



MOTIVATION OF STUDENTS IN RURAL SECONDARY SCHOOLS IN SRI LANKA TOWARDS LEARNING DIFFERENT BRANCHES OF SCIENCE

R.Asanka pushpa kumara

Secondary School Science Teacher, A/Palugaswewa Secondary School, Habarana, Anuradhapura, Sri Lanka

-----ABSTRACT-----

Effect of student's motivation towards learning science has been studied through various research works. This study centered to investigate the motivation of students in secondary rural schools in Sri Lanka towards learning different branches of science. Secondary school students in grade 11 were involved and the main area namely Biology, Chemistry and Physics in science subject thought for GCE ordinary level examination were considered as the main branches of the science for the study. The current study is an empirical study in which 160 of randomly selected rural secondary school students were involved. A self-prepared questionnaire was used as the research instrument for this quantitative survey. Stratified sampling method was used as the sampling method and the sample includes rural secondary school students in Palugaswewa education division located in Anuradhapura district, Sri Lanka. A significance level of motivation was shown for the biology in which female students became prominent.

KEYWORDS: *Science, Motivation, Rural students, Secondary students.* -----

INTRODUCTION

Science education is a vital aspect in secondary schools to enhance the quality of education of any state in the globe. The science education can offer a rich context for developing many 21st-century skills, such as critical thinking, problem solving, and information literacy. As the science helps student's understanding of the world around them, it is a necessary responsibility of every educational system to pay better concern regarding the improvement of quality of science education. The government of Sri Lanka has also taken various efforts to develop science education of the nation. The policy of 'science for all' was implemented in the country in 1972 and the concern to develop science has been broadened.

The motivation of students towards learning science is an integral component in science education. "Learning clearly has an affective component and developing positive attitudes is important for students' achievement" (Kind, Jones, & Barmby, 2007). One of these affective components, specifically students' motivation towards learning science (MTLS) plays a crucial role in science learning (Anthoni Durage Asoka De Silva, Ali Khatibi, and S. M. Ferdous Azam, 2018). As Osborne & Dillon (2008) describe Students' MTLS is a matter of global concern. Students' performance is affected by the motivation, and it is a multidimensional construct according to the Social Cognitive Theory (SCT) (Schunk & Prajares, 2001). Student's performance can be improved by using motivation (Atta & Jamil, 2012). Motivation can influence student's performance in all levels of education. (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). As Bandura describes motivation controls level of functioning (Bandura, 2001).

Even an evolving era in science education could be observed recently, a decline of student's motivation toward science education too observable. In many cases, student's attitude towards learning science is in a declined stage. (Barmby, Kind, & Jones, 2008; Galton, 2009; Kiemer, Gröschner, Pehmer, & Seidel, 2015; Vedder-Weiss &



Fortus, 2011). Since 1960s to date “swing away from science”, which is a decline in students’ attitudes toward studying science, has become a global concern (Anthoni Durage Asoka De Silva¹, Ali Khatibi² and S.M. Ferdous Azam, 2018). According to Jayawardena, ‘swing away from science’ is another dilemma faced by Sri Lanka (Jayawardena, 2015). Especially rural children are generally not interested in studying science, due to lack of exposure to scientific ideas. It also seems that science taught in schools is mainly examination-oriented and not meant to stimulate interest among children. Hence numerous research studies are done on the student’s motivation towards learning science. But on the other hand, it is observable that research works on student’s motivation towards the learning different branches of science are rare and hard finding. By taking this knowledge gap into consideration, the present study focuses trends of student’s motivation towards the learning different branches of science.

More accurately it is expected through the current study to recognize level of interest among students in grade 11 of rural secondary schools towards different branches of science. The study also sheds light on finding root causes for the identified trends and implementation of school wide policies to enhance the quality of science education.

OBJECTIVES

The following objectives were considered through the current study.

01. Primary objective was to identify level of motivation towards the biology, chemistry and physics taught for the GCE ordinary level examination among the students at rural secondary schools in Sri Lanka.
02. Recognition of root causes for the inequality of level of motivation for main three area in the science taught for the GCE ordinary level examination.
03. Identification of school-based measures to maintain the equal level of motivation towards the main area in the science.
04. Enhancing the quality of science education in rural secondary schools in Sri Lanka.

METHODOLOGY

The current study was an empirical study which was based on the survey design. The population, sampling, research instrument, data collection and analysis are described below.

