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ALTERNATIVE METHODS OF TEACHING PHYSICS

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Abstract*—that students learn better makes the effort of meeting the challenges worthwhile. To meet this, the study "Alternative Methods of Teaching Physics" may contribute. The study is modeled by incorporated indigenous folk motifs into modern forms. The researcher identified folk games that can demonstrate physics principles and designed class instructions in teaching physics using folk games, power point presentation, and lecture with board work. The purpose was to determine and compare the performance of physics students.All participants were given opportunities to experiential learning. However, males tended to be underrepresented. Subjects were in their typical age in college, many were "above average". Performance levels improvedamong different groups.All had comparable performance but significantly improved only in groups between "below" and "above" average.Three instructional methods stand out. It has shown to be effective in raising attainment and contributes to increased student motivation because instructional approaches used has maximized student learning. Pedagogy for physics learning could be more effective and inclusive when physics is taught and learned in contexts in which students can make links between their existing knowledge, experiences and when students are engaged in thinking physics during the learning tasks.If a follow-up study will be pursued, it might make links more evident.*

***Index Terms*—** *teaching physics, folk games, board work, power point presentation, experiential learning*

I. INTRODUCTION

A. Rationale of the Study

Education introduces valued aspects of culture of society as well as aspects of culture that are important for the members of the society. Looking back is to understand the past and review how it can serve as a challenge. The challenge is to reach better heights so we can see frontiers but always to uphold our mission by being vanguards of the cultural legacy handed down by those great people Gabao, 2010 [1].

While there may be significant improvements made by possible intervention programs of the Department of Education (DepEd), Department of Science and technology (DOST) and the Science Education Institute (SEI), there has been very little success in getting students to perform generally well in science and mathematics. The Philippines trailed far behind its Asian neighbors and consistently placed among the lowest two or three countries (TIMMS) Ibe 2004 [2]. Student performance in international assessment studies (TIMMS 1995, 1999, 2003) is consistently low. Students performed poorly in three cognitive domains: factual knowledge, conceptual understanding, and reasoning and analysis. The same results are observed in the National Achievement Test given by the Department of Education (Tan 2009) [3]. Decreasing interest in school science shown by students across the world is an important challenge. There are well-documented studies of declining interest in

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science and science careers in both primary (Jarvis and Pell 2002) [4] and secondary schools (Royal Society 2008b; Sturman and Rudduck 2009, TIMSS, PISA) [5]. Students reject a school science that is disconnected from their lives, a depersonalized science, where there is no space for themselves and their ideas. In his 2009 address, President Obama identifies this as a global issue. It is vital that we increase the interest of students in science.

Identifying effective practices are approaches which we can consider toward improving performance in Philippine science education. Effective learning in science occurs when students are involved in hands-on, practical-based activities like games, to increase the interests of students in science. A full of wonderful teaching and learning adventure in science not so much in the content of the curriculum but in the way learning in school is brought about, specifically, using folk games to give life to. Folk games when used in physics education, fun and enjoyable may help overcome the difficulty of understanding physics. It will enable even relatively unprepared students to gain insight into what is going on and encourages the development of physical intuition to those whom mathematics inspires no terror. Folk games will encourage and generate a concrete and visual model that will help explain certain physics principles. Each of us has a different teaching – learning style and a preferred means of teaching – learning.

This must be such that school science can help meet the challenges ahead. The study is modeled by the incorporated indigenous folk motifs into modern forms, Folk Games in teaching physics. As advanced by Ogena, DOST [6] availability of models and the knowledge and emulation of these effective practices, will in the long run, promote a "learning culture" among schools.

In this study, the researcher identified 5 folk games that can demonstrate certain physics principles as perceive, and designed class instructions and demonstrations in teaching these physics principles using three methods of instruction: the folk games, the power point presentation, and the lecture with board work in teaching physics. Hence the study is "Alternative Methods of Teaching Physics".

B. Theoretical Background

This study is anchored on the Learner-Centered Psychological Principles which espouses that everyone in the community is a learner. Students learn from teachers. Students learn from one another. And more important to remember, teachers learn from students. Teach and learn acts as the heart of education. The teaching styles used by the teacher may affect students' performance. This study is based on making the teaching and learning of physics an interesting and enjoyable experience. Science, in its endless pursuit of activities aimed at developing a storehouse of knowledge that it is a sound framework for effective facilitating learning.

The study aimed to determine and compare the performance of BSA II-A students in certain physics principles using three methods of instruction in Northern Iloilo Polytechnic State College – Barotac Viejo Campus school year 2015-16. The independent variables were the personal variables such as age, sex and high school final grade in Science IV of the subjects and the intervening variables are the methods of instruction. The dependent variable is the physics performance of the subjects. A schematic diagram showing the variables in the study is shown in figure 1.

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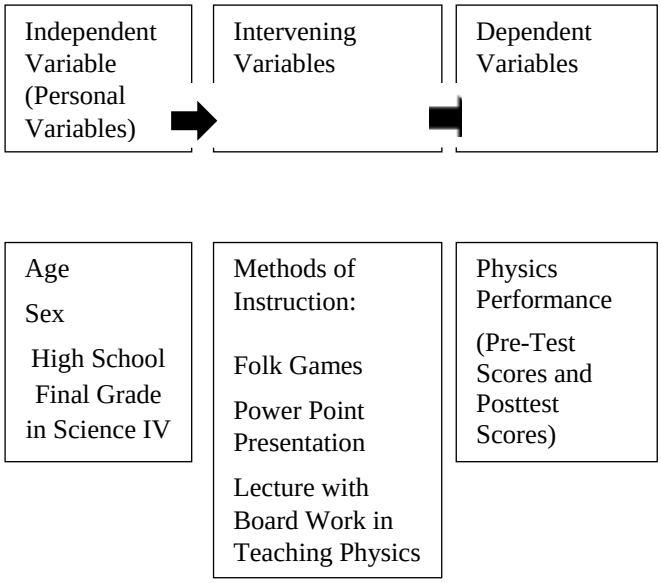

Figure1: Schematic diagram shows the relationship between the independent and dependent variables in the study.

With the view that physics, is not something abstract but something that should be connected to the lives of the students. The Relevance of Science Education or ROSE Review (Scheiner and SjØberg 2004) [7] which covers both developing and developed countries argues that a new school science has to match the context where the students learn. They say such an approach draws on current learning theory, which argues for the efficacy of situating learning in the students' contexts. They added a reminder that "Adolescence is not just a preparation for later life, but is an important part of life itself. Students at school should therefore experience this period as interesting, joyful and stimulating itself".

There has to be changes in the way that students learn science in school. The link between theory and evidence is important yet largely invisible to students. Kuhn (1989) [8] shows that this invisibility is one big difference between children's science and the science of scientists. Hipkins and Kuhn strategies are key to linking theory, concept and practice together. Implementing and recognizing inquiry pedagogy, progress has been constant although slow.

In 2007, a training project was implemented focused on the design of classroom activities for improving motivation towards scientific and technological education (Liopis et al, 2009, Garcia Gregorio et al, 2009) [9]. The result shows the importance of achieving the creation of multiple actor networks, constituting a new approach to the educational innovation through the generation of a true community of practice. It is also an especially effective tool to stimulate students' interest through science with personal and social relevance that is simultaneously creative and enjoyable.

UP ISMED organizes national and international conferences in science and mathematics education on various topics to update and upgrade competence of in-service teachers and teacher educators. UP ISMED's curriculum and professional development programs is guided by its philosophy, learners learn best most

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effectively from experiences that are engaging, meaningful, challenging and relevant and teachers who facilitate construction of knowledge from such experiences.

In practical teaching, some signal response games, attention focusing games and collective coordination games can be chosen to increase the fun of the course and interests of the students. Folk games can be introduced into main items of teaching as auxiliary exercises. Furthermore, as for the folk game itself, with the teaching objective unchanged, it can also be treated as the main teaching contents. If the main objective is to develop the throwing ability of the students, the contents of the lesson can choose “throw-sandbag”, “throwing stick”, “spinning top” and “throwing mud”, etc. The teaching objectives can be achieved, and meanwhile the teaching contents have been enriched, and it adds more fun to the lesson (Qiu, 2014) [10].

II. THE PROBLEM

A. Statement of the Problem

The study aimed to determine and compare the performance of Bachelor of Science in Agriculture II-A in certain physics principle using three methods of instruction: folk games in teaching physics, using power point presentation in teaching physics and lecture with board work in teaching physics in Northern Iloilo Polytechnic State College-Barotac Viejo Campus.

Findings of the study were the basis for an action plan. Specifically, the study sought to answer to the following questions:

1. What is the profile of the participants in terms of:
   1.1 age;
   1.2 sex; and
   1.3 high school final grade in Science IV?
2. What are the pre-test and posttest scores of the participants?
3. Is there a significant difference in the pre-test and posttest scores between groups and among groups?
4. Is there a significant difference in the pre-test and posttest scores when respondents are grouped according to profile?

B. Statement of the Null Hypothesis

The following null hypotheses were tested:

1. There is no significant difference in the pre-test and posttest scores between groups and among groups.
2. There is no significant difference in the pre-test and posttest scores when respondents are grouped according to profile.

C. Significance of the Study

The study “Alternative Methods of Teaching Physics” will contribute in the preservation of folk games. To promote and preserve its uniqueness, its purity to show the essence of what truly is a Filipino in the teaching of physics. Also develop appreciation of folk games among youth; foster goodwill and understanding among

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Filipinos and other nations around the world; and promote nationalism and patriotism. The passion for the teaching of physics via folk games is a wonderful exhibition of sustainability and dedication among Filipinos.

The findings of this study will be beneficial to the following groups of people:

The Dean. The Dean of the college will be guided by the result of this study. The findings can be the basis for the formulation of effective method of teaching especially in physics courses.

The Parents. The result of the study may serve as basis for the parents to discover the strengths and weaknesses of their son or daughter in physics class.

The Physics Professor. The findings of this study will guide the physics professor to improve his or her teachings considering the physics backgrounds of his or her students.

The Students. The students will have a better understanding about the lesson using folk games, power point and lecture with board work in the teaching of physics.

Other Researchers. The findings of the study will serve as guide for other researchers in their study of the related problem.

D. Definition of Terms

For purposes of the study, the following terms are operationally defined.

Age. The length of time a person or anything has lived or existed. [11]

It refers to the length of time that the subject has existed usually expressed in years.

Final Grade. It refers to the grades of students in science when they were in fourth year high school.

The same definition is adopted in this study.

Folk. Traditional in community relating to the traditional culture passed down in a community or country. It is from ideas of ordinary people relating to the traditional beliefs or ideas of ordinary people [12].

It refers to the selected traditional material aspect of culture, the 5 folk games in Northern Iloilo preserved and passed on from generation to generation, with constant variations shaped by memory.

Folk Games. Originate from life and have extensive contents, which the wisdom of the people and have obvious educational function [10].

It refers to the selected 5 folk games of the northern part of Iloilo used to enhance content teaching of 5 physics principles.

Games. Activities or contests governed by sets of rules. People engage in games for recreation and to develop mental or physical skills [12].

It refers to folk games utilized by the researcher in teaching physics to students of Northern Iloilo Polytechnic State College.

