STAD vs Conventional and Learning Modality towards English Fluency Learning Outcome

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Abstract—The aim of this study is to examine (1) the differences fluency in English speaking learning outcome taught by Student Teams Achievement Division (STAD) and the conventional learning strategies, (2) student differences fluency in English speaking learning outcome that have different learning modalities (visual, auditory, kinesthetic) gain different result in English speaking skill fluency, and (3) the interaction effect between learning strategies and learning modalities (visual, auditory, kinesthetic) towards fluency in English speaking learning outcome. This research was conducted in the second semester of academic year 2015-2016 of Electronics Engineering Department, State Polytechnic of Malang, which consists of 44 students of experimental class and 44 students of control class. This study is designed by using quasi-experimental research designs (quasi -experiment) with the model design is Nonequivalent Pretest - Posttest Control Group Design. Based on data analysis, the results of the study (1) there are differences in learning outcome between groups of English speaking students taught by STAD learning strategy with a group of students who are taught by conventional learning strategies (F = 44.021, p = 0.000), (2) there are differences in English speaking learning outcome between the students who have different learning modalities (F = 109.985, p = 0.000), and 3) there are interaction effect between STAD and conventional learning strategy and learning modalities (visual, auditory and kinesthetic) on English speaking learning outcome (F = 3.738, p = 0.044).

Index Terms—STAD, conventional, learning modality, fluency.

I. INTRODUCTION

Cooperative learning strategies, Student Teams Achievement Division (STAD) type can be used as an interesting alternative learning strategy for students which can inculcate aspects of soft skills for students, and effective and efficient in learning Setyasari, (2009),[1] Kendek & Ardhana (2004), Arnidah dkk. (2005), Degeng (1997), Ardhana (2004), (Gredler, 1992), dan (Reigeluth, 1999) [2]-[7] .

The results of the observations, researchers showed that the target subjects of English at State Polytechnic of Malang which has not been achieved due to lack of practicing English, learning modality, and learning strategy. According to DePorter *et al.* (2000) dan DePorter & Hernacki (2007) learning modality is visual, auditory, dan kinesthetic [8], [9].

The target of English subject at State Polytechnic of Malang is that students are able to communicate verbally to be able to compete in the workforce to face the job market. It is shown that speaking skill in a job interview is needed (Sriwahyuni, 2006) and (Brown, 2007) [10], [11]. Fluency is needed in speaking to face job interview. Fillmore in Mudofir

(2006) proposed that fluency includes the abilities to fill time with talk [i.e., to talk without awkward pauses for a relatively long time], talk in coherent, reasoned, and "semantically dense" sentences [Fillmore's emphasis], have appropriate things to say in a wide range of contexts, be creative and imaginative in using the language [12].

From the various analyzes problems in mastering English speaking fluency in English teaching and learning at State Polytechnic of Malang need for the application of Student Teams Achievement Division (STAD) learning strategies, and learning modality with the aim of English verbal (speaking) in facing job interview. It is strenghthened by the research result of Naghavi & Nakhel (2003) and Mudofir (2006) stated that Student Teams Achievement Division (STAD) learning strategy can improve English speaking ability [13], [14].

This research applies STAD and conventional learning strategies in English teaching and learning process at State Polytechnic of Malang, Department of Electro Engineering, Electronics Engineering Study Program to improve the English speaking fluency ability as a comparison.

The research problems are: 1) Is there any difference in the learning results in English speaking fluency among students taught by Student Teams Achievement Division (STAD) learning strategies and conventional learning strategies? 2) Do students who have different learning modalities (visual, auditory, kinesthetic) obtaining results of fluency in English speaking fluency differently? 3) Is there an interaction effect between the learning strategies and learning modalities (visual, auditory, kinesthetic) towards learning outcomes of students to speak English fluently?

The purpose of this study was to test: 1) The difference in learning outcomes of English speaking fluency among students taught by Student Teams Achievement Division (STAD) learning strategies and conventional learning strategies, 2) Differences students who have different learning modality (visual, auditory, kinesthetic) obtaining results of English speaking fluency differently, 3) the effect of the interaction between the learning strategies and learning modalities (visual, auditory, kinesthetic) in learning outcomes of students to speak English fluently.

II. LITERATURE

Cooperative learning is a teaching in small groups of students 2-5 people with ideas to motivate each other among its members to help each other in order to achieve a maximal learning objectives. Suprijono, A. (2010) "Cooperative learning model is a broader concept covering all types of group work including forms led by lecturer or directed by the lecturer [15]."