The population and sampling procedure

Grade 11 students at public rural schools who were to take GCE ordinary level in 2020 were considered as the population of interest. The population totally comprised students who carried out their studies through Sinhala medium. Five schools in the Palugaswewa education division, Anuradhapura were selected for the study and 160 students were in the sample. Table 1 shows the Demographic profile of the sample.

Research instrument

A self-prepared questionnaire was used as the survey instrument to collect the primary data. The questionnaire contained self-assessment items to be responded by students. The self-assessment items were constructed to receive responses that are indications of level of motivation towards different area in the science and root causes for the level of motivation.

Collection of data and analysis

Selected schools were visited personally, and the questionnaire was administered. The principals of respective schools were informed prior to the visit and questionnaire was administered during a convenient time allocated by the principal. Data were analyzed and both descriptive statistics and inferential statistics were carried out. Findings of the current study was based on percentage analysis method.

Sampling design

The primary data were collected through a self-designed questionnaire from 160 students in rural secondary schools. Stratified sampling method with simple random sampling were used as sampling method.

Statistical design

Collected data were coded and tabulated for analysis. Interpretation was done by using table, charts, and graphs. Both descriptive statistics and inferential statistics were involved, and findings are mainly based on percentage analysis method.



Geographical area

Students at rural secondary schools in Palugaswewa education division located in Anuradhapura, Sri Lanka were selected.

RESULTS

The data collected from respondents through the questionnaire was analyzed and interpreted as below

- Table 01 shows a demographic profile of the sample of students. There were 78(48.75%) boys and 82(51.25%) girls taught through Sinhala medium.
- Table 02 together with figure 01 and figure 02 indicate the number of students interested in different areas in science taught for GCE ordinary level examination based on the gender. They show that 67.94% of boys interested in biology while 21.79% and 10.27% of boys interested in chemistry and physics respectively. 75.30% of girls interested in biology while 18.29% and 06.42% of girls interested in chemistry and physics respectively. Totally 71.25% of students interested in biology while 20.00% and 08.75% of students interested in chemistry and physics respectively.
- Figure 03 represents the students interested in biology based on three selected reasoning. It shows that 40 boys and 45 girls interested in biology due to the reason of being exam oriented, 09 boys and 13 girls interested in biology due to their interest to learn as a subject and 04 boys and 03 girls interested in biology due ability to use in day-to-day activities.
- Figure 04 represents the students interested in chemistry based on three selected reasoning. It shows that 10 boys and 11 girls interested in chemistry due to the reason of being exam oriented, 05 boys and 03 girls interested in chemistry due to their interest to learn and 02 boys and 01 girls interested in chemistry due ability to use in day-to-day activities.
- Figure 05 represents the students interested in physics based on three selected reasoning. It shows that 04 boys and 04 girls interested in physics due to the reason of being exam oriented, 03 boys and 01 girls interested in physics due to their interest to learn and 01 boys and 01 girls interested in physics due ability to use in day-to-day activities.
- Figure 06 indicates the number of students interested in any branch of science based on their main reasons. It shows that 114(71.25%) of students interested any branch of science due to being exam oriented, 34(21.25%) of students interested in any branch of science due to interest to learn and 12(7.50%) of students interested any branch of science due to ability to use in day-to-day activities.

SUGGESTIONS

- Adequate measures in the curriculum development should be taken to maintain equal level of interest among students for main three areas of science taught for GCE ordinary level examination.
- Development of school wide policies to maintain the student's interest to study science based on the being exam oriented, interest to learn and ability to use in day-to-day life at an equal level.
- Introducing new teaching strategies to teach specially chemistry and physics in a way that student's desire to learn those area could be increased.
- Establishing activity-based learning environment in school community.
- Enhancing the knowledge of students to use scientific principles in real situation in life.

CONCLUSION

It is well settled fact that student 's motivation has a significance impact towards the science education. Maintain same level of motivation towards the main areas namely biology, chemistry and physics taught for GCE ordinary level examination is a vital aspect to enhance the quality of science education and to achieve the objectives in national level curriculum development. It is already observed that students in rural secondary schools in Sri Lanka exhibit less motivation level towards the learning science comparing with urban secondary school students. But observing level of motivation towards main branches of science also remains in a considerable stage as more strategies need to be implemented to equalize same level of motivation towards learning different branches of the science.

The findings of current study help policy makers and curriculum developers to identify difference in level of motivation towards the different areas in science especially by rural secondary school students. As majority of



students show significance level of interest towards biology, school-based strategies are needed to implement to increase the level of interest towards chemistry and physics.

Overall, the current study shows that the main reason of majority of students to be interested in any branch of science is being exam oriented and it sheds light on finding root cause for the inability of many rural secondary school students for applying their knowledge to everyday situations and to the workplace.