Learning. It is a change in an individual caused by experience (Slavin, 1995) [13].

It refers to the process of acquiring useful responses and control of response through experiencing them.

Performance. It is a manner in which something or somebody functioning, operates or behaves.

It refers to the physics performance of college students of Northern Iloilo Polytechnic State College in the province of Iloilo.

Physics. It is the study of physical forces and qualities.

The same definition is adopted in this study.

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Power point. It is the most common application software used for making visual aids. It is used by placing all information compiled together into an amazing presentation.

It refers to the power point presentation used to enhance content teaching of 5 physics principles.

Sex. Male of female gender: either of the two reproductive categories, male or female, of animals and plant [12].

It refers to the male and female college students of Northern Iloilo Polytechnic State Col... 14

Teaching. It is a systematic presentation of facts, ideas, skills, and techniques to students.

It refers to the use of folk games in teaching physics directing them through educational experiences.

III. RESEARCH METHODOLOGY

This section describes the research design, the research environment, research subjects/respondents, research instruments, and research procedure.

A. Research Design

True experimental research design was used in this study. A true experiment is a type of experimental design and is thought to be the most accurate because it supports or refute a hypothesis using statistical analysis. A true experiment is also thought to be the only design that can establish cause and effect relationships. In this study, it includes all parts of the experimental processes, a control group and two experimental groups. The control group was the group III of 15 research participants on lecture with board work in teaching physics that resemble the experimental group but does not receive the experimental treatment and had provided a reliable baseline data to which the researcher compared the experimental results. The two experimental groups were the groups I and II of 15 research participants each group who has received the experimental treatments, using folk games and power point in teaching physics. However, instead of having participants randomly assigned to experimental treatments, “naturally” assembled groups, such as classes, were used in the research.

This study described the physics performance of the respondents who were taught using three methods of instructions. One group was subjected to folk games in teaching physics, the other group was subjected to using a power point in teaching physics and the other was subjected to teaching physics of lecture with board work method thus, this design was considered appropriate.

B. Research Environment

The study was conducted at Northern Iloilo Polytechnic State College - Barotac Viejo Campus during the first semester of school year 2015-1 6. The campus is at the Municipality of Barotac Viejo located 54 kilometers from Iloilo City.

C. Research Subjects/Respondents

The subjects of the study were the Natural Science 3: General Physics, BSA 2-A students of Northern Iloilo Polytechnic State College - Barotac Viejo Campus for the school year 2015-16, first semester, a researchers’ physics class. The target respondents were ranked according to final grade in science IV, paired the highest and the lowest, e.g. 1 and 45, 2 and 44, 3 and 43, etc. and were divided in three groups of respondents based on the paired ranks using the stratified random sampling. The first group was assigned under the folk games in teaching

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physics, the other group was under the group using a power point in teaching physics and the other was under the lecture with board work in teaching physics. The subjects were categorized by methods of instruction, age, sex, and high school final grade in science IV. Table I showed the distribution of the respondents classified according to certain category.

Table I: Distribution of Respondents According to Grouping Variables

Category	Frequency	Percent
Entire Group	45	100
Group 1 (Using Folk Games in Teaching Physics)	15	33.33
Group II (Using Power Point Presentation in Teaching Physics)	15	33.33
Group III (Lecture with board work in Teaching Physics)	15	33.33

IV. Research Instruments

The researcher used the researcher selected 5 folk games in teaching 5 physics principles. The researcher used the 10-items standardized tests in every physics principle taken up, a total of 50 items, as the instrument in getting the pre-test and posttest scores of the respondents. The test was composed of two parts, part I will be the personal data and part II is the pre-test and or posttest. The instrument was taken from [14], [17]. [18] and [19].

Data-gathering tool part II were administered to the participants, as shown in Table 2, pre-test scores and posttest scores within groups of subjects ranged from 2 to 23 and 21 to 47, while gained scores ranged from 6 to 29. Base on the scale of range of scores constructed by the researcher, all posttest scores and performance levels improved to satisfactory, very satisfactory and excellent, among the different groups of subjects.

D. Research Procedure

It started with a community assessment on the typical 5 folk games in the area. Specifically, the collection and selection of 5 folk games was done in the northern part of Iloilo. In the process, people were interviewed to gather information about the folk games, its implements and its mechanics. The researcher studied and learned how to work and play with these implements, design physics instruction and develop demonstrations using folk games to teach 5 physics principles. Considered and defined which of 5 physics principles it can demonstrate appropriately and finally formulated analysis. The researcher brought to class materials to make the implements of 5 folk games, already made implements of folk games used in the class. Then used these out to the class.

Permits were secured prior to the conduct of this study. The validation of 15 lesson plans: 5 physics lessons in three instructional approach and 10 items pre-test and or posttest questionnaire went through the critique and approval of a physics professor in the college, the Dean of Education, and high school physics teacher. The

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researcher personally administered the pre-test and posttest. The first two groups were the experimental groups: using folkgames, and using power point in teaching physics and the other group was the controlled group, lecture with board work in teaching physics.

The researcher personally taught the three groups. She administered the pre-test for every physics principles that can be covered in a time to three groups on the first day then gave a lecture with board work in teaching physics on the assigned group, afterwards administered the posttest according to the coverage of the physics principle taken up. Next was the class with the assigned group in power point presentation exacting the coverage as done in the first then gave the posttest. On the same day, the assigned group to folk games in teaching physics was given their treatment with the same coverage as used in the pre-test. After the class in folk games in teaching physics, a posttest was given. On the second day, continuation of pre-test- lecture with board work/power point presentation/folk games in physics teaching –posttest good for the day coverage of the physics principles. By the third day, the same series of activities and procedure was done until the selected 5 physics principles were all taken up. The researcher then compared the effects of three methods of instruction to the physics performance of BSA 2-A students of Northern Iloilo Polytechnic State College – Barotac Viejo Campus.

Data Analyses

The data gathered was analyzed with the use of descriptive and inferential data analysis, using the following statistical tools via SPSS 14.0 for Windows:

Frequency count and percentages. These were used to describe the participants in terms of their personal variables.

Mean. This was used to describe the physics performance of BSA II students when they are categorized according to methods of instruction, age, sex and high school final grade in science IV.

For statistical interpretations, the following range of mean scores and their description was used for high school final grade in science IV and pre-test and posttest.

High School Final Grade in Science IV

Ranges of Grades	Description
86-90	above average
81-85	average
76-80	below average

Pre-test and Posttest Performance

Ranges of Scores	*Description*
41.0 - 50.0	Excellent
31.0 – 40.0	Very Satisfactory
21.0 – 30.0	Satisfactory
11.0 – 20.0	Poor
0 – 10.0	Very Poor

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T-test for independent sample means. This was used to test the significance of the differences in physics pre-test and posttest scores between subjects' grouped by methods of instruction, age, sex and high school final grade in science IV.

Paired-samples t-test. This was used to test the significance of the differences between the pre-test and posttest scores of subjects' grouped by methods of instruction, age, sex and high school final grade in science IV.

Analysis of variance (ANOVA) [15]. This statistical procedure was used to test the degree of significance of differences to which three methods of instruction, age, sex and high school grade in science IV vary or differ in an experiment.

V. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

A. Profiles, Frequency and Percentage

The table shows howthe typical physics class looked like as described.

Table I: Profiles of the Subjects, Frequency and Percentage

Profiles	Frequency, n =45	Percentage, %
Age		
17	10	22.22
18	19	42.22
19	9	20.00
20	7	15.56
Sex		
Male	18	40.00
Female	27	60.00
High School Final Grade in Science IV		
76 – 80	15	33.33
81 – 85	14	31.11
86 – 90	16	35.56

Based on the condition for selection initially agreed upon, the BSA II-A which represented a particular physics class type that was also anchored on size was selected. Among the personal variables, age and sex, a total of 45 students comprised the respondents of the study. Their profiles on the high school final grade in Science IV were also determined. The study of the profiles of the participants from the identified class in physics was expected to reveal factors that contribute to high student performance. The sources of data mainly consisted of data-gathering tool, part I was administered to the participants, and from which data were selectively culled for the analysis. The table presents the number of participants of the study.

Table I shows the` profile, frequency and percentage of subjects as dichotomized by age, sex, and high school final grade in Science IV. As shown in the table, majority of participants are of age 18 (19 or 42.22%).

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The youngest are 17 years old (10 or 22.22%), others are 19 (9 or 20.00%) and the oldest are 20 years old (7 or 15.565). It means that the subjects are in their typical age in their college level.

As in many other class sections in NIPSC-BVC, there were more female (27 or 60.00%) than male (18 or 40.00%) students in the class chosen as research participants. This indicates that males have tended to be underrepresented in selected research site. But this is also could be due mainly to the result of randomization.

However, a marginal difference in frequency and percentages were shown in Table 2, of 16 or 35.56% high school final grade in Science IV had a range of 86 – 90. Fourteen (14) or 31.11% is with a range of 76 - 80 and 15 or 33.33% have range of 81 - 85. Based on the scale of range constructed by the researcher, among the ranges, many of the respondents were “above average”.

All societies in the world have ways to educate their young members to ensure that they become full participants in society, are able to contribute and develop it so to become more human (Savater) [16]. Teachers should provide the structure such that a mechanism or venue where diverse students can meet and share experiences to make them actively participate in physics class was put into.

Performance in Pre-test and Posttest Scores Using Alternative Methods of Instruction

As seen in the table that follows, scores of pre-test and posttest by three methods of instruction: folk games, power point presentation and lecture with board work were used as a process in teaching 5 physics principles.

Table II: Performance in the Pre-test and Posttest of Respondents Grouped by Methods of Instruction

Group 1 – Folk Games			**Group 2 –Power Point Presentation**			**Group 3 – Lecture with Board Work**		
Pre-test	Post test	Gained	Pre-test	Post test	Gained	Pre-test	Post test	Gained
23	43	20	21	40	19	19	38	19
13	32	19	17	46	29	23	47	24
14	37	23	18	31	13	15	41	26
15	35	20	21	44	23	10	37	27
14	37	23	14	30	16	16	27	11
17	31	14	11	37	26	15	35	20
12	35	23	14	28	14	17	38	21
10	35	25	18	29	11	10	34	24
10	36	26	13	25	12	16	29	13
19	46	27	14	26	12	15	28	13
14	35	21	16	37	21	13	35	22
7	25	18	16	30	14	14	31	17
11	28	17	10	24	14	16	33	17
15	21	6	10	25	15	15	25	10

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13	27	14	2	25	23	2	25	23

In today's complex world, a desired characteristic of a learning environment within a school or a school system is effectiveness. We wish to have a school environment that is effective in nurturing students in order to help them become functional and productive. How can schools become effective in science education? No matter what others say, the most important aspect of education is still the teaching-learning process.

The typical physics class instruction is filled with hands-on, minds-on, and hearts-on activities. Active participation and involvement of the students in the teaching-learning sessions is a day-to-day event. The above and positive qualities of the teacher characterize the best science class. The opposite of these characterize the worst class. The teacher can make the students listen and do activities not only by giving hands-on, minds-on and hearts-on tasks, but also by creating a classroom environment, that is psychologically pleasant or unpleasant for the students, e.g., "humor or terror."

