A COMPARATIVE STUDY OF GRADE 12 STUDENTS' MOTIVATION FOR LEARNING SCIENCE AND SOCIAL SCIENCE ACCORDING TO GENDER AT ESCOLA SECUNDÁRIA 5 DE MAIO IN DILI, TIMOR-LESTE

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Abstract: In the learning process, motivation is considered as the main component that encourages learning activity and empowers the process of learning to achieve learning goals. Motivation itself includes one's sense of intrinsic and extrinsic goal orientation, the impression and value of task, control of learning beliefs and self-efficacy for learning and performance. These are essential parts of the Social Cognitive Theory of Motivation for learning. Although the gender gap continues to exist in all aspects of life, in education several studies on motivation for learning showed that the gender gap is gradually decreasing in the learning of science and social science. This research aimed to find out the level of grade 12 students' motivation for learning science and social science and to investigate that if there was any significant difference according to their gender at Escola Secundária 5 de Maio in Dili, Timor-Leste. The participants were 226 students among 537 students majoring in science and social science. This study utilized a questionnaire as the instrument for data collection and the collected data were analyzed by frequency, percentage, mean, standard deviation, and independent samples t-test. The research findings indicated that the level of students' motivation for learning science and social science was very high. Also, there was no significant difference between male and female students' motivation for learning science and social science. The students also showed high average of overall motivation scales. The paper concludes with recommendations for practice and for future research.

Keywords: Motivation for Learning, Gender, Science, Social Science, Social Cognitive Theory.

Introduction

Timor-Leste is a young country in Southeast Asia that faces obstacles in many areas of development including education. The education curriculum has been changed several times due to the many regime changes that the country experienced historically: first, the colonial government of Portugal, then, from 1975-1999 the

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colonial regime of Indonesia, followed by the United Nations Transition in East-Timor (UNTAET) government in 1999-2002 and finally the independent government of Timor-Leste, (Department of Public Information, United Nations, 2002).

The researcher has observed that in secondary school, several students and teachers are unmotivated for learning and teaching. For example, the language of instruction was changed from Indonesian to Tetum and Portuguese in 2010, which is challenging the students and teachers to learn a new language while at the same time teaching and learning. This has become one of the several issues which are affecting students' motivation for learning science and social sciences.

As a new country, learning science and social science for the students is especially needed for development in all aspects of life. Science is a way of looking at the universe, while social science refers to the interaction among people and their connection to the environment and their civilization. This means science and social science are important to learn about. Therefore, in Timor-Leste, science or social science has a special consideration in the secondary school as the main learning subjects for the grade 12 students.

The researcher has observed in several schools that each academic year, the number of science (natural science) students is lower than the number of social studies students. Most of the students prefer to go to social studies class rather than science class. The researcher's assumption was that most of them did not like physics and chemistry subjects. They believed that science subjects are quite hard to study because most of them require the ability to calculate using mathematics. On the other hand, among those science students, female students were and are considerably fewer than male students.

In secondary school level, there is a difference between male and female students' achievement in different subjects such as girls tend to show better achievements in such subjects as art, reading and writing. Besides, boys obtain good achievements in science courses and mathematics. Culturally, many people believe that male students show stronger achievement in science and mathematics because they are more logical and theoretical than female students. In this case, the space between boys and girls is still found in elementary and secondary school which demonstrates the widespread belief that only the boys can learn and master science while girls are weak in science subjects. Even though in several countries, research has found that there is still a gap between girls and boys in science achievements, in some countries, the UK for example, there is no significant difference in learning science achievement by gender (Office for Standards in Education, 2003).

Even though the results of most previous studies generally indicate that male students have higher motivation and achievement than girls or woman in learning science and math, Nolen (1988, as cited in Meece and Jones, 1996) argued that girls are strongly motivated to learn science compared to boys. They believe that science is fun and enjoyable. Girls enjoy learning science because through solving science problems, they will learn new knowledge and be able to connect it with their previous knowledge. Science therefore can become a fun and interesting subject for female students. Another finding noted that gender stereotyping is no longer found among students in the United States of America through learning science style which means

boys and girls have similar valuable learning strategies (Anderman & Young, 1994 as cited in Meece and Jones, 1996).

