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Cooperative Learning Style Develops Social Skills in Mathematics of College Freshmen Students

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ABSTRACT

Most of the students isolate or compete themselves in learning mathematics, sitting alone and struggling in understanding the materials or solve the assigned problems (Davidson, 1990). Cooperative learning in mathematics is an effective tool for meeting the individual needs of students. The relationship of students might have developed and shared common goals as they interact with each other. This study focuses on determining students' perception on the effects of cooperative learning style in enhancing the social skills of students. The researcher used descriptive-correlational design in gathering information and material evidence relating to cooperative learning and social skills of the students. Questionnaire was used and administered to 44 students of Tagum Doctors College, Inc. as the respondents of the study. The researcher uses the following statistical tools: mean, t-test, and Pearson Product – Moment Coefficient of Correlation. The result shows that cooperative learning enhances the social skills of the students. There was a high correlation between cooperative learning and social skills of the students. This study concludes that the more the students engaged in cooperative learning, the higher the level the students develop their social skills.

Keywords **-** Education, cooperative learning, jigsaw, think-pair-share, learning together, social skills, peer relational skills, self-management, academic

skills, compliance skills, descriptive-correlation design, Tagum City, Philippines

INTRODUCTION

Learning mathematics is self-sacrificing. Almost all-new learning builds on what has been learned in the previous. If students failed to attend some lessons, subsequently, lessons would become harder to learn. All students are capable of identifying their weaknesses and strengths in their knowledge of their lessons. Nolting (2011) said that students can develop their mathematics grades if they take the time to recognize their strengths and challenges in learning mathematics. They will find success in themselves if they increase their strengths and look for solutions to their challenges in learning math. Slow learners in contrast, cannot do this for themselves, which for them could be frustrating and leads to a feeling of unable to deal with it. Slow learners need to identify their confusions in the mathematics classrooms. Students who committed a mathematical error lead to failure in understanding mathematical concepts. The resulting misunderstanding puts students to discouragement, absenteeism, and behavioral problem, which have been recognized in the school.

Students' interaction as they learn together may vary in three basic ways: students will do their best to compete with others, work individually to achieve goals without minding other students, or share common interest in each other's learning. With the three interactions, competition is the most dominant. Roger and Johnson (1994) said that it may cause conflict between students for there is a winner and a loser. This aggressive expectation is already widespread when students enter school and gets bigger and stronger as time goes by. Students' learning can be more meaningful if they are willing to open their heads together to achieve the goal of learning through small cooperative groups in classrooms. Failure of many students can be reduced if this is done. The positive side of peer pressure can be used so that schooling can be fun and enjoyable.

One of the hardest things to do for students in learning mathematics is working on their own exercises, seatwork, and assignments, in which some of them perform well and some are not. They become worried. Some of the characteristics of mathematics anxious students are inattentiveness, excessive absences, general non-performance, laziness, neither understood nor willing to try to understand. Mathematics anxious students are those who felt they were making efforts to learn mathematics, but have seen no improvement in their efforts. These students must be helped to develop confidence and hope for their

future if they want to experience any degree of success.

In Tagum City, cooperative learning in mathematics is not commonly used where students are taught directly by the teachers. Much of the time is dedicated to help teachers in putting together suitable connections between students and materials (textbooks, curriculum programs) and spent on how the teacher should interact with students, but not on how students should interact with one another.

Webb (2009) said that only small amount of learners have personally examined and indicate types of interaction that arise among students while learning mathematics in a small group. Students are eager to continue in engaging themselves in problem-solving behavior and contribute to a higher level of achievement if they are given timely, enough and clear details to construct a clearer understanding of the problem. However, Cohen (1994) claimed that whether the emphasis is on the individual learner or on the percentage of students, it is the occurrence of work-related interactions that is associated to theoretical and attainment improvements in mathematics, science, and writing activities. Webb and Cohen's researches are evidently different based on the types of tasks given to students. Webb's interaction has an interdependent group for they cannot complete the task without the input of at least one person from the other. Cohen's interaction happened among fellows in the group working dependently with each other on the organization necessary to answer the work assignments of students.