One-third of the class were involved in Folk Games in teaching physics, they gave very positive feedback about these activities. Students preferred activity-oriented physics classes to direct instruction. While the researcher used a significant amount of implements and playing folk games experiences to supplement classroom discussions.

Comparisons of Pre-test and Posttest Mean Scores Between Groups

Understandably and as expected, posttest mean scores between groups greatly improved as seen in the table below.

Table III: Summary of the Results of t-test for Independent Samples of Pre-test and Posttest Mean Scores Between Groups.

Source of difference	**Mean**	**SD**	**t-value**	**p-value**	**Decision on Ho**	**Interpretation**
Pre-test Scores	14.18	4.402	-22.948	0.000**	Reject Ho	Significant
Post test Scores	32.96	6.501				

[ns]Not significant at the .01 level of probability.

It is very heartening to see an improved posttest mean score of 32.96(6.501) between groups over the pre-test of 14.18(4.402). This results that pre-test and posttest mean scores differ significantly (t=-22.948, p=0.000**>.05), meaning that the null hypothesis, "there is no significant difference in the pre-test and posttest scores between groups" was rejected.

Both teacher and students thought many classroom activities are fun-oriented and that they foster creativity, which students found enjoyable though involved in challenging problem solving activities. The participants reported that they enjoy the use of real objects in teaching a scientific concept, and conducting outdoor activities. They also thought that physics should as much as possible be related to real life. The Relevance of Science

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Education or ROSE Review which covers both developing and developed countries argues that a new school science has to match the context where the students learn. It reminds that "Adolescence is not just a preparation for later life, but is an important part of life itself! Students at school should therefore experience this period as interesting, joyful, and stimulating in itself"[7], p9). These emphases coincides with the view that a positive experience in school is more likely to make for lifelong learning and so for citizens keen to learn to apply this learning.

For this component, the students served as the main contributor to the data. Each completed instrument or data source was scrutinized to check for patterns that characterize an effective learning environment among the groups. From each data source, the positive aspects of the teaching-learning process were considered. At the same time, some of the participants' shortcomings were noted with the intention of informing concerned individuals about how these ones can be made even better.

Comparisons of Pre-test and Posttest Mean Scoresamong Subjects Grouped by Methods of Instruction

As seen on the table below, classroom instruction in physics class is impressive. The attempt by the researcher-teacher to make the subject concrete and useful in very creative ways, particularly in this provincial college is commendable.

Table IV: Summary of the Results of t-test for Independent Samples of Pre-test and Posttest Mean Scores among Subjects Classified by Methods of Instruction

Source of difference	**Mean**	**SD**	**t-value**	**p-value**	**Decision on Ho**	**Interpretation**
Pre-test Scores						
Folk Games	13.80	3.895	0.080	0.923	Do not Reject Ho	Not Significant
Power point	14.33	4.865				
Lecture – Board work	14.40	4.672				
Post test Scores						
Folk Games	33.53	6.523	0.337	0.715	Do not Reject Ho	Not Significant
Power	31.8	7.2				

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point	0	43				
Lecture – Board work	33.53	6.209				
Gained Scores						
Folk Games	16.80	4.858	0.677	0.514	Do not Reject Ho	Not Significant
Power point	19.07	6.220				
Lecture – Board work	20.37	5.110				

[ns]Not significant at the .01 level of probability.

Among groups, as seen in the table, subjects taught using the Folk Games obtained a pre-test mean score of 13.80(3.895), those taught using Power Point Presentation had 14.33(4.865) while those of Lecture with Board Work had 14.40(4.672), respectively. These pre-test mean scores did not differ significantly (t=0.080, p=0.923>.05), meaning that the null hypothesis, “there is no significant difference in the pre-test scores among groups” was accepted, and subjects had comparable performance in the pre-test.

Posttest mean scores improved to all groups, to 33.53 in Folk Games and Lecture with Board Work, and to 31.80 in Power Point Presentation, over the pre-test with standard deviations of 6.523, 6.209, and 7.243, respectively, however, the difference between these mean scores did not reach statistical significance (t=0.337, p=0.715>.05), meaning that the null hypothesis, “there is no significant difference in the posttest scores among groups” was accepted. This result implies that posttest performance of subjects taught in all groups were comparable. Data strongly show that the best physics classes remembered by students are those with folk games.
The gained mean score in Folk Games had 16.80(4.858), in Power Point Presentation had 19.07(6.220), and in Lecture with Board Work had 20.37(5.110). These gained mean scores did not differ significantly (t=0.677, p=0.514>.05).

Of the many components in the delivery of physics, three were found to be strengths and one worth discussing. The three components are the teacher, the instructional approach and the interactions that occur in the delivery.

The teacher used a variety of implements in playing folk games and motivational activities to enrich teaching. It can be inferred that the teacher considered the best in her field, came prepared for the lessons and able to teach well. It has been noted, however, that instruction went heavy on or very conceptual in approach, reflecting a very detailed and organized method, although some creative activities are also used. For folk games in teaching physics, classes take advantage of the natural environment and thus hold outdoor class activities. The positive responses of students to these activities were noted. Although in the lecture-discussion part of the lessons, the teacher-student interaction was limited to questions posed by teacher. Students respond but they rarely ask

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

questions, nevertheless, communication was quite open. However, it was noted that students have the tendency to explain using the vernacular. These activities support the instruction and the lessons were religiously followed according to plan.

Insofar as delivery of teaching is concerned, instruction appeared coherent and consistent in 5 physics principles. The teacher was more interested in the "quality of thought and effort that occurred within these structures" (Good and Biddle). There was a clear alignment among factors that contribute to the learning as seen from the following data sources.

Comparisons of Pre-test and Posttest Mean Scoresamong Subjects Grouped by Sex

Essentially, the reality is shown in the table below, science for all, equity on education for both, men and women was evident.

Table V: Summary of the Results of t-test for Independent Samples of Pre-test and Posttest Mean Scores among Subjects Classified by Sex

Source of difference	Mean	SD	t-value	p-value	Decision on Ho	Interpretation
Pre-test Scores						
Male	14.39	5.772	0.260	0.796	Do not Reject Ho	Not Significant
Female	14.04	3.311				
Post test Scores						
Male	32.00	7.104	-0.793	0.423	Do not Reject Ho	Not Significant
Female	33.59	6.247				
Gained Scores						
Male	17.61	5.019	-1.169	0.249	Do not Reject Ho	Not Significant
Female	19.56	5.740				

[ns]Not significant at the .01 level of probability.

As shown in the table, male subjects obtained a pre-test mean score of 14.39(5.772), while female subjects had a mean score of 14.04(3.311). Both male and female posttest mean scores had improved, males got a mean score of 32.00(7.104), while females had 33.59(6.247). On gained mean scores, male subjects had mean score 17.61(5.091) standard deviation while female subjects had a mean score of 19.56(5.740) standard deviation.

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Results of t-test for independent sample means between male and female subjects revealed no significant difference in the pre-test (t=0.260, p=0.796>.05), posttest (t=-0.793, p=0.423>.05), and gained scores (t=-1.169, p=0.249>.05) meaning that the null hypothesis, "there is no significant difference in the pre-test and posttest scores when respondents are grouped according to sex" was not rejected. Therefore male and female subjects had comparable performance in the pre-test and posttest and in their gained scores.

The study of the teaching-learning process assumes that every person has potential for learning. It aims at enabling the learner to develop the self to the best allowed by such potential in an atmosphere which is conducive to learning.

The issue of gender in science education has been the subject of many investigations. This is an important concern for both the individual students involved and their communities. Gender equity is a long time concern for UNESCO. For a variety of historical and cultural reasons, whenever there are choices to be made, girls seem not to take up or be able to take science options. Studying science in every day contexts makes for better science for all and is likely to raise barriers to girls' participation. Indeed, in some contexts where science is compulsory in basic education, girls' attainment is higher than boys', a change that has occurred over the last 20 years.

Comparisons of Pre-test and Posttest Mean *Scoresamong Subjects Grouped by Age*

The age among the respondents are shown in the table that follows.

Table VI: Summary of the Results of t-test for Independent Samples of Pre-test and Posttest Mean Scores among Subjects Classified by Age

Source of difference	Mean	SD	t-value	p-value	Decision on Ho	Interpretation
Pre-test Scores						
17	13.00	4.522				
18	15.26	3.784	0.790	0.507	Do not Reject Ho	Not Significant
19	13.11	6.451				
20	14.29	2.289				
Post test Scores						
17	33.40	6.004				
18	33.32	6.065	0.699	0.558	Do not Reject Ho	Not Significant
19	34.22	8.105				
20	29.71	7.017				
Gained Scores						
17	20.40	5.910				
18	18.05	4.183	1.927	0.140	Do not Reject Ho	Not Significant
19	21.11	5.207				
20	15.43	7.254				

[ns]Not significant at the .05 level of probability.

Understandably, we see an improved posttest mean scores in ages 17, 18, 19 and 20 of 33.40(6.004), 33.32(6.065), 34.22(8.105) and 29.71(7.017) over the pre-test of 13.00(4.522), 15.26(3.784), 13.11(6.451) and

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14.29(2.289). The gained mean scores were 20.40(5.910), 18.05(4.183), 21.11(5.207), and 15.43(7.254), respectively. Result of t-test for independent sample means revealed no significant difference in the pre-test (t=0.790, p=0.507>.05), posttest (t=-0.699, p=0.558>.05) and gained scores (t=1.927, p=0.140>.05), meaning that the null hypothesis, "there is no significant difference in the pre-test and posttest scores when respondents are grouped according to age" was not rejected. Therefore all ages, 17 to 20 years old subjects had comparable performance in the pre-test and posttest and gained scores comparably.

Piaget [17] said, "The principal goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done." It centered on the stages of cognitive development, each has characteristic ways of thinking and perceiving that shows how one's cognitive abilities develop.

Comparisons of Pre-test and Posttest Mean Scoresamong Subjects Grouped by High School Final Grade in Science IV

High school final grade in Science IV was shown in the table, as a predetermined factor in pre-test and posttest which differ greatly.

Table VII: Summary of the Results of ANOVA of Pre-test and Posttest Mean Scores among Subjects Classified by High School Final Grade in Science IV

Source of difference	**Mean**	**SD**	**f-value**	**p-value**	**Decision on Ho**	**Interpretation**
Pre-test Scores						
76 – 80	11.60	4.687				
81 – 85	13.86	3.009	7.193	**0.002 ****	**Reject Ho**	**Significant**
86 - 90	16.88	3.739				
Post test Scores						
76 – 80	28.40	4.823				
81 – 85	32.93	5.731	9.844	**0.000 ****	**Reject Ho**	**Significant**
86 - 90	37.25	6.006				
Gained						

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Scores						
76 – 80	16.80	4.858				
81 – 85	19.07	6.220	1.726	0.190	Do not Reject Ho	Not Significant
86 - 90	20.37	5.110				

[ns]Not significant at the .05 level of probability.

