

Chapter 5

Digital Games for Teaching and Learning of Mathematics in Nigeria Schools

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ABSTRACT

*Fractions are among some concepts in mathematics that pupils in Nigeria primary find difficult to learn, and teachers find difficult to teach. These problems require solutions because mathematics knowledge is germane for technological advancement and national development. Pupils need to be actively involved in constructing their knowledge and digital mathematics learning games could be helpful. Thus, this study investigated the effects of digital mathematics games on primary pupils' achievement in fractions concepts. An appropriately validated pupil fractions achievement test (PFAT) was used to collect data for the study. Data collected were analyzed using *t*-test. It was revealed that pupils exposed to digital mathematics games performed significantly better than those exposed to conventional method. There is significant difference between achievements of male and female pupils exposed to game-based strategy.*

DOI: 10.4018/978-1-5225-6158-3.ch005

INTRODUCTION

In order to compete effectively in today's global, information-based economy, and in today's increasingly high-tech work environment, students must be able to reason logically, solve problems and communicate effectively. Though mathematics, science and technology are commonly regarded as "critical filters" for determining future success, satisfactory achievement is not yet obtainable in most students. To prepare all students for twenty-first century careers, increase the number of high achieving students as well as improve on the ability of low achievers in mathematics and to ensure sustainable interest in the subject, students should be provided with innovative opportunities to learn more mathematics.

Students need to be engaged and challenged for the desirable outcomes in learning mathematics hence problem solving ought to be a central focus of all mathematics instruction. To accomplish this, we need to involve them in hands-on activities, to provide them with settings where they can participate in mathematical discovery, to decrease the focus on repetitive tasks, to make available alternate ways of learning concepts, and to offer them activities which they recognize as meaningful. As students benefit from a classroom environment in which they are working to find solutions to meaningful problems, it is also necessary to accord importance to issue of gender.

There are diverse reasons for gender differences in mathematics as this issue can be approached through various perspectives; while many people opine that it is because of preconceived notions that girls will fail and genetic theories, some others say it is due to adult influence, and the list goes on. Even, "math is for boys" stereotype has been used as the definition of why girls do not pursue science and mathematics as their careers (University of Washington, 2011). Also, the "math is not for me" is a cultural stereotype on girls which can affect which career choices and classes they choose to take (University of Washington, 2011). The latter portrays feminine gender as being less confident compared to masculine gender in mathematics abilities, which attributes to why there are so few women pursuing careers in mathematics, science and technology.

However, as quest for solution to the problems of learning mathematics waxes stronger, Haramati (2000) opines that guarantee for real learning is the creation of joy, excitement, and love for learning and these can be created through games as a way of learning. Hence, to improve student interest and academic performance, educators have begun paying special attention to computer games (Oblinger, 2004;

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