Regionalization and Harmonization in TVET

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Villa Isola.

Villa Isola is one of Bandung's colonial heritage, which was designed by C. Wolff Schoemaker (1882–1949), commissioned by D.W. Berretty (1890–1934) in 1932. It is located in Universitas Pendidikan Indonesia Bumi Siliwangi campus and has served as its landmark. The building, designed using Nieuwe Bouwen style, was originally Berretty's residence but handed over to the university as the university was established as Teachers Education College in 1954.

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The effectiveness of Student Team Achievement Division (STAD) on academic achievement and social behavior

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ABSTRACT: An effective learning process is capable of improving the results of study and effecting a positive change in student behavior. This research aims to establish the effectiveness of Student Team Achievement Division (STAD) on academic achievement and social behavior. This research uses the quasi-experimental method by performing the treatment on a student group. The research design used was a pre-test/post-test control group design. Data collection was done using post-test and questionnaire. Data analysis for student learning outcomes used a Mann-Whitney test, while an analysis of the cooperative behavior of students used descriptive analysis. The results of this research indicate that: (1) learning with STAD can improve student behavior including motivation, activity, cooperation, responsibility, requests for help, mutual respect, and confidence; (2) student learning outcomes in cognitive improvement are also quite significant. The implications of the application of this model are the increased cognitive and effective aspects of students.

1 INTRODUCTION

Sekolah Menengah Kebangsaan (SMK) is one of the types of vocational education in Indonesia and is aimed at preparing the participants to enter employment. This study looked at competence as a result of learning in the perspective of escalation, which covers three aspects, namely, knowledge, skills and attitude to work. In addition to demands for basic skills, as well as skills in the areas of a specialty, the world of work requires the skills in terms of the labor candidate's temperament. Employability skills are the abilities to manage behavior and attitudes in the workplace to match those expected by industry (McLeish, 2002).

The Secretary's Commission on Achieving Necessary Skills (SCANS) conducted a study to identify and outline the skills required in the workplace (Kane, 1990). Based on the review and deep verification, SCANS defined two groups of skills: foundation skills and workplace competencies. Foundation skills are basic and thinking skills, and personal qualities. Workplace competencies concern resources, interpersonal interactions, information, systems, and technology.

In this study, the component's behavior refers to research (Andreas in Samani, 2007). It can be categorized in employability skills. These skills can be obtained from the learning process in schools, one of them through the study of Cooperative Learning (CL).

The main contributions of this paper are: (1) implementation of cooperative learning with the Student Team Achievement Division (STAD) technique, (2) improvement of the social behavior of students, and (3) enhancement of student learning outcomes.

The initial assumption in this study (H1) is that there will be an improvement in student learning outcomes with the application of the STAD cooperative learning technique.

2 LITERATURE REVIEW

2.1 The skills gap

The term 'skills gap' has been identified by previous researchers, and can be defined as 'the disparity between the quality and adequacy of skills possessed by IS graduates and required by the IS/IT industry' (Scott et al., 2002). There have been a number of explanations and causes for this skills gap: one is that rapid changes in technology make it difficult for individuals to obtain the requisite level of experience in these skills before they become outdated, and the other is a mismatch between the academic perceptions of needs and requirements (curriculums) and the actual skill requirements of industry (Scott et al., 2002; Milton, 2000).

Success in the learning process is often measured by the achievement of competence of students in terms of the cognitive aspect Jordan et al.
(2008) describe competency as the ability to perform a set of tasks that requires the integration of knowledge, skills, and attitudes.

The research results of Burnett and Jayaram (2012) found that employers are looking for three key types of skills: cognitive, non-cognitive, and technical. Cognitive skills include critical thinking and basic functions like literacy and numeracy. Non-cognitive skills are variously called 'life skills' or 'behavioral skills' and include interpersonal communication skills, while technical skills are usually geared toward a specific occupation. In addition to this skills gap, the problem is compounded by the very limited interaction between teachers and industry (Burnett & Jayaram, 2012). A more detailed explanation of the results from such research can be seen in Figure 1.

UNESCO (2012) identified issues related to effectiveness in the field of education. The problem here is the gap created by a teacher who is only concerned with the structure and content of learning without providing an effective learning process.

2.2 Student Team Achievement Division (STAD)

Cooperative learning is a model system where learning, studying, and working is conducted collaboratively in small groups of 4-6 people to induce more passion for learning. In general, all learning techniques in this emphasize the cooperation of students in learning, both in presenting an idea, or in completing tasks in the hope that a learning atmosphere is created that is more active and effective, bringing about the achievement of learning objectives (Slavin, 1995). The cooperative learning model has many techniques in its application, and one is STAD.

