

A STUDY OF THE STUDENTS' ATTITUDES TOWARDS COOPERATIVE LEARNING IN SCIENCE AT YANGON UNIVERSITY OF EDUCATION

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Abstract

The main purpose of this study was to study the students' attitudes towards cooperative learning in science at Yangon University of Education. Quantitative and qualitative research methods were used to study students' attitudes towards cooperative learning in science at Yangon University of Education. In this study, purposive sampling was used. The participants in this study were (217) fifth year (first semester) students (68 male students and 149 female students) who specialize in science within the (2018-2019) academic year. As a research instrument, "Attitudes towards cooperative learning" questionnaire was used to study the students' attitudes towards cooperative learning. The instrument was based on Borich (1996) components of a cooperative learning activity. Students' attitudes towards cooperative learning questionnaire included (40) items on five-point Likert-scale described by five responses: strongly agree, agree, undecided, disagree and strongly disagree. Descriptive and inferential statistics were employed for the analysis of the quantitative data. This study indicated that there was no significant difference between the attitudes of students towards cooperative learning in science in terms of gender. There was also no significant difference between the attitudes of students towards cooperative learning in science in terms of state (or) region. It can be concluded that no difference between boys and girls on grades according to the questionnaire. There was also no difference between state (or) region according to the questionnaire.

Keywords: attitude, cooperative learning, science

Introduction

The world is changing rapidly in the twenty-first century. Education is a life-long process and it goes on from birth to death. It is also the greatest investment that a country can make for the quick development of its economic, political, sociological, technological, and human resources. Education enables an individual to make his life better both as an individual and a member of his society. Teachers at the university environment have often struggled with motivating and actively engaging students in the classroom. Cruickshank, Bainer and Metcaft (1999) expresses that the ultimate goal of formal education is to help students learn how to learn. The goals of cooperative lesson in science include the clarification of a basic concept or technique that is foundational to science and the reinforcing of an area of particular difficulty. Cooperative activities generally encourage peer interaction within class and out of class peer study groups. One of the main benefits of student-student interaction is in concept formulation through teaching opportunities which results in improved student performance and perseverance.

Background of the Study

Twenty-first century is a knowledge-driven age. Information comes to students from the wider ranges. In cooperative learning, group activities are carefully planned to maximize students' interaction and to facilitate students' contributions to each other's learning. Cooperative learning, therefore, would seem to deserve more attention from educators for academic achievement, personal growth and the development of social and learning skills. Hand, Treagust, & Vance (1997) revealed that students had mostly positively perceptions of cooperative learning. Cooperative learning is a teaching approach in which students work cooperatively in a small team with individuals of different talents, abilities and background to complete a common goal.

Therefore, the present study is intended to investigate the students' attitudes towards cooperative learning in science at Yangon University of Education.

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Purposes of the Study

The main purpose of this study is to study students' attitudes towards cooperative learning in science at Yangon University of Education. The specific objectives are as follows:

- a. To investigate students' attitudes towards cooperative learning in science at Yangon University of Education
- b. To compare students' attitudes towards cooperative learning in terms of gender
- c. To compare students' attitudes towards cooperative learning in terms of state (or) region

Research Questions

1. Are there positive attitudes towards cooperative learning in science at Yangon University of Education?
2. Is there a significant difference in students' attitudes towards cooperative learning in terms of gender?
3. Is there a significant difference in students' attitudes towards cooperative learning in terms of state (or) region?

Scope of the Study

This study is conducted at Yangon University of Education.

1. The participants of this study are fifth year (first semester) students within the academic year (2018-2019).
2. This research includes only students' attitudes towards cooperative learning in science.
3. To study the students' attitudes towards cooperative learning, the instrument was based on Borich (1996) components of a cooperative learning activity.

Definition of Key terms

Attitude

An attitude is the tendency to think, feel or act positively or negatively toward objects in our environment (Eagly & Chaiker, 1993; Petty, 1995, cited in Salta & Tzougraki, 2004).

