


Chapter 14

Effectiveness of Computer-Managed Instruction on Students' Performance in Tertiary Institutions


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ABSTRACT

The roles of information technology in the contemporary world cannot be over-emphasized considering its enormous usage in the educational sector. This chapter investigates the effectiveness of computer-managed instruction (CMI) on students' performance in tertiary institutions in the North-Central Geopolitical Zone of Nigeria. The control group was taught Computer Science using traditional lecture method (TLM) approach, and the experimental group was taught using CMI approach. A total of 360 students in colleges of education (COE), polytechnic, and university participated in the study by using multi-stage sampling procedures. The null hypotheses were tested using ANCOVA and ANOVA statistical analyses at 0.05 level of significance. Findings revealed that there was a statistical difference in the performance scores of students using CMI and TLM approaches. There was also a statistical difference between private and public tertiary institution students' performance. Additionally, the students from the university had the highest mean when compared with students from COE and polytechnics.

INTRODUCTION

The world has revolutionized with remarkable impacts of information and communication technologies (ICTs) in different spheres of life. The benefits of ICTs in Engineering, Science, Commerce, Energy, Health/Medicine, Communication, Manufacturing, Financial Institutions, Transportation and Agriculture have tremendously created a world of all possibilities. The field of education is not left behind in exploiting the significance of ICTs towards achieving the educational goals and objectives at all levels of education. The teaching and learning processes could be enhanced with the adoption of ICTs into the classroom's discussion by teachers and students. ICTs can be used for repetition of instructions until the specific learning objectives are achieved or mastered, preparation and presentation of ideas, and analysis among others. Educational packages such as Computer Assisted Instructions (CAI), Computer Based Training (CBT), Computer Managed Instruction (CMI) and Computer Assisted Learning (CAL) are available for use in the dissemination of educational instructions.

Therefore, this chapter intends to draw attention to the effectiveness of computer-managed instruction on students' performance in tertiary institutions in North-Central geopolitical zone of Nigeria. The main objective includes finding out the difference between computer-managed instruction and conventional lecture method in computer science in tertiary institutions. However, students get distracted with certain graphical information via the internet which later negatively affects the overall academic performance in a chosen course of study. The researchers stated that instructions which are not well managed and disseminated through the use of ICTs could endanger the academic performance of students at tertiary institutions in Nigeria. The causes of poor academic performance in computer science among students include poor teaching and learning techniques, infrastructures, instructional management, lack of conducive learning environment and non-availability of computers for studying and researching (Rozema, 2011).

The roles of tertiary institutions cannot be ignored in the development of individual and society at large. Tertiary institutions offer opportunities to a group of individuals to acquire skills, do research and develop human capacity. Regrettably, many tertiary institutions lack qualified lecturers and the few excellent lecturers they have in education are looking for a better career outside the teaching profession. However, when the tertiary institutions lack qualified lecturers to deliver their modules and do research effectively, then this will have a negative impact on improving the current education and the society at large. The fundamental responsibilities for future advancement and development of nations in the world lie on the youths and students in particular. Therefore, adequate attention is required to ensure that the students are provided with the required information and skills for intellectual capacity.

Significantly, ICT could be useful to enhance teaching and learning processes among the lecturers and students at tertiary institutions. A computer-based learning package can be provided to help teachers and students to share information and do research projects at the same time. According to Bada, Adewole and Olalekan (2009), the benefits of computer applications in education include the followings:

- Students could learn at their own pace
- Provision of suitable feedback
- Motivation towards learning
- Enhancement of personalized instruction through individualized reactions
- Provision of adequate control over learning
- Enhancement of self-assessment towards repetition of instructions until desired objectives are achieved.

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