As shown, subjects with high school final grades in Science IV ranges of 76 - 80, 81 - 85, and 86 - 90 obtained pre-test mean scores and standard deviation of 11.60(4.687), 13.86(3.009), and 16.88(3.739). All posttest mean scores had improved, subjects with high school final grades in Science IV "below average", "average", and "above average" got mean scores of 28.40, 32.93, 37.25, and 4.823, 5.731, 6.066, standard deviations. Results of f-test for independent sample means of subjects with high school final grades in Science IV "below average", "average", and "above average" revealed significant differences in the pre-test (f=7.193, p=0.002**>.05) and posttest (t=9.844, p=0.000**>.05), meaning that the null hypothesis "there is no significant difference in the pre-test and posttest scores when respondents are grouped according to high school final grade in Science IV" was rejected.

Subjects with "below average", "average", and "above average" had gained mean scores of 16.80, 19.07, 20.37 and standard deviations of 4.858, 6.220, and 5.110, respectively. The f-test results for independent sample means of subjects revealed no significant differences (f=1.726, p=0.190>.05). This implies that the gained mean scores were comparable, regardless of high school final grade in Science IV of the subjects. It shows that there is variation but it is not statistically significant.

Comparisons Between Pre-test and Posttest Mean Scores Among Indicators Compared

"Below average", "average", and "above average" were the descriptions of high school final grade in Science IV of ranges 76 – 80, 81 – 85, 86 – 90. To determine the level of significant differences between pre-test and posttest mean scores in high school final grade in Science IV ranges, data were subjected to post hoc analysis using Scheffe's Test.

Post Hoc Analysis of ANOVA

Indicators compared	**Scheffe's F-value**	**Interpretation**
Pre-test Scores		
(76 – 80) vs. (81 – 85)	0.305	Not Significant
(76 – 80) vs. (86 – 90)	**0.002**	**Significant**
(81 – 85) vs. (86 –	0.118	Not

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

90)		Significant
Post test Scores		
(76 – 80) vs. (81 – 85)	0.102	Not Significant
(76 – 80) vs. (86 – 90)	**0.000**	**Significant**
(81 – 85) vs. (86 – 90)	0.117	Not Significant

[ns]Not significant at the .01 level of probability.

Results as summarized show that there were significant improvements in ranges 76 – 80 versus 86 – 90 in pre-test and posttest mean scores (F=0.002,p(.05)) and (F=0.000,p(.05)) and none in ranges 76 -80 versus 81-85 and 81 – 85 versus 86 – 90 both in pre-test and posttest mean scores (F=0.305,p(.05)) and (F=0.811,p(.05)) and (F=0.102,p(.05)) and (F=0.117,p(.05)), respectively.

VI. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The consistently poor performance of Filipino students in national and international assessments in science has raised issues on how the teaching of the subject can be improved in Philippine schools. It is contended that effective practices in science study will contribute in one or the other to addressing the nagging issue of poor student performance in the subject.

The purpose of this study is to determine and compare the performance of Bachelor of Science in Agriculture II-A in certain physics principle using three methods of instruction: folk games in teaching physics, using power point presentation in teaching physics and lecture with board work in teaching physics in Northern Iloilo Polytechnic State College-Barotac Viejo Campus. Findings of the study were the basis for an action plan and can be patterned after in raising the quality of science teaching-learning in the Philippines.

A. Summary of Findings

Understandably, instruction appeared coherent and consistent in physics class at all instructional approaches. There was a clear alignment between factors that contribute to the learning environment. There was a good combination of lecture and hands-on activities and in which physics concepts and processes were not isolated tasks performed but were tackled together by both teacher and students.

Following are the characteristics of students' performance in physics as deduced and culled from the data:

All research participants are given opportunities to experiential learning. However, males tended to be underrepresented. The subjects are in their typical age in their college level and many were "above average". Performance levels improved to satisfactory, very satisfactory and excellent, among the different groups of subjects.

There is a significant difference in the pre-test and posttest mean scores between groups and none among groups. There is no significant difference in the pre-test and posttest scores when respondents are grouped according to sex and age. Therefore male and female subjects had comparable performance in the pre-test and

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posttest and in their gained scores. All ages, 17 to 20 years old subjects had comparable performance in the pre-test and posttest and gained scores comparably too.

There is significant difference in the pre-test and posttest scores when respondents are grouped according to high school final grade in Science IV. The gained mean scores were comparable, regardless of high school final grade in Science IV of the subjects.

There were significant improvements in ranges 76 – 80 versus 86 – 90 in pre-test and posttest mean scores and none in ranges 76 -80 versus 81-85 and 81 – 85 versus 86 – 90 both in pre-test and posttest mean scores.

All groups had comparable performance but significantly improved only in groups between “below average” and “above average”.

B. Conclusion

Three instructional methods stand out when results are examined. The folk games, power point presentation and lecture with board work as methods of teaching physics are comparable.

Across the groupings, the BSA II-A students performed similarly. When the researcher did three methods in teaching physics, it challenged students to set their goals higher and indeed get them to accomplish more. It has shown to be effective in raising attainment and contributes to increased student motivation for science. Perhaps it has a Pygmalion effect, or what is sometimes referred to as the self-fulfilling prophecy. The students do well – as expected – because the instructional approaches used has maximized student learning.

The study strongly reinforces the belief in the very significant role of the teacher, the major factor in the teaching – learning process.

C. Recommendations

The analysis focused on which the teacher and students in physics class manifested based on the factors as summarized.

Pedagogy for conceptual, procedural and nature and characteristics of physics learning could be more effective and inclusive when:

- physics is taught and learned in contexts in which students can make links between their existing knowledge, the classroom experiences, and the physics to be learnt;
- and the students are engaged in thinking about the physics they are learning during the learning tasks.

The students’ attitude towards their teacher and the subject are very positive which could be one among the reasons for their comparable performance in physics. The agriculture department should ensure that proper academic and study habits and attitudes be developed among students. The positive attitude between teacher and students is a very significant factor in the student achievement.

In all instances, the researcher was concerned that students knew they were observed and monitored. Hence they “performed” on the basis of buzz-words and what researcher wanted them to exhibit. If a follow-up study will be pursued, as would be a first methodological priority, this would be making links more evident. Perhaps in other science major students, non-science major students, and even across the curriculum can develop learning in physics and other subjects.

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

VII. APPENDICES

Appendix A. Demonstrations In Alternative Methods Of Instruction In Teaching Physics

This study on alternative methods of instruction in teaching physics was conducted to meet most if not all the attainment targets in selected topics. This work is divided into knowledge and understanding concepts and principles followed by exploration, application to evaluation. Demonstrations are progressive and should work well of understanding for the age and ability of the student. For the purpose of this research, the collected demonstrations are as follows:

I. FOLK GAMES USED IN TEACHING PHYSICS
   1. "Lagsanay"game in speed
   2. "Hole-in" game in velocity
   3. "Winner-winner" game in acceleration
   4. "Bug-oy" game in free fall
   5. "Lisik-lisik" game in projectile

II. POWER POINT PRESENTATION IN TEACHING PHYSICS
   1. Power point presentation in speed
   2. Power point presentation in velocity
   3. Power point presentation in acceleration
   4. Power point presentation in free fall
   5. Power point presentation in projectile

III. LECTURE WITH BOARD WORK IN TEACHING PHYSICS
   1. Speed
   2. Velocity
   3. Acceleration
   4. Free Fall
   5. Projectile

The discussion that follows is made for demonstration in the development of teaching physics.

The demonstrations are easily assembled and useful in a tertiary level in General Physics. A guide on the materials with the making of implements or device to be used in performing each activities and the discussion using a folk game in teaching physics is extended to serve as a guide and as a manual. The activities using folk games, power point presentation and lecture with board work in teaching physics have meaningful and a great variety of learning procedures. It is sufficient to permit physics instructors to make selection of one's that best fit in with the local plan of work. The physics students should have as much varied learning activities as can be provided. These have been chosen as basic and desirable for an adequate program in physics. It is designed to make one's study time more profitable and to give better understanding of basic concepts in motion.

I. FOLK GAMES USED IN TEACHING PHYSICS

1. "Lagsanay" Game in Speed

A. Preparation

1. Choose a wide space where the ground is soft and flat, much preferably grassland.

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

B. “Lagsanay” Game

1. Usually, two or more players gather and play “Lagsanay” game. A “Batu-batopik” will determine the players and the “it” or “taya”, a local name called to one that loses in the “Batu-batopik”.

2. The “it” will have to chase all players and must run fast to touch each. When a player is touched, he is out of the game. The “Lagsanay” game continues until no one is left untouched. Then the first player that was touched will take the role of the “it” (the new “taya” of the “Lagsanay” game) and the “Lagsanay” game will go on.

C. “Lagsanay” Game in the Teaching of Speed

The concept of speed is familiar to everyone. It is the rate at which something moves. An instrument used in vehicles called speedometer registers the speed at which the vehicle is moving. A stop watch is another instrument that is used to measure the time of travel of a sprinter. Say, if a marathon event of 30 miles is to be completed in 1 hour, the speed required is, clearly, 30 miles per hour.

A mile per hour is a unit of speed in FPS or British System of Units, same as foot per second, a standard unit of speed. A kilometer per hour is a unit of speed in SI or MKS or metric system of units and its standard unit of measure is meter per second. Similarly, centimeter per second is a unit of measure in CGS or conventional system of units and is the standard unit of measure.

Speed in “Lagsanay” game refers to how fast a player runs or how slow he or she ran. While running, a player in “Lagsanay” game travels a distance in a time and exhibits a fast or slow running, the runner’s rate of movement. The runners’ rate of motion is determined by the distance and the time it took to cover that distance. When a certain runner covers a distance of 5 meters in 1 second, the runners’ speed is 5 meters per second.

No mention is made of the direction of travel; the running could be made in a straight line, along a curving highway, or we could just go around the block or a tree a sufficient number of times to total 5 m traveled. No mention is also made of whether a constant speed of 5 meters per second is maintained, an unchanging speed of running or whether the trip is made by stop-and-go running, a variable speed of motion. That is, the statement, five meters per second specifies only the average speed.

Now if the first 2.5 meter were covered in 0.25 seconds (at a constant speed of 10 meters per second) and, if because of evasive running while being chased by the “it” or “taya”, the runner is required to negotiate the second 2.5 meter (so that the speed was 3.33 meters per second for this part of the chase), the average speed for the entire 10-meter running would be the total distance traveled by total time elapsed or 2.5 meters plus 2.5 meters divided by 0.25 second plus 0.75 second is finally equal to 5 meters per second

The world record in running, 100 meters track and field men, is 10.266 meters per second.

In general, for any small interval of distance that is traversed in the time interval the average speed is the interval of distance divided by time interval.

If a runner moving at a constant speed travels 20 meters in 5 seconds. What is the speed of the runner? How far does the runner move in 10 seconds? How long will it take for the runner to move 80 meters? The speed of the runner as calculated from 20 meters divided by 5 seconds is equal to 4 m/s. The distance covered by a runner is speed multiplied by time, or 4 meters per second times 10 seconds, is 40 meters. The time it will take a runner to cover 80 meters is distance divided by velocity or 80 meters by 4 meters per second, and is equal to 20 seconds.

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Appendix B. Lesson Plan of Folk Games in Teaching Physics

Speed

I. Objectives

At the end of the lesson, students must be able to:

A. Precisely define the term speed with appropriate units in the SI and British systems of units and determine the rate of movement of simple motions.

II. Learning Task

A. Subject Matter: Speed

1. Concept

Speed refers to how fast something moves.

