

The Influence of Cooperative Learning Model and Self Concept on Nursing Students' Achievement in A Public Speaking Course

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Abstract: The aim of the study is to identify the influence of cooperative learning and self-concept in a public speaking course for nursing students after their prior knowledge have been controlled. The study is an experiment and the data was gathered by using a multistage random sampling technique and analyzed using a 2x2 two-way analysis covariant (ANACOVA) based on the level of the design. After controlling for the participants' prior knowledge, the results of the study show that: 1) participants instructed with a cooperative learning model achieved better results than those taught with a conventional learning model after controlling for their prior knowledge; 2) there is evidence of an influence from the cooperative learning model on self-concept in the Public Speaking course with regards to learning results after prior knowledge has been controlled; 3) The Public Speaking course learning results of students in the cooperative learning model group are higher than those using the conventional learning model for students who have high self-concept; and 4) the Public Speaking course learning results of students in the cooperative learning model group are higher than those using the conventional learning model for students who have low self-concept. Overall, the results of the study show that the cooperative learning model positively influenced the learning process.

Keywords: self-concept, prior knowledge, public speaking course, cooperative learning model.

Introduction

Woodworth and Marquis [15] consider that learning outcomes are actual abilities that can be measured directly by tests. Gagne, et. al. [4] argues that learning outcomes are capabilities that can be classified into: (1) verbal information, namely the ability to restate information obtained from the learning process, (2) intellectual skills, the ability from a learning process, (3) motor skills, which is mastery of various types of motion skills, (4) attitudes, namely capabilities that influence choices about actions to be taken, for example developing attitudes towards learning or achievement, and (5) cognitive strategies, namely the ability to regulate how students learn to manage their learning. The learning outcomes for the public speaking course for nurses is not only concerned with cognitive aspects but is also concerned with the application or performance of public speaking. Gronlund[5] explains that evaluation is a systematic process for determining or making decisions as to the extent to which the goals have been achieved. Worthen and Sanders [19] suggest that assessment provides important information to judge the worth of a program, product, procedure, or objective, while Cronbach [3] defines evaluation as a process of gathering information as a basis for making decisions about evaluated programs. Stufflebeam and Shinkfield[14] formulate that assessment is the process of delineating, obtaining and providing description and judgments containing information about the value of goals and design implementation in order to guide decision making, serve needs for accountability, and promote understanding of the phenomena under assessment.

To obtain maximum results from the Public Speaking course, participants must examine their self-concepts and attitudes towards public speaking and why the Public Speaking course has not achieved good results. For this reason, students were classified by high self-concept and low self-concept based on their prior knowledge about Public Speaking courses in nursing. A teaching and learning process is essential for developing learning experiences that challenge students' creativity. Lecturers play an important role in ensuring student success. Lecturers must intentionally create conditions and environments that provide optimal learning opportunities for students to achieve certain goals. According to Johnson and Johnson [8], cooperation means working together to accomplish goals. Within cooperative activities, individuals seek outcomes that are beneficial to all other group members. Cooperative learning is the instructional use of small groups that allow students to work together to maximize their own and each other's outcomes to learn more effectively. In this study, the Johnson and Johnson concept was adopted. Thus, a cooperative learning strategy, jigsaw, was used as a way of teaching students in groups known as the original group. Each group was given different pieces of an assignment based on the number of group members. Group members who received the same piece of work met as an expert group to discuss their task. After the experts completed their task, they returned to their original group to share their task, in turn, until each group member mastered the tasks of each expert group. To find out the level of expertise of each group member, they were tested and each group was provided with feedback.

