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A Meta-Analytic Study of Student Teams Achievement Divisions (STAD) Methods in Teaching and Learning English

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Abstract: This study aims to analyze the effectiveness of the STAD method for teaching and learning English. The method used in this research is meta-analysis. Data collection was carried out using coding data sheets where researchers coded information from research articles in journals about the use of the STAD method in teaching and learning English. Data were analyzed by calculating the effect size. The results of the study revealed that overall the STAD method was effective in influencing English learning by 1.53 or included in the big influence category. The STAD method has also had an impressive impact on areas with a magnitude of 1.31 in Indonesia. In addition, based on the level of education, the results showed that the magnitude of the effect was 0.9 at the junior high school level and 1.9 at the senior high school level. Conversely, the effect on students' English skills is 1.64. STAD affects reading, speaking and writing skills in English with a large influence value of 1.05, 0.81 and 3.07. From these results it can be concluded that the STAD method is effectively applied in learning English because STAD has a great influence in various regions in Indonesia, at the level of education, and can improve students' English skills in various aspects.

Keywords: Meta analysis study; STAD; effect size; English teaching and learning.

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INTRODUCTION

The STAD (Student Team Achievement Division) method is a cooperative learning method that involves small groups where each group member works together on a common task to achieve a common goal (Awada et al., 2020; Khan & Inamullah, 2011; Yusuf et al., 2015). According to George & Menon (n.d.), the STAD method is characterized by three concepts, namely team rewards, individual accountability, and equal opportunity for success. Cooperative learning is an effective and popular learning to be applied in learning English which can actively develop student teamwork, improve English skills, and master in-depth knowledge that is not possible if students only try to learn all the subject matter themselves (Al-Yaseen, 2014; Gillies, 2014). This method is widely applied in teaching and learning English in Indonesia and by researchers about its effect on various language skills. The STAD method is a cooperative

learning technique that was first developed by Slavin and his colleagues at Johns Hopkins University, which is one of the simplest cooperative learning methods, where there are several small groups of students with different levels of academic ability and work together to achieve goals Learning (Aslan Berzener & Deneme, 2021; Budiyono & Ngumarno, 2019; Nair & Sanai, 2018; Wyk, 2012) .

Cooperative learning method type STAD (Student Team Achievement Division) is widely used because STAD pays attention to the attitudes and processes of student involvement to develop cognitive, affective, and psychomotor potential (Ghaith, 2004; Syahidi & Asyikin, 2018; Zahara & Maryam, 2021). This cooperative method is able to train students to listen, accept and respect other people. The activeness of students in the learning process creates interaction in groups. These interactions can form knowledge, and skills and can improve ideal learning outcomes. Therefore, interaction is needed so that the learning process goes well (Kriswintari et al., 2018; Setiyawan, 2019).

The researchers found that there were many experimental studies on the use of the STAD method in teaching and learning English such as the research conducted by Deswarni (2018) which found that STAD provided more effective application benefits in teaching reading comprehension to eleventh-grade students in MA Hubbulwathan Duri. Barus & Niswa (2020) conducted research on the effect of STAD on improving students' recount text writing skills at SMA HKBP1 Pematangsiantar and the results showed that the STAD method was considered more effective and useful, because based on the average summary results, it can be concluded that the average the posttest summary mean is higher than the pretest summary average and this proves that the alternative hypothesis (Ha), "There is a significant effect of Student Teams Achievement Divisions (STAD) on the writing ability of class X students of SMA HKBP 1 Pematangsiantar. Khasinah & Aziz (2016) found that there was a significant effect of the use of STAD cooperative learning on students' English grammar mastery. Data from various previous studies in the field of education are widely available in the form of research journals in Indonesia. Unfortunately, there is a lack of research that summarizes and reviews the effectiveness of research results in Indonesia. Research that has existing data can be compiled and analyzed according to the research theme. In addition, the research results reinforce previous research. Meta- analysis is an effective way to do this type of research.

After many researchers published articles discussing the application of the Student Teams Achievement Divisions learning method in learning English, it is necessary to summarize these studies in order to be able to interpret the results of research on the STAD learning method. One way to summarize research results from experts is by meta-analysis. A meta-analysis is a form of research that utilizes data from quantitative studies that have been conducted by previous researchers to find effect sizes. Effect size is the magnitude of the influence on a study, the magnitude of data differences, and the relationship between research variables. Therefore, the effect size will make it easier for us to know the differences and relationships between research results.