Cooperative Learning

Cooperative learning is a group learning activity organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which each learner is held accountable for his or her own learning and is motivated to increase the learning of others (Olsen & Kagan, 1992, cited in Richards & Rodgers, 2001).

Science

Gagne defines science as a search for explanations of events in nature (Gagne, 1965).

Significance of the Study

If teachers know students' favorable or unfavorable attitudes towards cooperative learning in science, they can perform teaching and learning process more effectively. Students' positive attitude towards cooperative learning is one of the vital factors for teaching and learning process that promotes academic achievement in students' learning. Understanding of students' attitudes towards cooperative learning method could also help teachers and school administrators, in particular for understanding the feedback of students for the implementation of the cooperative

learning method. At the end of this study, this research can further help to give comments and recommendations for school teachers and administrators.

Theoretical Framework of the Study

Components of a Cooperative Learning Activity

In planning a cooperative learning activity, you need to decide on the following:

- The type of interactions you will have with your students
- The type of interactions your students will have with one another
- The task and materials you will select
- Role expectations and responsibilities you will assign

Teacher – Student Interaction

One purpose of teacher-student interaction during cooperative learning is to promote independent thinking. Much like student response - teacher reaction sequences during self-directed inquiry, exchanges between you and your learners in the cooperative classroom focus on getting learners to think for themselves, independently of the text. To accomplish this goal, you will model and collaborate with learners in much the same way as in the self-directed classroom. The goals of cooperative and self-directed inquiry are complementary.

However, the way you establish teacher-student interaction during cooperative learning is different from self-directed and large group instruction (Burbules & Bruce, 2001). In self-directed inquiry, the interaction usually is one on one, with verbal messages directed to individuals one at a time and adjusted to their zones of maximum response opportunity. In contrast, cooperative learning occurs in groups that share a common purpose and task, so you must broaden interactions to fit the zone of maximum response opportunity that is common to most group members. Your goal is to help the group become more self-reflective and aware of its own performance.

Your role is to intervene at critical junctures and then to retreat, allowing the group to grapple with the new perspective or information given. In this manner, you monitor and collaborate with the group during brief but focused interventions, keeping them on course and following a productive line of reasoning.

Student – Student Interaction

Interaction among students in cooperative learning groups is intense and prolonged. Unlike self-directed inquiry, in cooperative learning groups, students gradually take responsibility for each other's learning. The effect may well be the same as in self-directed learning strategies, with one reinforcing the skills acquired in the other.

During cooperative learning, the feedback, reinforcement, and support come from student peers in the group, as opposed to coming from you. Student-student interaction constitutes the majority of time and activity during cooperative learning, unlike the modest amount of direct student-student interaction that occurs in large group instruction. Groups of four or five, working together in the physical closeness promoted by a common task, encourage collaboration, support, and feedback from the closest, most immediate source-one's peers. An essential ingredient of cooperative learning is each learner's desire to facilitate the task performance of fellow group members.

Task Specialization and Materials

Cooperative learning typically uses **task specialization**, or division of labor," to break a larger task into smaller subparts on which separate groups work. Eventually, these efforts come together to create the whole, to which each member of the class has contributed. Therefore, each group may be asked to specialize, focusing its efforts on a smaller yet meaningful part of some larger end product for which the entire class receives credit.

Groups may even compete against one another with the idea of producing a better part or higher-quality product than other groups. However, the purpose is not the competition that produces the final product, but the cooperation within groups that the competition promotes. Cooperative task structures have the goal of dividing and specializing the efforts of small groups of individuals across a larger task whose outcome depends on the sharing, cooperation, and collaboration of individuals within groups.

Role Expectations and Responsibilities

In addition to groups being assigned specialized tasks, individuals often are assigned specialized roles to perform within their groups. Some of the most commonly assigned roles include researcher, runner, recorder, and summarizer, whose specific functions will be defined in the sections ahead.