Salehizadeh and Behin-Aein (2014) concluded that there is a positive difference in the results of study and the attitude of students to study as a result of cooperative learning by the inquiry method.

The implementation of this learning requires the participation and cooperation of group learning. Cooperative learning can improve the attitude of students toward learning better too, improving some social behaviors (Rahmawati, 2013).

2.3 Social behavior

Krech and Crutchfield stated that, according to Ballachey (in Ibrahim, 2001), a person's state of behavior appears in the pattern of response between humans, which is manifested in segmented interpersonal relationships. Social behavior is also synonymous with the person's reactions toward others. Behaviors are associated with feelings, actions, attitudes, beliefs, memories, and respect for other people. A person's social behavior can also be defined as their attitude in response to others' attitude and each person's attitude is different to one another.

Baron and Byrne (in Ibrahim, 2001) stated that there are four major categories that make up an individual's social behavior: namely: (1) the behavior and characteristics of others; (2) cognitive processes; (3) environmental factors; (4) culture.

Previous studies at international level show that CL can enhance Tim's work and the social abilities of students (Cohen, 1994; Yang & Zheng, 2010). CL can also improve cooperation within a team (Kern et al., 2007; Smith, 1995). Group activities improve students' belief that success can be gained through positive dependence on others (Erdem, 2009; Smith, 1995).

### Table 1. Indicators to be assessed in the teaching-learning.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Knowledge</th>
<th>Comprehension</th>
<th>Application</th>
<th>Analysis</th>
<th>Synthesis</th>
<th>Evaluation</th>
<th>No. assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers assigned</td>
<td>1, 4, 5, 11</td>
<td>2, 3, 6, 12, 15</td>
<td>9, 14, 30</td>
<td>8, 10, 13</td>
<td>–</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17, 21, 23, 24</td>
<td>16, 18, 19, 22</td>
<td>20, 25, 26</td>
<td>27, 28</td>
<td>29</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
3 METHOD

This research used the quasi-experimental method. In this study, an intervention is applied to students in the form of a model of cooperative learning using the STAD technique. The class taught using STAD techniques is called experimental class, whereas the other class is called control class in which teaching and learning processes take place using conventional method. Both classes are then evaluated to see whether there is difference between class promoting the treatment and the class that does not. Both classes, namely, the experimental class and the control class, were evaluated so as to see the differences induced after the application of the STAD form of CL.

The social behavior of students is measured using the following indicators: motivation, activity, collaboration, responsibility, requests for help, mutual respect, and confidence.

In the experimental class using CL-type STAD methods (Y), the students are given a pre-test rating (Y₁) at the outset, and after the learning intervention ends the students are awarded a post-test score (Y₂). The data results of the study are indicated by the difference (delta) in values obtained from the scores of the pre-test (Y₁) and post-test (Y₂). Table 2. Research design.

<table>
<thead>
<tr>
<th>Class</th>
<th>Aspects of knowledge</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Difference in value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional methods (X)</td>
<td>Y₁, Y₂</td>
<td></td>
<td></td>
<td>Y₂ - Y₁</td>
</tr>
<tr>
<td>Methods of CL-type STAD (Y)</td>
<td>Y₁, Y₂</td>
<td></td>
<td></td>
<td>Y₂ - Y₁</td>
</tr>
</tbody>
</table>

Differences of the post-test (Y₂). The same test regime is applied to the control class that is taught with conventional methods. This design can be described as summarized in Table 2 and the procedures in this research are as shown in Figure 2.

The measurement of social behavior is performed by an instrument in the form of a questionnaire about attitude acceptance. This questionnaire uses the Likert scale (Ridwan, 2007) as an alternative to the answers of each respondent’s statements and the students must select the single answer that best fits. Every item has its value scored between 1 and 5 in accordance with the level of the possible answers, which were Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree.

4 RESULTS AND DISCUSSION

4.1 Average score of pre-test and post-test

The average score results of the pre- and post-tests of both control and experimental groups are listed in Table 3.

Based on the results of the descriptive analysis of public behavior, 75.2% of students agreed that the application of CL can improve community behavior. 9.8% of students stated that this learning model cannot improve social behavior, while 15% were unsure if this model improved social behavior.