According to Wheaton (2012), meta-analysis is the analysis and interpretation of quantitative findings with statistical techniques by combining the results of various studies conducted on the same subject but at different places and times, presenting the results of a number of comparable studies, then presenting the results of a meta-analysis that combines evidence from all studies. It is used to analyze central trends and variations in study results. In this study, researchers will use several samples in the form of previous research with similar topics to obtain information and analyze the magnitude of the influence on previous research. There are several meta-analytic studies, such as those conducted by Dewi (2020), which determine whether the STAD learning method has a high effect on improving social studies learning outcomes for elementary school students. The results showed that based on the results of the

analysis through comparison of scores before and after the learning action was carried out using the Student Teams Achievement Divisions (STAD) learning method, this method could improve social studies learning outcomes for elementary school students starting from the lowest. an increase of 6.9% to the highest increase of 56.6% with an average increase of 34.01%. Hutama & Suparji (2021) tested the effect of the Student Team Achievement Division cooperative method on learning outcomes of elementary school students from published experimental research using the meta-analysis method. The results of the effect size test show that the Student Teams Achievement Divisions (STAD) cooperative learning method has a positive effect on learning outcomes for elementary school students and has a large influence on learning outcomes for elementary school students. This is indicated by the existence of seven studies that have a large influence and the average value of the STAD effect size with learning outcomes is 1.39.

Meanwhile, in other research, Utami et al. (2021) pays attention to meta-analysis research which aims to summarize the results of research on the effect of cooperative learning which is the root of the STAD method in improving students' critical thinking skills. The results of the data analysis resulted in an ES of 0.71 (contributing 26.32%). The type of cooperative learning that produced the greatest and most consistent effect was the Basic Problem Learning Type (ES = 1.08, contributed 17.97%). Based on the school level, the highest effect size was at the high school level at 35.43%.

Several meta-analytic studies that have been conducted have not focused on the field of English studies and the STAD method. Most of the research analyzes the cooperative learning method as the root of the STAD method and the subjects in the article are elementary school students. It can be concluded that there has been no recent meta-analysis research on the STAD method in learning English, especially for high school and junior high school students, both in terms of region and in terms of student abilities (Syakur & Sabat, 2020; Warawudhi, 2012). The researcher intends to conduct research on a meta-analytic study of the Student Teams Achievement Divisions (STAD) method in teaching and learning English.

METHOD

This research is categorized as meta-analysis research. According to Sugiyono (2015), populations are objects or subjects whose number and characteristics are determined by researchers to study and draw conclusions. The population taken in this study were scientific publication articles in the form of journals on the use of the STAD method between 2011 and - 2021.

Furthermore, the meaning of the sample is a portion of the number and characteristics possessed by the population, or it can be referred to as a small portion of the members of the population taken according to certain procedures so that they can represent the population. The sample used in this research is scientific publication articles about learning using the STAD method in learning English with the following types of research categories: 1) articles created by general researchers and students; 2) articles with experimental research methods; 3) articles, namely quantitative data and statistics that have an effect size; 4) articles published in the last 10 years, 2011-2021; 5) articles about the STAD method in learning English; 5) the intended level of education is junior and senior high school. The data analysis technique in this study is the effect size formulated by Becker and Park in Nurul Izzah.

$$ES= \frac{\bar{X}_{post}-\bar{X}_{pre}}{SD_{pre}}$$

$$ES= \frac{\bar{X}_{E}-\bar{X}_{C}}{SD_{C}}$$

$$ES= \frac{(\bar{X}_{post}-\bar{X}_{pre})E-(\bar{X}_{post}-\bar{X}_{pre})C}{\frac{\overline{SD}_{preC}+SD_{preE}+SD_{postC}}{3}}$$

$$ES= \frac{2r}{\sqrt{1-r^2}}\,;\sqrt{\frac{x^2}{n}}$$

$$ES= t\sqrt{\frac{1}{nE}+\frac{1}{nC}}$$

Cohen (1998) provides a reference to the effect size which indicated a intervention of effect

size, ES = <0.2 for small effect size, ES = 0.2>0.8 for medium and ES = >0.8 for large size effect.

RESULT AND DISCUSSION

The Data of Effect Size Based on The Intervention of Effect Size

Table 1. Effect Size based on The Intervention of Effect Size

No	Article Code	Effect Size	Intervention of Effect Size	
1	1A	0.88		
2	2A	9.81		
3	4B	1.17		
4	5B	1.23		
5	6B	2.09	Large Effect	
6	10B	1.47		
7	11A	1.21		
8	14C	1.18		
9	3A	0.38		
10	7B	0.62		
11	8B	0.45		
12	9B	0.37	Medium Effect	
13	12C	0.79		
14	13C	0.56		
15	15C	0.74		
			Small Effect	
The Average of Effect Size			1.53	Large Effect
SD			2.33	

Calculation of the effect size from the results of the data analysis in Table 1 shows that there are eight scientific publication articles with a large effect size, seven scientific publication articles with a medium effect size, and no articles with a small effect size. Data calculations show that the overall average effect size of the Student Team Achievement Division (STAD) cooperative learning method from fifteen experimental research articles reaches 1.53 (large) which is categorized as a large effect and a standard deviation of 2.33. The effect size confirms that the STAD method has a lot of influence on teaching and learning English.

