THE EFFECTIVENESS OF STUDENT TEAMS-ACHIEVEMENT DIVISIONS IN ENHANCING VISUAL AND AUDITORY FOR ENGLISH STUDENTS' WRITING SKILL

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ABSTRACT

This research discussed the effectiveness of learning English writing using the Student Teams-Achievement Divisions (STAD) and lecture-based learning method. The two methods were applied in two classes of second-year students, and they were given a writing test over one semester. The first class was using STAD and the second class with lecture-based learning. Around 80 students were classified into visual and auditory learning styles based on the questionnaires filled in. The results in the statistical analysis provide important insights into the learning achievement of both visual and auditory learners modeled by STAD. Using the STAD method, they have accomplished considerably higher scores on academic writing achievement than the students who are taught by lecture-based learning. Therefore, it brings a positive effect and association with the students' learning styles.

Keywords: Student Teams-Achievement Divisions, lecture-based learning, visual and auditory learners, English writing

INTRODUCTION

In general, some lecturers still use the conventional learning method, such as lecture-based learning in conducting teaching in the classroom. They usually create a classroom environment in which the teacher-centered approach becomes the main method in giving instructions. In regards to this trend, higher education institutions deal with major challenges in establishing a good learning environment that is beneficial for all students. Many efforts have been made in searching for better instructional methods to accommodate more conducive learning environments.

Therefore, many studies have been conducted in several academic settings. One of them is an innovative and cooperative learning model that is called Student Teams-Achievement Division (STAD). It is a cooperative learning method which emphasizes the activities and interactions among students to help and motivate each other in mastering the lesson to achieve maximum performance (Slavin, 1983). The main plan of the STAD is to encourage learners to support and facilitate each other in mastering the lesson. If students want their team to attain cluster recognition award, they need to facilitate their members to master the lesson. They need to support their team members and do their

best to point out that learning is very important, valuable, and exciting. They can begin operating along in their team when the teacher directly presents the materials. They will add pairs inside their team, compare every answer, discuss doable disagreements, and facilitate each other to master the materials.

STAD is one of the best effective techniques which can be implemented by language teachers (Saniei & Ghadikolaei, 2015). Four to five students are appointed to different groups composing of specific levels of diversities: competence, genre, ethnic, and others. At this stage, teachers as facilitators will familiarize the students with concise and precise instructions. Afterward, students will read the assigned materials in the Expert Groups before being divided into the STAD groups to discuss their ideas. After the discussion in the Expert Groups is held, the learners will return to their STAD groups to combine the diverse information into a coherent idea. They have to prove other opinions, evaluate each comprehension, and make a summary of the concepts given by every individual member of the group. An assessment will be given to judge their understanding of the key ideas using presentations, quizzes, and applications. The students' advancement will be measured by accumulating the scores (Chim, 2015).

The STAD method is the most suitable for teaching clearly stated objectives with a single right answer. For example, it can be mathematical computations and applications, language usage and mechanics, geography and map skills, and science facts and concepts. Nonetheless, it can also be used for less clearly stated objectives by combining more open-ended assessments, such as essays or performance (Adesoji & Ibraheem, 2009).

The research on STAD has been widely used in teaching different subject areas and settings. Many researchers report that it has a significant influence on English motivation and achievement of EFL (English as a Foreign Language) adult students (Van Wyk, 2015; Hanafi & Basuki, 2018). The results also prove that it is an effective instructional technique and has a positive effect on improving students' English skills. Comparing it with the traditional method of lecture-based learning in EFL context, Nikou, Bonyadi, and Ebrahimi (2014) have believed that it is a more effective method so that the students can feel more comfortable when they work together.

Furthermore, Van Wyk (2015) has asserted that STAD is more superior than other models in the process of achieving English proficiency. Gómez-López, Martínez, and Sanchez-Ruiz (2018) have added in students' perception of learning experience with STAD that cooperative learning not only helps the students to develop their social skills easily by listening to others, recognizing the others' success, apologizing to their peers when an error has been made, but it also makes an opportunity to know their classmates directly. Although all results on STAD is recognized as the best technique, it has no study relating to its effectiveness in students' learning styles.

To comprehend the students' learning styles, teachers can improve their instructional experiences. In turn, teachers should modify their educational designs to be compatible with the given category of students' learning style. Since each student has a unique behavior in educational environments to acquire his/her knowledge and skills, it can bring up variant learning styles in some cases (Ghadirli et al., 2016). The foremost vital in the utilization of learning designs is that it can make easy instruction for the teachers to combine the styles. Learning styles shape the students' distinctive learning preferences and help teachers in the planning of small-group and individualized instruction. As in the teaching writing skill, a teacher should take into account not only the instructional method but also students' individual and emotional differences.