Brooks [2] defines self-concept as the physical, social, and psychological perceptions of ourselves that are derived from experience and our interaction with others. According to Berk [1], self-concept is the set of attributes, abilities, attitudes, and individual values that defines who we are. Meanwhile, according to Miller

[10], self-concept is the perception of oneself in terms of personal worth, life and school success, and perceived social status. According to Woolfolk [17], the term self-concept is a combination of thoughts, feelings, and attitudes that people have towards themselves. Furthermore, Shavelson & Roger [11], argues that self-concept among students has seven important dimensions, namely: (a) learning; (b) how to dress; (c) communication; (d) behavior; (e) service; (f) leadership; and (g) appearance. Hurlock [7] argues that self-concept is a picture someone has of themselves which is a combination of beliefs about the physical, psychological, social, emotional, and achievement characteristics. Furthermore, one's belief in oneself determines the actions one takes and one's views of the world and others. According to Woofolk and Nicolich [16], students who have high self-esteem are more likely to succeed in school. In addition, they also have a positive attitude towards school, positive behavior in the classroom, and are liked by other students. A person with a high self-concept means that they have a healthy self-concept, high self-esteem, competence, feel adequate, are self-confident, and feel positive about their appearance. Thus, they are able to: modify old values with future experiences, overcome problems, accept themselves as equal to others and be sensitive to the needs of others; characteristics that consistently exclude the impact of bad experiences.

Problem of Research

In response to complaints from a Hospital, Community Health Center and other workplaces regarding poor communication skills in the nursing sector, the university introduced a public speaking course. Communication is considered an essential attribute for those in the care sector in order to be able to show respect for the patient and their needs. When communicating, people need to use spoken language familiar to the patient. Since 2008, conventional learning models have been used to instruct in the university, however, evaluation results show that these models do not achieve the required results. In the 2010-2011 school year, a cooperative learning model was introduced which is expected to have better learning outcomes for the Public Speaking course. Therefore, this study examines the extent to which the collaborative learning model is successful compared to conventional learning models.

Research Focus

This study focused on the use of cooperative learning strategies where learning involves students working collaboratively to achieve common goals. According to Johnson and Johnson [8], not all group work can be considered as cooperative learning. To achieve maximum results, Woofolk [18] argues that five elements must be applied: (a) interdependence, (b) individual accountability, (c) face to face interaction (d) communication between members, (e) group process evaluation. Furthermore, according to Slavin [12], there are two reasons for using a cooperative model in learning. First, while cooperative learning can improve student learning achievement it can also improve social relations and foster an attitude of accepting the self and others while increasing self-esteem. Second, cooperative learning can provide opportunities for thinking, solving problems, and integrating knowledge and skills. Slavin [12] found that students with high, moderate and low achievement have better results with cooperative learning than controls. However, a separate analysis of students in the top 10% and 5% in pre-class tests, found a very large positive effect of cooperative learning on these students.

The following research questions were explored in the research project:

1. Did students using the cooperative learning model versus the conventional learning model achieve different learning outcomes in the public speaking course after prior knowledge has been controlled?
2. Is there any link of the learning model and self-concept towards the learning outcomes of the public speaking course after controlling their prior knowledge?
3. Did the public speaking course students with high self-concept, using the cooperative model, achieve differences in learning outcomes from the group using a conventional learning model, after controlling their prior knowledge?
4. Did the public speaking course students with low self-concept, using the cooperative model, achieve differences in learning outcomes from the group using a conventional learning model, after controlling their prior knowledge?

Methodology of Research

This research was conducted to determine the effect of cooperative learning models and self-concept on the learning outcomes of a public speaking course after controlling prior knowledge. The research was conducted at the STIKes Kesetiakwanan Sosial (Nursing College) in Jakarta. An experimental method was used in this research with factorial 2x2 design. The response variable is the learning outcome of the public speaking

course at the university. While treatment factors are: (1) learning model, and (2) self-concept, where each of them has two levels of treatment.

Before conducting the experiment, prior knowledge data was collected from all students in the research. Therefore, the linear effect of students' prior knowledge on the learning outcomes of the Public Speaking course can be expressed as a covariate in applying linear methods. The participants in this study were all students in STIKes Kesetiakawan Sosial. Two classes were chosen that had similar characteristics, where one class was determined as a group of students with high self-concept and the other with the low self-concept. The details can be seen as follows.