Besides that, by using cooperative learning strategies, lecturer explores learning modalities of students to improve the student's fluency in speaking. Learning styles or learning modality is the one way interprets around the world through sensing. Every child has the most dominant sensing. The dominant senses that are the main stay of a person to process information. Senses are Visual, Auditory, and Kinesthetic (DePorter dkk, 2000) and (DePorter & Hernacki, 2007) [16], [17].

III. RESEARCH METHOD

A. Research Design

This study was designed by using the design of quasi-experimental research (quasi experiment) by using purposive random sampling with sampling to 1) take the respondent was currently taking English courses, 2) take the respondent was currently taking English courses in the second semester.

Factorial design of research (3×2) (Tuckman, 1999), [18].

TABLE I: RESEARCH DESIGN

Learning Modality	Learning Strategy	
	STAD	CONVENTIONAL
Visual	$Y_{111}, Y_{112},...Y_{11n}$	$Y_{121}, Y_{122},... Y_{12n}$
Auditorial	$Y_{211}, Y_{212},... Y_{21n}$	$Y_{221}, Y_{222},... Y_{22n}$
Kinesthetic	$Y_{311}, Y_{312},... Y_{31n}$	$Y_{321}, Y_{322},... Y_{32n}$

Note:

$Y_{111}, Y_{112},...Y_{11n}.$ = Group of students who have a visual learning modality treatment given to "Student Teams Achievement Division (STAD)" learning strategies

$Y_{121}, Y_{122},... Y_{12n}$ = Group of students who have a visual learning modalities given treatment with conventional learning strategies

$Y_{211}, Y_{212},... Y_{21n}$ = Group of students who have the auditory learning modality treatment given to "Student Teams Achievement Division (STAD)" learning strategies

$Y_{221}, Y_{222},... Y_{22n}$ = Group of students who have the auditory learning modality given treatment with conventional learning strategies

$Y_{311}, Y_{312},... Y_{31n}$ = Group of students who have the auditory learning modality treatment given to "Student Teams Achievement Division (STAD)" learning strategies

$Y_{321}, Y_{322},... Y_{32n}$ = Group of students who have the auditory learning modality given treatment with conventional learning strategies.

B. Research Subject

The subjects were at State Polytechnic of Malang. The study population was conducted in Electronics Engineering Study Program, Electro Engineering Department, Electronics Study Program in 2015/2016 academic year. Determination of student groups to conduct tests of fluency in speaking by 1) students are interviewed by using the job interview; 2) lecturers assessing the performance of students' job interview on fluency, 3) lecturer grouping by the high score to the lowest score (total score of 0-100), 4) lecturers formed groups with four members randomly with a mix between the highest and lowest scores.

C. Research Variable

The variables were 1) The independent variables: learning strategy that consists of Student Teams Achievement Division (STAD) and Conventional, 2) variable moderator: Learning modality (visual, auditory, and kinesthetic) was measured by using an instrument which is developed by DePorter and Hernacki (2007), [19] 3) The dependent variable: Learning outcome of students' fluency in English speaking. Learning outcomes in this study were obtained by using the fluency speaking test is a form of a job interview after the implementation of Student Teams Achievement Division (STAD) learning strategies.

Four classes were chosen as the subject of further research which is administered of learning modalities test. At the next meeting is given a pre-test to determine the student's ability in the beginning. Subjects who have had the ability to learn English conditions are assumed to be similar or homogeneous treatment given "Student Teams Achievement Division (STAD)" learning strategies allocated within 8 sessions (one meeting is two hours by the time allocation of one hour lecture is 45 minutes).

D. Research Procedure

The preparation of stage experiments: 1) conducting a preliminary study, 2) determining the time of the experiment, 3) preparing all the research instruments, 3) holding discussions with the lecturer of English course, 4) setting up a learning tool: a) Measuring the general of "STAD and Conventional" Learning Strategy b) Scenario of "STAD and Conventional" Learning Strategies, 3) STAD Learning Strategies Lesson Plan, 4) Conventional Learning Strategies Lesson Plan,, 5) Subjects, 6) Logbook, 7) Pre-test and Post -test, 8) Evaluation Instrument of English speaking fluency, 9) Learning Modality instrument.

The implementation phase of the experiment: 1) providing a test of students' learning modality, 2) providing pre-test of English speaking fluency in a job interview, 3) Implementing treatment of learning (the experiment) by using Student Teams Achievement Division (STAD) and Conventional learning strategy, 4) evaluating (post- test) for Student Teams Achievement Division (STAD) and Conventional learning strategies.

