The foss module on magnetism and electricity education essay

Education

Introduction

The result of the international high school Physics test given to students of 40 countries during the 1999 Third International Mathematics and Science Study (TIMSS) showed that there is a prevailing problem in the Physics education worldwide. The overall average percentage of participants who answered correctly in the exam is 35%. Only 32% of the Electricity and Magnetism problems were answered correctly by the participants (Bowen, n. d.). In 2011 Trends in International Mathematics and Science Study (TIMSS), the average achievement in Physics is 38 % and it revealed that there is a difficulty in improving the achievement in the said subject (Martin, Mullis, Foy, & Stanco, 2012). Thus, there is a need to scrutinize the cause of setting science education to such a disadvantaged position. To address this concern, educational institutions constantly review the curriculum and implement educational reforms in the field of science education through Physics Education Research (PER). PER aims to develop instructional methods and strategies that may help students learn the subject effectively (Physics education, 2010). However, initial findings of the PER showed that despite these efforts, " there is … a gap between what is taught in classes and what is being learned" (May, 2002, p. 2). Initial findings attributed this to the fact that students have preconceptions about phenomena in Physics and some of these are misconceptions which were hard to alter despite the formal classroom instruction. Consequently, these prior knowledge and beliefs of students about the physical world affects how they learn (May, 2002). One of the focus of PER is the conceptual understanding in Physics, specifically Electricity and Magnetism. Early researches found out that even after formal

instruction, students in Physics still have difficulties in explaining certain concepts. Thus, several investigations were conducted to determine its underlying causes (May, 2002). One finding is that active learning should be used instead of the traditional lecturing in Physics classes (Physics education research, 2009). Hence, the use of technology in classroom instruction is investigated for its potential to provide students with an active, independent and interactive way of learning. There has been adequate number of foreign researches conducted to investigate on the effect of Computer-Assisted Instruction (CAI) to academic achievement and learning attitude towards a subject. However, limited similar studies were conducted in the Philippines. Thus, this current study would like to verify if the same connection will be established between CAI and academic achievement in Physics across different populations, this time, to Filipino senior high school students taking up Physics.

Statement of the Problem

The general objective of this study is to find out the effect of Computer - Assisted Instruction on the academic performance in Physics of students at Notre Dame of Marbel University – Integrated Basic Education Department. Specifically, this study aims to answer the following questions: Is there a significant difference in the pretest scores of the experimental group and control group? Is there a significant difference in the pretest and posttest scores of the control group? Is there a significant difference in the pretest and posttest scores of the experimental group? Is there a significant difference in the mean gain scores of the experimental group and control group?

Significance of the Study

Researches regarding Computer – Assisted Instruction (CAI) do not only aim to establish the effect of the said teaching method to the academic achievement of the learners; it also aims to find out how to make use of CAI effectively in classroom teaching. In the end, this study only seeks to improve the classroom instruction for effective teaching – learning process to take place. If the result of this research will reinforce the findings of the previous local and foreign studies, it would benefit the students for it provides an opportunity to promote independent and collaborative learning. It would motivate students to study since technology has the potential of holding their attention. Most of all, it would allow students to set their own pace in learning. The findings of this study would also be of value to the teachers since it would aid Filipino educators to plan, design and deliver effective classroom instructions. Moreover, the outcome of this investigation would aid school administrations and policy – making bodies in planning and improving the instruction by using technology. Computer – Assisted Instruction will be given due importance and the school would consider investing and acquiring technology to aid instruction. To top it all off, the results of this study will be added to the vast literature already existing regarding CAI and its effect to academic achievement. Conclusions and recommendations from this study may be the basis of future researches that would aim to determine how CAI could be used effectively in classroom teaching.

Scope and Delimitation

The focus of this study is on the effect of CAI on the academic performance in Physics of students at Notre Dame of Marbel University – Integrated Basic Education Department (NDMU – IBED). One hundred fifty seven (157) Year 10 high school students who are enrolled in the Physics class of NDMU – IBED for School Year 2012-2013 were the subjects of this study. The enrolment in Physics class is not based on personal choice but was compulsory to all senior high school students enrolled in the four (4) pre-existing heterogeneous classes. The study made use of the FOSS Module on Magnetism and Electricity, which started on the last week of January 2013 and ended on the last week of February 2013 (5 weeks). The module used in this study covered the following topics: MagnetismElectricityb. 1 Static Electricityb. 2 Current ElectricityCircuitsc. 1 Series Circuitc. 2 Parallel CircuitElectromagnetismStudent's academic achievement in Physics was measured with the use of the Pretest and Posttest in the Benchmark/Summative Assessment of the FOSS Module for Magnetism and Electricity to be determined by the mean gain scores of the experimental and control groups.