Instantaneous speed is the speed at any instant.

Eq. (B.1) $v = \frac{d}{t} = \frac{\textit{total distance traveled}}{\textit{total elapsed time}}$

Eq. (B.2) $\bar{v} = \frac{\Delta d}{\Delta t}$

2. Process/Skills: analyzing, discussing, calculating, playing a folk game
3. Value Focus: accuracy, unity

B. References:

- Physics for the Health Sciences. 3rd Edition. 1985 [20]
- Hewitt, P. Conceptual Physics. 8th Edition. [21]

C. Materials: paper, pen & Calculator

III. Development of the Lesson

A. Pre-activity

Teacher's Activity	Learner's Activity
"Good morning class!"	"Good morning Ma'am!"
1. Review	
"What time do you go to school?"	"About 7:00 A.M."
"Do you walk in going to school?"	"Yes Ma'am!"
"Well, that is good. How fast do you walk?"	"Fast enough Ma'am."
"Do you still play folk games?"	"Yes Ma'am!"
"How about "Lagsanay" game?	"Yes!"
"Well, that is good. How do you play it? What are the	

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preparations of the game?" "To play "Lagsanay" game, we choose a wide space where the ground is soft and flat, much preferably a grassland."

2. Motivation

"By the way, who is the fastest, cheetah or the monkey? "Cheetah"

Then who is the wisest?" "Monkey"

"Smart." "Thank You"

"How fast are you in taking down notes? "Quite fast or slow, it depends."

"Very well, let us know the basics first."

"Would you like to play "Lagsanay"game now/" "Yes, let's go."

"Okay, let us recount the rules of "Lagsanay" game. (Encourage students to contribute in the list below.)

1. Usually, two or more players gather and play "Lagsanay" game. A "Batu-batopik" will determine the players and the "it" or "taya", a local name called to one that loses in the "Batu-batopik".

2. The "it" will have to chase all players and must run fast touch each. When a player is touched, he is out of the game. The "Lagsanay" game continues until no one is left untouched. Then the first player that was touched will take the role of the "it" (the new "taya" of the "Lagsanay" game) and the "Lagsanay" game will go on.

"Now are you ready?" "Yes Ma'am!"

3.Presentation

Today we are going to play a folk game called "Lagsanay". (Make the Folk Game group play the game)

The concept of speed is familiar to everyone; it is the rate at which something moves. An instrument used in vehicles called speedometer registers the speed at which the vehicle is moving. A stop watch is another instrument that is used to measure the time of travel of a sprinter. Say, if a marathon event of 30 miles is to be completed in 1 hour, the speed required is, clearly, 30 miles per hour.

"How do we get 30 miles hour gives 30 miles per hour." "30 miles divided by 1 per hour?"

"How do we derive to units mi/h?" "The unit of measure of distance is in miles and the time is in hour, so by derivation, becomes mi/h."

A mile per hour is a unit of speed in FPS or British System of Units, same as foot per second, a standard unit of speed. A kilometer per hour is a unit of speed in SI or MKS or metric system of units and its standard unit of measure is meter per second. Similarly, centimeter per second is a unit of measure in CGS or conventional system of units and is the standard unit of measure.

B. Activity Proper

Speed in "Lagsanay" game refers to how fast a player runs or how slow he or she ran. While running, a player in "Lagsanay" game travels a distance in a time and exhibits a fast or slow running, the runner's rate of

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

movement. The runners' rate of motion is determined by the distance and the time it took to cover that distance. When a certain runner covers a distance of 5 meters in 1 second, the runners' speed is 5 meters per second.

"How did we get 5 m/s

as the rate of movement?""We divide the distance of 5 m by 1 sec. and we get 5 m/s as the speed."

No mention is made of the direction of travel; the running could be made in a straight line, along a curving highway, or we could just go around the block or a tree a sufficient number of times to total 5 m traveled. No mention is also made of whether a constant speed of 5 meters per second is maintained, an unchanging speed of running or whether the trip is made by stop-and-go running, a variable speed of motion. That is, the statement, five meters per second specifies only the average speed.

Now if the first 2.5 m were covered in 0.25 seconds (at a constant speed of 10 meters per second) and, if because of evasive running while being chased by the "it" or "taya", the runner is required to negotiate the second 2.5 m (so that the speed was 3.33 meters per second for this part of the chase), the average speed for the entire 10-m running would still be average speed is total distance traveled by total time elapsed or 2.5 meters plus 2.5 meters divided by 0.25 second plus 0.75 second is finally equal to 5 meters per second

The world record in running, 100 m track and field (men), is 10.266 meters per second.

"How long it will take

the runnerto run the 100 m event?" "100m divided by 10.266 is 9.74 sec."

In general, for any small interval of distance that is traversed in the time interval the average speed is the interval of distance divided by time interval.

C. Post Activity

1. Discussion

Examine the given example.

If a ball moving at a constant speed travels 20 meters in 5 seconds. What is the speed of the ball? How far does the ball move in 10 seconds? How long will it take for the ball to move 80 meters?

a) What is the speed of the ball? The speed of the ball is 20 meters divided by 5 seconds equal to 4 m/s.

b) How far does the ball move in 10 seconds? This time, let us derive the relation for the unknown factor, the distance. By cross-multiplication, the distance covered by a ball is speed multiplied by time, or 4 meters per second times 10 seconds, or 40 meters

c) How long will it take for the ball to move 80 meters? Similarly, by cross-multiplication, the time it will take a ball to cover 80 meters is distance divided by velocity or 80 meters by 4 meters per second, and is equal to 20 seconds.

2. Generalization

- What two units of measurement are necessary for describing speed?
- Distinguish speed in general from instantaneous speed. Give example.

3. Application

"I want you to form three members

in a group. Each group will solve the

following problems in a piece of paper.

Ready?" "Yes Ma'am"

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

1. Suppose that the first half of the distance between two point marks is covered at a speed v_1 = 10 mi/h and that during the second half the speed is v_1 = 40 mi/h. What is the average speed for the entire trip?
2. What is the average speed of a cheetah that sprints 100 meters in 4 seconds? How about if it sprints 50 meters in 2 seconds?

IV. Evaluation

(posttest)

V. Assignment

Copy, illustrate and solve.

1. An automobile moves uniformly a distance of 60 ft in 2 sec., during the next 3 sec. it moves only 30 ft. What was the average speed

(a) during the first 2 sec.,

(b) during the next 3 sec.,

(c) during the 5 sec. interval?

(d) Compute the average speed for the first 3 second.

Appendix C. Lesson Plan of Power Point Presentation in Teaching Physics

Speed

I. Objectives

At the end of the lesson, students must be able to:

A. Precisely define the term speed with appropriate units in the SI and British systems of units and determine the rate of movement of simple motions.

II. Learning Task

A. Subject Matter: Speed

1. Concept

Speed refers to how fast something moves.

Instantaneous speed is the speed at any instant.

Eq. (C.1) $v = \frac{d}{t} = \frac{\textit{total distance traveled}}{\textit{total elapsed time}}$

Eq. (C.2) $\bar{v} = \frac{\Delta d}{\Delta t}$

2. Process/Skills: analyzing, discussing, calculating
3. Value Focus: accuracy, unity

B. References:

- Physics for the Health Sciences. 3rd Edition. 1985
- Hewitt, P. Conceptual Physics. 8th Edition.

C. Materials: paper, pen & Calculator

III. Development of the Lesson

A. Pre-activity

Teacher's Activity	Learner's Activity
"Good morning class!"	"Good morning Ma'am!"

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

1. Review

"What time do you go to school?" "About 7:00 A.M. "

"Do you walk in going to school? "Yes Ma'am!"

Well, that is good. How fast do you walk? " "Fast enough Ma'am."

2. Motivation

"Who is the fastest, cheetah or "Cheetah"

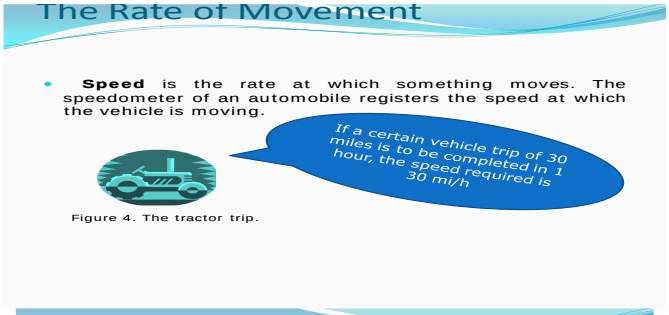
the monkey? Then who is the wisest? "Monkey"

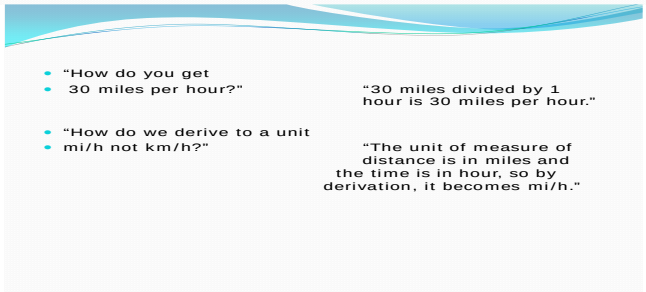
"Smart." "Thank You"

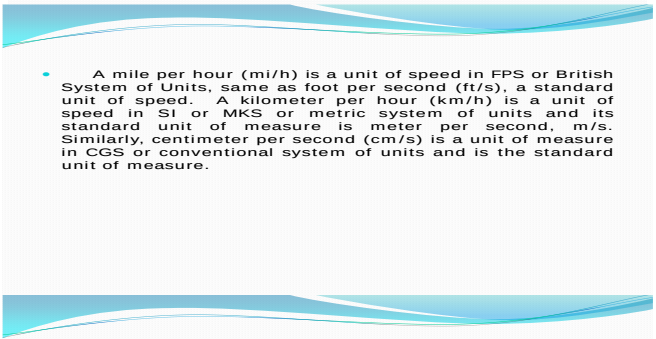
"How fast are you in taking down notes? "Quite fast or slow, it depends." "Very well, let us know the basics first."

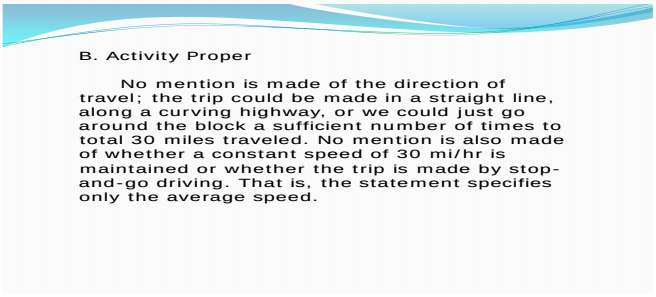
3. Presentation

Today we are going to study learn the speed using a multi-media application. Let us understand the speed through a power point presentation. "Everybody, all eyes to the slide show now."









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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

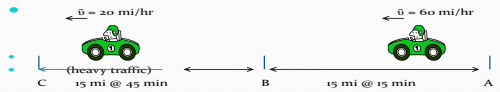


Figure 5. Varied speeds by the car.