The Data of Effect Size Based on The Region

The STAD method is a learning method that is applied in various regions in Indonesia as a method of teaching and learning English. Data from Table 2 shows that the effect size of the use of the STAD method in learning English by the province in Indonesia is 1.31 (large) and the standard deviation is 0.97. This means that the STAD method has a large influence in Indonesia because of the large effect size of the intervention.

Table 2. Effect Size based on Region in Indonesia

No	Region	Article Code	Effect Size	Average of Effect Size
1	South Sulawesi	1A	0.88	0.88
2	North Sumatra	2A	9.81	3.8
		11A	1.21	
		3A	0.38	
3	East Java	4B	1.17	0.95
		15C	0.74	
4	Riau	5B	1.23	1.23
5	Central Java	6B	2.09	1.02
		7B	0.62	
		9B	0.37	
6	Banten	8B	0.45	0.5
		13C	0.56	
7	Jambi	10B	1.47	1.47
8	Aceh	12C	0.79	0.79
9	Bengkulu	14C	1.18	1.18
Mean				1.31
SD				0.97

Meanwhile, if the effect size is ordered from the highest to the lowest, then the effect size of the STAD method in English and learning in North Sumatra province is greater than in other provinces in line with the size of the average effect size, namely the research location and standard deviation. The average effect size by province is presented in table 2. North Sumatra has the largest effect size, namely 3.8, and Banten is in the medium category with an effect size of 0.5. The value of this effect size is sought based on the formula according to Becker and Park. North Sumatra, South Sulawesi, East Java, Central Java, Riau, Jambi, Aceh, and Bengkulu are included in the major influence, while Banten is included in the moderate influence.

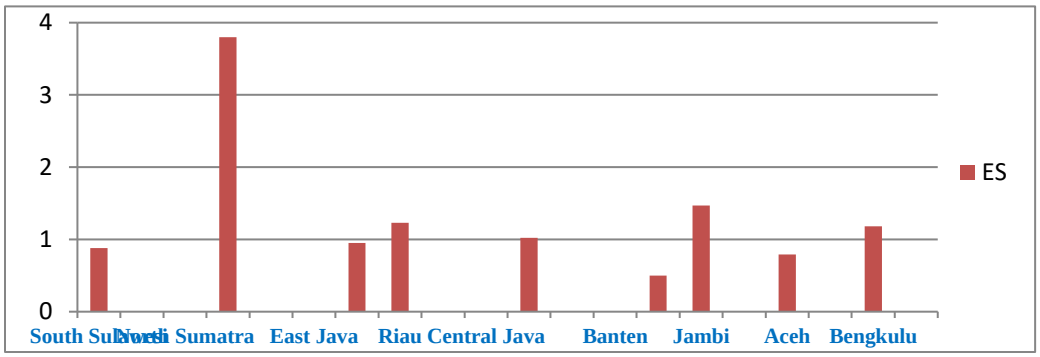

Figure 1. Effect Size Based on Region in Indonesia

The Data of Effect Size Based on The Educational Level

The level of education is one aspect that can be analyzed which consists of high school (SMA) and junior high school (SMP). Data on the effect size and the effectiveness of the STAD method based on educational level can be seen in Table 3 below.

Table 3. Effect Size Based on Educational Level

No	Educational Level	N Article	The Average of Effect Size	SD
1	Junior High School/ SMP	5	0.9	0.95
2	Senior High School/SMA	10	1.9	2.81
Mean			1.4	1.88

From the data summarized in Table 3, the number of articles on the use of the STAD method at Junior High Schools is five articles and the use of the STAD method at Senior High School is ten articles. The table shows that the magnitude of the effect of the STAD method in Junior High School (SMP) and Senior High School (SMA) during the learning process has a large effect with an average effect size of 1.4 (large) which is in the large category and an average standard deviation (SD) of 1.88. The influence of the learning process in Senior High School has the highest influence on English learning outcomes in many aspects with an effect size of 1.91 (large) and a standard deviation (SD) of 2.81. In addition, Junior High School is also included in the large category with an effect size of 0.9 (large) and a standard deviation (SD) of 0.95. Therefore, this finding reveals that the STAD method is the most effective way to teach English at the Junior High School and Senior High School education levels.