Furthermore, recognizing these characteristics will help teachers to foresee the factors that can affect the students' achievement in developing their writing skill, such as emotional and logical factors. In addition to that, when the students recognize their learning style based on their preference and behavior, the teacher's instruction and design are absorbed in the learning process. As a result, the process of learning will be fun, fast, and more effective (Awla, 2014).

DePorter, Reardon, and Singer-Nourie (1999) have presented three main categories of learning styles: visual, auditory, and kinesthetic. In this case, the main focus of this study relies on visual and auditory style. Visual learning style emphasizes the visual sense. The delivery of material through books and teacher in visual form or sensory vision is the main key in understanding the material. Moreover, visual students have a specific attribute to comprehend the materials. Firstly, they tend to be well-organized, listen to every detail, and carry on appearances. Secondly, they

must bear the image in their mind. Thirdly, they recognize the image or material, but they have a problem in selecting the words. Fourthly, they have difficulty in basic cognitive process verbal direction but not for the scripts or images. Thus, they do not often hand over in reciting them.

Meanwhile, the auditory learning style leans on hearing ability in learning the material. The students pay attention to the material given from the lecture, radio, or recorder. Despite that, they also want to listen and interact with people in learning the material. The oral direction is the best choice in comprehending the task, so reading activity is not useful or beneficial. It will put them in boreness. This style is a contradiction to the visual learning style in which diagrams and written explanation will make them confused and frustrated because the materials are not given in the spoken description. Auditory learners have definite characteristics when they start to speak, they tend to use rhythmical patterns; when they learn the material, they focus on listening; and when they read the materials, they move their lips and make voices to articulate the words. Those activities are only distracted by noises.

From the studies that have been conducted by the experts, the case study of instructional and assessments model, and the different types of visual and auditory learners, the researchers noticed that many studies have reported the effectiveness of STAD. However, the researchers do not associate it with students' learning styles. Therefore, this study is conducted to achieve the enhancement of EFL students' writing skill in Indonesian higher education, particularly for visual and auditory learners. This research questions the significant positive effects on visual and auditory learners' writing achievement.

METHODS

The steps to analyze the data start by selecting the participants, testing the validity and reliability for writing skill and learning styles, measuring the validity test for learning style instruments, and calculating the reliability coefficient of learning style instruments. The main procedure is collecting the participants. They are selected using multi-stage random sampling. Around 80 students from the second semester majoring in English department at Bina Sarana Informatika University Jakarta are singled out of 300 population and divided into two classes. The first class is the experimental class taught using the STAD, and the second class using lecture-based learning method. Subsequently, each class is put into two groups. Both are the students' group with a visual learning style and with auditory learning style. This grouping is based on the survey results of learning style questionnaires developed by DePorter, DePorter, Reardon, and Singer-Nourie (1999). They are taught by the same lecturer and used the same course book.

Meanwhile, the validity and reliability tests for writing skill are divided into two ways. First, the validity and reliability tests for writing skill are rationally conducted by the experts' writing skills (the inter-raters). It consists of three panelists. Then, the reliability test is carried out by calculating the assessment of the three experts. The result of the obtained reliability test calculation is $r_{test} = 0,9731$ that r is the correlation coefficient. Therefore, it can be concluded that the writing skills inter-raters' assessment results have an extremely high level of fitness.

Second, the validity test for learning styles is measured using Pearson's Product Moment formula. The

test to assess the reliability of learning styles is carried out using the Alpha Cronbach formula. The criteria are used to determine the reliability of the instrument and shown by the alpha coefficient. The calculation result for visual learning style is $r_{test} = 0,4347 > 0,389$ (α = 5% 0 and 0,301 α = 1%). The calculation result for auditory learning style is $r_{test} = 0,5379 > 0,389$ (α = 5% 0 and 0,301 α = 1%). Therefore, it can be said that the instruments for visual learning style and auditory learning styles are reliable and can be used for the research.

To measure the validity test for learning style, the researchers use the instruments in questionnaires. It composes of 24 questions using Pearson's Product Moment. The questionnaires are distributed to 43 respondents. The calculation results show that out of 12 questions for measuring the visual learning style, 11 questionnaire items are valid, and 1 item is invalid (drop). Similarly, out of 12 questions for the auditory learning style, the valid and invalid items are also determined.