Stage post-experiment: The final step after giving treatment, both groups were given a final test or post-test of English speaking fluency to speak in a job interview, aimed to determine the effect of treatment in the experimental group and the control group to the learning outcomes of students in English speaking fluency in a job interview, and the interaction influence between independent variables and moderator variables on the results of learning to speak English fluently for a job interview. Procedures for implementing the experimental study illustrated in Fig. 1 as follows:

In Fig. 1 below can be explained that this study consists of eight sessions, both groups of STAD and the conventional study group. Details of the implementation of learning are: Meeting 1 (Determination class into groups of CLS and groups SLS), meeting 2 (data collection practices of students who have learning modalities) meeting 3-6 (Pre-test), meeting 7-14 (performance of an experiment conducted on CLS group SLS), meeting 15 (peer assessment, preparation of post-test), the meeting of 16-19 (Post-test)

E. Data Collection

Steps of data collection: 1) giving learning modalities questionnaires to determine the learning modalities of student as well as pre-tests on all classes of subjects to determine the ability of the initial understanding of the English, 2)

implementing interventions for learning (the experiment), and 3) providing post-test on all students in all classes of research subjects to determine learning outcomes of students' fluency after the experiment.
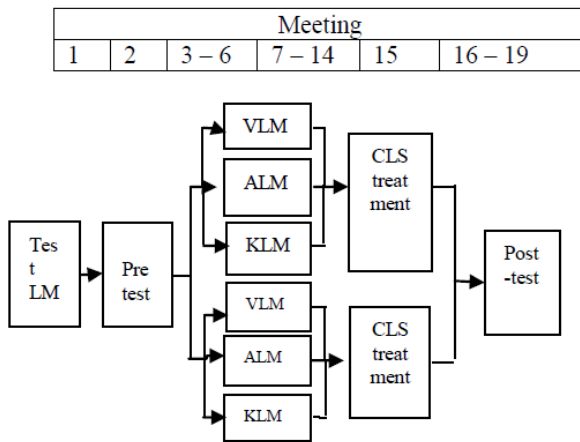

Fig. 1. The implementation phase of the experiment.

Note:
SLS : STAD Learning strategy
CLS : Conventional Learning strategy
LM : Learning Modality
VLM : Visual Learning Modality
ALM : Auditory Learning Modality
KLM : Kinesthetic Learning Modality

F. Data Analysis

In accordance with this type of research variables data analysis techniques used were Analysis of Variance (ANOVA) interaction two paths. This is in line with the opinion of Tuckman (1999) analysis of variance gives researchers to study the effect of several free variables simultaneously but its application has a special feature (two, three or four). The usage of factorial design study in which there are independent variables, moderator variables and the dependent variable. Free variables and moderator variable is called factor. Data analysis techniques in this study conducted with descriptive and inferential statistics. For the research hypothesis testing was conducted in two phases, namely the assumption test phase analysis and hypothesis testing phase. Decisions that used to express the influence of independent variables on the dependent variable based on the error level of 5% or 95% confidence level [20].

IV. RESULT ANALYSIS

TABLE II: RESULTS OF COMPARISON BETWEEN LEARNING OUTCOMES POST-TEST SCORE BY USING CONVENTIONAL METHODS

	Pre-test		Post-test	
	Value	Score	Value	Score
FLUENCY	2.277	22.773	2.527	25.273

Learning outcomes of students' fluency in speaking of Students' State Polytechnic of Malang Semester II, Electronics Engineering Study Program which uses conventional teaching methods prior to tutoring English by using conventional learning strategy gained an average score of 22.773 is good enough. However, after the tutoring of

English teaching with conventional learning strategy gained an average score higher than the previous time, which amounted to 25.273. This may be an indication that the guidance to learn English by using conventional learning strategy can increase the score of learning outcomes of English speaking fluency of students of State Polytechnic of Malang Semester II Electronics Engineering Study Program.

TABLE III: RESULTS OF COMPARISON BETWEEN LEARNING OUTCOMES POST-TEST SCORE BY USING STAD LEARNING STRATEGY

	Pre-test		Post-test	
	Value	Score	Value	Score
Fluency	2.495	24.955	2.991	29.909

Learning outcomes of English speaking fluency of State Polytechnic of students, Semester II, Electronics Engineering Study Program by using STAD prior to tutoring English learning strategy by using STAD learning strategy gained an average score of 24 955 is good enough. However, after the tutoring of English learning strategy by using STAD learning strategy gained an average score higher than the previous time, which amounted to 29 909. This may be an indication that the tutoring of STAD learning strategy in English can increase the score of learning outcomes of English speaking fluency of students' State Polytechnic of Malang, semester II, Electronics Engineering Study Program.

