

**IMPACT ASSESSMENT OF THE INTEGRATION OF E-LEARNING
ENGRADE SYSTEM ON THE LEARNING OF PHYSICS IN SELECTED
SECONDARY SCHOOLS IN ILE-IFE**

BY

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DEDICATION

This work is dedicated to the glory of the ALMIGHTY GOD.

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Abstract

The study developed an e-learning engrade system for teaching Physics in selected secondary schools in Ile-Ife. It assessed the effectiveness of the system on the performance and retention of the students in Physics and also determined the impact of the system on students' attitude towards Physics in the selected secondary schools. These were with a view to improving students' learning outcomes in Physics in senior secondary schools in Ile-Ife.

The study adopted the pretest, posttest, control group design. The population comprised all students that registered for Physics in all the senior secondary schools in Ile-Ife, from where a sample of 60 students was selected from two schools using purposive sampling technique based on availability of facilities like Information and Communication Technology, internet and supply of electricity. The 60 students were assigned into experimental and control groups containing 30 students each. Three research instruments were used for data collection. They were: Physics Achievement Test (PAT); Perceived Impact of the E-Learning Engrade System on Student Attitude towards Physics (PIESAP) and Student Attitude towards Physics (SAP). The stimulus material used was the e-learning engrade system, a web-based package with template for lesson delivery. It treated the following topics heat energy and linear momentum. The experimental group used the package independently for learning the selected topics by login in to www.engrade.com with their individual access code given to them by the researcher. The study lasted eight weeks. Data collected were analysed using mean, standard deviation and t-test.

The e-learning engrade system was developed using the Microsoft Power Point with text and pictorial features. It contained user-friendly platforms such as flashcards, animations and quizzes which accelerate learning achievement by enabling teachers to connect learning

resources to the students at the right time. The results showed that students that were exposed to e-learning engrade system performed significantly better than those taught using the conventional method ($t = 17.52, p < 0.05$). The results also showed that there was a significant difference in the retention abilities of the students that were exposed to e-learning engrade system and those taught using the conventional method ($t = 15.77, p < 0.05$). Furthermore, the results showed that there was a significant improvement in the attitude of students towards Physics after they had been exposed to the e-learning engrade system ($t = 4.84, p < 0.05$).

The study concluded that the e-learning engrade system was a creative tool for improving students' learning outcomes in Physics in secondary schools.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Science is the foundation upon which the bulk of present day technological breakthrough is built. Nowadays, nations all over the world including Nigeria are striving hard to develop technologically and scientifically, since the world is turning scientific and all proper functioning of lives depend greatly on Science.

The concept of Science as it relates to teaching and learning processes had been given various definitions and descriptions. Owolabi (2004) defined Science as an integral part of human society. Its impact is felt in every sphere of human life, so much that it is intricately linked with a nation's development. For instance, life has been made a lot easier for man as a result of the advancement in Science. Through science, man has been able to understand better his environment and this enabled him to manipulate the conditions of his environment to suit his own benefit. Science has also made it possible for man to acquire his desired needs easily. It has reduced human needs to the barest minimum. Science and Technology has become an indispensable culture in the world. This is due to the fact that the economic and political strength of any nation depend on her scientific and technological achievement. Also, the development of any nation is indicated by the overall social, economic and political progress and dependent upon man's activities in his natural environment. These activities revolve around Science and its

technological applications. It therefore, implies that for any meaningful national growth and development to be achieved, Science and Technology must be an essential part of the nation's culture. Indeed, Science and Technology is a critical instrument for the upliftment of the nation's economy. Hence, it should form the basis for development as well as an influencing factor of peoples' thinking and working processes. Science has been of great importance internationally for sustainable and socio-economic development as well as for technological advancement of nations. Knowledge of science and technology is therefore a requirement in all countries. These challenges include emergence of new drug resistant diseases, effects of genetic experimentation and engineering, ecological impact of modern technology, dangers of nuclear war, population explosions and global warming among others. This resulted in the rapid changes taking place in Medicine, Industry, Communication, and Agriculture. Science as an agent of development plays an important role in bringing about these changes through technological advancement, national wealth enhancement, health improvement and industrialization. This is why scientific and technological breakthrough is usually the goal of any developing nation of which Nigeria is a part.

Science comprises the basic disciplines such as Physics, Chemistry, Mathematics and Biology. Many investigations have shown that students in secondary schools are not very much interested in science (Esiobu, 2005, Okonkwo, 2000). Besides, Physics as one of the Science subjects is believed to be one of the most difficult subjects in the school curriculum (NERDC, 2005). Okoronka (2004) asserted that Physics is a vehicle for achieving long-term goals of Science because it is instrumental to technological and socio-economic growth across the globe. According to Oludipe (2003), Physics is a *sine qua non* to the technological development of any nation and its application is found in all spheres of human life and it is the foundation upon

which the scientific and technological advancement of any nation rests. He noted that the subject is the foundation of scientific knowledge has contributed immensely to the existence and activities of man towards improved standard of living and growth in wealth.

The West African Examinations Council (WAEC) and National Examination Council (NECO) have repeatedly reported students' poor performance in Physics (NECO, 2011; WAEC, 2012). This problem has major implications on university admission, for instance; schools no longer produce adequate number of qualified candidates in Science-based courses for university admission. In addition, it prevents the educational system in Nigeria from producing required number of qualified scientists and technologists (Chukwu, 2000; Rafiu and Adetona, 2006). Based on relevant literature from Physics experts and West African Examination Council (WAEC) Chief Examiner's reports on Physics, 28 topics were identified as very difficult or problematic in Nigeria (Egwaoje, 1994; Okpala and Onocha, 1998; Bamigbala, 2000; Salami, 2003).

Table 1.1 shows the Secondary School Students' Performance in Physics conducted by WAEC (May/June 2006-2011).

**Table 1.1: Secondary School Students' Performance in Physics conducted by WAEC
(May/June 2006-2011)**

Year	Total Sat	(%)	Total Credit	(%)	Total Fail	(%)

2006	375824	97.40	218199	58.05	149144	39.67
2007	418593	97.93	180797	43.19	228652	54.61
2008	415113	97.69	200345	48.26	207892	50.07
2009	465636	98.05	222722	47.83	221514	47.57
2010	463755	97.55	237756	51.27	207133	44.67
2011	563161	98.28	360096	63.94	181394	32.21

Source: WAEC (2012), *Research and Statistics Unit, WAEC Lagos.*

Table 1.1 reveals the secondary school students' performance in Physics examinations conducted by West African Examinations Council (WAEC) from 2006 to 2011 in Nigeria. From the table, it can be observed that students' performance in Physics examinations have been consistently poor. This has been a major concern

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