In addition to that, the calculation of the reliability coefficient of learning style instruments is measured using the Alpha Cronbach formula. Based on the calculation results, reliability value for visual learning style is 0,4347, and the reliability value for auditory learning style is 0,5379. Since r_{test} is greater than r_{table} for both error levels of 5% and 1%, the correlation coefficient value for visual learning style is $r_{test} = 0,4347 > 0,389$ (α = 5% 0 and 0,301 α = 1%), and for auditory learning style, it is $r_{test} = 0,5379 > 0,389$ (α = 5% 0 and 0,301 α = 1%). Therefore, it can be concluded that visual and auditory learning styles instruments are reliable and can be used for the study. Then, the results of the population normal distribution test are described in Table 1.

Table 1 The Results of the Population Normal Distribution Test

No	Writing Skills	Value of L_0	Value of L_t (0,05)	Value of L_t (0,01)	Conclusion
1	A1B1	0,20	0,227	0,261	Normal
2	A1B2	0,099	0,227	0,261	Normal
3	A2B1	0,127	0,227	0,261	Normal
4	A2B2	0,105	0,227	0,261	Normal

Table 1 shows that all data groups are tested for their normal distribution using the Liliefors test. It presents a smaller L0 value (Liliefors value for observation result) than the Lt value (critical L value in the Liliefors test table at a significance level of 0,05 and 0,01 with n = 14). It can be concluded that all groups of data in this study come from normal distribution samples. Thus, the normal data requirement is met. Moreover, the population of homogeneity of variance is done using the Barlett Test formula. The calculation results are in Table 2.

Table 2 Statistic Results of Homogeneity Test

Data Groups	X^2_{test}	X^2_{table}	Conclusion
A1B1	0,2167	7,81	Homogenous
A1B2			
A2B1			
A2B2			

The test results show the value of $X^2_{test} < X^2_{table}$. Therefore, it can be concluded that the four tested data groups are derived from samples in which its variance is homogeneous.

RESULTS AND DISCUSSIONS

Before discussing the statistical analysis of the effects on STAD and lecture-based learning method through visual and auditory style, the researchers discuss the procedures on how to teach with STAD and lecture-based learning by the theory and concepts that have been explained previously.

These procedures are used as a guide for lecturers in teaching. The researchers carefully explain and give direction to the lecturer about the steps in using the two models. In turn, the researchers ensure that the lecturer understands and implements teaching concepts and procedures using STAD and lecture-based learning. The learning steps in the STAD can be conducted with six procedures. They are preparing, forming groups, discussing the problem, guiding the students to work and study in groups, making an individual and team scores, and giving recognition of team achievements.

Preparing the learning implementation plans must be in accordance with STAD. Lecturer divides students into groups of four to five people. These groups consist of heterogeneous students in terms of ability, gender, and culture. While working in a group, the lecturer shares assignments for each student as the learning material. Each student thinks together, and the lecturer assures that each can do the task well. Thus, guiding the students to work and study in groups can be carried out by the instructions such as giving assignments to the groups. If there are the students who cannot do the assignment because they still do not understand, the other teammates have to explain it. Then, the lecture emphasizes that they will not end teaching and learning activities until they are sure that all members of their team can complete 100% of the tasks assigned.

The lecture also provides opportunities for the students to evaluate each other writing like in the structure, language, and content. If the students have questions, the lecturer asks them to submit the question to their teammates before submitting to the lecturer. When the students are working in teams, the lecturer goes around in class and gives praise to the team that works well and alternately sits with the team to pay attention to the team members. In making the individual and team scores, the lecturer calculates the scores by summing up the increase points obtained by each team member and dividing that number by the number of team members working on the quiz. In the end, the lecture recognizes the team achievements. The lecturer praises the team that has the highest score to motivate students to be more active in completing tasks before the learning process begins.

Furthermore, there are steps for applying the lecture-based learning such as preparation, learning process, core activities, and evaluation. The lecturer prepares learning tools, including learning plans and materials. Then, the lecture explains the learning objectives and motivates the students, gives material, demonstrates the material, checks the students' understanding and feedback, and provides practice and applied concepts. At the end of learning, the lecturer closes the lesson by giving the assignments to the students and evaluating student learning.

Lecture-based learning and STAD have a very striking difference. Referring to the theoretical and

conceptual explanations, the differences between the two models are clearly stated. STAD is student-centered learning in giving the material. So, it brings up a positive interdependency for heterogeneous students. It consists of group and individual accountability and creates cooperative learning skill. It stresses on cooperative task and relation. It also uses students' supports and shows group evaluation.