Table 1: Sample Grouping

Self-concept(B)	Learning Model		Total (Students)
	Cooperative(A1)	Conventional(A2)	
High Self-concept(B1)	15	15	30
Low Self-concept(B2)	15	15	30

The research sample was determined using a multistage cluster random sampling technique. Samples were taken from fourth-semester students who had relatively the same prior knowledge obtained during 1 year through the same learning process and under the same learning environment conditions. The design used is a 2X2 factorial design with univariate cell mean methods with analysis-covariates (ANACOVA).

Table 2: Validity and Reliability

	Self-concept	Prior Knowledge	Learning Outcomes
Total Amount	37	30	30
Valid Amount	36	27	25
Validity Test	Content Validity	Biserial Point	Biserial Point
Reliability Score	KR-20 (0.95)	KR-20 (0.83)	KR-20 (0.85)

To determine the validity of the learning outcomes in this study 60 participants were tested. The validity of the learning outcomes test was calculated using the Product Moment correlation formula from Pearson. The reliability of the test was calculated using the Kuder Richardson-20 (KR-20) method based on the proportion of students that answered the test correctly, and by the standard test deviation total score. The KR-20 method is based on grain covariance. In calculating the reliability of the test, this study sought the consistency of the interval test scores, obtained from individual samples of one test, to measure the results of the learning test in the public speaking course using the KR-20 formula.

Results of Research

The data presented in this section includes a data description and five hypotheses of the study.

Students' Learning Outcomes of a Public Speaking Course using a Jigsaw (A1) cooperative learning strategy.

The number of respondents was 30, the minimum score was 15 and the maximum score was 26 so the data range is $26-15 = 11$, then the data is presented in the form of frequency distribution tables with interval 6 classes, interval width 2, average 20 with standard deviation 3.03, modus 19.00 and median 19.50. The frequency score of the public speaking course with a Jigsaw learning strategy is presented in the graph below:

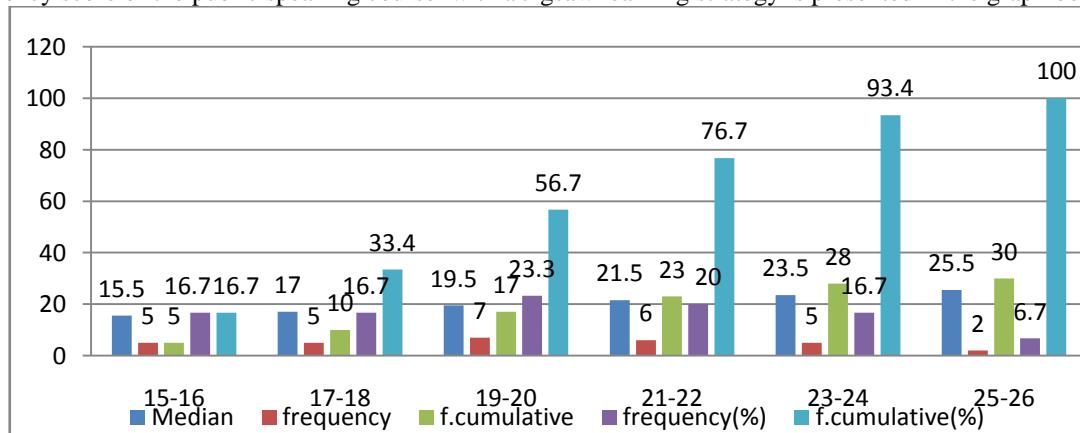


Figure 1: Frequency Score of Public Speaking Course Using Cooperative Learning Model (A1)

Distribution of students' learning outcomes scores in the public speaking course on the graph illustrates that 23.3% are at the score limit (mastery level = 65%) while 33.4% of students have lower grades than the score limit, and 66.6% of students can be declared as passing the test (mastery).