Area for further research

Further study can be taken to find level of motivation of students to learn different branches of science taught for GCE ordinary level examination based on the ethnic group, school type and on the province. Also finding different reasons to be interested in a particular area of science based on the free responses of the students is another area for further study. Impact of teacher involvement for motivation of students towards learning science too can be considered.

FIGURES AND TABLES

Table 01 – Demographic profile of sample

Gender	Frequency	Percentage
Male	78	48.75%
Female	82	51.25%

Figure 01-Representation of students interested in different areas in GCE O/L science based on gender

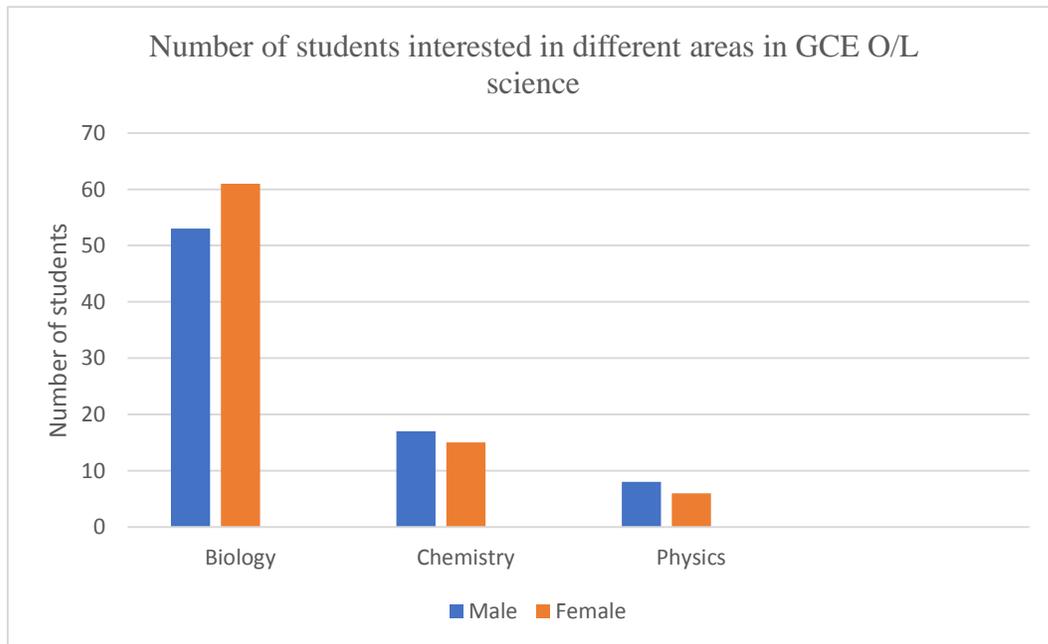




Figure 02-Total number of students interested in different areas in GCE O/L science

