

Academic Performance in Physics of Fourth Year High School Students in one Public High School in Batangas City, Philippines

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**Asia Pacific Journal of
Education, Arts and Sciences**

Vol. 3 No.3, 36-40

July 2016

P-ISSN 2362-8022

E-ISSN 2362-8030

www.apjeas.apjmr.com

Date Received: May 16, 2016; Date Revised: July 2, 2016

Abstract - *The main purpose of this study is to determine the academic performance in Physics of fourth year high school students in one public school in Batangas City, Philippines. Descriptive type of research was utilized in the study. Findings showed that the results of student performance in physics as well as the achievement test are all satisfactory. The students encountered difficulties in the conduct of science investigatory project which is considered very serious, use of IT in presenting report and use of English language in expressing ideas with serious problems. The proposed activities to enhance the performance level of students in Physics are offered.*

Keywords: *Physics, academic performance, achievement test*

INTRODUCTION

The Philippine government has laid the educational responsibility of developing individuals to the optimum in their physical, mental, social, emotional and moral aspects on the school. Such tasks include the development of scientific culture among the young's through scientific, technological and vocational skills. Because of scientific nature of today's society, individuals and society are expected to be scientifically literate in order to function effectively and to meet the demands of the time. As such, scientific literacy becomes one of the major goals of education. Consequently, it becomes the ultimate goal of each school through science teachers to produce scientifically literate persons.

The purpose of education is to provide students with the specific skills and values in order to be productive members of the society. Educator need to translate these educational aims into statements that will describe what educational institutions are expected to accomplish. Orstein and Lasley [1] point out that those goals make possible to organize learning experiences in terms of what the state, school district, or school decide to stress on a system wide

basis. In effect, goals are statements that cut across subjects and grade levels and represent the entire school program.

According to Ramiso [2], the goal of quality education is to develop the full capacities of learner and to support the unfolding of an individual. Quality must be viewed in terms of outcomes. Student-centered teaching and learning is the recommended approach to modern day pedagogy especially in the Outcomes-based Education [3]-[7]. Galang [8] cited that the portrait of the Philippine education today can be compared to an artistic painting of a landscape that emphasizes the bloom and not the gloom of the setting. Peñano-Ho [9] envisioned that the learner, the teacher, and the teaching-learning process are the three important components in education.

Salandanan [10] stated that along the general objectives of Science education should be geared towards: enabling the students to acquire knowledge and understanding for them to explain, predict and interpret national phenomena in their environment wherein instruction in science should be related and can be applied to daily experiences. Academic performance is a measure of how the student progress can be monitored and identified the areas where the students need more improvement [11].

Science and Technology IV which is Physics in fourth year high school are counted as 1.8 unit's subject in the Basic Education Curriculum. Physics divided into units such as, nature and importance of Physics, mechanics, mechanical and thermal properties of matter, oscillations and waves, electricity and magnetism and modern Physics. This curriculum provides the general goal of basic education that is to develop the Filipino learners by providing them basic competencies in the literacy, numeracy, critical thinking and learning skills and desirable values to become caring, self-reliant, productive, socially aware, patriotic and responsible citizens.

Physics as a discipline requires learners to employ a variety of methods of understanding and to translate from one to the other-words, tables of numbers, graphs, equations, diagrams, maps. Physics requires the ability to use algebra and geometry and to go from the specific to general and back. This makes learning Physics particularly difficult for many students [12].

The school under study was able to have an enrolment of at least 390 students from first year to fourth year. The population is low compared to other national high schools in the division of Batangas City, Philippines. The academic standing for the past five years is satisfactory based on the performance of the school. Students are still trying to improve their academic performance in Physics. They need variation in teaching approach to develop better understanding in Physics. It is the challenge in every teacher to upgrade and have a higher level of performance in the subject they are teaching. Provisions for adequate, updated and relevant instructional materials and facilities must be based from the needs of the students. Identifying the extent of problems encountered [13], [14] is necessary to address the issue on the teaching and learning process.

The teaching of Physics is an adventure. It is challenging, sometimes frustrating, occasionally painful and often richly rewarding and satisfying. The researcher believes that through this study, teachers will discover ways and means for a more intelligent understanding of the factors and circumstances that directly or indirectly affect the students' performance, also hoped that through the assessment of students performance, teaching of the various science, will become more effective thereby producing competent and productive citizenry.

The insights from this paper prodded the researcher to mull over and evaluate the performance of fourth year students and wanted to determine the factors related to their academic performance in Physics. In doing so, appropriate adjustments by the people concerned may be conceptualized to come up with proposed activities that could enhance student's performance in Physics and further cope up with the different lessons.