Martins and Ferreira (2011) argued that social studies in educational curriculum of Timor-Leste are very essential to teach students to become good citizens to build the country together in spite of the social, economic and cultural differences among the people. Students should develop a humanistic culture that allows them to recognize in general the major current problems of societies in historical and geopolitical contexts. They should develop positive attitudes towards future involvement in the learning process throughout life and promote a stronger comprehension of the various realities and social, cultural and political characteristics of Timorese society.

Based upon the researcher's observations as well as the review of related literature, the following research objectives were developed:

1. To identify grade 12 students' gender at Escola Secundária 5 de Maio in Dili, Timor-Leste.
2. To determine the level of grade 12 students' motivation for learning science at Escola Secundária 5 de Maio in Dili, Timor-Leste.
3. To determine the level of grade 12 students' motivation for learning social science at Escola Secundária 5 de Maio in Dili, Timor-Leste.
4. To compare grade 12 students' motivation for learning science and social science at Escola Secundária 5 de Maio in Dili, Timor-Leste.
5. To compare grade 12 students' motivation for learning science according to gender at Escola Secundária 5 de Maio in Dili, Timor-Leste.
6. To compare grade 12 students' motivation for learning social science according to gender at Escola Secundária 5 de Maio in Dili, Timor-Leste.

The hypotheses of this study were; 1). There is a significant difference between male and female students' motivation for learning science and social science in grade 12 at Escola Secundária 5 de Maio in Dili, Timor-Leste, 2). There is a significant difference between male and female students' motivation for learning science in grade 12 at Escola Secundária 5 de Maio in Dili, Timor-Leste and 3). There is a significant difference between male and female students' motivation for learning social science in grade 12 at Escola Secundária 5 de Maio in Dili, Timor-Leste.

Theoretical Framework

This study based on Bandura's Social Cognitive Theory (SCT) for learning (1989, 1993, 1994a & 1994b). SCT identified the social factors and cognitive factors that influence learning. Bandura's theory also argues that learning occurs naturally, which means people are encouraged to learn and acquire knowledge through environmental observation (Bandura, 1989).

Gender differentiation also has become a fundamental interest of SCT. The SCT of gender development and differentiation focuses on how gender is influenced by social and cultural factors. Since men and women are biologically different, in their everyday life they fulfill different roles and responsibilities. The SCT perspective avers that human differences will influence people's activities in all aspects of their lives, including education. The study of gender stereotype in education is crucial because the students' psychology has been influenced by social activities and cultural

beliefs, where male and female students have different motivations for learning (Bussey & Bandura, 1999).

Social Cognitive Theory for Learning Motivation

Social cognitive learning theory (SCT) was developed by Bandura (1997) and is based on the notion that social, environmental, cognitive and behavioral aspects together reciprocally influence motivation, emotion and human behavior. There are two environments such as social and physical environments, where the social environment is the people around the learner like family, relatives, friends, classmates and teachers and the physical environment is the atmosphere, the classroom dynamics (University of Twente, 2014).

Bandura (1989) emphasized that, human beings are dynamic individual information processors and are also social organisms because people always interact with other people and learn from each other. Learning new knowledge from other people influences behavior. An individual's behavior changes based upon inputs from their environment (i.e., other people and learning spaces) as well as from their own cognitive processing. People can and do learn (mentally and behaviorally) from social modeling, i.e., from other people's (students') performances, which are part of the environment. Pajares (2002) discussed Bandura's triadic reciprocal causation model of Social Cognitive Theory (SCT) which shows how environmental factors constantly affect human behavior (see Figure 1). The model shows the reciprocal relationships among the three components of personal factors, behavioral factors and environmental factors. Since the interaction among the 3 components could develop new performance, human behavior influences the environment or the environment influences the behavior or, more likely, both.

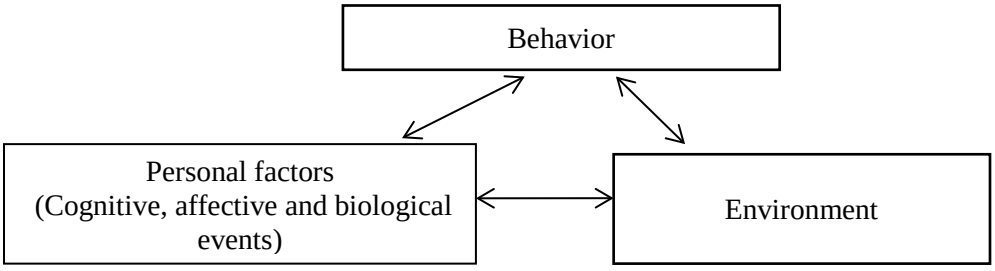

Figure 1: Bandura's Reciprocal Determinism. (Adapted from Pajares, 2002)

Social Cognitive Components of Motivation for Learning

According to Pintrich, Smith, Garcia, & McKeachie (1991), there are several components of motivation for learning:

- Intrinsic goal orientation; refers to the students' perception of why they want to be involved in learning tasks. Students prefer to engage themselves in the task because it is challenging their curiosity and their self-belief that they can successfully master it.