TABLE IV: RESULT OF ANOVA 2 INTERACTION PATHS

Tests of Between-Subjects Effects

Dependent Variable: Score

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	5530.478[a]	5	1106.096	52.081	.000
Intercept	113786.471	1	113786.471	5357.726	.000
SB	934.913	1	934.913	44.021	.000
MB	4671.682	2	2335.841	109.985	.000
SB * MB	158.785	2	79.392	3.738	.026
Error	3610.431	170	21.238		
Total	125634.000	176			
Corrected Total	9140.909	175			

a. R Squared = .605 (Adjusted R Squared = .593)

Hypothesis 1: The test results of comparing multiple (shceffe Test) on conventional learning strategy differ significantly from the average scores of learning outcomes in English speaking fluency (post-test) in the group that was taught with STAD learning strategy ($p = 0.000 < 0.05$). The difference is due to the scores of learning outcomes of English speaking fluency in the group by using conventional learning strategy in the amount of 25.273 has a considerable far margin with an average score of learning outcomes of English speaking fluency in STAD learning strategy with an average score of 29 909.

Hypothesis 2: The results of multiple comparisons test (multiple comparisons) with Scheffe test (Scheffe Test) as one of the multiple comparisons test that has high sensitivity enough to test the difference between treatments in multiple comparisons. With this method, multiple comparisons will be made to the average scores of learning outcomes of students' English speaking fluency (post-test) between each learning modality. The test results comparing multiple (Scheffe Test) between the average scores of learning outcomes of students' English speaking fluency with kinesthetic learning modality is 28.516, auditory learning modality is 20.071, and visual learning modality is 33.862, so that it can be said that the

score English speaking fluency with different learning modality was significant (p = 0.000 <0.05). The results showed that the kinesthetic, auditory and visual learning modalities give different effect on the result of learning to English speaking fluency of student of State Polytechnic of Malang, semester II. Visual Learning modality gives an average result of learning to speak English fluency greatest compared auditory and kinesthetic learning modality, while auditory learning modality gives average yields lower than the visual and kinesthetic.

Hypothesis 3: The results of the comparison the average scores of learning outcomes of students' English speaking based on the interaction between treatment group of conventional and STAD learning strategies, as well as the learning modalities (kinesthetic, auditory and visual) of the results of ANOVA showed a significant difference (significant) (p = 0.026 <0.05) the average scores of learning outcomes of students' English speaking based on the interaction between treatment group learning methods (conventional and STAD), as well as the learning modalities (kinesthetic, auditory and visual). The STAD learning strategy, visual learning modality gives an average result of learning fluency to speak English most large compared to conventional learning strategy by learning modality is visual, auditory and kinesthetic, as well as the STAD learning strategy, learning modalities are auditory and kinesthetic, while conventional learning strategy with auditory learning modality gives average yields lower than conventional learning strategy with auditory and kinesthetic learning modalities, as well as the modalities of STAD learning strategy with learning modalities are visual, auditory, and kinesthetic.

V. DISCUSSION

The results showed that the learning modality is visual, auditory, and kinesthetic give a different effect on the result of learning in English speaking fluency of students' State Polytechnic of Malang Semester II. Visual Learning modality gives an average result of learning in English speaking fluency is the greatest comparison of auditory and kinesthetic learning modality, while auditory learning modality gives average yields lower than the visual and kinesthetic learning modality. Vermunt & Vermetten (2004) says that students who have and reflect on the learning modalities will perform better than no attention to learning modality [21].

VI. CONCLUSION

The conclusions of this research are 1) Learning in English speaking fluency at State Polytechnic of Malang, semester II, Electronics Engineering Study Program with (conventional) and Student Teams Achievement Division (STAD) learning strategies produces a different effect on the student learning outcomes, implementation strategies Student Teams Achievement Division (STAD) learning strategy gives a higher score than conventional learning strategy, 2) The results showed that the learning modality is visual, auditory, and kinesthetic give a different effect on the learning outcomes of students' English speaking fluency at State Polytechnic of Malang, Semester II. Visual learning modality

gives an average result of learning in English speaking fluency is the greatest of auditory and kinesthetic learning modality, while auditory learning modality gives average yields lower than the visual and kinesthetic, 3) The application of conventional and Student Teams Achievement Division (STAD) learning strategy and learning modalities identified as having influence in the process of learning in English speaking fluency. Thus it can be stated that there is an interaction between the learning strategies and learning modalities of student learning to the learning outcomes of English speaking fluency. The interaction between the learning strategies and learning modalities have different effects depending on the results of student learning at State Polytechnic of Malang, Semester II, Electronics Engineering Study Program. Visual learning modality produces an average result of learning to speak English fluency is the highest, while the conventional auditory learning modality produce an average of learning in English speaking fluency is the lowest of other interactions

The findings of this research can give input and consideration in the improvement of learning design, learning organization, learning management and delivery of learning materials for English lecturer. And also it is suggested to hold further research with a wider range of material and learning methods more with the combination with other STAD learning strategy.

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