

THE EFFECT OF THE STUDENT TEAM ACHIEVEMENT DIVISION (STAD) METHOD ON THE ACTIVITY AND LEARNING OUTCOMES OF MENU DESIGN IN VOCATIONAL HIGH SCHOOLS

Rina Febriana^{1*}, Nuraina Farihah¹, Rusilanti¹

¹Universitas Negeri Jakarta, Indonesia

E-mail: rinafebriana@unj.ac.id

Abstract: The purpose of this research is to study the influence of the STAD method toward dynamic behavior and learning outcomes of the student in the Designing Menu subject of Restaurant and F&B Service at Grade XI Culinary Class in SMK Negeri 3 Bogor odd semester year 2019/2020. This research using a purposive sampling technique, so that are two classes of XI Culinary, in which every level has 34 students. Assessing the influence of the STAD method toward dynamic behavior is done by two times of activity observed at the experimental class. The first observation does the teacher center learning, and the second observation does the STAD. Assessing the influence of STAD method toward learning outcome is done by doing an empirical validation and doing pre-test and post-test at the control class and the experimental level. This research calculates the actual behavior with descriptive analysis and for the learning outcome using pre and post-test. Based on the Mann Whitney U test on student learning outcomes shows there is a positive influence on student learning outcomes. There is an influence of the STAD method on the activeness and learning outcomes of students in SMK about Menu Design. With an increase in the average value of activeness of 16.2% and the average cost of student learning outcomes by 17.47, which is higher than the learning outcomes of students who use the lecture method. These results indicate that the application of the STAD method had applied to other theoretical subjects in the Subjects of Food and Beverage Administration.

Pengaruh Metode Student Team Achievement Division (STAD) terhadap Aktivitas dan Hasil Belajar Perancangan Menu di Sekolah Menengah Kejuruan

Abstrak: Tujuan penelitian ini adalah untuk mempelajari pengaruh metode STAD terhadap perilaku dinamis dan hasil belajar siswa pada mata pelajaran Mendesain Menu Restoran dan Layanan F&B di Kelas XI Tata Boga di SMK Negeri 3 Bogor semester ganjil tahun pelajaran 2019/2020. Penelitian ini menggunakan teknik purposive sampling, sehingga terdapat dua kelas XI Tata Boga, yang masing-masing jenjang memiliki 34 siswa. Penilaian pengaruh metode STAD terhadap perilaku dinamis dilakukan dengan dua kali pengamatan aktivitas di kelas eksperimen. Pengamatan pertama melakukan pembelajaran berpusat pada guru, dan pengamatan kedua melakukan STAD. Penilaian pengaruh metode STAD terhadap hasil belajar dilakukan dengan melakukan validasi empiris, dan melakukan pre-test dan post-test di kelas kontrol dan tingkat eksperimen. Penelitian ini menghitung perilaku aktual dengan analisis deskriptif dan untuk hasil belajar menggunakan pre dan post-test. Berdasarkan uji Mann Whitney U terhadap hasil belajar siswa menunjukkan ada pengaruh positif terhadap hasil belajar siswa. Terdapat pengaruh metode STAD terhadap keaktifan dan hasil belajar siswa SMK pada mata kuliah Desain Menu. Hal ini ditunjukkan dengan peningkatan nilai rata-rata keaktifan sebesar 16,2% dan peningkatan rata-rata hasil belajar siswa sebesar 17,47, yang lebih tinggi dibandingkan hasil belajar siswa yang menggunakan metode ceramah. Hasil ini menunjukkan bahwa penerapan metode STAD telah diterapkan pada mata kuliah teori lainnya, yaitu Mata Kuliah Administrasi Makanan dan Minuman.

Keywords: Student activity, learning outcomes, STAD methods

INTRODUCTION

The subject matter of Menu Design is the knowledge that underlies the subsequent subjects in the subject of Food and Food Service. This material is one of the vital elements in the issue of the Procedure, and this subject matter becomes the primary parent of the success of the Practicum Procedure. Based on observations at SMKN 3 Bogor, the learning process used in Class XI still uses teacher-centered learning. Students have not been active in learning activities because while learning, more teachers use the lecture method. So that activity is undertaken by students usually only hear and take notes; students rarely ask questions or express opinions. Inter-group discussions had rarely conducted so that communication between students and other participants and with teachers is still not established during the learning process.

From the description above, it is necessary to try to overcome these problems to improve the learning process, especially about Menu Design on Culinary Class XI students. This effort had made to enhance the activeness and learning outcomes of students throughout the learning process. During learning, students can share knowledge in understanding theoretical lessons in groups and be able to do the test questions independently. So, we need a learning approach that can increase the activeness of participants during learning activities. Learning strategies that can increase activeness are cooperative learning models or collaborative learning that had oriented towards students (students) or Student Oriented with the type of Student Teams-Achievement Divisions (STAD).