A Mann-Whitney test was applied to the data as follows:

\[ U_z = n_A n_B + \frac{n_A (n_A + 1)}{2} - R_a \]

where \(U_z\) = test statistics; \(R_a\) = number of samples with \(N_A\); and \(n_A\) = the number of members of the A sample.

![Figure 2. Flowchart applicability CL-type STAD.](image-url)
The average score of pre- and post-tests for experimental and control classes:

<table>
<thead>
<tr>
<th>Class</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Delta (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional methods (X)</td>
<td>70.43</td>
<td>74.78</td>
<td>4.35</td>
</tr>
<tr>
<td>Methods of CL-type</td>
<td>71.20</td>
<td>79.00</td>
<td>7.80</td>
</tr>
</tbody>
</table>

$U_a = n_A n_B + \frac{n_B(nB + 1)}{2} - R_a,$  

where $U_a = U_a$ test statistic, $R_a = \text{number of samples with } N_a$, and $n_a = \text{number of members of the B sample.}$

The Mann-Whitney test was calculated by using the formula: "U" for large samples because the sample size is greater than 20. $U_a$ is $U$ for group A (experiments); from Equation (1) we obtain the value of $U_a = 391.5$. $U_a$ was $U$ for the control group (B). $U$ used in this analysis is the smallest, that is, $U = 183.5$, so:

\[
\begin{align*}
Z &= \frac{U - n_A n_B}{\sqrt{n_A n_B (n_A + n_B + 1)}} \\
&= \frac{183.5 \text{ } 287.5}{\sqrt{575 \text{ } 49}} \\
&= \frac{-104}{48.45} = -2.14
\end{align*}
\]

It is shown based on the statistical calculation that the value of $z$ is 2.14.

Since the $z$ is higher than the $z$ table; therefore, according to the Mann-Whitney criterion, the H1 is accepted, $z = 2.14 > z$-table = $z$ ($\alpha = 0.05 = 5\%$) = 1.96. This means that the H1 hypothesis is accepted. In other words, the application of STAD-type cooperative learning can improve the results of learners, who do significantly better than those taught with conventional methods.

According to Table 3, the delta in the scores of the STAD group was 7.80. The mean delta of the scores from the control group is 4.35. Based on this explanation, the mean scores of the learners using a STAD method were higher than the average score of the students who were using conventional methods.

Table 3 also shows that the pre-test scores of the experimental and control classes were almost the same (71.20 vs. 70.43). This suggests that learners in both classes had the same initial ability. If one class received an intervention and a differential change in ability was observed, then it can be concluded that this happened as a result of the intervention.

The post-test score for the experimental class is 79.00 with a delta of 7.80. The mean post-test score for the control class is 74.78 with a delta from the average pre-test scores of 4.35. Based on this, the average scores of the learners using a STAD-type method of CL were higher compared to the mean score of the students who were taught with conventional methods. Statistical tests need to be done to find out if the sample data can be used to generalize the data population.

In other words, the application of the STAD method of CL can improve the learning outcomes of students significantly.

The results from this research were reinforced by the liveliness of the learners. This is because the idea of STAD is that learners work together to learn about and take responsibility for their own lessons and also learn from others. In addition, it can increase the confidence of learners (Apriayani et al., 2000).

The advantage of CL is a positive interdependence among learners. The teacher created an atmosphere that encouraged learners to feel a need for each other. The occurrence of interpersonal interaction forces the learners to engage in personal dialog, and this makes the learners more flexible, and makes it easier for them to learn with peers. Such a conducive atmosphere created by the teacher leads to the existence of personal responsibility where students are responsible for themselves and at the same time help other fellow students. (Bennett, 1995).

Models like cooperative learning can improve skills in solving problems (process group). The main objective of all STAD learners is accelerating understanding (Slavin, 1995). So it can be said that these methods influence student learning outcomes.

This research shows that the application of CL-type STAD helps students who are individually unable to understand the lessons. This learning encourages students to work together and each student is responsible for what is studied by other students.

5 CONCLUSIONS

The results showed that CL-type STAD can improve student learning outcomes and are significantly better than conventional methods. The experimental classes had an average increase of 7.80 in their scores while the class to which conventional method were applied had a lower average increase of 4.35.

The conventional learning model is still centered on the teacher so that students lack experience in
learning for themselves. Students become passive and unenthusiastic in learning because everything has already been provided by the teacher. The class that experimented with the application of the STAD-type model of cooperative learning was more centered on students. Learning through STAD is helping students to become more active, work in teams, and take more responsibility for their education.

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