The success of a cooperative learning activity depends on your communication of role expectations and responsibilities and modeling them when necessary. This is another reason why cooperative learning has little resemblance to loosely formed discussion group; not only must you divide labor among learners and specialized tasks, but you also must designate the roles that foster the orderly completion of a task.

If someone's duties are unclear, or a group's assignment is ambiguous, cooperative learning quickly degenerates into undisciplined discussion, in which there may be numerous uninvolved and passive participants. Uninvolved and passive participants are individuals who successfully escape sharing anything of themselves. This defeats the purpose of cooperative learning.

Review of Related literature

Review of related literature for this study is presented in this section. It includes, major schools of thought in cooperative learning, importance of science education, establishing a cooperative task structure in the classroom, team-oriented cooperative learning activities, outcomes of cooperation, promoting the goal of cooperative learning in the culturally diverse classroom, components of a cooperative learning activity and previous related researches.

Major Schools of Thought in Cooperative Learning

Major schools of thought in cooperative learning are social learning theory, cognitivism and constructivism.

Social Learning Theory

Cooperative learning and social learning theory are connected. Moreover, collaborative teaching and learning is directly connected to social learning theory. Reciprocal learning is extremely important to understand where learning is dependent on several factors – cognition, environment, and behavior – and all of the influences within each of those. Social learning theory is a theory of learning process and social behavior which proposes that new behaviors can be acquired by observing and imitating others.

Cognitivism

Cognitivism, which was born as a reaction to behaviorism, was influential during the periods of 1960s, 1970s, and 1980s. Views of figures like David Ausubel, Jerome Bruner, and Noam Chomsky played important roles in the formation of cognitivism (Brown, 2007). Cognitive learning theory dismissed the focus on habit formation and stressed the cognitive dimension that is composed of the learners' reasoning and mental processes. That is, while behaviorists consider learning as a change in behavior cognitivists take it as a change in mental behavior. Losing its prevalence in the 1980s, cognitivism was gradually replaced by its advanced version, constructivism.

Constructivism

Constructivism, the way to which was paved by cognitivism, can be defined as "a theory which regards learning as an active process in which learners construct and internalize new concepts, ideas and knowledge based on their own present and past knowledge and experiences" (Cohen, Manion, & Morrison, 20004: 167). Its reign covers the periods of 1980s, 1990s, and 2000s. Brown (2007) describes constructivism as a multidisciplinary approach that brings linguistic, psychological, and sociological paradigms together on a common ground. Along with this multidisciplinary dimension, constructivism is characterized by its core principle that learners are encouraged to get the ownership of their learning.

Importance of Science Education

University education is important to national development because it builds on the educational gains of basic education. Science education is expected to contribute not only to the personal development of individual but also to ultimately nation building. The goal of science education is to achieve the broader goals of education through science.

Understanding science is essential in today's society. The public's understanding of science is largely influenced by its experiences in science classrooms. It is, therefore, important that science teachers understand science and give an accurate representation of it in their classroom.

In the process-oriented science, the focus will be on

1. The nature of science
2. The nature of learning
3. The nature of the child

Information gleaned from each of these areas provides the teacher with valuable criteria and the rationale needed in making decision about what to teach and how to teach it.

Establishing a Cooperative Task Structure in the Classroom

Establishing a **task structure** for a cooperative learning activity involves five specific steps:

1. Specify the goal of the activity.
2. Structure the task.
3. Teach and evaluate the collaborative process.
4. Monitor group performance.
5. Debrief.

Team-Oriented Cooperative Learning Activities

Research indicates that teams of heterogeneous learners can increase the collaborative skills, self-esteem, and achievement of individual learners (Slavin, 2001). Four team-oriented cooperative learning techniques have been particularly successful in bringing about these outcomes: Student Teams Achievement Division, Teams-Games-Tournaments, Jigsaw II, and Team-Assisted Individualization. A brief summary of these follows, based on the work of Slavin (1993).