Sometimes, cooperative learning is misinterpreted or misused. There are students who defined it as copying directly the assignments of their classmates through personal interaction. It is by having a group study of which only one talks or discusses the topic assigned to the group. Thus, teachers must explain to their students the differences in interactions that may occur whether it is in a high or low level cooperation. According to Hertz-Lazarowitz (2008), cooperative learning must consist of tasks that promote a higher reasoning and thinking interactions to the students. This requires students to talk and share ideas to produce a group product.

FRAMEWORK

This study was anchored on social interdependence theory by Kurt Koffka (1990) and Kurt Lewin (1940) that states, "a way social interdependence is organized by determining who individuals interact with and thus, determines outcomes." Cooperative efforts are based on fundamental enthusiasm produced

by interpersonal influences and cooperative desires to accomplish a significant goal. There is emphasis on interactive ideas dealing with what happens among individuals. Thus, learning is an individual's effort in internalizing the concepts, rules, and general principles that may be useful in a practical real-world context. Learning is a development of presenting students the values of more trained members (cited by D. Johnsons & R. Johnsons, 2005).

Students learn better when they work together in small groups and get actively involved in constructing knowledge. Potthast (1999) said that cooperative learning practices lead to a higher achievement, more efficient and effective processing and exchange of information, increased productivity, positive relationships among students, and greater development of trust than do competitive and/or individualistic learning experiences (as cited by Hennessy and Evans, 2006). There are several analysis comparing achievement results to students taught by competitive, individualistic and cooperative learning methods. In general, these studies demonstrated that an average student taught with cooperative learning performs better than the average student taught with competitive and individualistic methods. This was strongly supported by Sharan (1994) who stated that cooperative learning (i.e. jigsaw, learning together, think-pair-share, group investigation, student teams achievement divisions, and teams-games-tournaments) is a basic term that is used to describe an instructional arrangement for teaching academic and collaborative skills to small, mixed groups of students. It is deemed highly desirable because of its tendency to reduce peer competition and isolation, and to promote academic achievement and positive interrelationships.

The National Council of Teachers of Math (NCTM, 1995) said that there are many styles in cooperative learning, which students work cooperatively. Students must be provided with opportunities to work cooperatively in large and small groups to solve significant problems that arise out of their experiences (as cited by J. M. Furner and D. D. Kumar).

Cooperative learning is the independent variable, which had the following indicators: jigsaw, think-pair-share, and learning together. The dependent variable is social skills, which had a different dimension, peer-relational skills, self-management skills, academic skills and compliance skills. The moderating variables of this study which affect both variables are the age and sex of the respondents.

OBJECTIVES OF THE STUDY

The study aimed to determine the students' perception on the effects of cooperative learning in enhancing social skills of the students. This investigation determined the profile of the respondents; the extent of cooperative learning to the students; and the level of social skills among students. The researcher also aimed to identify the significant differences in the social skills of the students when grouped according to age and sex and the significant relationships between the two variables.

METHODOLOGY

The researcher employed the descriptive-correlation design in conducting the cooperative learning and social skills of the students. The respondents were the first-year students of Tagum Doctors College, Inc. with mathematics subjects. Random sampling was used to determine the 44 out of 63 students who were given a questionnaire of the study. The researcher had developed a non-parametric scale, a five-point rating scale that guided the respondents in answering the questions: 5 – very high; 4 – high; 3 – moderate; 2 – low; and, 1 – very low.