OBJECTIVES OF THE STUDY

The study aimed to determine the level of performance in Physics of the student respondents in terms of lecture discussion, laboratory performance and results of achievement test, identify the difficulties encountered by the students that affect

their academic performance in Physics, and to propose a plan of action to enhance the level of performance of the respondents.

METHODS

Research Design

This study used the descriptive method of research to determine the academic performance in Physics of fourth year high school students in Talumpok National High School, Batangas City, Philippines. The researcher gets the frequency, percentage and weighted mean. This design is considered as the most appropriate in studying the concerns of this study and effective in the analysis and interpretation of the data that will be gathered. Discussions are substantiated with information gathered through the answers of the respondents in the self-made questionnaire of the researcher. The findings are used as basis to propose an action plan or activities to enhance the performance of the respondents.

Participants

Respondents of the study are the 95 fourth year students, 48 females and 47 males of Talumpok National High School, Batangas City, Philippines during School Year 2012-2013. Since there are only two sections and the researcher wants to generalize the result for the respondents, no sampling was used in the study.

Instrument

The study used the class performance of the students based on the previous record of the Physics teacher. The record includes their grades in lecture, laboratory performance and results of the achievement test. The questionnaires are based from the experienced and observation of the researcher in handling Physics subject. This research-made questionnaire will provide a broad range of input in an efficient manner and will contain a series of questions or items that attempt to collect information on a particular topic especially the factors affecting the students' performance is also used as part 2.

Procedure

The first draft was constructed and presented to the research consultant for corrections, revisions and for improvement. The second draft was developed incorporating the corrections and suggestions given in

the first draft and then will be presented again. After that, the researcher prepared several clear copies for validation. The validation of the questionnaire was needed to ensure that the respondents supplied reliable data. Revision made by the adviser were added and involved in the gathering tool. The questionnaire was presented again to the adviser for further verification and assessment.

All the suggestions given were incorporated; the final copy of the questionnaire were then reproduced and distributed personally to the intended respondents. Retrieval was done personally with one hundred percent of the questionnaires on hand.

The responses were tallied, scored and tabulated for analysis. The scoring of responses were based on the Likert Scale positioning wherein the respondents will chose which is more applicable and true to them. The values range from 1 to 5 with 1 expressing the lowest value and 5 equivalents to highest value. An equivalent verbal description was used for each of the numerical values.

The weighted averages were interpreted based on the given scale: 90 above: Outstanding (O); 85 – 89: Very Satisfactory (VS); 80 – 84: Satisfactory (S); 75 – 79: Unsatisfactory (US); 74 below: Poor (P). The given scale was used to interpret the result of the problems encountered: 4.5 – 5.0: Very Serious (VS); 3.5 – 4.49: Serious (S); 2.5 – 3.49: Moderately Serious (MS); 1.5 – 2.49: Slightly Serious (SS); 1.0 – 1.49: Not Serious (NS)

Data Analysis

The following statistical tools were used in the study to analyze and interpret the data and results of the study objectively. Frequency and Ranking determined which item in the questionnaire would be analyzed and interpreted first. The weighted mean was used to quantify the assessment of respondents on the level of their achievements in Physics.

RESULTS AND DISCUSSION

Table 1. Students Level of Performance in Physics (n = 95)

Grade	VI	Lecture	Laborator	Achievement
			y	Test
90above	O	0	0	0
85 – 89	VS	18	23	11
80 – 84	S	41	36	49
75 – 79	US	36	31	25
74 below	P	0	5	10

Based on the data, no one showed outstanding performance in Physics lecture discussion. There are only 18 students who have very satisfactory performance in Physics with 85-89% grades, 41 who have satisfactory performance with 80-84% grades, 36 who have unsatisfactory with 75-79 % grades and no one got poor performance in Physics. The data showed that all students participated in the lecture discussion.

Class participation is an important aspect of student learning. When students speak up in class, they learn to express their ideas in a way that others can understand. When they ask questions, they learn how to obtain information to enhance their own understanding of a topic.

Class participation also is a valuable learning tool for teachers. Through students' questions, you learn what they don't understand, and can adjust your instruction accordingly. If students will not participate in class interaction then it will affect their performance and no one will be of outstanding in the subject.

Based from the data, no one showed outstanding laboratory performance in Physics. There are only 23 who have very satisfactory performance in Physics, 36 students who have satisfactory performance, 31 who have unsatisfactory and 5 who have poor performance in Physics.

