SCIENCE ENGAGEMENT, INTEREST AND PERFORMANCE OF GRADE 9 STUDENTS

JIMSON A. DEGRACIA
jimson.degracia@deped.gov.ph
https://orcid.org/0000-0003-2977-1186
Capiz National High School
Roxas City, Capiz, Philippines

ABSTRACT

This survey – correlational study determined the level of engagement and interest in relation to Science performance of Grade 9 regular students of Capiz National High School for the School Year 2017 – 2018. This involved 285 students from 988 total populations selected through stratified random sampling by lottery method. The researcher -made questionnaires were used to determine students' Science engagement and interest, while students' grade in the third quarter was used to measure Science performance. Frequency count, percentage, mean, and standard deviation as descriptive statistical tools were utilized for data analyses. Moreover, t-test, Analysis of Variance (ANOVA), and Pearson r were used for inferential data analysis. A two- tailed test was used at 5% level of significance for all inferential analysis. The study revealed that level of Science engagement of Grade 9 regular students is highly engaged, their interest is highly interested and performance is very satisfactory. No significant difference is found in the level of engagement of the Grade 9 regular students when classified as to sex, monthly family income and parents' education and no significant difference is found in the level of interest of the Grade 9 regular students when classified as to sex, monthly family income and parents' education. Also, no significant difference was assessed in the level of Science performance of Grade 9 regular students in terms of sex and no significant difference when classified as to monthly family income and parents' education. However, the significant relationship is found between Science engagement and performance. Similar result conformed between science interest and performance.

Keywords: science engagement, science interest, science performance, and high school

INTRODUCTION

Engagement and interest of students are two of the important factors that must be considered in every subject. As an institution, schools are doing different ways to implement improvements which the main goal is to improve student's performance and change the way students get engaged with the subject matter. As a science teacher holding regular classes, students' engagement and interest in science is very important to grasp the concepts and learning competencies in every grading. Students in the lower sections of the regular class were noticed to get easily bored and unattended. They are out of focus and easily get unattached from the daily routine. High school student's performance in science has been discouragingly low. This result poses a problem to stakeholders. In addition to that, there is also the problem of persistence absenteeism among students that result to drop out. There is much attention placed on closing the achievement gap among socioeconomically disadvantaged or ethnic/ racial minority students. Performance in school is also affected by number of factors including the quality of the school, characteristics of students' family such as socio-economic status and parents' educational level and the characteristics of the child. Unfortunately, evidence demonstrating that changes in these areas lead to higher academic engagement and

P – ISSN 2651 - 7701 | E – ISSN 2651 – 771X | www.ioer-imrj.com
DEGRACIA, J.A., *Science Engagement, Interest and Performance of Grade 9 Students, pp. 45 - 51*

45

achievement does not exist (Farrington, et al, 2012).

Student engagement inside the classroom is concerned for educators, researchers, parents, and students themselves. Different researchers have suggested that student engagement is key to student performance and advancement in any aspect. In this matter, many students do not have a sense of engagement at school, they do not recognize how important engagement in their success in the future. (Zyngier, 2007). The importance of student engagement in school is recognized by educators and school administration, as is the observation that far too many students are easily getting bored, uninterested and uninvolved, that is, disconnected from the academic and social aspects of school life. (Appleton et.al., 2008).

In connection, performance of students is also affected by interest as one factor affecting the total performance of students towards the subject. Research states that the extent to which student interest are incorporated is significantly related to their academic achievement. Research also has shown that the inclusion of students' interest in the learning process increases student engagement in learning (Akey, 2007).

Finally, the researcher observed that during his conduct of classes in Grade 9 students in the regular class especially in the lower sections, male students tend to show lesser interest than females in studying Science subjects. Then, both male and female students in the Science, Technology and Engineering of the same school have very high engagement and interest in the said subject as reflected in their performance both in output – based tasks and written works. Based on these observations, it is very important to identify the factors affecting performance of the students in Science. In this case, it was assumed that engagement and interest can result to a better performance of students.

OBJECTIVES OF THE STUDY

The study ascertained the Science engagement, interest, and performance of Grade 9 students at Capiz National High School, Roxas City, Capiz for the School Year 2017- 2018. More specifically, it sought to: 1) determine the level of Science engagement of Grade 9 regular students; 2) determine the level of Science interest of Grade 9 regular students; 3) determine the level of science performance of Grade 9 regular students; 4) determine if there is a significant difference in Science engagement when classified as to sex, age, monthly family income, and parents' education; 5)determine if there is a significant difference in Science interest when classified as to sex, age, monthly family income, and parents' education; 6) determine if there is a significant difference in Science performance when classified as to sex, age, monthly family income, and parents' education; 7) determine if there is a significant relationship among Science engagement, interest, and performance of the respondents.