Meanwhile, lecture-based learning focuses on teacher-centered learning instruction and brings up negative interdependency. It deals with homogeneous students consisting of individual accountability. It creates an assumption on social skills, emphasizes on tasks, uses teacher support, and shows individual group.

Both of the differences can be understood that STAD and lecture-based learning have their characteristics, goal, and focus on the students' achievements in English writing skill. In this case, the students of auditory and visual style take the writing test to enhance English skill. Writing ability test is conducted in the form of writing a paragraph according to the topic given. The validity of the test is done rationally by the experts (inter-raters) consisting of three panelists. The aspects of writing skills are measured by the indicators based on ESL (English as a Second Language) Composition Profile, including content, structure, vocabulary, language use, and mechanism.

Next, the researchers show that the statistical analysis of the effects on STAD and lecture-based learning through visual and auditory style can be utilized by the two-way Analysis of Variance (ANOVA). A further analysis using the Tuckey test (t-test) will only be taken if there is an interaction effect found in the ANOVA analysis results. The Normality test (Liliefors test) and Homogeneity test (Bartlett test) are carried out prior to analyze the data findings from testing the hypotheses.

Table 3 Two-Way ANOVA Summary

Sources of Variance	DF	SS	MS	F_{test}	F_{table}	
					0,05	0,01
Instructional Model (A)	1			9*		
Learning Style (B)	1	1235,16	1235.16	21,85*		
Interaction A x B	1	750,446	750,446	13,28*		
Inter-Group	3	1990,77	663,59		3,18	5,06
Intra-Group	52	2938,93	56,52			
Total	55	4929,7				

Description: Degrees of Freedom (DF), Sum of Squares (SS), and Mean Square (MS).

From the two-way ANOVA summary in Table 3, some conclusions are drawn. It is clear that there is a significant difference between rows that F_{test} (b) = 9 is bigger than the F_{table} (b) = 3,18 at level of the test α = 0,05 and 5,06 α = 0,01. There is also a significant difference between colums showing F_{test} (k) = 21,85> F_{table} (k) = 3,18 at level of the test α = 0,05 and 5,06 α = 0,01. Furthermore, there is an interaction between the column factors and the row factors showing F_{test} (I) = 13,28> F_{table} (I) = 3,18 at level of the test α = 0,05 and 5,06 α = 0,01. Consequently, since there are differences and interactions between the factors within the column and the row, a further analysis will be done using the Tuckey test (t-test).

The statistical calculation result shows that Q-test = 4,98 and critical value Q = 3,05 with the level of test α = 0,05. Thus, the null hypothesis is rejected. It can be implied that there is a significant interactional effect between instructional models and learning styles towards students' English writing skill. In other words, interactions happen between the English writing skill of the visual students who are taught using the STAD and auditory students with lecture-based learning. The results of this analysis can be used as a benchmark to conduct further analysis of why the STAD is better than the lecture-based learning in writing courses. A complete data summary of English writing skill scores for each group can be seen in Table 4.

Table 4 Data Description

Learning Style	Note	Student Teams-Achievement Divisions	Lecture-Based	Total
		(A1)	(A2)	
Visual (B1)	N	20	20	40
	$\sum X$	938	844	1782
	Mean	67	60,29	127,29
	SD	10,52	10,25	20,77
	Var	110,6	105,14	215,74
	$\sum X2$	64284	52248	116532
Auditory (B2)	N	20	20	40
	$\sum X$	967	1078	2045
	Mean	77	69,07	146,07
	SD	8,66	6,36	15,02
	Var	74,99	40,46	115,45
	$\sum X2$	67767	83532	151299
Total	N	40	40	80
	$\sum X$	1905	1922	3827
	Mean	68,0357	68,6428	136,6786
	SD	19,18	16,61	35,79
	Var.	185,59	145,6	331,19
	$\sum X2$	132051	135780	267831

Description: N = the total Number of Samples, X = Score of English writing skill, SD = Standard Deviation, and Var = Variance

Based on the results in Table 4, it can be concluded that the ANOVA shows the obtained calculated value of F_{test} for influence in the instructional model as 21,85 > F_{table} = 5,06 for the level of the test α = 0,01. This means that the null hypothesis (H_0) is rejected, whereas the alternative hypothesis (H_1) is accepted. This proves that there are differences between students with STAD and those with lecture-based learning.

Furthermore, a comparative test is conducted between the two learning models using the Tuckey test (T-test). The results of the comparison test inform that students' English writing skills taught using STAD are better than lecture-based learning. This evidence is from the results of the empirical analysis in the Q_{test} = 4,73 > Q_{table} = 3,53 at the level of the test α = 0,05.