- Extrinsic goal orientation; refers to the students' desire to participate in the task because of external reasons such as, grades, prizes, performance, competition and evaluation by the teacher or other people.
- Task value; is the students' notion of how important and significant the learning task is that they concern about.
- Control of learning beliefs; is the learner's conviction of the positive achievement they obtain through learning effort (Pintrich et al. (1991).
- Self-efficacy for learning and performance; the individual's self-judgment of their capability to complete a task successfully.

Gender Differences in Science and Social Science Learning

According to Keeves and Kotte (1992, as cited in Jones, Hawu & Rua (1999) in their study of high school students in 10 countries, they found that most of the male students were more concerned with science courses such as chemistry and physics and obtain high scores, while female students prefer only biology courses and others general subjects. Furthermore, Keeves and Kotte observed that although in the same science classrooms boys and girls still had different learning experiences.

Milgram (2014) said the girls attending SMET (science, math, engineering and technology) classes have more limited core knowledge than the boys who have better skills in science. Generally, it was caused by the different kinds of learning habits in their childhood. For instance, girls were more focused on playing with dolls, houses or other creative endeavors such as painting or drawing. On the other hand, boys played with video games, performed problem-solving and hands-on activities.

Encouragement to enroll in science class did not just come from the students themselves but also from their environment or the people around them. There are some female students who were strongly interested in learning science who had been motivated by other peoples' science accomplishment such as family and their relatives. Those students believe that they will achieve their future goals in science just as their role models did (Baker and Leary, 1995 as cited in Jones et al. 1999).

According to Cotner, Ballen, Brooks, and Moore (2011), students' interest in learning science is influenced also by their teacher's gender. In their study, they found that the teacher's gender influenced students learning motivation. Girls preferred female teachers to teach them biology over male teachers because they believed that with a female teacher they felt more confident to learn and do the tasks.

Parents also have an important role in their children's learning. Culturally, parents believe that there is a difference between boys and girls in learning math and science. Most parents assume that their son (boys) would do better and perform well in learning math and science rather than their daughter (girls). The influence of parents sometimes affects children's motivation to learn, especially the girls who feel discouraged to learn science and math (Meece, Glienke & Burg, 2006).

The gender gap phenomenon in science education shows that female students' self-confidence for learning science is lower than the male students, because they achieved low in their previous schooling, such as primary school. It might cause the girls' fear to perform well and compete with the boys in science class. Age also defines a girl's motivation to learn science, because their interest in learning science

becomes lower as they get older. Otherwise, female students' have more self-confidence and are self-confident to learn science despite their science grade being lower than other female students (Davis, 2008).

Although most studies have discovered there is a difference between boys and girls in learning science where science is the man domain, another study had different findings such as, nowadays female students are more talented and have the intellect to compete with men in science classes. Nolen (1998, as cited in Meece & Jones, 1996) on a study on students' achievement goal at a primary school in the United States found that, male students have less motivation than female students for learning science. Female students prefer to learn science more because they believe that learning science is fun and they could have new experiences. They also believe science could help them to overcome challenges. Besides, based on the research on 6th and 7th grades, Anderman and Young (1994 as cited in Meece & Jones 1996) found that boys and girls were not different in learning science, where the girls also had their own science learning style similar to boys to achieve their goal.

Another study on science course-taking according to gender discovered that between the years of 1982 and 2004, the gender gap had been minimized according to the number of females attending science courses. For example, in 2004 gender enrollment in science courses was essentially equal, where statistics indicated that female rates were 23% and male rates were 27% (Ingels & Dalton, 2008 as cited in Amelink, 2009). Generally thought, male students are doing better than female in science and math in educational achievement. However, an international research in 70% countries of respondents had proved that female students at the age of 15 were showed high performance than male in reading, math and science literacy (ScienceDaily, 2015).

