of the material being studied. Both the control class and the experimental class can construct their thinking using available teaching materials or through additional material or cases that have been given.

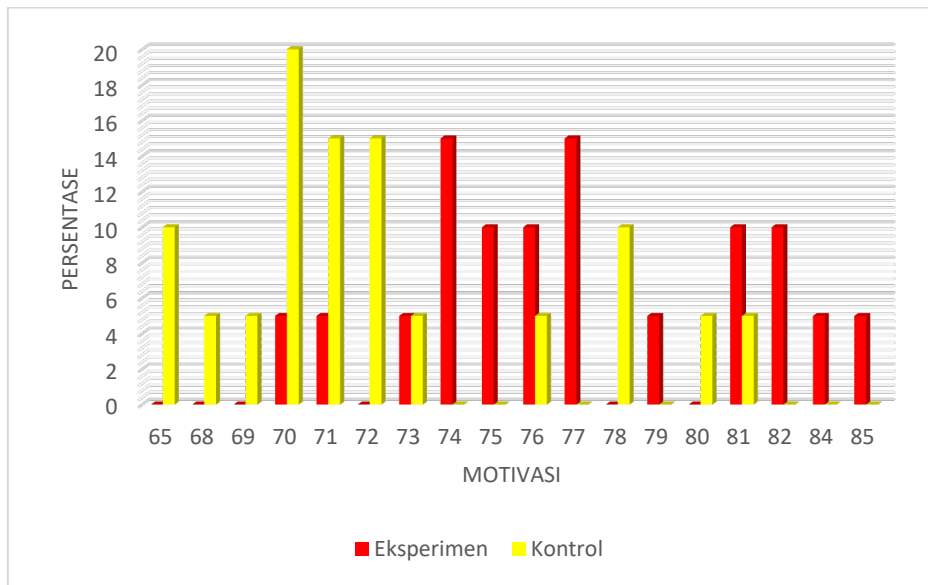


Figure 2. Differences in Students' Motivation Scores between the Experimental Class and the Control Class

The results of the student motivation questionnaire study showed the average score of the experimental class was 77.29 while the control class was 72.19. These results indicate that the application of think-pair-share with the help of LMS (Learning Management System) is more effective than the application of think-pair-share in increasing learners' learning motivation. Overall, the difference in students' motivation scores between the experimental class and the control class can be seen in Figure 2.

Table 1. Percentage of Students' Motivation in Each Aspect

Motivation Aspects	Motivation Percentage (Criteria)	
	Experimental Class	Control Class
Motivation	77 (good)	70 (moderate)

Attention	78 (good)	73 (moderate)
Consequence	76 (good)	74 (moderate)
Diligence	77 (good)	72 (moderate)
Length of Study	73 (moderate)	71 (moderate)
Performance	79 (good)	75 (good)

Based on Table 1, students' motivation in TPS learning assisted by LMS is 77% (included in the good category), while students' motivation in TPS learning assisted by LMS at the think stage has an effect on motivation and pleasure when solving the questions independently. The implementation of this strategy increases the number of students involved in learning. Tsankov (2012) contends that the increasing motivation of students will foster their positive attitudes so that they are more independent in academic activities and have an impact on good learning outcomes.

The aspect of attention to the application of TPS assisted by LMS is 78% (included in the good category), while the attention of students to the application of TPS is 73% (included in the sufficient category). The percentage shows that learning activities will be carried out effectively if students have attended to the teacher's instructions and focus on completing the tasks. Attention to learning will also arise if the subject matter is in accordance with students' needs so that students feel the learning material is important.

The concentration aspect in the class that was taught by applying TPS assisted by LMS is 76% (included in the good category), while the class that was taught using TPS is 74% (included in the sufficient category). Students' motivation in the aspect of concentration can be seen from the attention given to the problem-solving process through discussion. This concentration includes the attention of students towards providing good explanations from peers and teachers.

The persistence aspect for classes taught with the LMS assisted TPS strategy has a percentage of 77% (included in the good category). The same result applies to classes that are taught by TPS, which has a percentage of 72% (included in the sufficient category). The persistence of students in learning using teaching materials will utterly support the completion of assignments on time and correctly in accordance with existing concepts. In addition, the persistence of students can also be seen from their activeness in working together or in a group discussion.

The aspect of the length of study in the class taught by TPS assisted by LMS obtained a percentage of 73% (included in the sufficient category). Meanwhile, the length of study in the class taught by TPS obtained a percentage of 71% (included in the sufficient category). The length of study of students has a big influence on the understanding of the material. This happens because of the endurance or resistance of students in receiving material and studying during the learning process both in the classroom and outside the classroom.

The appearance aspect of TPS assisted by LMS is 79% (included in the good category), while the appearance of students towards TPS learning is 75% (included in the good category). The appearance of students can be seen when presenting the results of the discussion with the

group, namely at the sharing stage in front of the class. The willingness of students to respond to each question will give a good appearance.

CONCLUSION

The present study shows that there are differences in learning outcomes between students who are taught with the assistance of LMS in TPS compared to students who are taught with TPS only. The learning outcomes of students who are taught with LMS assistance in TPS are higher than the learning outcomes of students who are taught with TPS only. There are differences in motivation between students who are taught with the assistance of LMS in TPS compared to students who are taught with TPS only. In accordance with the results of this study, it is suggested that this study be used as an alternative strategy for teachers to be applied in the learning process, which emphasizes the effectiveness of time and place. The TPS with the assistance of LMS in this study should be used to assist students in solving unsolved problems in the classroom and can be solved outside the classroom through the use of an LMS.

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