Students' Learning Outcomes of Public Speaking Course using Conventional Learning Models (A2)

The number of respondents was 30 people, achieving a minimum score of 15 and a maximum score of 23 so that the range of data is $23-15 = 8$. Furthermore, the data is presented in the form of frequency distribution tables with interval 6 classes, the width of the interval is 2, the average is 19.33 with a standard deviation of 2, 28, modus 18.00 and median 19.00. The frequency score of the public speaking course delivered by the conventional learning model is presented in the following graph:

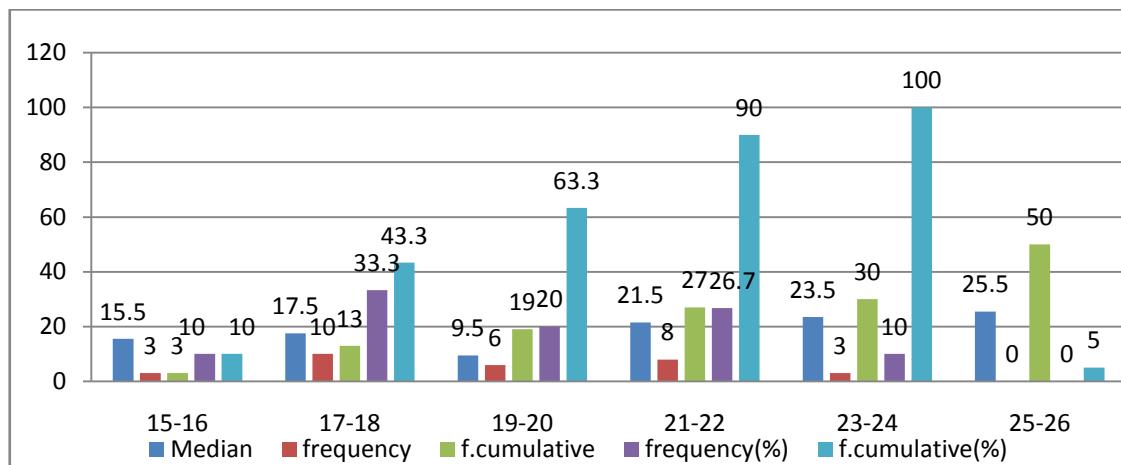


Figure 2:Frequency Score of Public Speaking Course Using Conventional Learning Models (A2)

The distribution of students' learning outcomes scores in the public speaking course in table 5 above, illustrates that the learning outcomes of this subject have 20.0% student scores at the mastery level. The data also shows that there are 43.3% of respondents below the score limit, and 56.7% were declared complete. If compared with the cooperative learning model using the jigsaw strategy, it appears that conventional learning has a lower limit value than cooperative learning.

Students' Learning Outcomes of the Public Speaking Course using a Cooperative Learning Model (A2) and participants with High Self Concept (A1B1)

The results of student responses to self-concept questionnaires, participants with high self-concept were grouped together. The learning outcomes of the high self-concept students using a cooperative learning model jigsaw strategy are described as follows. The number of respondents 15 with a minimum score of 19 and a maximum score of 26, so that the range of data $26-19 = 7$. Furthermore, the data is presented in the form of a frequency distribution table with a number of classes 4, interval width 2, average 22.33 with standard deviation 2.02, modus 22.00 and median 22.00. Score frequency table of students' learning outcomes with the cooperative learning model (A1) and have a high self-concept (A1B1) are presented on the graph below.