During data gathering procedure, the researcher had sought first permission to conduct this study from Ma. Emilia N. Alegre, RN., the President of Tagum Doctors College, Inc. The researcher surveyed samples of questionnaires from related studies (theses) and the internet. The researcher considered the sufficiency of the items of the questionnaire to cover all aspects of the problem and to provide answers to specific questions under the statement of the problem. The questionnaire was validated by the panelists of the study. After the validation of the questionnaire, a pilot testing was conducted. A week after, the researcher informed the selected students that they will be given a series of group work activities for two months. One week after giving the activities, the researcher distributed the survey questionnaires to students personally and retrieved them after answering the questions.

The researcher used the following statistical tools in analyzing and interpreting the data collected: frequency distribution and percentage to determine the profile of the study. Average weighted means determined the extent of cooperative learning and level of social skills of the students. One-way analysis of variance (ANOVA) determined the significant difference in social skills among students when grouped according to age and t-test to determine the significant difference in social skills among students when grouped according to sex. Pearson Product –

Moment Coefficient of Correlation was used to establish a relationship between the cooperative learning and social skills of the students, and z-test to test the significance of the obtained r.

RESULTS AND DISCUSSION

Profile of the Respondents

Forty-four students were requested to give their perception on the cooperative learning and social skills of the students through the researcher-made questionnaire. Majority of the respondents were female which had a percentage of 68.18 and 31.82 percent of the respondents were males. In terms of sex, the proportion of the respondents differs from 36.36 percent, thus, the opinions of the respondents in both sexes were considered. In research, gender has concentrated on girls' and boys' involvement in Science in general, in physics instruction, and in mathematics instruction. Pauli and Lipowsky (2007) state that in research literature, specifically on mathematics instruction, girls and boys are the most focused verbal interactions with teachers in class (as cited by V. Jurik et al., 2013).

Table 1. Extent of cooperative learning of the students

Style	Mean	Descriptive Rating
Jigsaw	3.84	High
Think-pair-share	4.23	Very High
Learning together	3.94	High
Overall Mean	4.00	High

Table 1 shows the level of cooperative learning style as to the weighted means obtained from the responses of students. Think-pair-share had a weighted mean of 4.23 or very high. In jigsaw, it had a weighted mean of 3.84 and in learning together, had a weighted mean of 3.94 which both had a descriptive rating of high. The overall weighted mean in the level of cooperative learning of the students was 4.00 with a descriptive rating of high.

Jigsaw is a cooperative learning style of which each student must give his idea effectively within the group to complete the puzzle and magic squares given to them. Learning together is a style of cooperative learning wherein students are put into a group band to ask them to collaborate for they will report and will be given a group grade. Think-pair-share is a style of which students will

contribute ideas, listen to their partners, and encourage discussion to evaluate group procedure in solving a given problem.

The extent of cooperative learning style was clearly manifested in most cases; thus, think-pair-share had the highest mean among the three. The result implies that students pair with their partner to share their responses to the given problem to the whole class. They were able to give chances to their pair to speak and listen to them. Denzine (1999) states that a think-pair-share structure gives all students the opportunity to discuss their ideas (as cited by McNamara, Judith and Larkin, Ingrid K. and Beatson, Amanda, 2010). It also enhances the student's skill in oral communication as they express their ideas to other students. The more active students took the lead of verbalizing the thinking process, the more learning they account for listening to their partner's ideas.

Jigsaw had the lowest weighted mean in the level of cooperative learning styles. The result revealed that students were not able to get ideas, listen and discuss with their group. They were not able also to encourage some interactions within the team in solving problems given in the puzzle or magic square since they are focusing in solving to accomplish the puzzle or magic square given.

Social Skills have five dimensions. These are peer relational skills (complimenting others, offering help or assistance, inviting peers to play, taking perspective of others), self-management skills (controlling temper, following rules, compromising conflict situations), academic skills (completing work independently, listening to the teacher's directions, producing acceptable quality work), and compliance skills (following directions, following rules, using free time appropriately) (Gresham, Sugai, & Horner, 2001; Gumpel, 2007).