Cooperative Learning is a model system where learning, studying and working in small groups of 4-6 people collaboratively to induce more passionate learners in learning. Cooperative learning model has many techniques in its application, namely STAD (Student Teams Achievement Divisions), the technique of Jigsaw, G (Group Investigation), structural engineering, Think-Pair-Share, Numbered Heads Together, Bamboo Dancing, The Power of Two, and the Listening Team. In general, all learning techniques in this emphasis on the cooperation of students in learning, both in presenting an idea or idea or in completing tasks in hopes of learning atmosphere is created that is more active, effective, and the achievement of learning objectives (Slavin, 1995).

Many factors influence to improve student learning outcomes. Not only online-based media but also the methods used. Strang literature study results (2016) about success factors that are important to predict the effects of student analysis show how small the difference between online student learning and academic results (Strang, 2016). This research had focused on the effect of the STAD method on the activeness and learning outcomes of students in vocational schools about menu design. The purpose of this quasi-experimental study is to study the effect of the STAD method on the activeness and learning outcomes of students on the subject matter of the Design of the Course Menu and Food and Beverage Services in Class XI Culinary Vocational School 3 Bogor in odd semester 2019/2020.

According to Riswanil and Widayati (2012), in Tazminar (2015) Active learning of students is the activity of students in teaching and learning processes that involve emotional abilities. This activity puts more emphasis on students' creativity, increases their minimum skills, and reaches students who are creative and able to master concepts (Tazminar, 2015). Learning outcomes are changes that are obtained by individuals after the learning process takes place, can be in the form of increased knowledge, abilities, and interpretation. It can say that learning outcomes are changes that occur in individuals which include differences in cognitive, affective and psychomotor skills because of their interactions with the environment.

The application of the STAD method about Menu Design makes students interdependent in real terms, where the learning group results are right; it means the group members are also active. Positive dependence, in this case, is working together to achieve high targets (learning outcomes), can encourage students to compete actively. Student activity can measure from 4 learning activities, namely visual activities, listening activities, oral activities, and writing activities.

METHOD

This research uses the observation method. Observations had made on 68 students as samples taken based on purposive sampling. The object observed is the activeness of students. The activeness of students in question is the behavior exhibited by students during the learning process. The reaction of students seen by observing as much as two times the observation and instrument filling by the observer. One observer observes four students. The observer will measure the activity in terms of visual events, listening activities, oral activities, and writing activities for students during the learning process.

Data collection techniques used in this study were to make observations (observations) of the activeness of students and provide objective test multiple-choice questions to measure student learning outcomes about Menu Design at SMK Negeri 3 Bogor. Measurement of learning outcomes by using 30 actual items in the form of multiple-choice questions. This instrument has gone through empirical validity testing, and the instrument reliability calculation in this study had carried out by comparing the reliability coefficients with the coefficient criteria using the Kuder Ricardson coefficient (KR 20) and K, with the formula:

$$KR\ 20 = \left(\frac{n}{n-1}\right) \left(\frac{St^2 - \sum pq}{St^2}\right)$$

The data analysis technique used in this study was quasi-experimental. This technique had carried out to measure the effect of the STAD method on student activity in the learning process. The data obtained were analyzed using descriptive analysis in the form of a percentage presentation of the cumulative value obtained from observing student activeness. Data analysis technique to measure the effect of the STAD method on student learning outcomes is the U Mann Whitney test (Arikunto, 2017).

RESULTS AND DISCUSSION

Students had divided into seven groups, with the number of members of each group is 4-5 people. Students had given an identity card to use to facilitate observers in the observation process. Student activeness data in the experimental class was obtained from observations descriptively before the application and when the implementation of the STAD method was applied. This observation had also carried out in the control class. Then a test was conducted to test the effect of the STAD method on student activity on the two sample groups.

The amount obtained from the total value multiplied by the number of students had then made into the form of percent with the maximum number of scores of all students. The level of student activity is divided into 5 categories based on the percentage (Sugiono, 2009).

Table 1. Student Activity Categories

Category	(%) Score
Very active	81 - 100%
Active	61 - 80%
Enough active	41- 60%
Inactive	21 – 40%
Very inactive	< 20%

Based on observations before the application of STAD, there were 15 activities in the quite active category consisting of oral and writing activities. Fifteen activities are in the dynamic group, namely visual and listening. The average activeness of students at this stage is 59.7%, with the category of quite active. Observing the activeness of students when implementing STAD, there were 26 activities

in the very active group, which included listening, oral activities. Four events are in the very active category of visual and hearing. The average activeness of students at this stage is 75.9%, so that it had categorized as active.