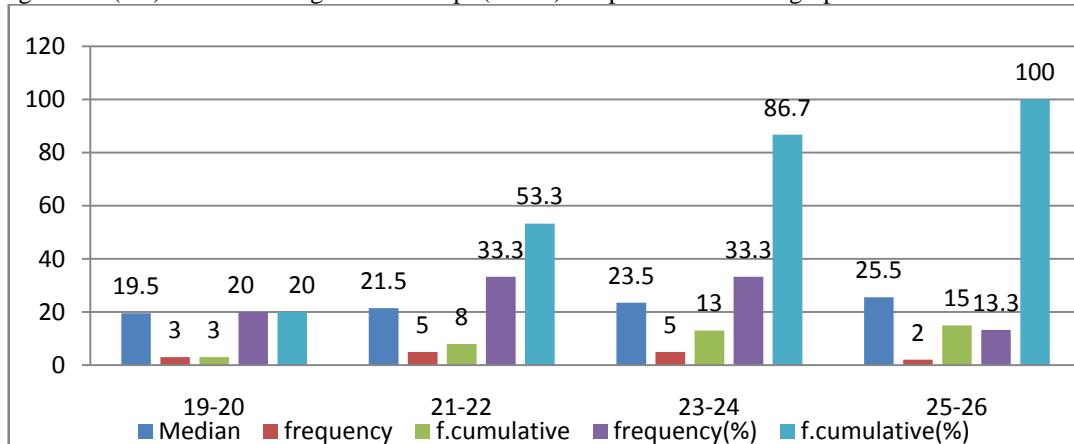


Figure 3:Frequency Score of Public Speaking Course Using Cooperative Learning Model (A1) and Participants with High Self-Concept (A1B1)

Distribution of students' learning outcomes scores with Jigsaw (A1) learning model and having a high self-concept (A1B1) in table 5 above illustrates that all students who have a high self-concept have complete learning outcomes (65 %). This means that groups of students who have high self-concepts tend to achieve the course outcome in the public speaking course.

Students' Learning Outcomes of Public Speaking Course using a Cooperative Learning Model who have Low Self-Concept (A1B2)

The participants' learning outcomes with a jigsaw strategy (cooperative learning model) and low self-concept can be explained as follows. The number of respondents was 15, with a minimum score of 15 and a maximum score of 21 so that the range of data is $21-15 = 6$. The data is presented in the form of frequency distribution tables with 4 interval class, interval width 2, average 17.67 with standard deviation 1.80, modus 18.00 and median 18.00. Score frequency table of students' Learning Outcomes for the public speaking course using cooperative learning model with a low self-concept (A1B2) are presented on the graph below.

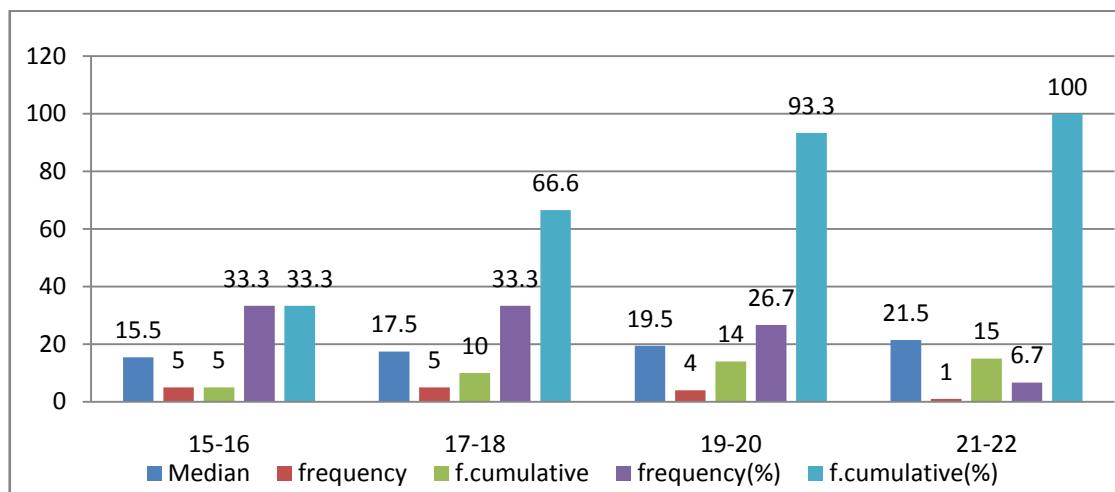


Figure 4:Frequency Score of Public Speaking Course Using Cooperative Learning Model (A1) and Participants with Low Self-Concept (A1B2)

