

Exploring the educational use of augmented reality and storytelling for differentiated reading instruction for primary school learners

Introduction

This work explores one of the newer technologies, Augmented Reality (AR) and its relation to literacy education. Education and technology are essential aspects of our society, and with technologies constant evolution, education needs to change to match the advancements being made. New technologies such as AR need to be examined to utilise them effectively. The usage of mobile devices is ubiquitous; for example, in Ireland, 91% of adults own a smartphone and check it on average 50 times a day (Deloitte & Touche LLP, 2019). However, the number of primary schools using mobile devices is limited (Hallissy et al., 2013). As a result, schools typically do not “realise the potential of digital technologies to enhance teaching, learning and assessment so that young people become engaged thinkers, active learners and global citizens” (Department of Education and Skills, 2015). The work described below begins to explore this multidisciplinary area. It leverages literature and consultation of stakeholders to evaluate and improve the design of a supportive technology culminating in an AR literacy education application.

Methodology

Semi structured interview were conducted to gather qualitative data from industry professionals , primary school teachers. The purpose of the semi-structured interview was to explore this multidisciplinary space of literacy and technology use in primary school classrooms. It also allowed the researcher time to build connections with schools for further research. Semi-structured interviews were held privately in empty classrooms for 15 minutes and consisted of five open-ended questions. no selection criteria other than a being a primary school teacher was used. The questions ranged from literacy education to technology in the classroom. Thematic analysis was used with an inductive latent approach (Braun and Clarke, 2006) to process the transcriptions of these interviews.

Results

On analysis of the interviews, key themes were assigned to coded talking points and collated (see below).

Theme	Codes	Frequency of Codes
Hardware in The Classroom	AR VR Whiteboards Computers iPad	42
Interactivity/Engagement	Positives Negatives Motivation	30
Methods of Teaching	Differentiation Group Work Materials Pedagogy	70

Analysis

Hardware in The Classroom

The theme of hardware in the classroom encompasses all discussions around technology within the classroom that arose.

Of the teachers interviewed, none had a good understanding of AR; with some, it was conflated with VR. Smartboards and computers were the most common technology device used in the classroom, and iPad's/tablets were not widely available. Unreliability and expense were raised as issues by some teachers.

Interactivity/Engagement

The theme of interactivity and engagement encompasses all discussions around the use of interactive material, motivations, and engagement levels in classrooms activities.

Games, timers, reward systems, and videos were the main interactions students had with the whiteboards. Several teachers praised the software systems used with these smartboards, such as Bua na Cainte (EDCO, 2019). Many mentioned a positive response to technology in the classroom with themes of engagement figuring strongly.

Methods of Teaching

All discussion related to classroom pedagogy, specifically that of literacy education and technology use.

Station teaching was prevalent, with stations taking up to 15 minutes each. Literacy- Lift Off, guided reading and round-robin/chorus reading were all mentioned as methods used. Literacy with technology was minimal. A lack of guidance and resources was mentioned concerning technology use in the classroom.

Implementation

The prototype was an innovation on the concept of physical escape rooms. AR's use to create a virtual Escape Room offers a number of benefits such as minimal setup time for the organisers and dynamic and virtual assets that offer a different experience to a physical Escape Room. This Escape Room had players trying to obtain a code by completing a series of puzzles in a virtual world. Within this world, words were hidden behind and around physics objects and animations. This is our flagship experience and was due to be tested in schools before lockdown

References

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