Meanwhile, the average score for the English writing of students with a visual learning style using STAD is 67. Then, the average score for English writing of the same learning style with lecture-based learning is 60,29. The empirical analysis results in $Q_{test} = 3,34 > Q_{table} = 3,03$ at significant level $\alpha = 0,05$. Hence, it can be stated that the students with visual learning style using STAD will have better English writing skills than those who use lecture-based learning.

Moreover, the average score for the students in English writing with auditory learning style using STAD is 77. Meanwhile, the average score of students with an auditory learning style using lecture-based learning is 69,07. The empirical analysis results in $Q_{test} = 3,34 > Q_{table} = 3,03$ at significant level $\alpha = 0,05$. Therefore, it means that the students with auditory learning style using STAD have higher English writing skills than those who are taught using lecture-based learning.

In addition, from the $Q_{test} = 4,98 > Q_{table} = 3,05$ at significant level $\alpha = 0,05$, there is a significant interaction effect between learning models and learning styles towards the students' English writing skills. The interaction between them can influence the results of English writing skills.

The research findings taken from the analysis of the data prove that there are differences in learning achievements in English writing skill. It happens between the students who have studied STAD and lecture-based learning. Overall, the students' English writing skills taught using STAD are higher than lecture-based learning.

From the results of data analysis, it is also found that the students' English writing skills from both the visual and auditory learning style groups using STAD are better than those who use lecture-based learning. The students with visual or auditory learning styles are more compatible with STAD. Moreover, the research also finds that there is an influence in the form of interaction between the learning models and learning styles in affecting English writing scores.

This research is in line with the results of research on the positive effects of cooperative learning techniques towards students' progress for students with visual and auditory learning style. STAD is not only more successful in improving students' understanding but also significantly increases the students' motivation for achieving the target and having a good attitude in learning (Ocampo & Bascos-Ocampo, 2015; Adu & Galloway, 2015; Tran, 2014). In addition, students with high and low motivation have a benefit from this method. It gives a positive influence on the students' learning style. It can assist the lecturers in making the blended-teaching design and having good strategies when they are teaching in the class and giving the material. It is also used to serve the students' needs and help the students in becoming aware of their learning style based on their preferences (Ojeh et al., 2017). Therefore, lecturers need to accommodate these preferences as many as possible in their teaching by integrating these different learning styles into their instructional activities so that students can succeed in learning the material.

Moreover, STAD method has its characteristics and advantages in enhancing English writing skills. They can make a possible different influence on the students' English writing skills. The students can experience the advantages of using STAD since they are in a condition and a situation which are different from their usual learning environment. The students' learning environment in the class consists of several groups that have mix compositions of ability levels, gender, and ethnicity (heterogeneous).

Essentially, this instructional model explores and develops the students to be active and involved in the teaching and learning process through heterogeneous groups. Moreover, the students still have equal opportunities to succeed with individual responsibilities. Although they learn in groups, each within the group carries equal responsibility towards the completion of assignments. Within the groups, students are always obliged to motivate and help each other in mastering the materials especially in putting their thoughts or ideas into words and being more creative in writing. Eventually, when this learning model is conducted more frequently and become a routine in the learning process, the students will be skillful in writing in English appropriately.

CONCLUSIONS

This research shows that STAD has given a positive effect and association with the students' learning styles. The results show that STAD is better than lecture-based learning in enhancing students' writing skill. This study also implicates one of the most important factors in enhancing English writing skill for the students learning. As the result of this study has proven that STAD brings the positive effect and association with the students' learning styles, it generally accepts that using an appropriate learning model can affect the student English writing skills especially for the student of the second semester majoring in English department at Bina Sarana Informatika University Jakarta. This model also brings up the achievement of learning objectives that depends on the accuracy of lecturers in deciding the learning model in the class. Thus, lecturers should apply the STAD and lecture-based learning interchangeably and continuously to recognize and overcome the differences in students' learning styles when conducting the teaching in the class.

In spite of the positive reports, the researchers realize that many limitations are needed to be put forward as the references for further research. The researchers admit that this study uses an experimental research design that requires control of all research variables outside the predetermined variables, so it does not interfere with the experiments. Moreover, there are still other variables that cannot be controlled, so it affects the results of the study obtained in the form of attitudes of the students, interest in learning, motivation, and others. This study also does not carry out pre-test because the researchers assume that the initial knowledge of English students in English writing skills is homogeneous. Then, other researchers can use an alternative design in enhancing the students' learning achievements in the class with the new collaboration or exploration from other concepts of learning as the researchers have conducted.

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