The distribution of participants' learning outcomes scores in the public speaking course using a cooperative learning model and having low self-concept (A1B2) in table 7 above illustrates that 66.6% of students are below the score limit, or 33.4 % are at the score limit. Students, who have a low self-concept, has the lowest modus score which is also below the score limit.

Students' Learning Outcomes in the Public Speaking Course using a Conventional Learning Model and Have a High Self Concept (A2B1)

The participants' learning outcomes using a conventional model and a have high self-concept can be explained as follows. The number of respondents was 15, with a minimum score of 15 and a maximum score of 22 whereby the range of data is $22-15 = 7$. The data is presented in the form of frequency distribution tables with number 5 classes, interval width 2, average 18, 93 with standard deviation 2.19, modus 21.00 and median 19.00. Score frequency table of participants' learning outcomes in the public speaking course using a conventional model and who have a high self-concept (A2B1) are presented on the graph below.

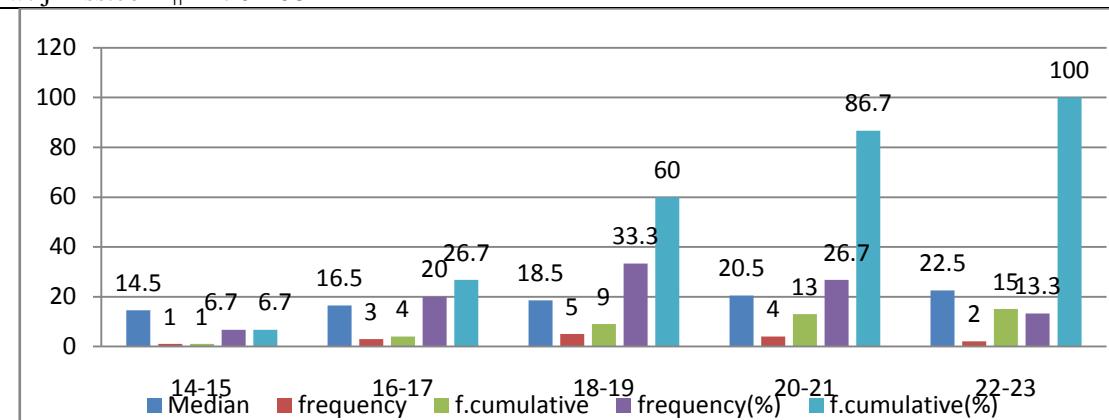


Figure 5:Frequency Score of Public Speaking Course Using Conventional Learning Model (A1) and Participants with High Self-Concept (A2B1)

Distribution of participants' learning outcomes scores in the public speaking course using a conventional model (A2) and who have a high self-concept (A2B1) on the graph above illustrates that there were 26.7% below the score limit while 73.3% were above. The frequency of learning outcomes at the score limit is 33.3%.

Participants' Learning Outcomes in the public speaking course using a Conventional Model (A2) and who Have low self-concepts (A2B2)

Participants' learning outcomes who learning via a conventional learning model and who have low self-concept can be explained as follows. The number of respondents was 15, the minimum score was 16 and the maximum score was 23, so the range of data is $23-16 = 7$. The data is presented in the form of frequency distribution tables with interval class 5, interval width 2, average 19.73 with standard deviation 2.37, modulus 23.00 and median 20.00. Score frequency table of participants' learning outcomes in the public speaking course using a conventional learning model and who have low self-concept (A2B2) are presented on the graph below.