In social science learning, Corbin (1994 as cited in Alazzi & Chiodo, 2004) conducted a study in New York's urban public high schools and he found that among the huge number of students who choose social studies class, female students had very strong interest on social studies especially in the area of communication skills. Similarly, Torney-Putra, Lehmann, Oswald and Schulz (2001) examined the data collected from 14 years old students in 28 countries and found that, there was no difference among male and female students in civic content knowledge and interpreting political communication skill. Also, Hahn (1998, as cited in Oechsle & Weterau, 2015), from his study on German data of civic education, he discovered gender differences no more exist in political attitudes in terms of their interest, efficacy, trust and confidence.

Social Cognitive Theory of Gender Development

Social cognitive theory explains that gender development comes across by observation and imitation of other people who act as role models in everyday life. Gender stereotypes have been acquired and have become a crucial issue in social life. Gender patterns also become a tradition (habit) between men and women (Bussey & Bandura, 1999).

There are some theories related to gender development which clarify gender development from different dimensions.

- The first dimension stresses the theories which point out psychological, biological and social-culturally determinant factors.
- The second dimension emphasizes the nature of the transmission models. This thought refers to the family's role in gender development. In the family, the parents are the first people who influence child development. The parent's role is important in developing a child's knowledge but sometimes parents treat to their sons and daughters differently. The children learn and adopt gender roles from their parents (Freud as cited in Bussey & Bandura, 1999). However, according to Rowe (1994, as cited in Bussey & Bandura, 1999), biological factors also influence gender roles and can be a result of genetics.
- The third dimension stressed the tentative scope of the theoretical elaboration. Several psychological theories believe that gender development first occurs in infancy not in adulthood. Although many theories (Deaux & Major, Freud, Koholberg) emphasize the first period of development, other theories have concluded that gender development is not limited to childhood but is on-going in daily life and continues through maturity (Bussey & Bandura, 1999).

Method

Participants

This research was conducted in Escola Secundária 5 de Maio, a public high school in Dili, Timor-Leste. It was a quantitative comparative study which used survey research to investigate if there were significant differences among male and female students' motivation for learning science and social science. The target population was grade 12 students majoring in science and social science at Escola Secundária 5 de Maio. 226 male and female students from the total of 537 students in grade 12 of academic year 2014 were used as the sample of the study.

Instrumentation

The questionnaire of the study has two parts, such as students' demographic information item and students' motivation for learning science and social science item which adapted 5 motivation components from the Motivated Strategies for Learning Questionnaire (MSLQ). There are two important parts of MSLQ, the motivation section and the learning strategies section. The motivation section consists of 31 items measuring six motivational components: intrinsic goal orientation (4 items), extrinsic goal orientation (4 items), task value (6 items), and control of learning beliefs (4 items), self-efficacy for learning and performance (8 items) and test anxiety (5 items). The test anxiety component was not used because it is not related to this study.

Pintrich et al. (1991), developed the MSLQ and it has been validated and used as a tool for research into the cognitive view of motivation and learning strategies. Before its official recognition, the MSLQ was piloted in 1982 by a team of researchers at the National Center for Research to Improve Post-secondary Teaching and Learning (NCRIPTAL) at the University of Michigan to study college students' motivation and learning strategies. The MSLQ has been validated by Artino (2005)

who said that it has high predictive validity and is an appropriate instrument to apply in the study of motivation and learning strategies. Furthermore, in his review of the MSLQ, Artino confirmed that the MSLQ had relatively good internal reliability. It has been applied by many researchers all over the world and has been translated into more than 20 different languages.

Pintrich et al. (1991) tested the reliability of the MSLQ through three waves of study on 1,771 respondents in the years 1986, 1987 and 1988. This research calculated the Alpha value at the end of this study as well.
The Alpha value of five sub-scales of motivation and the Alpha values of this study shows in the table 1 below:

Table 1: Reliability Coefficients of the Motivation Components of the MSLQ

Sub-scales	Previous Alpha Values. Pintrich et al (1991)	This Study Alpha Values	
		Science	Social Science
Intrinsic goal orientation	.74	.62	.66
Extrinsic goal orientation	.62	.71	.69
Task value	.90	.69	.67
Control of learning beliefs	.68	.65	.71
Self-efficacy for learning & performance	.93	.65	.69
Total	.77	.66	.68

The questionnaire was translated from English to Tetum (one of the official languages of Timor-Leste) by National Institute of Linguistics (Instituto Nacional de Linguistica, INL Timor-Leste). The Tetum version was back-translated into English and it was acceptable with the original translation by an American who is fluent in Tetum, and who currently works as an advisor to the science and mathematics learning center and as a science curriculum developer in the Ministry of Education, Timor-Leste.