Based on two observations on the activeness of students, it had seen that in each activity, there is increasing inactivity. With the highest increase value in the event of expressing opinions by 25% and the lowest increase in value in the exercise of listening to teacher lectures by 5.1%. The average increase in the activeness of students overall was 16.1%.

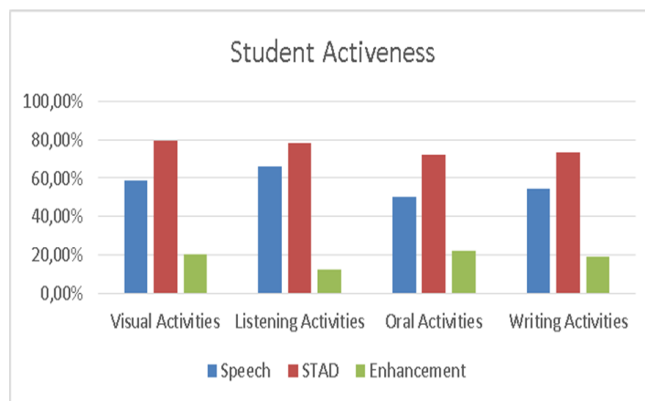


Figure 1. Bar Diagram of Students' Active Activities

Based on the assessment of experimental class learning outcomes obtained the lowest value of 33, the highest number of 100 with an average of 75.75, and a standard deviation of 21.04. The smallest difference between the pre-test and post-test scores of the experimental class was 13; the highest distinction in value was 67. With an average of 37.97, the standard deviation was 12.25, and the coefficient of variation was 32.26. The frequency distribution of learning outcomes of the experimental class has a range of scores (r) is 54, many types (K) are 6.05 rounded to 6 with a class length of 8.91 rounded to 9.

Table 2. Frequency Distribution of Pre-Test and Post-Test Difference Class Experiments

Score Difference	Frequency
13 < x ≤ 22	3
22 < x ≤ 31	4
31 < x ≤ 40	19
40 < x ≤ 49	4
49 < x ≤ 58	1
58 < x ≤ 67	3
Amount	34

Based on the table, it had seen that the difference in pre-test and post-test scores were highest in the experimental class, with 19 students with a range of 31-40. Based on the assessment of control class, learning outcomes obtained the lowest value of 26, the highest amount of 86, with an average of 58.28 and a standard deviation of 14.63. The smallest difference in the cost of the pre-test and post-test control class is 0, the highest distinction in value of 47, with an average of 21.55, the standard deviation of 14.11, and coefficient of variation of 65.45. The frequency distribution of learning outcomes data of the control class has a range of scores (r) is 47 many classes (K) are 6.05 rounded to 6 with a class length of 7.76 rounded to 8.

Table 3. Frequency Distribution of Pre-Test and Post-Test Control Class Differences

Score Difference	Frequency
$0 < x \leq 8$	8
$8 < x \leq 16$	7
$16 < x \leq 24$	4
$24 < x \leq 32$	5
$32 < x \leq 40$	8
$40 < x \leq 48$	2
Amount	34

Based on the table, it had seen that the difference in pre-test and post-test scores is highest in the control class, with the number of students as many as eight people with a range of different values from 0-8 and 32-40.

Analysis of the test had based on the results of the data normality test. If the normality test results had obtained that the data had typically distributed, then the data will then be analyzed using the parametric T-test of two independent groups. However, if the normality test results had obtained that the data had not normally distributed, then the data will then be analyzed using the Mann Whitney non-parametric test.

Calculation of normality test using Liliefors test with a significance level (α) of 0.05 with experimental class samples that had given the treatment of the application of the STAD method and control classes offered conventional lecture methods as many as 34 samples each had L Table of 0.1519. In the preparatory course with the application of the STAD method, it had obtained that L count was 0.9792 greater than the Stable of 0.1519. In the control class, with the use of conventional lecture methods obtained by L count was 0.7816 greater than L Table for 0.1519. Based on the normality test counters, it had concluded that the two data had not normally distributed.