Laboratory performance is 35 percent in the grading system. Students should have to show interest in every activity as well as participate in the post laboratory discussion. There are 11 students who gave very satisfactory result, 49 students who gave satisfactory result, 25 students who are unsatisfactory and 10 students who are poor in the achievement test.

Arellano [15] on his study found out that majority of the students showed average performance in the achievement test in Physics. He also added that different approaches must be used by the teachers in Physics to motivate the students and develop interest among them; there should be sequence of activities that will lead to the discovery of concepts and laws in Physics.

Table 2 shows the number of students who encountered problems that affect their academic performance in Physics Class. Based from the data, the conduct of science investigatory project is a very serious problems and ranked number one (1) encountered in Physics.

Based from the Science Convention, science investigatory project aims to develop the capacity to

participate actively and effectively in the solutions to problems in the environment. The project also seeks to stimulate the intellectual growth and provide a sense of self-fulfillment and satisfaction. Students should be able to apply rational and creative thinking process in the search for solutions to problems. Demonstrate a functional understanding of the basic concepts, principles and relationships applicable to scientific study. Collect, organize and evaluate quantitative and qualitative data. Manifest an analytical and

questioning attitude. These are the qualities in which students are lacking to conduct science investigatory project.

The serious problems are the use of IT in presenting reports and use of English Language in expressing ideas. Talumpok National High School is situated far from the city and most of the families belonged to the middle class and lower class so the access of students in technology is also a factor to consider.

Table 2. Problems Encountered in Physics Class

The students find difficulty in.....	VS	S	MS	SS	NS	VI	Ranking
1. Converting one unit of measurement to another	0	11	42	34	8	MS	4
2. Applying problem solving skills in designing solutions	10	28	37	17	3	MS	6
3. Stating the relationship between quantities	9	16	41	23	6	MS	5
4. Accomplishing written output	7	20	25	37	6	SS	12.5
5. Ability to research appropriate concepts	0	18	35	29	11	MS	7
6. Using of IT in presenting reports	15	33	23	18	6	S	2
7. Availability of learning materials (textbooks, modules)	0	9	31	30	25	MS	9
8. Making presentable projects and outputs	5	19	26	32	13	SS	19
9. Conducting Science Investigatory Project (SIP)	42	25	17	9	2	VS	1
10. Designing and perform laboratory experiment	8	25	20	35	7	SS	16
11. Explaining flow chart and diagram	4	19	26	32	14	SS	17.5
12. Accuracy of laboratory equipment	11	14	25	36	9	SS	14.5
13. Time management	3	15	34	36	7	SS	14.5
14. Proper attitudes toward work	2	13	25	44	11	SS	10
15. Expressing ideas during class discussion	12	19	20	38	6	SS	11
16. Coping with the lessons	8	13	32	23	20	MS	8
17. Using of English language in expressing ideas	16	31	28	15	5	S	3
18. Relationship with the members of the group	3	11	21	34	26	SS	17.5
19. Relationship with the subject teacher	1	3	16	22	53	NS	20
20. Support from the family	13	33	9	37	3	MS	12.5

Table 3. Proposed activities to enhance the performance level of students in Physics

Objectives	Activities	Expected Output
1. To train students in undertaking research	Training workshop in conducting research	Research oriented students.
2. To educate students on the use of technology in making and presenting projects and reports.	Conduct of IT Training	Literacy in the use of IT.
3. To further develop student's knowledge and skills in Physics	Use of different strategies and technology in teaching.	Students can easily understand the concepts and theories presented by the teacher
4. Conduct research work to develop students' English literacy.	Cooperative Learning Research Work	Students expressed their ideas in English language.
5. Conduct review classes to strengthen students weaknesses in Physics class	Review class	Intensified knowledge in Physics.

CONCLUSION AND RECOMMENDATIONS

Students' performance in Physics class discussion, laboratory and result of achievement test are all satisfactory. The difficulties encountered are the following: conduct of science investigatory project which is considered very serious, use of IT in presenting report and Use of English language in expressing ideas which are serious problems of the students. The proposed activities to enhance the performance level of students in Physics are offered.

It is recommended that in order to increase the performance of students in Physics class discussion, laboratory and result of achievement test the teacher should use strategies and methods that will be suited to the needs of the students. Trainings should be conducted to enhance the student's abilities in writing science investigatory project. Utilizing cooperative learning approach in performing laboratory activities would provide active involvement of the students in the completion of the tasks [16].

The proposed action plan to solve the problems met by the students may be considered and implemented by the teachers concerned. Future researches may be conducted in investigating the interest of the students [17] in the subject of topic being discussed.

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