Outcomes of Cooperation

Cooperative learning activities instill in learner's important behaviors that prepare them to reason and perform in an adult world (Jacobs, Power, & Loh, 2002; Johnson & Johnson, 1994; Marzano, Pickering, & Pollock, 2001).

- (1) Attitudes and values
- (2) Prosocial behavior
- (3) Alternative perspectives and viewpoints
- (4) Integrated identity
- (5) Higher thought processes

Previous Related Researches

Cooperative learning is now widely recognized as one of the most promising practices in the field of education. In 1981 meta-analysis of 122 achievement related studies reported that cooperative learning promotes higher achievement than competitive or individualistic learning across all age levels, subject areas and all tasks except rote and decoding kinds of tasks (Johnson et al., 1981, cited in Kessler, 1992).

Putnam (1997, cited in Seng, 2006) compared cooperative learning with traditional learning group. Research indicated that "a well-planned strategy promotes content learning, trust in others and social development".

Moryadee (2001, cited in Chukwuyenum et al., 2014) studied the effects of cooperative learning using Student Team-Achievement Divisions (STAD) technique on self-efficacy and English learning achievement of students. The results indicated that the students who studied through STAD have higher self-efficacy and English learning achievement after the treatment period.

Seetape (2003, cited in Wichadee, 2005) studied the effects of cooperative learning on English reading achievement and the students' behavior toward this learning method used in the English classroom. According to research findings, the posttest scores were higher than the pretest scores. Most of the students displayed very good behavior in cooperating in their tasks.

Neo (2005). carried out a research on a group-based cooperative learning class to determine its impact on student learning and the reactions of these learners towards this instructional method. Results of the study showed that in group-based learning, students learned to cultivate teamwork, communication, management and interpersonal skills.

Murray (2008) studied student attitudes towards cooperative learning in education. The experimental group exposed to cooperative learning thus experienced more positive attitudes and perceptions than the groups exposed only to a lecture-based teaching and learning format.

Kiran Akhtar et al (2012) set out this study to examine the views about cooperative learning in domain of group projects of graduating students of the departments of statistics and economics

of Arid agriculture university Rawalpindi. The results of the study suggested that students could be developed different attitudes toward teamwork from their educational experiences.

Naomi Watetu Mbacho (2013) studied the effects of Jigsaw cooperative learning strategy on students' achievement in secondary school mathematics in Laikipia east district, Kenya. Findings of this study showed that learners who were taught by using Jigsaw cooperative learning strategy performed better than those who were taught by using conventional learning methods.

Su Mon Htike (2016) carried out a research to investigate the effectiveness of cooperative learning techniques on grade ten students' English reading comprehension. Results of the study showed that the performance of the experimental groups were better than that of the control groups in all the selected schools.

According to the researches, there are a lot of benefits concerning cooperative learning. In my opinion, there are still needed to do more researches on cooperative learning. It is also essential to investigate effects of cooperative learning on students and give suitable suggestions to all educators in Myanmar. It is crucial to move traditional teaching method (teacher-centered instruction) to learner-centered instruction as much as we can. We, Myanmar, will surely reach to the international standard by using cooperative learning effectively in the near future.

Research Methodology

In this study, fifth year (first semester) students' attitudes towards cooperative learning at Yangon University of Education were examined. This section summarizes research design and procedure, instrumentation, population and sample size and data analysis.

Research Design and Procedure

The research design of the study was descriptive research design, in which the researcher tried to analyze students' attitudes towards teacher-student interaction, student-student interaction, task specialization and materials and role expectation and responsibilities in science at Yangon University of Education.