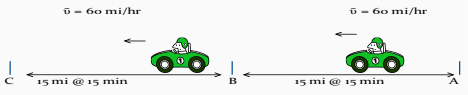


Figure 6. A car at constant speeds.

If the first 15 mi were covered in 15 minutes (at a constant speed of 60 mi/hr) and, if because of heavy traffic, is required to negotiate the second 15 mi (so that the speed was 20 mi/hr for this part of the trip), the average speed for the entire 30-mi journey would still be

Average speed ($\bar{v}$) = $\frac{\text{total distance traveled}}{\text{total elapsed time}}$

= $\frac{15 \text{ mi} + 15 \text{ mi}}{0.25 \text{ h} + 0.75 \text{ h}}$

= 30 mi/hr.

In general, for any small interval of distance, Δd, that is traversed in the time interval Δt the average speed is given by

$$\bar{v} = \frac{\Delta d}{\Delta t}$$

C. Post Activity

1. Discussion

A ball moving at a constant speed travels 20 meters in 5 seconds.

(a) What is the speed of the ball?

(b) How far does the ball move in 10 seconds?

(c) How long will it take for the ball to move 80 meters?

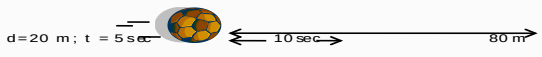


Figure 7. A ball in motion.

(a) v = ? b) d =? c) t = ?

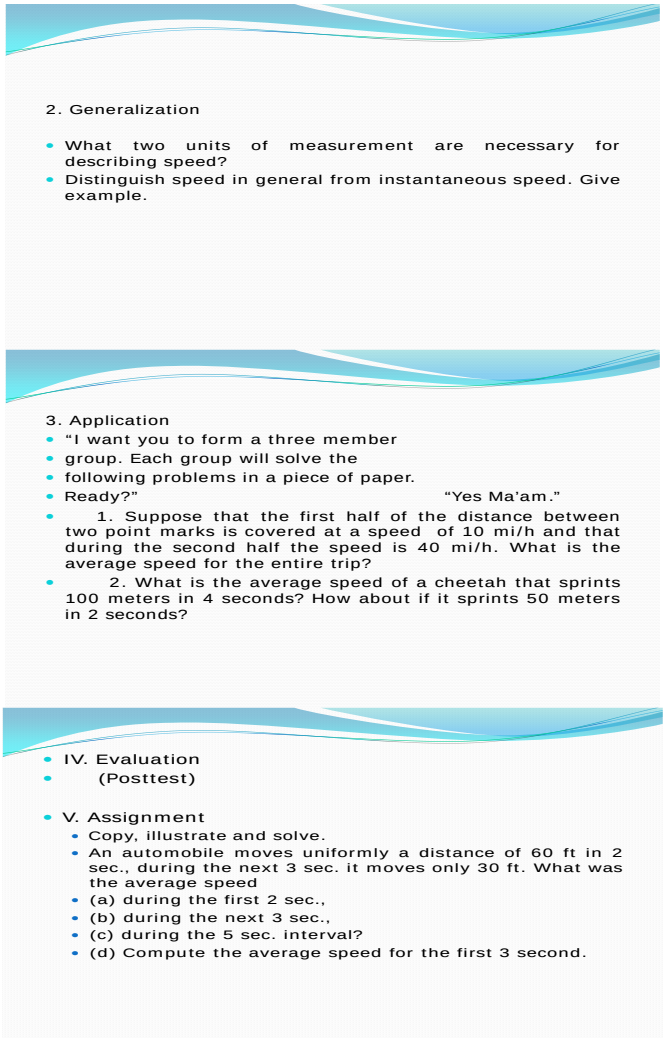
Solution:

a) $v = d/t = 20 \text{m}/5 \text{ sec} = 4 \text{ m/s}$

b) $d = vt = 4 \text{ m/s} \times 10 \text{ s} = 40 \text{ m}$

c) $t = d/v = 80 \text{ m} \div 4 \text{ m/s} = 20 \text{ (m)(s/m)} = 20 \text{ s}$

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020



Appendix D. Lesson Plan of Lecture with Black Board in Teaching Physics

Speed

I. Objectives

At the end of the lesson, students must be able to:

A. Precisely define the term speed with appropriate units in the SI and British systems of units and determine the rate of movement of simple motions.

II. Learning Task

A. Subject Matter: Speed

1. Concept

Speed refers to how fast something moves.

Instantaneous speed is the speed at any instant.

Eq. (D.1) $$v = \frac{d}{t} = \frac{\textit{total distance traveled}}{\textit{total elapsed time}}$$

Eq. (D.2) $$\bar{v} = \frac{\Delta d}{\Delta t}$$

2. Process/Skills: analyzing, discussing, calculating

3. Value Focus: accuracy, unity

B. References:

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

- Physics for the Health Sciences. 3rd Edition. 1985
- Hewitt, P. Conceptual Physics. 8th Edition.

C. Materials: paper, pen & Calculator

III. DEVELOPMENT OF THE LESSON

A. Pre-activity

Teacher's Activity	Learner's Activity
"Good morning class!"	"Good morning Ma'am!"

1. Review

"What time do you go to school?"	"About 7:00 A.M."
"Do you walk in going to school?"	"Yes Ma'am!"
"Well, that is good. How fast do you walk?"	"Fast enough Ma'am."

2. Motivation

"Who is the fastest, cheetah or the monkey? Then who is the wisest?"	"Cheetah" "Monkey"
Smart."	"Thank You"
"How fast are you in taking down notes?"	"Quite fast or slow, it depends."
"Very well, let us know the basics first."	

3. Presentation

Today we are going to study speed in a traditional method, a lecture with board work. Let us understand the speed through our old ways of instruction. "Everybody, all eyes on the board now."

The concept of speed is familiar to everyone. It is the rate at which something moves. The speedometer of a vehicle registers the speed at which the vehicle is moving, the so called instantaneous speed.

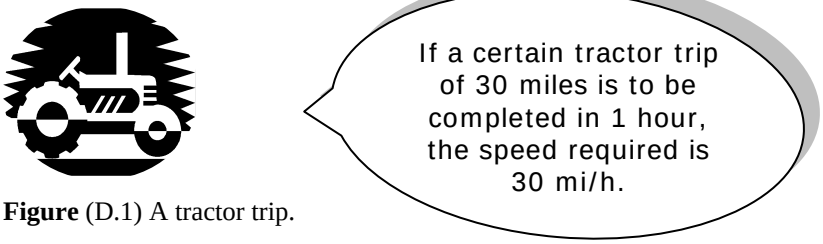


Figure (D.1) A tractor trip.

"How do you get 30 miles per hour, north?"	"30 miles divided by 1 hour is 30 mi/h."
"How do you derive to a unit mi/h and why not km/h?"	"The unit of measure of distance is inmiles and the time is in hour, so by derivation, it will be mi/h."

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A mile per hour is a unit of speed in FPS or British System of Units, same as foot per second, a standard unit of speed. A kilometer per hour is a unit of speed in SI or MKS or metric system of units and its standard unit of measure is meter per second. Similarly, centimeter per second is a unit of measure in CGS or conventional system of units and is the standard unit of measure.

B. Activity Proper

No mention is made of the direction of travel; the trip could be made in a straight line, along a curving highway, or we could just go around the block a sufficient number of times to total 30 mi traveled. No mention is also made of whether a constant speed of 30 mi/hr is maintained or whether the trip is made by stop-and-go driving. That is, the statement, thirty miles per hour specifies only the average speed.

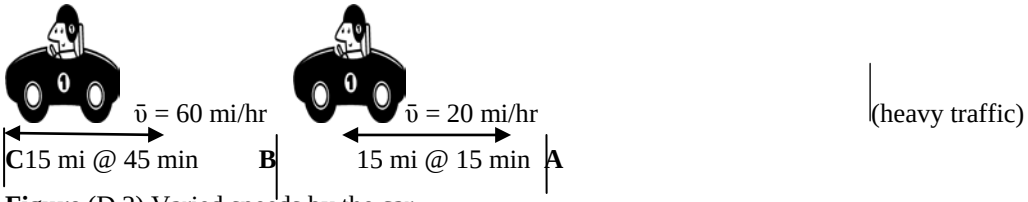

Figure (D.2) Varied speeds by the car.

If the first 15 mi were covered in 15 minutes (at a constant speed of 60 mi/hr) and, if because of heavy traffic, is required to negotiate the second 15 mi (so that the speed was 20 mi/hr for this part of the trip), the average speed for the entire 30-mi journey would still be

$$\text{Average speed} = \frac{\textit{total distance traveled}}{\textit{total elapsed time}}$$

$$= \frac{15\ mi + 15\ mi}{0.25\ hr + 0.75\ hr}$$

$$= \frac{30\ mi}{1\ hr}$$

$$= 30 \text{ mi/hr.}$$

In general, for any small interval of distance, Δd, that is traversed in the time interval Δt the average speed is given by

$$\bar{v} = \frac{\Delta d}{\Delta t}$$

C. Post Activity

1. Discussion

   Examine the given examples.

   If a ball moving at a constant speed travels 20 meters in 5 seconds. What is the speed of the ball? How far does the ball move in 10 seconds? How long will it take for the ball to move 80 meters?

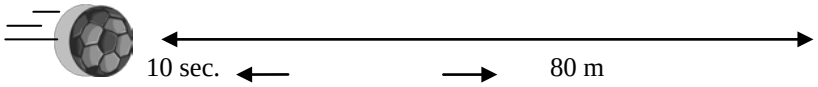

Figure (D.3) A ball in motion.

Solution:

a) The speed of the ball is

$$v = \frac{d}{t} = \frac{20\ m}{5\ sec} = 4 \text{ m/s}$$

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

b) The distance covered by a ball is

d = vt = 4 m/~~s~~ x 10 s~~ec~~ = 40 m

c) The time it will take a ball to cover 80 meters is

t = $\frac{d}{v}$ = $\frac{80\ m}{4\ m/s}$ = 20 (m)(~~s~~/m)~~$^{-1}$~~ = 20 s

2. Generalization

- What two units of measurement are necessary for describing speed?
- Distinguish speed in general from instantaneous speed. Give example.

3. Application

"I want you to form three members in a group. Each group will solve the following problems in a piece of paper.

"Ready?" "Yes Ma'am."

1. Suppose that the first half of the distance between two point marks is covered at a speed v_1 = 10 mi/h and that during the second half the speed is v_1 = 40 mi/h. What is the average speed for the entire trip?

2. What is the average speed of a cheetah that sprints 100 meters in 4 seconds? How about if it sprints 50 meters in 2 seconds?

IV. Evaluation

(posttest)

V. Assignment

Copy, illustrate and solve.

An automobile moves uniformly a distance of 60 ft in 2 sec., during the next 3 sec. it moves only 30 ft. What was the average speed

(a) during the first 2 sec.,

(b) during the next 3 sec.,

(c) during the 5 sec. interval?

(d) Compute the average speed for the first 3 second.

Appendix E. Research Instrument

Part I. PERSONAL DATA

Name:_____

Age: _____

Course, Year & Sec.:

Sex: _____ (Male/Female)

High School Final Grade in Science IV: ____

School:

Northern Iloilo Polytechnic State College – Barotac Viejo Campus (NIPSC-BVC)

School Address:

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

NIPSC-BVC, Barotac Viejo, Iloilo

Part II. PRE-TEST/POSTTEST

1. Speed

MULTIPLE CHOICE QUESTIONS

Choose the best answer and write the letter in the space provided.