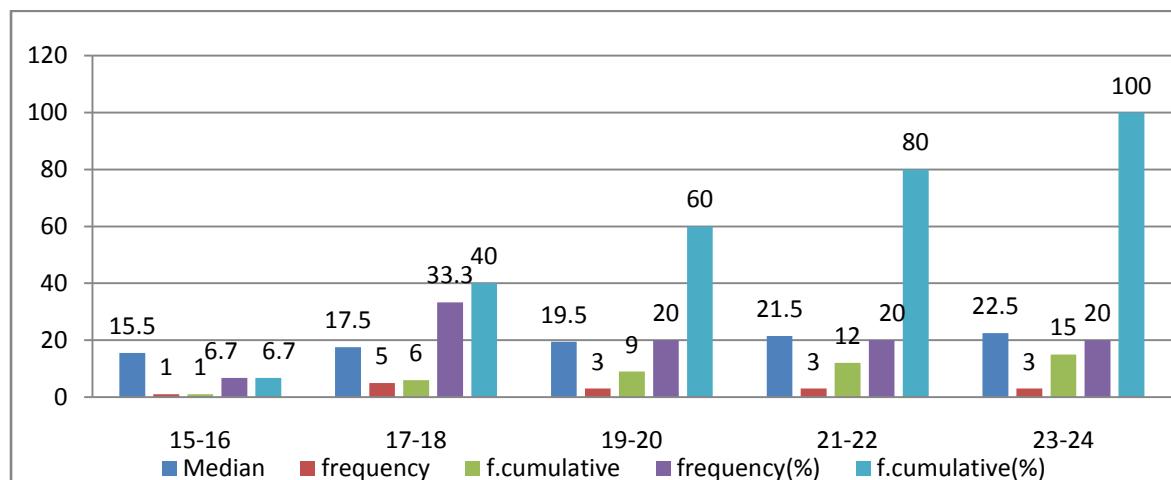


Figure 6:Frequency Score of Public Speaking Course Using Conventional Learning Model (A1) and Participants with Low Self-Concept (A2B2)

Distribution of participants' learning outcomes scores in the public speaking course using conventional models (A2) and who have a low self-concept on the graph above illustrates that 33.3% of participants were below the score limit while 20% of participants were at the limit, and 6.7% were above it.

Discussion

The discussion of each hypothesis is described below.

The Learning Outcomes of Public Speaking Course Using a Cooperative Learning Model (Jigsaw) is Higher than Conventional Learning Model after Controlling Participants' Prior Knowledge

Based on the results of univariable analysis through SPSS Version 23, it is concluded that the results of the public speaking course of the students who were instructed using a cooperative learning model is higher than the participants instructed using a conventional model after prior knowledge has been controlled.

The results of the first hypothesis testing show that H₀ is rejected with Fcount = 6.68 > Ftable (0.05 : 1.55) = 4.02. Thereby, it might be concluded that there is a difference in the mean results in the public speaking course between the students who were instructed using the cooperative learning model (Jigsaw) and the students who used the conventional learning model after their prior knowledge was controlled. In order to identify the learning outcomes from the group that displays a higher score, the mean scores from both groups were correct. Then, the mean score from the students who were instructed using the cooperative learning model (Jigsaw) is 20.63 after correction while the mean score from the students who used the conventional learning model is 19.70 after correction. Thereby, it might be concluded that the results of the students learning with a cooperative learning model (Jigsaw) are higher than the results of the students learning with a conventional learning model after prior knowledge has been controlled. This result is supported by Gull and Shehzad [6] who concluded that cooperative learning had a positive effect on the academic achievement of students enrolled in Education subjects. Cooperative learning is a teaching method in which students play an active role in their learning and understand the subject collaboratively with their peers[13]. While conventional learning models use activities individually and often in a competitive environment[6].