First of all, the relevant literature was explored. Secondly, the researcher constructed the questionnaire to get the required data. After preparing the instrument, content validity was determined by four experienced teachers from department of methodology, Yangon University of Education. After getting the validity of the instrument, pilot testing for the instrument was conducted at Yangon University of Education, in the fourth week of December 2018. Based on the pilot test, the major survey was conducted in the first week of January, 2019. The modified questionnaire was distributed to all participants (fifth year, first semester students) in the first week of January, 2019. After all instruments were collected, the data were analyzed by using the Statistical Package for the Social Science (SPSS 23).

Instrumentation

In this study, a questionnaire for fifth year (first semester) was used as an instrument. Questionnaire developed by Borich (1996) "components of a cooperative learning activity" was adapted to investigate students' attitudes towards cooperative learning. The questionnaire included 4 sub-scales: (1) Teacher-student interaction (2) Student-student interaction (3) Task specialization and materials (4) Role expectation and responsibilities.

The questionnaire of (40) items on five point Likert-scale were described by five responses: strongly agree, agree, undecided, disagree, and strongly disagree. Arbitrary scoring weight (1,2,3,4, and 5) was assigned for negative items and (5,4,3,2, and 1) was assigned for positive items. The development of students' attitudes towards cooperative learning was formed relevantly

with students. After preparing the measuring scale, content validity was carried out by expert judgment. The pilot testing was done with a sample of (40) fifth year (first semester) students who specialize in science from Yangon University of Education. According to pilot study, some items were modified to adapt students' understanding. The internal consistency of the questionnaire was (0.93) by Cronbach's Alpha. Moreover, sample student interview questions were used to get more information from the students.

Population and Sample Size

All the participants in the sample were fifth year (first semester) students who specialize in science. This study was conducted at the Yangon University of Education. The total number of students participated in this study were 217 (68 males and 149 females). The students in this study were selected by using purposive sampling method to collect the data.

Data Analysis

The data were analyzed by using a descriptive statistic (mean score and standard deviation). Moreover, the independent sample *t*-test was used to describe the students' attitudes towards cooperative learning in terms of gender and state/region.

Research findings for this study will be presented in the next section.

Findings

This section concerned with the findings and interpretations based on the data taken from the study. The collected data were analyzed in order to get the accurate results and make appropriate interpretation. This includes three parts in this study. First, students' attitudes towards each dimension were presented. Second, students' attitudes towards cooperative learning in science in terms of gender and state/region were compared. Finally, the findings and interpretations of the results were discussed.

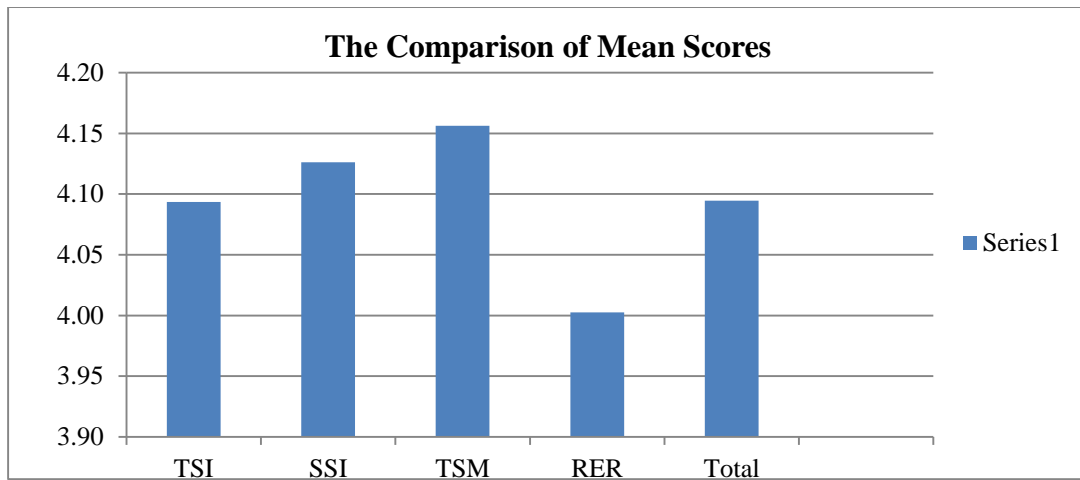
1. Findings of Mean and Standard Deviation of Students' Attitudes for all Dimensions

