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EFFECTS OF AUGMENTED REALITY IN REHABILITATION INSTITUTIONS IN KENYA.

RESEARCH CENTRE KIRIRI UNIVERSITY OF SCIENCE AND TECHNOLOGY INTERNATIONAL CONFERENCE.

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ABSTRACT

The budding growth of augmented reality provides a chance for rehabilitation institutions in Kenya to motivate and engage students making science, technology and mathematics learning process faster, fun and better. Although augmented reality is a technology that integrates real images with virtual objects simultaneously, there are concerns that must be considered. This paper ascertains the most relevant effects of its adoption in institutions. The aim is to explore the benefits of Augmented reality in transforming and encouraging students to embrace science, technology and mathematics in rehabilitation institutions. Adoption of augmented reality in rehabilitation institutions in Kenya is important because it enhances the traditional mode of teaching.

Key words: Augmented reality, Rehabilitation centre, Information Communication Technology (ICT).

1. Introduction

The National Institute of Standards and Technology (NIST) define augmented reality as a technology that integrates real images with virtual objects simultaneously. In Vocational Education and Training Application skills such as mathematics, science and technology are difficult to learn without individualized teaching or the supervision of the experts [1]. Therefore, more intuitive, interactive and effective experiences can be provided and new opportunities can be discovered for rapid skill development [6]. These advantages make augmented reality a preferred technology in the fields of science and technology.

Rehabilitation programmes for juvenile delinquents is a plan of learning opportunities which shares much in common with the notion of curriculum in educational setting [5]. It constitutes a circumscribed set of activities that has specific objectives and it consists of a number of inter-connected elements. More broadly however, in criminal justice settings the term programme can be used to describe initiatives like mentoring schemes for young offenders or therapeutic communities for drug mis-users. In much of the existing literature there is an assumption that rehabilitation programmes denote interventions delivered to groups of offenders. In principle, programmes can be delivered to a single offender or to a group of individuals. Rehabilitative programmes may be set up to provide legal alternatives for income generation for instance supplying adolescents and young people with increased economic opportunities, professional training, education, increased role and responsibility of local communities in dealing with juvenile delinquents, provision of new places/environment and assistance to help prevent the offenders involvement in delinquent activities. It is essential for juvenile delinquents re-entry into the mainstream society because being rehabilitated sets the foundation to lead a healthy lifestyle in the community once out of the juvenile justice system.

The physical organization of concepts in this paper is as follows:-

Section one introduces the effects of adoption of Augmented reality by Kenyan Rehabilitation centres. Section two outlines the objectives of the research and section three reviews the methodology used in the research. The primary aim of this study is to analyze the effects of adoption and use of Augmented reality by Kenyan Rehabilitation centres. Section four identifies the technology used in adopting Augmented reality . Section five describes the various developments derived from the research. Section six discusses the results of the research findings. Discussion of the interviews is given and the results analyzed.

2.0 Objectives

The objectives of this paper:-

1. To determine the extent of the effects of adoption of augmented reality by the Kenyan Rehabilitation institutions.
2. To determine whether the rehabilitation institutions have the capacity to implement augmented reality.
3. To investigate the impact of adoption of augmented reality by the Kenyan Rehabilitation institutions.
4. To make recommendations for effective adoption of augmented reality by the Kenyan

Rehabilitation institutions.

3.0 Methodology

This study adopts an interpretative kind of exploratory study [1]. The primary aim of the study is to interpret the effects caused by adoption of augmented reality by the Kenyan Rehabilitation centers. This paper aims at gathering data from key players in Kenyan Rehabilitation centers adopting a snowball strategy [6].

3.1 Population Sampling

Target population is the entire set of units for which the study data is to be used to make inferences. It defines those units for which the findings of the study are meant to generalize [1]. The target population will be

This study focused on the effectiveness of rehabilitation programmes for the juvenile delinquents in Kenya. The study was carried in two (2) Government rehabilitation schools within Nairobi County, namely, Kabete Boys Rehabilitation School, Getathuru Boys National reception,Assessment and Classification School. The target population at the time of study was 70 comprising of Juvenile delinquents who were about to graduate from the schools(3rd years) and staff members of 24 and 15 respectively. The staff members used in this study were the class teachers, welfare officers and vocational instructors working within the selected schools. The sample size that the study juvenile delinquents and staff members of 40 and 30 respectively. Specific areas of focus were the existing rehabilitation programmes, environmental settings of the rehabilitation schools, competence level of the staff handling the juvenile delinquents, management policies and guidelines of the institutions and the benefits of the rehabilitation programmes to the juvenile delinquents.

Benefits of Augmented Reality

Out of the two rehabilitation centers interviewed, 70% of the respondents of the sample data have recommended the adoption of augmented reality because of the benefits which are:-

1. It draws student interest on lessons.
2. It also increases their motivation especially on challenging subjects such as mathematics, technology and sciences.
3. It is also practical compared to traditional teaching methods.
4. It allows students to internalize what they are being taught.
5. It also draws student attention on lessons.

Challenges of Augmented reality

Augmented reality weaknesses ranked at 50% of the sample data. This is because of the following reasons:-

1. Increasing complexity of monitoring and managing the augmented reality environment.
2. Lack of expertise and skill in managing the augmented reality environment.

4.0 Technology Description

The National Institute of Standards and Technology (NIST) define Augmented reality as enhanced visualization of real images by adding virtual objects such as texts, photos, audio, animations, videos and 3-dimensional models [4]. It provides a real and live environment with the enhancement

it offers. it is observed that studies on the utility and potential of augmented reality in educational environments have been recently launched and they suggest that it draws student interest and attention on lessons and it also increases their motivation [5]. It also has advantages such as providing student centered learning and learning by doing things practically. These advantages give insights about its use in applied education. In particular, the ability to provide presentation of virtual objects such as 3D models and abstract concepts make learning interesting.

5.0 Developments

5.1 Data Analysis

There are many different techniques for evaluating and analyzing data obtained in a research. There are special techniques that fit for quantitative research and those that fit for qualitative research. The data analysis technique must match the general research approach and the collection technique. There are a number of ways to evaluate and analyze data you obtain. Data analysis can often be either confirmatory or exploratory when analyzing data. Either explore the area or confirm recent studies [2].

Exploratory data analysis is an approach that describes data in a better form and it is easier to understand. This research focused on analyzing our interviews and the data we collected from meetings with rehabilitation centre representatives alongside with the secondary data collected directly from the source and also external secondary data that was found in journal reviews, Government documents and policies as well as other literature relating to augmented reality [1].

During the analysis it is important to understand the interview done and all the data gathered from it and the goal of the analysis is to ensure that results are accurate and easy to understand. Secondary data was also analyzed to be able to get reliable results.

6. Results

Representatives of two different Government rehabilitation institutions were interviewed mostly the teachers, welfare officers and administrators. These institutions are located in Kenya in the capital city which is Nairobi, Kenya.

8. Conclusions

Augmented reality will benefit rehabilitation institutions in Kenya since it’s the single most effective way to promote education and enhance the technical courses. This technology will enable these centers to validate science courses.

Ideally an educational augmented reality system fulfils at least the following requirements:

1. Be simple and robust.
2. Provide the learner with clear and concise information.
3. Enable the educator to input information in a simple and effective manner.
4. Enable easy interaction between learners and educators.
5. Make complex procedures transparent to the learners and educators
6. Be cost effective and easily extensible.

A carefully planned and managed presentation of augmented reality technology is also needed to avoid the teaching and learning environment being solely focused on technological issues rather than educational ones. This, together with the use of technological improvements, can direct rehabilitation centers to improve their teaching and learning processes.

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