_____ 1. A rate is defined as

a) mass.
b) distance.
c) a change for something.
d) time divided by a quantity.
e) a quantity divided by time.

_____ 2. Speed is

a) a measure of how fast something moving.
b) the distance covered per unit time.
c) always measured in terms of a unit of distance divided by a unit of time.
d) All of the above.
e) None of the above.

_____ 3. One possible unit of speed is

a) miles per hour.
b) kilometers per hour.
c) light years per century.
d) All of the above.
e) None of the above.

_____ 4. When you look at the speedometer in a moving car, you can see the car's

a) instantaneous speed
b) average speed
c) instantaneous acceleration
d) average acceleration
e) average distance travelled

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Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

_____ 5. Suppose you take a trip that covers 240 km and takes 4 hours to make. Your average speed is

a) 960 km/h.
b) 480 km/h.
c) 240 km/h.
d) 120 km/h.
e) 60 km/h.

VIII. PROBLEM SOLVING QUESTIONS

Solve and give your answer.

1. A ship travels 9 mi in 45 minutes. What is the speed in miles per hour? (2 points)

2. A car travels 270 mi in 4.5 h.

(a) What is its average speed? (b) How far will it take to go in 7 h at this average speed? (c) How long will it take to travel 300 mi at this average speed? (3 points)

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Appendix F. Raw Scores in the Pre-test and Posttest

Table (F.1): Tabulated Data of the Respondents

Respondents' Number	Methods of Instruction	Age	Sex	Final Grade in Science IV	Pre-test score					Post-test score				
					S	V	A	FF	P	S	V	A	FF	P
1	1	1	1	1	9	5	2	1	6	10	5	9	10	9
2	2	1	2	1	5	4	3	5	4	5	8	8	10	9
3	3	1	1	1	1	5	8	3	2	10	5	8	10	5
4	1	1	1	1	4	1	5	1	2	7	4	9	6	6
5	2	1	2	1	7	1	4	2	3	10	7	10	10	9
6	3	1	1	1	8	1	7	5	2	10	8	10	10	9
7	1	1	2	1	1	2	4	2	5	5	5	8	10	9
8	2	1	2	1	3	2	3	5	5	6	5	8	5	7
9	3	1	2	1	5	0	6	3	1	9	4	8	10	10
10	1	1	2	1	2	3	4	3	3	6	5	9	10	5
11	2	1	1	1	6	5	5	2	3	10	8	10	10	6
12	3	1	2	1	1	3	3	3	0	5	4	10	10	8
13	1	1	1	1	4	4	3	2	1	6	5	7	10	9
14	2	1	2	1	4	0	5	3	2	5	4	8	5	8
15	3	1	1	1	5	4	4	2	1	5	5	5	5	6
16	1	1	2	1	5	3	6	2	1	5	5	6	10	5
17	2	1	2	1	1	1	6	3	0	10	7	9	5	6
18	3	1	2	1	4	1	6	3	1	10	3	6	9	7
19	1	1	2	1	4	3	3	0	2	4	5	10	8	8
20	2	1	2	2	3	2	5	4	0	3	5	5	10	5
21	3	1	2	2	5	4	1	4	3	10	4	10	6	8
22	1	1	2	2	3	2	3	2	0	7	7	6	10	5
23	2	1	2	2	5	4	4	4	1	5	5	4	9	6
24	3	1	1	2	1	0	4	3	2	6	5	9	6	8
25	3	1	1	2	1	5	5	2	3	5	8	5	5	6
26	2	1	1	2	6	1	5	1	0	6	4	5	5	5
27	1	2	2	2	1	3	5	1	0	5	5	8	10	8
28	3	1	1	2	3	5	5	2	0	5	8	5	5	5
29	2	1	1	2	4	3	6	1	0	4	6	6	5	5
30	1	1	2	2	3	5	4	5	2	9	9	10	10	8
31	3	1	2	2	4	0	6	3	0	6	5	8	10	6
32	2	1	2	2	4	6	6	5	5	10	5	6	10	6

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33	1	1	2	2	1	4	5	4	0	10	4	6	6	9
34	3	1	2	2	5	4	3	2	0	5	4	10	7	5
35	2	1	1	2	4	4	5	3	0	5	7	5	7	6
36	1	1	2	2	0	1	4	2	0	5	5	5	5	5
37	3	1	1	2	4	4	4	2	2	9	6	9	5	4
38	2	1	2	2	1	3	2	2	2	5	3	3	8	5
39	1	1	1	2	2	1	4	3	1	4	4	4	10	6
40	3	2	1	2	4	0	7	2	2	4	3	7	7	4
41	2	1	2	2	0	2	5	1	2	5	5	5	5	5
42	1	1	2	2	2	3	4	4	2	2	3	4	4	2
43	2	1	2	2	1	0	0	1	0	5	5	5	5	5
44	3	1	1	2	0	0	2	0	0	5	5	5	5	5
45	1	1	2	2	2	3	6	2	0	5	3	9	5	5

Code:

Medium of Instruction:

Folk Games in Teaching Physics – 1

Power Point in Teaching Physics– 2

Lecture with Board Work in Teaching Physics – 3

Sex:

Male – 1

Female – 2

Age:

below 20 y.o. – 1

above 20 y.o.- 2

Final Grade in Science IV:

below 85 – 2

above 85 – 1

Speed – S

Velocity – V

Acceleration – A

Free fall – FF

Projectile – P

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Appendix G. Letters

(G.1)

January 15, 2015

_____
_____
_____

Sir/Madam:

Greetings!

The undersigned is a professor of NIPSC-BVC, and currently undertaking my Dissertation A at Southwestern University, Cebu entitled “Alternative Method of Teaching Physics”.

In this connection, I would like to ask permission in allowing me to gather information by interviewing some representatives in your Barangay regarding some folk games, its implements and rules of the game.

Your cooperation and support to this request will help me accomplish my requirements.

Thank you very much.

Very Truly Yours,

NORADE A. BANAS

ED.D. Science

Noted By:

RHODORA Z. LAYUMAS, ED.D Adviser

Action Taken:

Disapprove ( ) Approve ( )

(G.2

July 6, 2015

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Mrs. KENNIE ANN FERNANDEZ
School Registrar
NIPSC-Barotac Viejo Campus
Barotac Viejo, Iloilo

M a d a m:

I would like to request a copy of Science IV final grades of all BSA II-A of Agriculture Department, first semester of 2015-16. The list will be used in my study "Alternative Methods of Teaching Physics", a requirement for the degree Doctor of Education in Science in Southwestern University, Cebu City.

It is hoped that the result of this study will provide information that will be useful to the students and the department as well as to physics instructors.

Thank you for a favorable action on this request.

Very Truly Yours,

NORADE A. BANAS
ED.D. Science

Action Taken:
Disapprove ( ) Approve ( )

(G.3)

July 8, 2015

DR. ALMA R. DEFACTO
Dean of Education
NIPSC-Barotac Viejo Campus
Barotac Viejo, Iloilo

M a d a m:

I would like to conduct my study "Alternative Methods of Teaching Physics" in a true experimental research design, a requirement for the degree Doctor of Education in Science in Southwestern University, Cebu City.

In this regard I would like to ask permission for the involvement of my Natural Science 3 – General Physics class, BSA II-A of Agriculture Department in this college as respondents of the study.

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

It is hoped that the result of this study will provide information that will be useful to the students and the department as well as to physics instructors.

Thank you for a favorable action on this request.

Very Truly Yours,

NORADE A. BANAS

ED.D. Science

Noted By:

RHODORA Z. LAYUMAS, ED.D.
Adviser

Action Taken:
Disapprove ( ) Approve ( )

(G.5)

July 8, 2015

Prof. EVELYN P. BARRETTO
Chairman, Agriculture Department
NIPSC-Barotac Viejo Campus
Barotac Viejo, Iloilo

M a d a m:

I would like to conduct my study “Alternative Methods of Teaching Physics” in a true experimental research design, a requirement for the degree Doctor of Education in Science in Southwestern University, Cebu City.

In this regard I would like to ask permission for the involvement of my Natural Science 3 – General Physics class, BSA II-A of Agriculture Department in this college as respondents of the study.

It is hoped that the result of this study will provide information that will be useful to the students and the department as well as to physics instructors.

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Thank you for a favorable action on this request.

Very Truly Yours,

NORADE A. BANAS

ED.D. Science

Noted By:

RHODORA Z. LAYUMAS, ED.D.
Adviser

Action Taken:

Disapprove ( ) Approve ( )

Appendix H. Interviews

Table (H.1): Interview Schedule

Locale	Representative	Date & Time
San Francisco, Barotac Viejo, Iloilo	1.Barangay Official 2. Senior Citizen 3. Student	January 5, 2015 @ 4-5 PM
Santiago, Barotac Viejo, Iloilo	1.Barangay Official 2. Senior Citizen 3. Student	January 10,2015 @ 4-5 PM
Poblacion, Ajuy, Iloilo	1.Barangay Official 2. Senior Citizen 3. Student	February 12, 2015 @ 3-5 PM
Poblacion, Lemery, Iloilo	1.Barangay Official 2. Senior Citizen 3. Student	February 15, 2015 @ 2-4 PM
Poblaciion, Estancia, Iloilo	1.Barangay Official 2. Senior Citizen 3. Student	March 3, 2015 @ 1-3 PM

Questions to be asked are about the following:

1. What are the folk games in the area?
2. What are the implements of the folk games used (materials and how to make it)?
3. Are the materials and implements still available in the area today?

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

4. What are the rules of these folk games?
5. Who plays the folk games now and long ago?

Appendix I. Time Table

Table (I.1): Time Table

Phases	Activities	Inclusive Date
Phase 1	The Conceptual phase. It will entail conceptualizing the proposal through the identification of problem criteria for identifying research locale and respondents.	2nd Semester of SY 2014-15
Phase II	This phase will involve the pre-oral exam, approval of the dissertation proposal, the verification and validation of the instrument.	1st Semester, SY 2015-16
Phase III	In this phase, performance of BSA II-A students of NIPSC-BVC (1st Sem. 2015-16) will be determined and compared, focusing on determining the interplay of factors which make the subjects perform.	July, 2015– October, 2015
Phase IV	The final phase. It will involve the final defense, and the approval of the dissertation paper.	2nd Semester, SY 2015-16

Appendix J. Proposed Budget

Budget Proposal

I. Research Materials Php 10 000.0

10 reams Cactus Bondpapers (short)
1 ream Cactus Bondpapers (Long)
150 pcs. Pens
25 pcs. Pencils
100 pcs Envelopes (Ordinary/Long)
6 pcs. Canon fine cartridge 810/black
1 pc. Canon fine cartridge 811/colored
25 pcs. Folders (Ordinary/Short)
10 pcs. Folders (Ordinary/Long)
100 pcs. Paper clips
2 pcs USB 4G

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

II. Research Transportation

Phase 1 Activities Php 1 500.00

Phase 2 Activities Php 6 000.00

Phase 3 Activities Php 7 500.00

Phase 4 Activities Php 6 000.00

III. Pre-Oral Exam Php10 000.00
Procedures

IV. Final Defense Php 25 000.00
Procedures

Prepared By: NORADE A. BAÑAS ED.D.