Collection of Data

The survey was carried out in August and September, 2014 in Dili, Timor-Leste. In order to facilitate the proper completion of data collection, the researcher co-operated with the School Director, curriculum division and several teachers in distributing and collecting the questionnaires. The questionnaires were 100% returned from the total of 226 questionnaires.

Data Analysis

Descriptive and inferential statistics were used to analyze the collected data by using a statistical software program. The statistical methods were applied to each of the research objectives as follows; Objective (1) Frequency and percentage were used to identify the demographic information (gender) of the respondents, Objective (2) Mean and standard deviations were used to determine the level of grade 12 students' motivation for learning science, Objective (3) Mean and standard deviations were used to determine the level of grade 12 students' motivation for learning social

science, Objective (4) Independent samples t-test was used to compare grade 12 students' motivation for learning science and social science, Objective (5) Independent samples t-test was used to compare grade 12 students' motivation for learning science according to their gender and Objective (6) Independent samples t-test was used to compare grade 12 students' motivation for learning social science according to their gender.

The motivation scale and sub-scales' scores of this study were interpreted based on the scale as shows in the table 2 below which expresses a low total score indicated low motivation for learning science/social science and a high total score indicated strong motivation for learning science/social science (Pintrich et al., 1991).

Table 2: Interpretation of the Scores of Motivated Strategies for Learning Questionnaire (MSLQ)

Score	Interpretation
5.81- 7.00	Very High
4.61- 5.80	High
3.41 - 4.60	Moderate
2.21- 3.40	Low
1.00 - 2.20	Very Low

Results

Research Objective One

Table 3 below present gender and the numbers of male and female students at grade 12 of science class and social science class.

A total 226 students from grade 12 were surveyed in this research, where each class (science and social science) had 113 students. Of the respondents from science class, 56 (49.6%) were male and 57 (50.4%) were female. On the other hand, of the social science class respondents, 46 (40.7%) were male and 67 (59.3%) were female.

Table 3: Gender, Frequency and Percentage of the Respondents of Grade 12 Students

Gender	Major/class			
	Science		Social science	
	Frequency	Percentage	Frequency	Percentage
Male	56	49.6	46	40.7
Female	57	50.4	67	59.3
Total	113	100.0	113	100.0

Research Objective Two

Students' motivation for learning science scale "Task value" has the maximum mean score at 6.52 and the minimum mean score was "Control of Learning Beliefs" at 5.95. The total mean score of students' motivation for learning science was 6.20, based on the interpretation scores of MSLQ was very high.

Table 4: Summary of the Comparison of Mean and Standard Deviation of Grade 12 Students' Motivation for Learning Science Scales and Subscales

Scale	M	S.D.	Interpretation
Intrinsic Goal Orientation	6.13	.836	Very High
Extrinsic Goal Orientation	6.47	.591	Very High
Task Value	6.52	.607	Very High
Control of Learning Beliefs	5.95	.971	Very High
Self-Efficacy for Learning and Performance	5.97	.779	Very High
Overall Motivation	6.20	.526	Very High

Research Objective Three

The scale "Extrinsic Goal Orientation" has the highest mean score counted at 6.49 and the lowest mean score was "Control of Learning Beliefs" at 5.53. The total mean score of students' motivation for learning social science was 6.15, based on the interpretation scores of MSLQ was very high.

Table 5: Summary of the Comparison of Mean and Standard Deviation of Grad 12 Students' Motivation for Learning Social Science Scales and Subscales

Scale	M	S.D.	Interpretation
Intrinsic Goal Orientation	6.04	.971	Very High
Extrinsic Goal Orientation	6.49	.757	Very High
Task Value	6.32	.753	Very High
Control of Learning Beliefs	5.53	1.189	High
Self-Efficacy for Learning and Performance	6.23	.792	Very High
Overall Motivation	6.15	.614	Very High

Research Objective Four

The probability significance of science class students was .823 and social science class was .868 which was bigger than .05, thus indicated that there was no significant difference of students' motivation for learning science and social science on both classes.