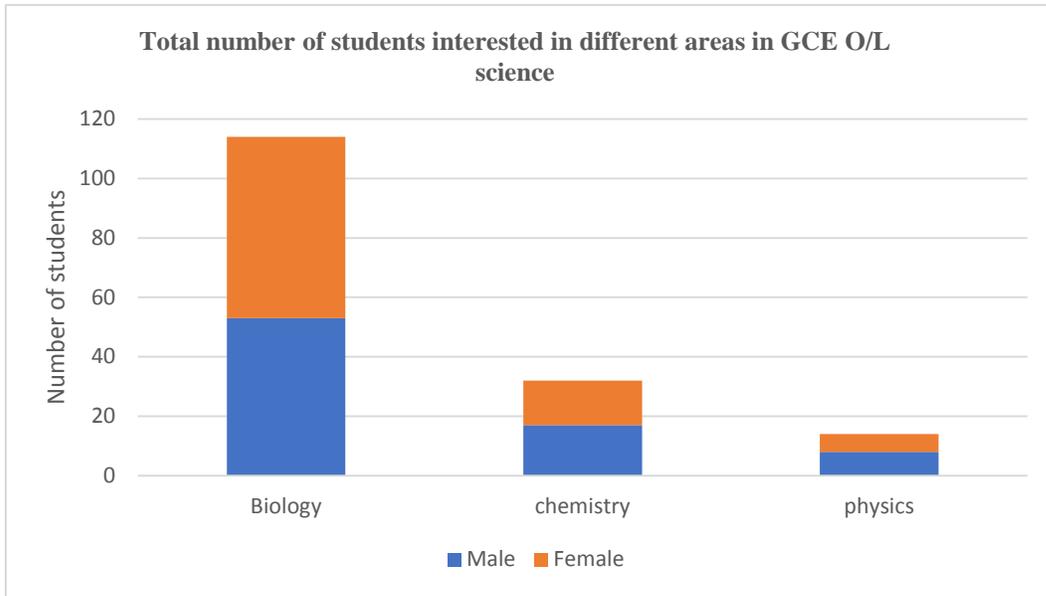


Table 02-Percentages of students interested in different area in GCE O/L science

Gender	Number of students interested in			Percentage of students interested in		
	Biology	chemistry	physics	Biology	chemistry	physics
Male	53	17	08	67.94%	21.79%	10.27%
Female	61	15	06	75.30%	18.29%	06.42%
Total	114	32	14	71.25%	20.00%	08.75%

Figure 03-Representation of students interested in biology based on selected reasoning

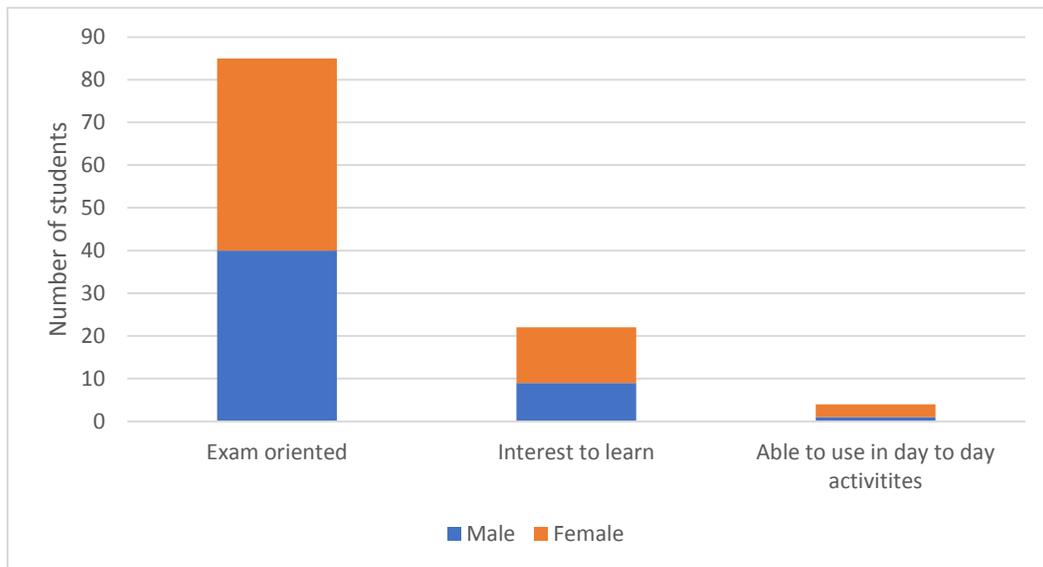




Figure 04- Representation of students interested in chemistry based on selected reasoning

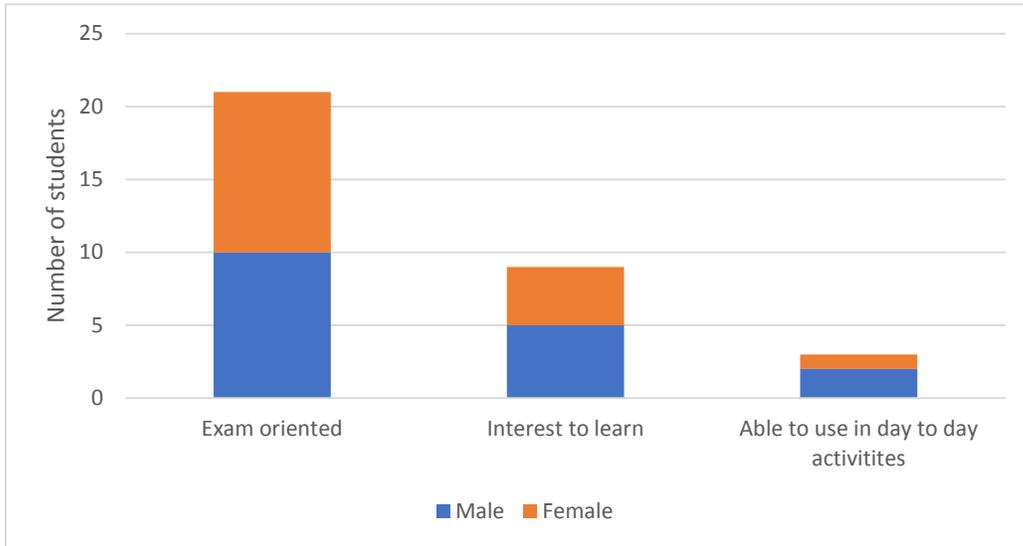


Figure 05- Representation of students interested in physics based on selected reasoning