Table 1 The Comparison of Mean Scores for Students' Attitudes in all Dimensions

| No. | Dimensions | N | Mean | Std. Deviation |
|-----|------------|-----|-------------|----------------|
| 1 | TSI | 217 | 4.09 | .31 |
| 2 | SSI | 217 | 4.13 | .34 |
| 3 | TSM | 217 | 4.16 | .30 |
| 4 | RER | 217 | 4.00 | .35 |
| | Total | 217 | 4.09 | .25 |

Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

Table 1 indicated that mean scores of students' attitudes towards each dimension. It showed that total mean score for students' attitudes towards cooperative learning in science in all dimensions is (4.09). Among them, the mean score of students' attitudes towards task specialization and materials in science (4.16) is the highest score in all dimensions and the mean score of students' attitudes towards role expectation and responsibilities (4.00) is the lowest score in all dimensions. The results, therefore, are above satisfactory.



Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

Figure 1 The Comparison of Mean Scores for Students' Attitudes in all Dimensions

Findings of *t*-Values for the Students' Attitudes in all Dimensions in Terms of Gender

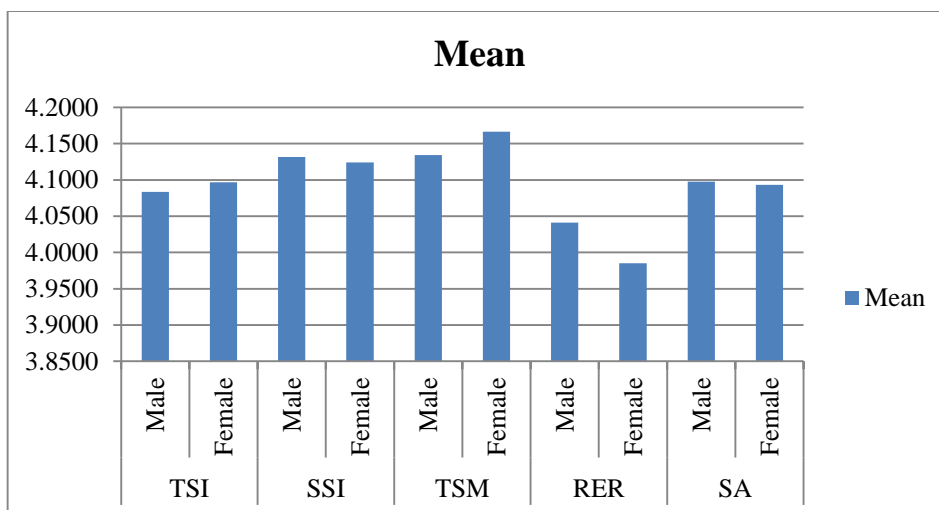
The independent sample *t*-test was used to find out whether students' attitudes towards cooperative learning in science differ according to gender. The results are given in Table 2.

Table 2 The Comparison of *t* Values for Students' Attitudes in all Dimensions in terms of Gender

| No. | Gender | N | Mean | Std. Deviation | MD | <i>t</i> | <i>df</i> |
|-----|--------|-----|-------------|----------------|-------|----------|-----------|
| 1 | Male | 68 | 4.08 | .31 | -.013 | -.287 | 127.022 |
| | Female | 149 | 4.10 | .31 | | | |
| 2 | Male | 68 | 4.13 | .34 | .007 | .143 | 124.475 |
| | Female | 149 | 4.12 | .34 | | | |
| 3 | Male | 68 | 4.13 | .30 | -.032 | -.729 | 131.229 |
| | Female | 149 | 4.17 | .31 | | | |
| 4 | Male | 68 | 4.04 | .38 | .056 | 1.039 | 116.285 |
| | Female | 149 | 3.99 | .34 | | | |
| | Male | 68 | 4.10 | .25 | .004 | .114 | 126.785 |
| | Female | 149 | 4.09 | .25 | | | |

Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

Table 2 shows that there was no significant difference between the attitudes of students towards cooperative learning in science in terms of gender. This indicated that the total mean scores for male and female students' attitudes towards cooperative learning in science in all dimensions are (4.10) and (4.09).



Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

Figure 2 The Comparison of Mean Scores for Students' Attitudes in all Dimensions in terms of Gender

According to figure 2, it can be interpreted that there was no significant difference in terms of gender.

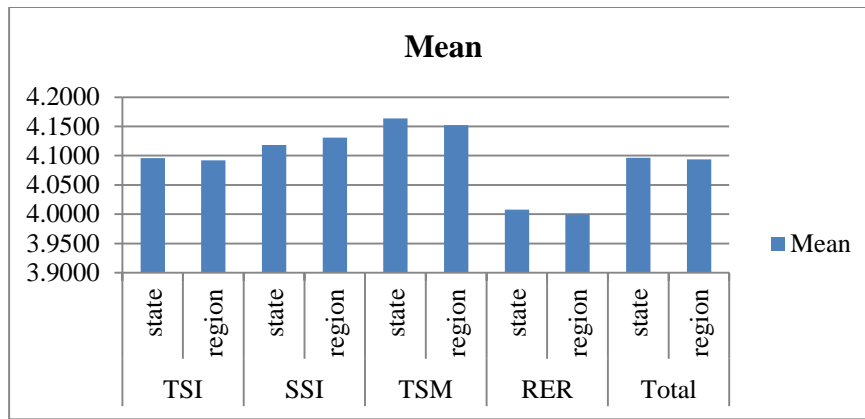
Findings of *t*-Values for the Students' Attitudes in all dimensions in terms of State/Region

Table 3 The Comparison of *t* Values for Students' Attitudes in all Dimensions in terms of State/Region

| No. | Dimensions | State/Region | N | Mean | Std. Deviation | MD | <i>t</i> | <i>df</i> |
|-----|------------|--------------|-----|-------------|----------------|-------|----------|-----------|
| 1 | TSI | state | 77 | 4.10 | .30 | .030 | .390 | 60.303 |
| | | region | 140 | 4.09 | .31 | | | |
| 2 | SSI | state | 77 | 4.12 | .34 | .008 | .104 | 54.332 |
| | | region | 140 | 4.13 | .34 | | | |
| 3 | TSM | state | 77 | 4.16 | .32 | -.020 | -.289 | 60.018 |
| | | region | 140 | 4.15 | .29 | | | |
| 4 | RER | state | 77 | 4.01 | .38 | .089 | 1.099 | 60.986 |
| | | region | 140 | 4.00 | .34 | | | |
| | Total | state | 77 | 4.10 | .27 | .027 | .511 | 60.293 |
| | | region | 140 | 4.09 | .24 | | | |

Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

The mean scores of these two groups in each dimension were presented in Table 3. when Table 3 is examined, it can be seen that the attitudes of students towards cooperative learning in science indicate no significant difference in terms of state/region. The total mean scores for students' attitudes towards cooperative learning in science in all dimensions in terms of state and region are (4.10) and (4.09).



Note: TSI = Teacher-Student Interaction
 SSI = Student-Student Interaction
 TSM = Task Specialization and Materials
 RER = Role Expectation and Responsibilities

Figure 3 The Comparison of Mean Scores for Students' Attitudes in all Dimensions in terms of State/Region

It can be interpreted that there was no significant difference in terms of state/region.

Conclusion

There are three sections in this part. They are discussion, suggestions and conclusion of the study.