Table 6: The summary of the Comparison on Grade 12 Students' Motivation for Learning Science and Social Science

Major/Class	Gender	N	M	S.D.	t	*df*	Sig
Science	Male	56	6.19	.455	-.224	111	.823
	Female	57	6.21	.529			
Social Science	Male	46	6.17	.654	.166	111	.868
	Female	67	6.15	.590			

Research Objective Five

Since the probability significant difference totaled at .82, which was bigger than .05, the study found that there was no significant difference between male and female students' motivation for learning science.

Table 7: Summary of the Comparison of Mean Scores of Male and Female Students of Science Class on Motivation Scales and Sub-scales (N=56 Males and N=57 Females)

Scale	M		t	Sig (2-tailed)
	Male	Female		
Intrinsic Goal Orientation	6.07	6.18	-.714	.476
Extrinsic Goal Orientation	6.42	6.52	-.837	.404
Task Value	6.50	6.55	-.458	.648
Control of Learning Beliefs	5.80	6.10	-1.64	.104
Self-Efficacy for learning and performance	6.08	5.86	1.50	.137
Total Motivation	6.19	6.21	-.224	.820

Research Objective Six

As the result shows in the following table, since the probability significant difference was .87, which was bigger than .05, the study concluded that there was no significant difference between male and female students' motivation for learning social science.

Table 8: Summary of the Comparison of Mean Scores of Male and Female Students of Social Science Class on Motivation Scales and Sub-scales (N=46 Males and N=67 Females)

Scale	M		t	Sig (2-tailed)
	Male	Female		
Intrinsic Goal Orientation	6.10	6.01	.450	.650
Extrinsic Goal Orientation	6.50	6.49	.260	.980
Task Value	6.30	6.33	-0.217	.828
Control of Learning Beliefs	5.52	5.54	-0.117	.907
Self-Efficacy for learning and performance	6.26	6.20	.371	.712
Total Motivation	6.17	6.15	.166	.870

This research investigated the level of grade 12 students' motivation for learning science and social science according to gender and found that both male and female students overall had very high motivation to learn. There was also no significant difference between male and female students' motivation for learning science and social science.

Discussion

This study found that the number of female and male students were almost equal in grade 12 science major. This number of female students enrolled in science major was different from previous school years. Thomas (2014) discussed that in the UK, the number of students who enroll in science, technology, engineering and math (STEM) classes has been increasing year by year. Among them, females were more interested to take STEM courses. The importance of STEM courses nowadays encourages many students, especially female students to study and obtain the knowledge and skill in the area of STEM. This study also found that there were more female students than male students in social science major. Similarly, Corbin (1994

as cited in Alazzi & Chiodo, 2004) conducted a study in New York's urban public high schools and he found that among the huge number of students who choose social studies class, female students had very strong interest on social studies especially in the area of communication skills.

According to the information received from the school administration, in previous years, there were a smaller number of female students enrolled in science class than male students. On the other hand, the study found that in the academic year of 2014, the number of female students who enrolled in science class had considerably increased. Moreover, female students are still dominant in social science major.

The research findings showed the level of grade 12 students' motivation for learning science was very high as well as their motivation for learning social science. Also, they had very high level of motivation for learning in terms of five subscales of motivation, including intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, and self-efficacy for learning and performance. It was expected that the students would have very high motivation since the students had all selected to study science and social science on their own decision. The result indicated that all the students tended to perform well and had strong encouragement to learn because they believed that if they obtain good grades in their major subjects, they would be able to enroll in universities without taking entrance exam or they would qualify for overseas scholarships. These findings are in line with the study by McCombs and Miller (2009) which reported that students' learning is strongly affected by high motivation and it is influenced through personal emotional expression, purpose, concern and imagination.

The study found that the level of students' intrinsic goal orientation and extrinsic goal orientation was very high. The students might be naturally encouraged to learn science or social science and perform classroom activities on their own will. Intrinsic goal orientation leads students to meet challenges in learning and pursuing their goals. In intrinsic goal orientation, no reward or prize is expected and the students are not forced by other people to achieve their goals, but it is their own desire to achieve those goals (Lumsden, 1994). Pintrich et al., (1991) mentioned that extrinsic goal orientation refers to the students' desire to participate in the task because of several reasons such as, grades, prizes, performance, competition and evaluation by the teacher or other people such as parents and relatives. Getting the high school certificate and good grades were two extrinsic goal orientation factors that motivated grade 12 students of Escola Secundária 5 de Maio to attend the class. The students can use the certificate to enroll for study in the higher education level or to apply for overseas scholarships.