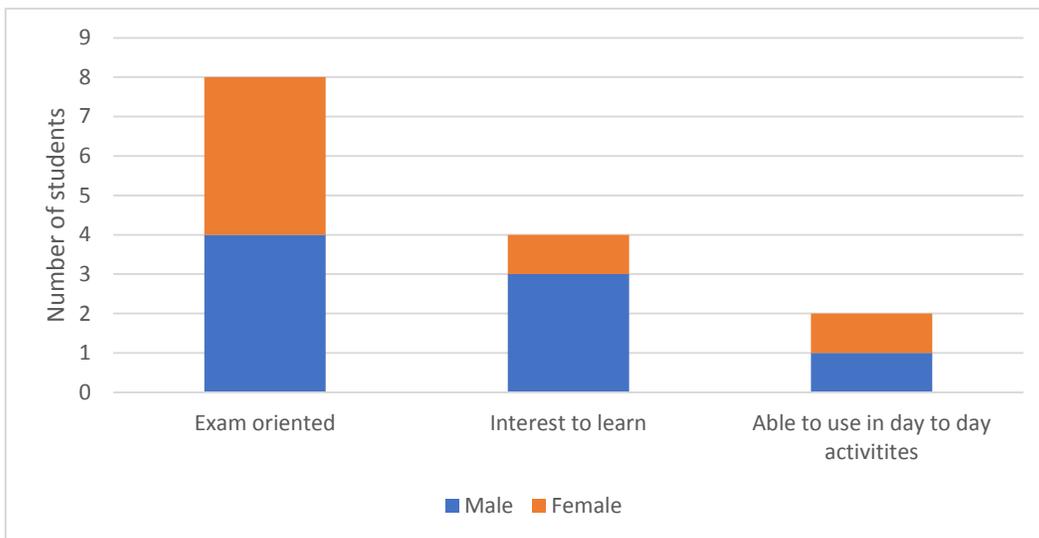
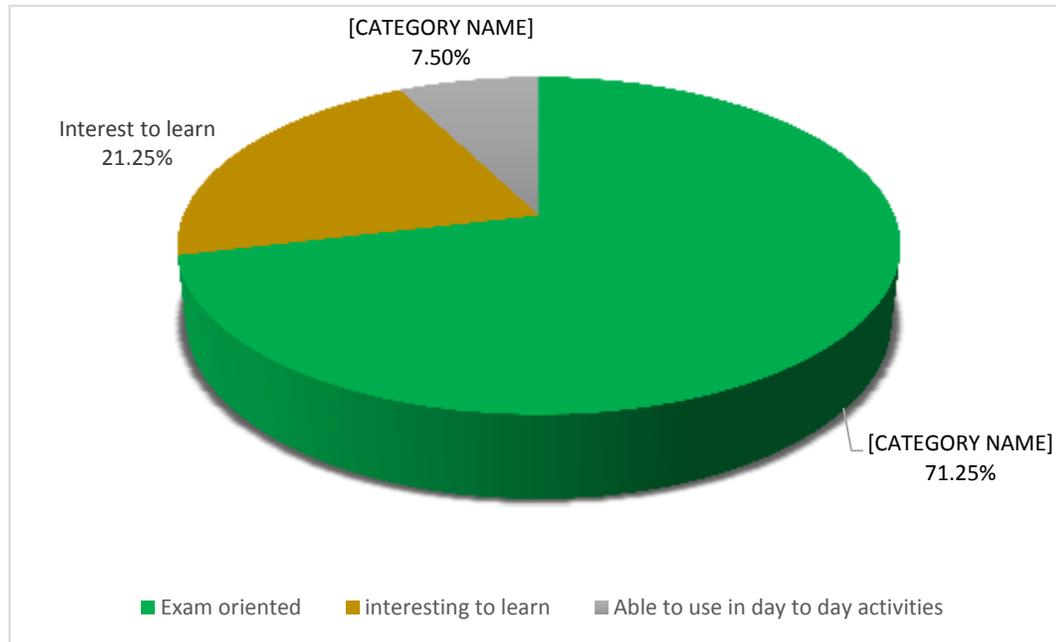


Figure 06-Representation of students based on the selected reasoning



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