Discussion

The purpose of the study is to study students' attitudes toward cooperative learning in science at Yangon University of Education. In this study, 68 male students and 149 female students participated willingly and enthusiastically. They are fifth year (first semester) students who specialize in science during (2018-2019) academic year. The researcher developed the Science Attitudes Questionnaire to study the students' attitudes towards cooperative learning in science. The instrument was based on Borich (1996) components of a cooperative learning activity. The five-point Likert scale evaluated the students' attitudes towards cooperative learning in science.

According to the finding of the students' attitudes towards each dimension, the total mean score of students' attitudes towards cooperative learning in science for all dimensions is (4.09). Task specialization and materials is the highest score (4.16) in all dimensions. But role expectation and responsibilities is the lowest score (4.00) in all dimensions. The results, therefore, are satisfactory.

According to the finding of the students' attitudes towards cooperative learning in science in terms of gender, the total mean scores of male and female students' attitudes towards cooperative learning in science for all dimensions are (4.10) and (4.09). It can be interpreted that there was no significant difference in terms of gender.

According to the finding of the students' attitudes towards cooperative learning in science in terms of state/region, the total mean scores of students' attitudes towards cooperative learning in science for all dimensions in terms of state and region are (4.10) and (4.09). It can be interpreted that there was no significant difference in terms of state/region.

Papanastasiou and Zembylas (2002, cited in Mogane, 2010) concluded that students' attitudes towards science influence their actual performance in science. So, the teachers should communicate the benefits and importance of science in the society to the students.

According to the findings of the study, the following suggestions can be drawn out. The teacher should encourage students to do practical activities concerning science. Science teacher should be given proper training to uplift their qualities. The science teachers should know and communicate the importance and usefulness of science to the students. Students should be nurtured very well to get 21st century skills for preparing for their real life situations. Science teachers should have good communication skills in the society.

Science teachers should study the science textbooks as well as magazines, journals and other relevant books in order to update their teaching styles. Students should be informed the rules and regulations of the university and they can obey them very well. The teacher should give feedbacks if necessary after students had taken the weekly or monthly examinations. Science assessment system should include the practical examination to improve the motor skill of students. In order to get good attitudes for students, teachers should also have good attitudes towards cooperative learning in science.

Suggestions

It is necessary to conduct more research concerning students' attitudes towards cooperative learning in science. One of the purposes of science education is to develop positive attitudes towards science. So, it is essential to carry out more studies concerning the effective ways and means for the development of positive attitudes towards science. Some recommendations are provided for future research.

This research consisted of only four dimensions. Further research, therefore, should be conducted with many other dimensions. Although, this study was conducted with small sample size, further research should be conducted with large sample size. Further research should also be conducted to study the relationship between students' attitudes and their learning outcomes. Moreover, further research should be conducted in other universities and other states (or) regions.

Conclusion

Jacobs and Asokan (2003) asserted that education is the process of passing on to future generations in a concentrated and abridged form the essence of knowledge accumulated by past generation. Education opens new horizons for the individual, releases new aspirations and develops new values. It strengthens competencies and develops commitment. Education generates in an individual a critical outlook on social and political realities and sharpens the ability for self-examination, self-monitoring and self-criticism.

Science is a way of thinking and a way of understanding of the world. This study was the survey type of the descriptive research. On the basis of this research finding, it was found that there are positive attitudes towards teacher-student interaction, student-student interaction, task specialization and materials and role expectation and responsibilities in science at Yangon University of Education. But there is no significant relationship between gender and state/region.

Teachers should use the appropriate teaching techniques according to the real life situations, needs and interests of the students, instructional objectives and the demand of the society. Like academic achievement, attitude is an important product of education system. Knowing our students' attitudes towards science and the effect of attitudes on their learning outcomes can enhance the quality of teaching. This study can be used to provide guidelines to the policy makers and assessment standards authorities as to how positive attitudes of students should be developed. By doing so, our country can uplift its education to the international standard and teachers will be able to nurture students to become good citizens and educators in the near future.

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