

## Chapter 19

# Comparative Effectiveness of Interactive Multimedia, Simulation Games, and Blended Learning on Science Performance of Learners With Special Needs

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### ABSTRACT

*This chapter investigated the comparative effectiveness of interactive multimedia, simulation games, and blended learning on science performance of learners with special needs. The study adopted the pre-test post-test control group quasi-experimental research design. The pre-test was used to determine the prior knowledge of the learners. Three intact classes in three schools were assigned to the experimental groups “Interactive Multimedia Platform,” “Simulation Games Box,” and “Blended Learning Parcel.” The post-test was conducted at the end of learners’ exposure to the treatment. The data collected were analyzed using t-test. The findings suggested that the use of blended learning enhances the performance of special needs learners better than interactive multimedia and simulation games.*

### INTRODUCTION

Science and technology is transforming the world at an incredible rate and there are boundless chances to invite children into the world of science. Scientific knowledge is cumulative - to learn new things as well as build on what one has known. It is imperative then that children are introduced to start learning science early enough (Sowunmi & Aladejana, 2013). Science and technology have been regarded worldwide

DOI: 10.4018/978-1-5225-5557-5.ch019

as the two major forces propelling modern socioeconomic development (Ezeliora & Ezeokana, 2011), thereby making scientific literacy necessary for people in this age of technology to enable everyone use, cope and adapt to the technological inventions of the time of which Nigeria is not an exception. It has therefore become imperative to enhance the learning of science amongst learners especially children with special needs.

The new paradigm shift for science learning emphasizes learners' involvement and hands-on in ways that are not consistent with past practices. In spite of this, science teachers are faced with challenges of teaching science at the preschools. The process of teaching and learning of Basic Science had been a difficult undertaking for children with special needs, as a result it is imperative to adopt improved teaching methods which could make science learning more fascinating, in an attempt to meet up with challenges ahead. Therefore, children should be encouraged to learn science in a more interactive way. Probably if interactive multimedia, simulation games and blended learning are employed, science teaching and learning may possibly be more activity based, hands-on and instructional based.

This chapter describes the effectiveness of interactive multimedia, simulation games and blended learning in strengthening basic science performance of special needs children. Specifically, there is a comparison of basic science performance of special needs children on interactive multimedia, simulation games and blended learning with a view to recommending the most appropriate method(s) for teaching this group of children in the early childhood program.

The overall effectiveness of early childhood program is dependent upon several factors, amongst which is suitable environment (Association for Childhood Education International, 2007). Decisions about these factors are often made early in the planning and organizing process for an early childhood program. These decisions have important ramifications because they affect the child, the family, the classroom, the school and the community. The physical environment which includes the classroom setting as well as the outdoor setting should provide opportunities for the children to explore and learn. The room arrangement of shelving and furniture clearly designates these centres and also provides a spacious area for group gathering. Furniture is child-size, sturdy and that are easily accessible by small children (National Childhood Technical Assistance System, 2007). National Association for the Education of Young Children (NAEYC) (1991) stated that the quality of the physical space and materials provided affect the level of involvement of the children and the quality of interaction between adult and children. The outdoor setting is also important in early childhood program. Children need space outdoor for play, exploration and social interaction. Specific times during the day should be set aside for recess and outdoor activities. This time can be used for physical movement, climbing and playing on playground equipment, digging and planting, and individual play. Environment is a very crucial factor that determines to a larger extent the success or otherwise of learners (Aladejana, 2000; Ehindero, 2003; Aladejana & Aderibigbe, 2007). Therefore, for pre-primary pupils to effectively learn and for the teacher to be successful in whatever strategy he/she uses, the academic environment must be safe, conducive and friendly. This therefore dovetails into the heart of this study where investigation was conducted to compare the three learning strategies used to set the learning environment.

The need to focus on science in the early childhood classroom is based on a number of factors currently affecting the early childhood community. First and foremost is the growing understanding and recognition of the power of children's early thinking and learning (Worth, 2010). Children have greater potential to learn, and early childhood settings should provide richer and more challenging environments for learning. In these environments, guided by skillful teachers, children's experiences in the early years

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