The level of students' task value was also high in this study. Students considered task value really influenced their motivation for learning natural science and social science. Regarding this, Agnesia (2010) stated students' motivation to learn will increase when the value of the task satisfies them. When students found out that the knowledge learned meets their personal objective, they develop their engagement with the task. Lepper (1988 as cited in Lumsden, 1994) added, various challenging tasks stimulate students' curiosity to learn as well as increasing intrinsic motivation.

Grade 12 students' control of learning beliefs was also very high both in learning natural science and social science. According to Atkinson (1964 as cited in Stipek 1998), the students might be encouraged in various ways. The student's belief in his ability to undertake a task derives from his belief that he can complete the task successfully.

The mean score of self-efficacy for learning and performance in this study was also very high. Bandura (1994) defined self-efficacy as individual beliefs in one's ability to succeed. In schools, self-efficacy refers to the learners' beliefs in their competence in managing their learning. Students also need to assign their purposes and have encouragement to achieve academic success. Similarly as this study found, grade 12 students had a very high level of self-efficacy for learning and performance. They believed that they could be good in those subjects if they studied harder and applied effective learning strategies properly. They also believed that passing the subjects was crucial in attaining their goal of obtaining the high school diploma.

In terms of gender differences in motivation for learning science and social science, the results of this study found there was no significant difference between males and females in learning science and social science. No significant difference was found between male and female students for learning science. Female students showed very high motivation to learn science as well as male students. The previous research conducted by Ingels and Dalton (2008, as cited in Amelink, 2009) on science course-taking according to gender in the United States, discovered that between the years of 1982 and 2004, the gender gap had been minimized according to the number of females attending science courses (for example, in 2004, gender enrollment in science courses was essentially equal, where statistics show females' rates were 23% and male's rates were 27%).

What was surprising was that female students of grade 12 also had very high motivation to learn science in term of intrinsic goal orientation, extrinsic goal orientation, task value, control of learning and beliefs and self-efficacy for learning and performance. A huge number of female students enrolled in science major at Escola Secundária 5 de Maio by the academic year of 2014 (January-December) also proved that female students, similar to their male peers, had greater enthusiasm to learn science and expected to obtain good scores to achieve their learning goals. Obtaining a high school certificate and to being able to continue their university studies in the area of medical science, technology and engineering was one of their goals.

In terms of gender differences in social science learning, this study found that both male and female students demonstrated high motivation for learning social science. The result of this study was consistent with previous studies. Torney-Putra et al, (2001) examined the data collected from 14 year old students in 28 countries and found that there was no difference among male and female students in civic content knowledge and interpreting political communication skill. The involvement of women in political activities and their interests in the political area was as high as that of men. On some occasions, females had higher motivation to vote than did males. Also, Hahn (1998, as cited in Oechsle & Weterau, 2015), from his study on German data of civic education, discovered that gender differences no longer exist in political attitudes in terms of their interest, efficacy, trust and confidence.

In brief, the result of this study presented that there was no difference between grade 12 students' motivation for learning science and social science at Escola Secundária 5 de Maio in Dili, Timor-Leste. Most of the students from both science and social science majors showed very high motivation to learn. Furthermore, in terms of gender, both male and female students showed strong motivation to learn science and social science.

Based on the findings of this study, the researcher has strong recommendations for practice;

- Students should have strong motivation for learning in any subjects because will develop and improve their knowledge that will be useful in the future and contribute to the development of the country.
- Teachers need to implement innovative teaching approaches and creating suitable learning environment connected to the students' needs. In science class, inquiry based-learning method is strongly required to enhance learner encouragement.
- Teachers must evaluate their understanding of motivation and they should always consider the development for students' motivation for learning in the future.
- The school principal should pay more attention on enhancing teachers' quality, observing the effectiveness of learning and teaching process in the classroom, and conducting evaluation regularly. To obtain educational goals, the school principal and the teachers should have good cooperation as an educational team.

The researcher strongly recommend for the future research to enlarge a similar study in other schools in the country or in other countries with different grade level students. Moreover, the researcher strongly recommends the future researcher to apply good methods either quantitative, qualitative or can be mixed both.

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