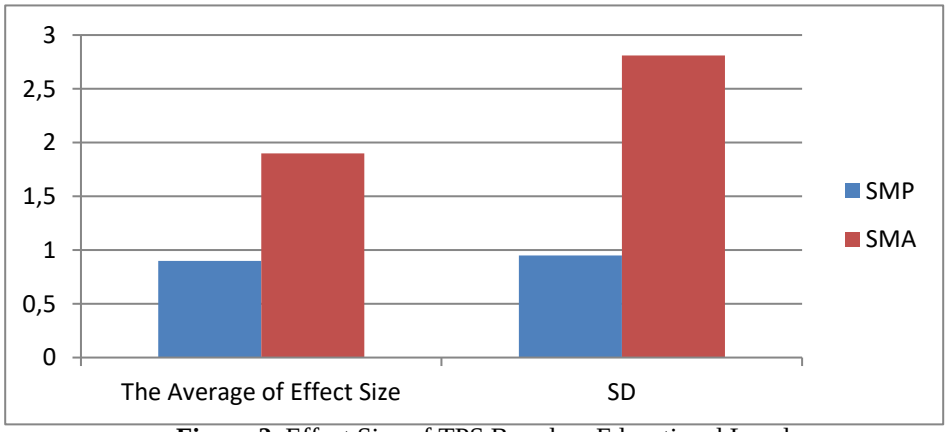

Figure 2. Effect Size of TPS Based on Educational Level

The Data of Effect Size Based on The Student's English Skill

Effect size data based on students' English skills consisting of listening, speaking, reading, and writing can be seen in Table 4.

Table 4. Effect Size Based on English Skill

Dependent Variable	N	The Average of Effect Size	SD
Reading	7	1.05	0.62
Speaking	4	0.81	0.26
Writing	4	3.07	4.5
Listening	-	-	-
Mean		1.64	2.35

Scientific publication articles on the use of the STAD method in learning English show learning outcomes as learning outcomes with the highest number of articles with seven articles discussing the use of the STAD method in students' reading skills. Four articles explain the effectiveness of the STAD method on students' speaking skills and four articles question the impact of students' writing skills using the STAD method in the learning process. However, in listening skills, the researcher did not find an article category that met the criteria for using the STAD method in learning English for the 2011-2021 period. The results of the analysis show that the STAD method is rarely used in learning English to improve students' listening skills. Table 4 shows that the average effect of English learning outcomes on students' writing skills is the highest with an effect size of 3.07 (large). Students' reading skills and speaking skills also show high effect sizes with 1.05 (large) and 0.81 (large). As a result, the STAD method is very useful for improving students' English skills, especially in writing.

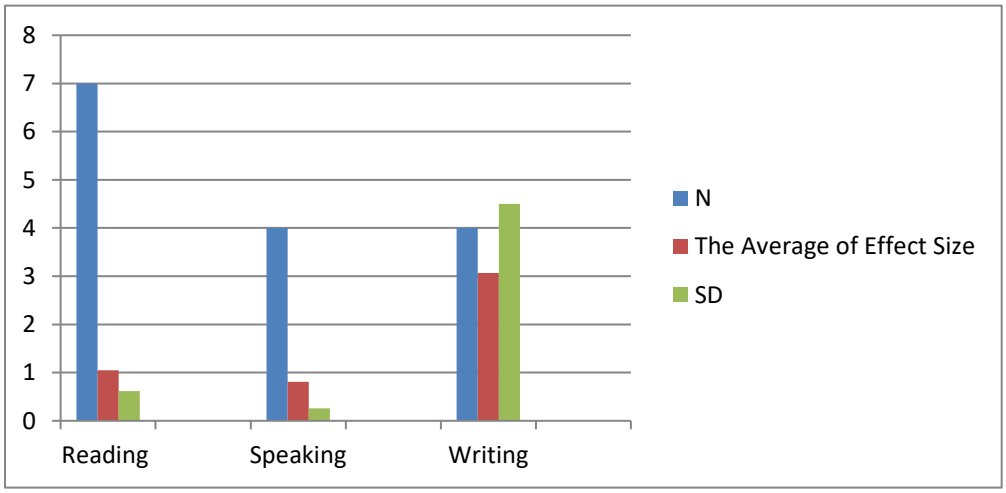

Figure 3. Effect Size Based on English Skill

CONCLUSIONS AND RECOMMENDATIONS

Based on the results above, the STAD method is effective to use in English teaching and learning. It can be implied that the use of the STAD method on English learning as a whole has a positive effect with an effect size of 1.53 which is included in the large category and a standard deviation of 2.33. Furthermore, the effect of the STAD method in terms of area is also included in the large category with an effect size reaching 1.31, of which North Sumatra reached the highest position with an effect size of 3.8 including the large category.

Based on the level of education, the STAD method is effective and suitable for use in Junior High School and Senior High School students with an average effect size of 1.4 including the large category. From the articles that have been researched, SMA mostly uses the STAD method in learning English with the highest effect size of 1.9 (large) and a standard deviation of 2.81. In students' skills, writing has the highest effect size of 3.07 including the large

category and the standard deviation of 4.5. The STAD method itself emphasizes activities and interactions between students to help and motivate each other in mastering the subject matter so that students are able to achieve good achievements.

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