The Relationship of Learning Model and Self-Concept towards Students' Learning Outcomes in Public Speaking Course, after Controlling Their Prior Knowledge

The results of the second hypothesis testing show that H₀ is rejected based on the F-statistic test factor A * B with Fcount value = 46.82 which is higher than Ftable (0.05: 1.55) = 4.012. Therefore, it might be concluded that there is a link between the learning model and self-concept on public speaking course learning outcomes after the students' prior knowledge has been controlled.

Based on the findings above, it can be concluded that the students taught with the cooperative learning model (jigsaw) achieved higher scores than those instructed using the conventional learning model after controlling for prior knowledge in the public speaking course. The public speaking course learning outcomes tended to be high for students taught with the cooperative learning model (Jigsaw) and had a high self-concept, whereas the students taught with the same learning model with a low self-concept achieved lower learning outcomes. In addition, the students who were taught using a conventional learning model and had a high self-concept tended to achieve low on the public speaking course outcomes after controlling for prior knowledge and, conversely, the outcome achievement tended to be high if participants had a low self-concept. The differences in the mean score of the learning outcomes of the public speaking course in each treatment group show an influence of interaction between the learning model (A) and self-concept (B) which was significant towards the learning outcomes of public speaking course after controlling participants' prior knowledge. Therefore it is necessary to do a Tuckey test to see the effect of the interaction.

There is a link between the learning model and self-concept towards the learning outcomes of the public speaking course, after controlling their prior knowledge.

High Self-Concept Students' Learning Outcomes in a Public Speaking Course is Higher using a Cooperative Learning Model (Jigsaw) than with a Conventional Learning Model After Controlling Prior Knowledge

The results of the third hypothesis testing show that H₀ is rejected based on the Tuckey test statistical calculation on the findings above, which shows t value = 3.62. Since t value is higher than t table (1.54), it might be concluded that there is a difference between the mean score of the public speaking course between the group using a cooperative learning model (Jigsaw) and a conventional learning model of the students whom have a high self-concept in the public speaking course. These results imply that the mean score of students who have a high self-concept in the public speaking course using a cooperative learning model (Jigsaw) is higher than the students using a conventional learning model after controlling for prior knowledge.

Low Self-Concept Students' Learning Outcomes in Public Speaking Course is Higher Using a Conventional Learning Model than Cooperative Learning Model (Jigsaw) After Controlling Their Prior Knowledge

The results of the fourth hypothesis indicate that H₀ is rejected based on the Tuckey test statistics. Based on the calculation, the value of t_{count} = 1.63 is greater than the value of T_{table} = 1, 55 so it can be concluded that there are differences in the learning outcomes of the public speaking course in the group of students who have a low self-concept from those who are taught with a cooperative learning model (Jigsaw) and a conventional learning model. Based on the results corrected in the group of students who have a low self-concept, students who are taught with a cooperative model ($\bar{Y} = 19.70$) score lower on learning outcomes than

those using a conventional learning model ($\bar{Y} = 21.33$). That means that in the group of students who have a low self-concept, a conventional learning model is better than a cooperative learning model (Jigsaw) after controlling for prior knowledge.

Furthermore, the results of the fourth hypothesis testing successfully reject the null hypothesis which states that there is a difference in the public speaking course learning results for students who have a low self-concept and have been instructed using a cooperative learning model and the group that has been instructed using a conventional learning model. Based on the mean score of both groups for the public speaking course learning results, the first group displays a lower result than the second group. As a result, it is recommended that students who have low self-concept are provided with a conventional learning model in the public speaking course.

Conclusions

The results of the public speaking course for the group of students who were instructed using a cooperative learning model were higher than the group of students who were instructed using a conventional learning model after prior knowledge was controlled. There is a link between the cooperative learning model and the self-concept for a public speaking course for nursing students after their prior knowledge has been controlled. While the results of public speaking course learning for nursing students that have been taught using Jigsaw-type cooperative learning model is lower than the conventional learning model with regards to the students who have a low self-concept.

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