METHODOLOGY

This study focused on engagement, interest, and science performance of Grade 9 students at Capiz National High School for the School Year 2017- 2018. This study utilized the survey- correlational research design. Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. Survey research can use quantitative research strategies, qualitative research strategies or both strategies. The use of the survey approach is appropriate for the most descriptive and correlational study. Correlational study, on the other hand involves collecting data to determine the degree to which a relationship exists between two or more variables (Fraenkel et.al., 2012). In this study, the independent variables were engagement and interest, and the independent variable was the Science performance.

From a population size of 988, a sample size of 285 was randomly taken using the Slovin Formula. The selection was done using the stratified random sampling. This means all the names of the students were written in rolled slips of paper and placed in a box. From the box, the required number of respondents was drawn.

The researcher used questionnaires to gather the needed data. To these instruments, the

student's personal profile was attached to gather data on sex, family income, and educational attainment of the parents. Science Engagement Questionnaire was a researcher - made questionnaire composed of 35 items to measure the level of engagement of respondents to the science. Science Interest Questionnaire was a researcher-made questionnaire composed of 50 items to measure the level of interest of respondents to the science. The Science performance of students was based in their Science grades in the third grading period. The variables such as sex, parents' educational attainment, and monthly family income of Grade 9 students in School Year 2017 – 2018 were gathered using attached personal information data sheet for the participants.

In conducting the study, a permission letter was secured from the Schools Division Superintendent of the Capiz Division. Another letter for approval was given to the school principal to conduct the study on the scheduled date. After the letter was approved, the researcher had personally administered the questionnaires with the assistance of the advisers to the participants at specific time limit to ensure a 100% retrieval of the accomplished copies of the instruments. A brief instruction was given to the participants prior to the administration of the questionnaire so that they would understand what to do and would not leave any questions unanswered. The participants were provided with a copy of the signed consent form. For confidentiality and anonymity, the names of the participants were not being disclosed. The participants were also given freedom to withdraw as a participant of the study at any time.

RESULTS AND DISCUSSION

1. Level of Science Engagement

The overall level of engagement of students is found to be highly engaged. More particularly, their level of Science engagement in terms of Science concept is found to be highly engaged. In terms of learning environment, their level of Science engagement is also found to be highly engaged. With regards to performance task, their level of Science engagement is also found to be highly engaged. Similar results have been collected in terms of process skills. The results imply that students are highly engaged in science. Students may have similar engagement in science such as when learning new concepts, they attempt to understand and find relevant resources that will help them clarify misunderstandings. This may also because students are encouraged by teachers to actively participate and get involved collaboratively with their groupmates in performing science activities and other performance tasks. The learning environment may also be conducive for all learners where in students get engaged in the subject with lesser pressure coming from their teacher. This result supported the study of Harris (2008) on student engagement and suggests that teachers should be clear and consistent about how they understand student engagement and how important engagement is to their teaching practices.

2. Level of Science Interest

The overall level of Science interest of students is found to be highly interested. More particularly, their level of Science interest in terms of learning environment is found to be highly interested. In terms of intrinsic factors, their level of science interest is also found to be highly interested. With regards to self-efficacy, their level of science interest is also found to be highly interested. The results imply that students are highly interested. Students may have similar interest in the contents demonstrated and activities performed in the third quarter. Their willingness to visit sites connecting them to studies and researches published as well as performing varied activities and observations about the science concepts related to volcano, climate and constellation may have also caused this result. Their awareness on the risks and effects of natural phenomenon such as volcanic eruptions and climate change may also be one of the reasons for this result. This finding is supported by a research stating that the extent to which student interest is incorporated is significantly related to their willingness to learn (Akey, 2007).

3. Level of Science Performance

The overall Science performance of students in the third grading period is found to be very satisfactory. The result implies that students exhibited a very satisfactory performance in science. This is maybe due to the student's intention and desire to learn, pay close attention to the material as they study, learn in a way that matches their personal learning style, and consideration of the time they spend studying with the help of their teacher, parents, and peers. In addition, teaching methods by teaching students the difference between recall, application, and strategic reasoning may also lead to this result since when students learn the difference between how much thinking is required to answer questions at each level, it assists them in not only answering questions, but also in their learning.