Hypothesis testing is done by the nonparametric U Mann Whitney test to determine whether there is an influence of the STAD method on the learning outcomes of the experimental class using the STAD method and the control class applying the conventional lecture method. The following is a calculation using the U Mann Whitney U nonparametric test as in (1) and (2):

$$U_1 = 34.34 + \frac{34(34+1)}{2} - 1519,5 = -347 \quad (1)$$

$$U_2 = 34.34 + \frac{34(34+1)}{2} - 826,5 = 346 \quad (2)$$

Because the number of samples is more than 20, the hypothesis test uses a large scale Mann Whitney U test, with the formula as in (3):

$$Z = \left| \frac{346 - \frac{34.34}{2}}{\sqrt{\frac{34.34(34+34+1)}{12}}} \right| = -2,84 \quad (3)$$

Based on the calculation results obtained, an average increase in student learning outcomes by applying the STAD method of 17.47 with the U Mann Whitney nonparametric test. From the results obtained, Z count absolute value of 2.84 and Z table at (α) 0.05 of 0.57. Based on the results of the calculation of the hypothesis test, it had concluded that the reject H0 means accept H1, and the experimental class data is more significant, which applies the STAD method compared to the control

class data, which uses the conventional lecture method. So, it can be concluded that there is an effect of the STAD method on the learning outcomes of students in SMK about Menu Design.

The results of the descriptive analysis of student activity are in line with the results of research conducted by Marheni et al. This research shows that there is an increase in the activeness of student learning outcomes by applying STAD (Marheni et al., 2013). An increase in the average percentage in the first cycle of 76%, which is in the criteria of being quite active, has increased in the second cycle to 84% classified in the dynamic category.

The advantage of the STAD method is its syntax can encourage students to work together with groups to achieve goals (learning outcomes) so that students play an active role as peer tutors who help and motivation to succeed together. The occurrence of interaction between students can also improve the ability of students to argue and build thought concepts.

Tiantong's (2013) findings on the Student Achievement Division (STAD) Technique through Moodle to improve Learning Achievement showed positive results in the application of STAD. This research proves that collaborative learning uses sharing techniques that can improve learning achievement successfully. Besides that, the students enjoyed working together through Moodle with student achievement sharing techniques (Tiantong et al., 2013).

Tarim's research results show that STAD and TAI cooperative learning methods are more effective in terms of academic achievement than traditional methods even if the pairwise comparison indicates that the TAI method has a more significant effect than the STAD method (Tarim et al., 2008). Ronfeldt et al. (2015) understand how teacher collaboration affects student achievement. Teachers and schools involved in quality collaboration have better results in mathematics and reading. Also, the quality of teachers increases at a higher level when working in schools with better quality collaboration (Ronfeldt et al., 2015).

The results of testing the hypotheses of students' learning outcomes are in line with research conducted by Suryani in 2018. The results showed that there was an increase in the second cycle, with a percentage increase of 19%. The high average value obtained in the second cycle is due to the unique ability of teachers to use the STAD type cooperative learning model (Suryani, 2018).

Behin-Aein & Salehizadeh's (2014) study included positive differences in student attitudes with the application of cooperative learning compared to inquiry methods. The implementation of cooperative learning requires the participation and cooperation of study groups (Salehizadeh et al., 2014). Collaborative learning can improve student learning towards better education, helping with attitude assistance in some social learning (Rahmawati, 2013).

The advantage of Cooperative Learning is a learner, positive interdependence. That teacher had created an atmosphere that encourages learners to feel a need each other. The occurrence of in- person interaction because this can force the learners at each other personally dialogue, and so that they will make the learners will be more flexible, easier to learn with peers. The existence of a personal responsibility, namely the student's responsibility for the subject matter within the members to the group so that the learners are motivated to help his friend (Sertel, 2015).

CONCLUSION

Models cooperative learning can improve the skills of cooperative in solving problems (process group). The main objective of accelerating understanding is all STAD learners. So, it can be said that these methods of influence on student learning outcomes (Burnett et al., 2012). Based on the descriptive analysis of student activity evaluation and analysis of the Mann Whitney U test on student learning outcomes show there is a positive influence on student learning outcomes. The results prove that H0 had rejected, and H1 is accepted, which means that there is an influence of the STAD method on the activeness and learning outcomes of students in SMK about Menu Design. With an increase in

the average value of activeness of 16.2% and the average cost of student learning outcomes by 17.47, which is higher than the learning outcomes of students who use the lecture method. These results indicate that the application of the STAD method had applied to other theoretical subjects in the Subjects of Food and Beverage Administration.

The results of previous studies concluded that there was a lot of positive impact on cooperative learning. Cooperative Learning (CL) can enhance teamwork and social abilities of students (Cohen, 1994; Yang et al., 2010). CL can also improve collaboration (Kern et al., 2007; Smith, 1995). Group activities in CL can increase student confidence and prove that success had obtained through positive dependence on others (Erdem, 2009).

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