CURRICULUM VITAE

Name: NORADE ANTOPINA BAÑAS Nickname: Nade

Birthdate: December 13, 1968 Gender: Female

Birthplace: Anilao, Iloilo Status: Married

Weight: 48 kgs Citizenship: Filipino

Height: 1.75m Religion: Roman Catholic

Address: Provincial: Dangula-an, Anilao, Iloilo Zip Code: 5009

E-mail: norade.banas@yahoo.com. Contact No.: 09123833107

Family Background

Name of Spouse: Paterno AbongBañas Jr. Birthdate: February 20, 1965

Name of Child: Patti Louise AntopinaBañas Birthdate: February 12. 2001

Father's Name: AdelinoSua-an Antopina Birthdate: November 10, 1933

Mother's Maiden Name: Norma GajeHerreraBirthdate: August 29, 1946

Educational Background

Name & Address l of School	Year Graduated	Honors/Awards Received
Elementary: Dangula-an Elementary School	1981	Third Honors
Secondary: Iloilo National High School	1985	
College: Western Visayas College of Science & Technology	1989	Service Awards
Course/Major: BS in Teaching		Physics/Physics (BSTP)
Graduate Studies: West Visayas State		

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

University (WVSU)
Course/Field of Specialization: MAT-
Physical Science (24 units)

Central Philippine University (CPU)
MA in Education in Physics
(MAEd.-Phy. Ed.) (18 units)

Siquijor State College (SSC) 2005
with Siliman University (SU)
& Philippine Physics
Society (PPS)
Master of Arts & Science
Teaching major in Physics
(MAST-Physics)

Southwestern University (SWU) 2016
Doctor of Education
(major in Science Education)

Eligibility

Name of Examination	Rating	Date of Exam	Place of Examination
PBET	79.75	December 10, 1989	Iloilo City

Work Experiences

Inclusive Date	Company/Agency	Status of Appointment
Sept. 1989-Jun 1990	NIPSC-BVC	Provisional
Jun 1990-to present	NIPSC-BVC	Regular Permanent

Organization Membership

	Inclusive Dates	Position
PAVE	1990-2005	Member
SAMAHANG PISIKA Ng PILIPINAS	1997-2007	Member
PHILIPPINE PHYSICS SOCIETY	2000 to date	Member

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Western Visayas Association Of Physics Instructors, INC.	1999-2010	PRO/Member
Philippine Association for Teacher Education	2009 to date	Member
Philippine Council for Literary & Language Arts	2015	Member

Training Programs

Title of Seminar/Conferences	Inclusive Dates and Venue
31st Teachers' Regional Congress	August 15-16, 2013, Iloilo City
NIPSC-BVC Accreditation Visits; 2nd Survey Evaluation	July 9-11, 2012, NIPSC-BVC Btac. Vjo., Iloilo
Annual Regional Conference for TEI Deans/	February 8-9, Principals/Heads/Teachers 2012, Iloilo City
Seminar-Workshop on Realignment of Teacher Education Curriculum	January 27, 2012, NIPSC, Estancia, Iloilo
Regional State Colleges and Universities Athletic Association (SCUAA) Meet	December 18-23, 2011 AU, Sibalom, Antique
Orientation-Workshop on AACCUP Accreditation	August 8-9, 2011, NIPSC-BVC, Btac. Vjo., Iloilo
38th National Folk Dance Workshop	May 17-21, 2010Aquinas University, Legaspi City
Dance Xchange: 2nd Philippine International Dance Workshop and Festival	April 14-20, 2010 Roxas City, Capiz
8th regional Physics Convention and Seminar-Workshop & 6th Regional Olympics (Resource Person)	April 12-14, 2007 CAPSU, Roxas City
28th National Physics Convention/Seminar-Workshop, 19th National Physics Olympics Physics Fair (Resource Person)	April 5-9, 2006, ASU Banga, Aklan April 1, 2006
7th Annual Regional Convention & Seminar-Workshop and 5th Regional	Miag-ao, Iloilo

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

Physics Olympics (Resource Person)		
Regional Seminar-Workshop in Physics	July 29-30, 2005	
(Resource Person)	ASU, Banga, Aklan	
3rd PPS-Siquijor Chapter Regional	June 21, 2005	
Seminar-Workshop On Inexpensive Physics	SSC, Larena, Siquijor	
Laboratory Apparatus	(Resource Person)	
4th Regional Convention & Seminar-Workshop	April 2003	
and 2nd Regional Physics Olympics ,	JBCLF, Iloilo City	
Regional Seminar/Workshop on the	October 9-14, 2000	
"Development of Instructional	WVSU, Iloilo City	
Materials in General Physics"		
Regional Short Term Course on	May 10-14, 1999	
"Experimental	WVSU, Iloilo City	
Light and Optics"		
9th NCCA National Dance Conference and	April 26-27, 1999	
Workshop	UP, Diliman, Quezon City	
Five-Day Short Term Course in Modern	May 18-22, 1998	
Physics:"Modern Physics in a Nutshell"	WVSU, Iloilo City	
Upgrading Program for General Education	April 1997-March 1998	
Instruction In Western Visayas	CPU, Iloilo City	
Seminar/Workshop on FIZ-EEEEKS	November 28-29, 1997	
At The Park	UP Diliman, Q.C	
15th National Physics Congress of the	October 27-30, 1997	
SAMAHANG PISIKA NG PILIPINAS	USC, Cebu City	
Seminar/Workshop on Tertiary Science	February 27-28, 1997	
Teaching into the Next Millenium	UP Diliman, QC	
One-Day Seminar/Workshop in	November 16, 1996	
Secondary Physics	VSPC, Sara. Iloilo	
Conference/Workshop on Modern and	October 22-26, 1996	
Innovative Technologies For Asian	Ateneo de Manila University, Physics Education (MITAPE)	QC
1996 National Folkdance Workshop	May 27-June 2, 1996	CCP, Manila
Regional Seminar in Secondary Physics	December 10-11, 1992	
	WVSU, Iloilo City	

IX. INTERESTS AND SPECIAL SKILLS

Drawing
Computer Literate
Playing Puzzles

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

X. Awards Received

LOYALTY AND SERVICE AWARD (10 YEARS) August 11, 2003
June 14, 1990 to June 13, 2000 Barotac Viejo, Iloilo
LOYALTY AND SERVICE AWARD (15 YEARS) June 14, 2005
June 14, 1990 to June 13, 2005 Barotac Viejo, Iloilo
LOYALTY & SERVICE AWARD (20 YEARS) August 11, 2010
June 14, 1990 to June 13, 2010 Barotac Viejo, Iloilo
LOYALTY & SERVICE AWARD (25 YEARS) August 11, 2015
June 14, 1990 to June 13, 201 5 Barotac Viejo, Iloilo

53

REFERENCES

1. Gabao, L., Sayaw Dances of the Philippine Islands. Philippine Folk Dance Society. Manila. 2003
2. Ibe, M. D. Searching for Model Schools. Effective Practices in Science and Mathematics Education: A Benchmarking Project. Major Project. 2004.
3. Tan, M. C. Science Education in the Philippines: Where To? Current Challenges in Basic Science Education. 2009
4. Addison Wesley Conceptual Physics. Addison Wesley Publishing Company, Inc.
5. Ogena, E. B. Effective Practices in Science and Mathematics Education: A Benchmarking Project Major Report. Department of Science and Technology. Science Education Institute. 2004
6. Schreiner and SjØberg. Rose Review. Current Challenges in Basic Science Education. UNESCO. Education Sector.2009
7. Liopis, R.; Edwards, M.; and Llorens, J.A. Universidad Politecnica de Valencia; Garcia Gregorio, M.G. Centro de Formacion de Profesores (CEFIRE) and Pelegero, V. Museo de Ciencias Principe Felipe, all Valencia Spain.Networks and Practice Communities for Improving Motivation and Learning in Science & Technological Educati
8. Qiu, Y.P.. Responsibility of the Government in the Construction of Teacher Educational Practice Base. Computer Intelligent Computing and Rducation Technology- Liu, Sung & Yao (Eds) @2014 Taylor & Francis Group, London, ISBN 978-1-138-02469-4
9. The New Webster's Dictionary of the English Language. Polinex International Publication, Inc..2004.

DOI: 10.37200/IJPR/V24I4/PR201046
Received: 22 Oct 2019 | Revised: 13 Sep 2019 | Accepted: 15 Jan 2020

10. Encarta Yearbook, February 1998.Microsoft ® Encarta ® 2009. © 1993-2008 Microsoft Corporation
11. Slavin, Robert E. Educational Psychology: Theory and Practice. Pearson Education, Ic., New Jersey: Allyn & Bacon, 1995.
12. Addison Wesley Conceptual Physics. Addison Wesley Publishing Company, Inc
13. Study.Com. Analysis Of Variance (ANOVA): Examples, Definition & Application.2003-2015.
14. Savater. Schooling, Science and Culture. Current Challenges in Basic Science Education. UNESCO. Education Sector.2009.
15. A. Beiser, A. Applied Physics 2/ed.
16. A. Beiser. Modern Physics Exercises and Experiments in Physics.
17. Catchillar, G. C. and Malenab, R. G. Fundamentals of Physics (A Textbook for College Students). National Book Store. 2003
18. Nave, C. R. and Nave, B. C. Physics for The Health Sciences.3rd Edition. W. B. Saunders Company. 2004
19. Hewitt, P. G. Conceptual Physics. Eighth Edition. Addison Wesley Longman, Inc. 1998.
20. Williams, J.E.,Trinklein, F.E., Metcalfe, H.C. Modern Physics Exercises and Experiments in Physics. 1980.
21. Proficiency in Presentation Graphics Using Microsoft Office PowerPoint 2007. Win7 Series. Rex Book Store. Philippine Copyright 2011
22. Good, T.L., and Biddle, B. J.,The Effective Learning: The Delivery Modes of Models Schools. Effective Practices in Science and Mathematics Education: A Benchmarking Project. Major Project. 2004
23. Study.Com. The True Experimental Research Design- Video & Lesson. 2003-2015.
24. Stufflebeam, Daniel (1985). Systematic Evaluation: A Self Instructional Guide to Theory and Practice. Boston: Kluwer-Nijhoff Publication.
25. NURZAMAN, TRI SUSILOWATI, and ARIF DIAN WAHYUDI. "DRUG INVENTORY INFORMATION SYSTEM IN ASY-SYIFAA YUKUM JAYA ISLAMIC HOSPITAL." International Journal of Communication and Computer Technologies 7 (2019), 27-31. doi:10.31838/ijccts/07.02.07

DOI: 10.37200/IJPR/V24I4/PR201046
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26. Sorli, A., Fiscaletti, D., Mageshwaran, M. Advanced relativity: Unification of space, matter and consciousness (2016) NeuroQuantology, 14 (4), pp. 645-656.

27. Pereira, C. Consciousness is quantum computed beyond the limits of the brain: A perspective conceived from cases studied for hydranencephaly (2016) NeuroQuantology, 14 (3), pp. 613-618.

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