4. **Differences in the Levels of Science Engagement according to sex, age, family income, and parent's educational attainment**

The result denotes those male and female students have similar level of engagement. This is maybe since both male and female students are engaging in discussions about volcano, climate, and constellations during the third quarter period of the school year which they found exciting and satisfy their curiosity. This finding may also be resulted because both male and female students with the guide and supervision of the teachers' design procedures to verify their questions and ask the help of their group mates to collaboratively record and analyze the result of their scientific observations or investigations about the task thy are assigned of. This result contradicts the study of Harris (2008) stating that female students have better level of engagement and more efficient than male.

Moreover, students of various age groups have similar level engagement towards science. All students, regardless of their age, participate in the same activity given by the teacher as required by the competency. The level of Science engagement in science also does not significantly differ among students with varied family income. The level of Science engagement in science of students also does not significantly differ considering their parents' educational attainment. This means that regardless of their parent's educational status, students exhibit high engagement in the aforecited subject.

5. **Difference in the Level of Science Interest according to sex, age, family income, and parent's educational attainment**

Findings revealed that male and female students have a similar level of interest in science. This implied that both male and female students are interested to learn new concepts and understand the risks and benefits they can get from climate – related activities. Students, regardless of their sex also find volcanic eruptions interesting as they saw it in televisions, videos, and internet sites just like what the tourists and other people are experiencing when they are watching such activity. The result negates the findings of Pino and Smith (2007) that female students exceed than male counterparts in academic and readily interested with academic goals and activities than males.

Parallel to this, the students of various age groups have the same level of interest towards science. In addition, the result showed that students of various family incomes have also similar level of interest towards the subject. Finally, students of various parents' educational attainment have the same level of interest. This means that regardless of their parent's educational status, students exhibited high interest in Science.

6. **Difference in the Levels of Science Performance according to sex, age, family income, and parent's educational attainment**

Results revealed that male and female students have different level of performance towards Science. Females were more likely perform better than males. This may be due to varied learning references, study habits and attitude towards the subject. Female students tend to have better organization strategies in which they tend to apply or impose more efficient working methods, arrange their schedule, and plan their tasks more effectively than male students. This result negates with Dania (2014) that students' performance is not determined by gender in terms of students' academic achievement. The Science

performance has significant difference among students with various ages. Considering their grades, students aging 13 years old have higher performance than students aging 18 years old. The ability of young students to grasp new information and concept may lead to this result. Furthermore, it was revealed in the result that the monthly income of the family does not directly affect the level of performance of students in science. Results also showed that parents' educational attainment does not directly affect the level of performance of students in science. This also concludes that high level education of parents to an extent, have no influence on their children to achieve and perform well in their studies. This assertion contradicts the results obtained by Khan et.al., (2015) that high level educated parents usually affects their children's academic performance or achievements and their choice of subject and career while in secondary school.

7. Relationships among Science Engagement, Science Interest, and Science Performance

The correlation matrix showed a positive and strong relationship between Science engagement and interest. This means that one highly influences the other such that with focused interest in Science, there could be higher level of engagement. This also implies that the level of engagement is related to the level of interest of students towards science. This may be because student's engagement towards Science activities and performance is also affected by their interest and that is they are willing to learn new concepts about volcano, constellations and climate because they attempt to understand them and wanted to connect these concepts to their previous and current experiences. They may also engage in performing tasks related to such topics because they find it challenging and may answer to their curiosity.

Thus, Science performance is dependent of both interest and engagement. Both engagement and interest showed a relationship towards performance. That is, interest and engagement in the subject translates into better performance or learning in the subject. Henceforth it may be concluded that high score in performance

is affected by high level of interest or high level of engagement of students towards the science.

CONCLUSIONS

Based on the findings in the study, the following conclusions were drawn:

1. Grade 9 regular students of Capiz National High School have high engagement in Science. The teacher strategies applied to secure student engagement is therefore effective and students also exert effort to become more involved in activities and performances related to their subject matter. Their level of engagement can improve their overall school experience and can help prevent future issues such as decreased attendance, increased class disruptions and dropping outs.

2. Generally, students are highly interested in the topics that were presented and discussed in the third grading period. It shows a positive result that depicts students' willingness to learn the concepts and relate it to their daily lives. Their interest is highly affected by their environment which means that the teacher is effective in providing a set up that triggers their interest about the subject being discussed.

3. The overall Science performance of the students is found to be very satisfactory. To be specific, their mean average falls in the lower bracket of a very satisfactory performance. This may be an indication that students are doing good in their performance task, but it still need some improvement in other written works and departmental test to make their performance outstanding.

4. It is an understandable assumption, and even desire, to find that engagement has a positive effect on academic achievement. The students' performance in Science are affected by their interest and engagement in science as the result of this research

shown. It was perceived that students can have very satisfactory performance if they have a high level of interest and engagement in the subject.

RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are hereby endorsed:

1. Engagement is a crucial part of learning, but ensuring students are actively engaged is more complex than whether the student is paying attention or not. Since the result of the study shows high engagement of the students towards science, the teacher may either find way to maintain or increase this to make students very highly engaged by providing activity, strategy, tasks, or idea that allow students to personalize his or her response towards the topic. The teacher should make sure that there is social interaction and students in return should take the opportunity to talk about their learning. The school head may also participate in keeping students engaged by supporting financially and physically the teachers in proving hands – on and kinesthetic learning opportunities.

2. Maintaining an interest in Science is clearly one of the best things a teacher can do for his or her teaching. Since the result of the study showed that students have high engagement in science, the teachers may either find way to maintain or increase this to make students very highly interested by relating the content of the discussions to their lives or relate their lives to the content. The teacher may also arouse students' curiosity and anticipation by asking interesting, speculative questions and capture their attention at the emotional level as possible. The school heads may also take charge with the help of the parent – teacher association in securing an emotional and physical safety environment for the students.

3. Teachers may continue to improve students' performance and increase students' achievement. Data showed that students have a very satisfactory performance in science specifically on output – based performance. If the teacher wants to improve students' performance, he or she must align instructions to learning standards, include formative assessment, provide consistent feedback, and use this feedback to loop concept and always have self – assessment just like if the students clearly see how one day of learning builds on the next day of learning. Students, in return, should not only focus on output - based performance but also take time to study concepts that may come out in the exam. The department heads/ principal may also check or validate the test questions constructed by the teacher to make sure that the competencies are being reached.

4. A replicate of this study may be conducted utilizing different variables or respondents for further data collection and investigation of other factors that can support why student interest and engagement affect student performance and for a better understanding of other factors that may affect achievement, it would be worthwhile investigating what impacts on achievement from the students' point of view.

REFERENCES:

Akey, Theresa M. (2006). *School context, student attitudes and behavior, and academic achievement: An exploratory analysis.* New York: MDRC. http://www.mdrc.org/publications/419/full.pdf

Appleton, J.J., Christenson, S. L., & Furlong, M. J. (2008)*. Student engagement with school: Critical conceptual and methodological issues of the construct.* Psychology in the Schools, 45, 369–386.

Check J., & Schutt R. K. (2012). Survey research. *Research methods in education.* Thousand Oaks, CA: Sage Publications; 2012,159–185.

Dania, P. O. (2014). *Effect of gender on students' academic achievement in secondary school social studies.* Journal of Education and Practice, 5(21). https://www.iiste.org/Journals/index.php/JEP/article/view/14519

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners: The role of noncognitive factors in shaping school performance--a critical literature review.* Consortium on Chicago School Research. 1313 East 60th Street, Chicago, IL 60637.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education.* https://saochhengpheng.files.wordpress.com/2017/03/jack_fraenkel_norman_wallen_helen_hyun-how_to_design_and_evaluate_research_in_education_8th_edition_-mcgraw-hill_humanities_social_sciences_languages2011.pdf

Harris, L. R. (2008*).* A phenomenographic investigation of teacher conceptions of student engagement in learning. *The Australian Educational Researcher,* 35(1), 57-79.

Khan, R. M. A., Iqbal, N., & Tasneem, S. (2015). The influence of parents educational level on secondary school students academic achievements in district Rajanpur. *Journal of Education and Practice*, 6(16), 76-79.

Pino, N. W., & Smith, W. L. (2005). Gender differences in the academic ethic and academic achievement. College Student Journal, 39, 604-618.

Zyngier, D. (2007). *Listening to teachers–listening to students: Substantive conversations about resistance, empowerment and engagement.* Teachers and Teaching: theory and practice, 13(4), 327-347.

AUTHOR'S PROFILE

Jimson Alair Degracia is a senior high school science teacher at National High School in Roxas City, Capiz, Philippines. he teaches science subjects including General Biology 1, General Biology 2 and Physical Science. He is also one of the designated Science Club Coordinator in their department. He finished his Bachelor in Secondary Education major in Biological Science at Capiz State University as Cum Laude. He obtained his Master of Arts in Teaching General Science at Filamer Christian University, and currently a Department of Science and Technology (DOST) scholar taking Doctor of Philosophy in Science Education major in Biology at West Visayas State University, Iloilo, Philippines.

COPYRIGHTS

P – ISSN 2651 - 7701 | E – ISSN 2651 – 771X | www.ioer-imrj.com
DEGRACIA, J.A., *Science Engagement, Interest and Performance of Grade 9 Students, pp. 45 - 51*

51