Table 2. Level of social skills of the students

Social Skills	Mean	Descriptive Rating
Peer relational skills	3.60	High
Self-management skills	3.75	High
Academic skills	3.78	High
Compliance skills	3.88	High
Overall Mean	3.75	High

In the level of social skills among college students, the highest weighted mean was the compliance skills, which means that students are working with their own group, discussing the problems without disturbing others and follow teacher's directions. They also use their free time in discussing the given problem to their

own group.

Peer relational skills got the lowest weighted mean of 3.60 with a descriptive rating of high. It was found out that students had a little difficulty in encouraging their groupmates to participate and use people's name. Curtis (2003) states that in secondary school, students are encouraged to use nametags or seat plan and know something about their schoolmates to create a positive school climate. Students can directly look at the person who is talking and make contacts with their mates (as cited by Bremer & Smith, 2004).

The result found out that there was no significant difference in the social skills of the students when analyzed by sex. This implies that students can still develop their social skills regardless of their sex. When groups are maximally heterogeneous, the other essential elements are met, students tend to interact and achieve in a way and at a level that are rarely found in other instructional strategies. This means that the social skills of students do not depend on their sex. However, this result contradicts to the study of Er (2014) that male students choose to study alone because it is easier and more comfortable to them than female students. As he cited in his study, men are more autonomous than women. They are competitive-oriented, which made them not to cooperate and, thus, affect their relationship with their classmates.

Table 3. Significant relationship between cooperative learning style and social skills of the students

Variable	Mean	Computed t-value	Computed z-value	Tabular z-value	Decision	Interpretation
Cooperative learning style	4.00	0.650	5.55	1.645	Ho Rejected	Significant
Social skills	3.75					

Table 3 shows the result of the correlation on the significance of the relationship between students' perception on cooperative learning style and social skills. The computed average weighted mean of the responses of the students in cooperative learning style was 4.00. The responses of the students in the social skills made an average weighted mean of 3.75. The computed value of r was 0.650 which means that there was a high correlation between the two variables.

To test the significance of the relationship, the z-test was used. The computed value of z was 5.55 which was greater than the tabular value of z at 0.05 level of significance. Therefore, the null hypothesis was rejected. This means that there

was a significant relationship between cooperative learning style and social skills of the students.

According to Magnesio and Davis (2010), there is a positive outcome of using cooperative learning that improves academic performance as well as enhanced the social skills of the students. Social skills are necessary for successful cooperative groups. We have developed several short skill-building stations to encourage students to learn, discuss, and practice social skills.

CONCLUSIONS

The findings of the study show a high level of cooperative learning style that gives a high-level skill of students. It was also found out that there was no significant difference on the level of social skills of the students when grouped according to sex. In the study conducted by Loredana and Duduciuc (2011), females confirmed a higher nonverbal correctness than males and more hesitant in joining outside school recreational attachment with peers from their student groups. Thus, the skills of students develop even if they are grouped heterogeneously. There was a significant relationship between cooperative learning style and social skills of students. Garfield (1993) said that cooperative learning includes a lot of different activities that may be used in several ways to a college statistics class. These actions offer ways for students to be more involved in learning and develop enhanced skills by working together.

TRANSLATIONAL RESEARCH

Increased use of cooperative learning method is one of the most visible changes in mathematics education nowadays. In fact, it is more effective than traditional methods in teaching mathematics. It creates enjoyable experiences from the students while learning. Teachers are encouraged to use cooperative learning as one of their strategies in teaching mathematics because it develops and enhances the social skills of the students, not only in mathematics subjects but also with the others.

In this study, a lot of activities and worksheets were given to the students. A teacher must understand first the cooperative learning style that he/she will impose to the students so that students will know what to do in their activity. As per observation, after giving all the activities given to the students, they learn to interact with different types of people regardless of their sex, ages and races, they

were able to give their knowledge and ideas to their peers. They work together and most especially they actively participated not only in the classroom participation, but also to the activities done by the school.

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