Smart Interactive Game-Based System for Preschools in Tanzania

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EXECUTIVE SUMMARY

Academia across the globe is increasingly integrating smart education into learning that describes digitized interactive technologies with elements of motivation, engagement, and feedback. This chapter presents an intelligent and interactive system using alphabetical sounds using game mechanics for preschoolers in Tanzania. Generally, it has been reported that preschoolers often experience trouble in articulating alphabetical sounds. At present, the mode of teaching alphabetical sounds differs in every preschool, resulting in a lack of standardization. This makes adaptation to a new preschool system problematic, especially in situations where a preschooler is transferred from one kindergarten to another. A smart research framework on the interactive game-based system and attributes of active learning were taken into account to uphold intelligent ways to enable language competency for preschoolers in Tanzania. A study was conducted in Tanganyika preschool in Arusha, Tanzania, which presented initial results of preschoolers' perception of the intelligent interactive game-based system.

INTRODUCTION

Preschoolers presently use smart technologies and applications as a primary source of awareness, game playing, and entertainment (Naphade, M., Banavar, G., Harrison, C., Paraszczak, J., & Morris, R. 2011). Despite the advancement in these technologies and the way learners across the globe familiarize themselves with the changes in their learning contexts, the public preschool education system in Tanzania still uses conventional teaching approaches, particularly in teaching the second official language of the country, English. Only preschools in the private sector in Tanzania integrate the use of technology into

the curriculum to complement the teaching and learning of English, especially where preschoolers are facing problems in sound articulation of alphabets (Ongoro & Mwangoka, 2014).It also has been discovered that often each preschool has a different way of articulating the alphabetical sounds, resulting in a lack of standardized format of sound articulation. Besides, it has been documented that overall, parents' involvement in identifying their children's progress concerning language and alphabetical sound articulation at the preschool age is very minimal. A smart, interactive system for teaching the articulation of alphabetical sounds in the English language that employs games and active learning features has been proposed to harness motivation, engagement and feedback for students in Tanzanian preschools.

It is essential for smart learning environments (SLEs) to be integrated into preschool settings to create an appropriate and motivating learning experience in sound articulation. The work of Spector (2014) asserts that intelligent learning environments accommodate innovative technologies that permit immense engagement, flexibility, and feedback for the learners, thus creating a more learner-centered learning context. There are numerous smart education projects undertaken globally, an example being the Malaysia Smart School Implementation Plan (Durall & Leinonen, 2017; Hwang, G., Shi, Y., & Chu, H2010), where it has been realized that with the development and implementation of smart technologies, smart education flourishes (Singh & Hassan,2017; Middleton, 2015).

From research conducted previously in Arusha, Iringa and Dar es Salaam in Tanzania, it has been ascertained that game-based systems increased engagement and enjoyment in learning sound articulation (Ongoro & Mwangoka, 2014). The results revealed that learning performance among preschoolers improved when sound articulation lessons incorporated game-based techniques. However, the research also shows that there are still serious challenges associated with integrating smart game-based attributes into standard teaching methodologies. One reason is that the game-based systems available for Tanzanian preschoolers currently cater to preschools with access to electricity and computers, specifically the private schools, thus excluding children from low-socioeconomic areas from benefiting from the game-based systems in learning the English Language. Moreover, the current game-based systems address only one aspect of language development, the articulation of alphabetical sounds, not taking into consideration other contents in the curriculum that still need to be given further consideration. Moreover, the available game-based systems lack features such as timing of the game to assist with the potential issues of game addiction among the preschoolers.

Despite the fact that the response of Tanzanian preschools is affirmative on the integration of smart, digital game-based content in the preschool curriculum, there are areas of comprehension that need to be addressed (Ongoro, 2017). Firstly, there is a necessity to conduct an experimental study with larger scales or samples to examine the suitability of smart, digital game-based system for teaching sound articulation in language learning, and the challenges at hand. Any developed game system correspondingly still requires to be fully operational by extension to mobile phone application and web-based platforms that enable access at any time and any place. In addition to the subject of English language, the smart game-based technique should be applicable to be used in other subjects for effectiveness and efficiency in preschool education. Specifically, a problem that is facing the preschool education system in Tanzania is that teachers fail to let preschoolers link what they are familiar with in their surroundings to the teaching and learning process (Ongoro, 2017). At the same time, policymakers have not developed digital media to embed or use in learning activities. Thus, there is no connection between the digital media and tangible items, making it difficult for children to relate what exists in their environment to that which is in the digital arena.