Multimedia Education System for Deaf and Hear Impairment Children

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Abstract: The deaf and impairments students always facing problem of communicating with their teachers and colleagues which may affect negatively in their education and attitudes, there must be any kind of tool to facilitate and enhance the education components for them. Multimedia Education System for Deaf and Hear Impairment Children is application system designed to help a learning media for that kind of children (3-5 Years) to understand the basics of language, math, etc...Taha Talaat Center (TTC) is the case we used and it is one of Al-amal schools for deaf and dumb education in Khartoum, Sudan.

In schools they use traditional ways that is not attractive and don’t improve child’s Intelligence and there’s no specialist teachers to teach this kind of children and our system project will provide modern ways to teach and improve child’s intelligence by using computerized games and to be more attractive by using multimedia like images, videos, animations etc.

Dark Basic Professional and 3D MAX, Photoshop, Fps creator, movie maker, 3d world studio was used to build and implement the system.

By using this system children will be more efficiency and more intelligence, help teachers and families to teach the children by easy way.

Keywords: Multimedia Education System, Education of Deaf and Hear Impairment children, sign language.
1. Introduction

There is no enough specialist staff to teach deaf and dumb children, that make it high cost: Deaf and dumb children need a special way to teach. They need special teacher who know their state of psychological, to know how to communicate with them, how to pronounce a words carefully to save and understand it, and there is no enough teacher know how to do that. And when the school what a teachers they need a high cost to nomination them. The deaf and dumb children found it difficult to understand the lessons because the inability to hearing and speaking.

Alamal School is a school in Khartoum for the deaf and dumb children (3-5) that established in 1993 which almost takes care of children in the preschool age and be aged between four to seven years. The school uses specialist teachers to teach deaf and dumb children, and they resorted for many of the games and tools that assist in conveying information to children.

In our paper we want to use games to teach these children and make them understand and enjoy in learning, to facilitate the way of education to the teachers, development of the way of education and development of a child's intelligence and education of the computer.

2. Multimedia Education System

The use of multimedia in teaching and learning presents challenges to institutions of higher learning. Multimedia refers to any computer-mediated software or interactive application that integrates text, color, graphical images, animation, audio sound, and full motion video in a single application [1].

3. Sign Language

Sign languages commonly develop in deaf communities, which can include interpreters and friends and families of deaf people as well as people who are deaf or hard of hearing themselves [2]. A sign language is a language which, instead of acoustically conveyed sound patterns, uses visually transmitted sign patterns to convey meaning by simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial [2].

4. Deaf and Hear impairment Education

Teaching deaf children offers a wide range of work opportunities in a number of different types of educational setting. It is challenging and stimulating work that invites initiative and gives teachers the chance to develop innovative patterns of classroom practice.

5. The importance of Multimedia Education System to deaf child

In our society there is no enough specialist staff to teach deaf and dumb children, that make it high cost. But multimedia makes it easy to teacher to teach and save costing money. Use of traditional education tools for children is not attractive way, but when using games and multimedia tools it will be more attractive. The deaf children found it difficult to understand the lessons because the inability to hearing and speaking. Multimedia tools will make these children respond to the education and facilitate the delivery of information to them.

In Schools They don't use methods for development of child's intelligence, but our main idea is to strengthen a child's intelligence and learn new skills [3].

6. Challenges in the use of Multimedia Education System to Deaf Children:

There are many challenges faces the educational system include:

7. There is no enough specialist staff to teach deaf and dumb children, that make it high cost:

Deaf and dumb children need a special way to teach. They need special teacher who know their state of psychological, and to know how to communicate with them and how to pronounce a
words carefully to save and understand it. And there is no enough teacher know how to do that. And when the school what a teachers they need a high cost to nomination them [4].

7.1. Use of traditional education tools for children is not attractive way:

Most of the children in most parts of the world do not like going to school, because they always want to play and entertaining. When there is a way to teach them with some of the thrill, entertainment and games, children will be happy and always ready to go to school without boredom or complaint. And the method of teaching will be faster and better [4].

7.2. The deaf and dumb children found it difficult to understand the lessons because the inability to hearing and speaking:

That the child at the beginning of its growth and absorb around him, always depends on the sense of hearing and trying to emulate what he heard. There are a lot of things distinguishes it with its voice like the voice of his father or mother, or when he heard the sound of the bell he know that there is someone knocking on the door, and so learn and explore around him. Either the child deaf and dumb, he needs to distinguish the things given to them and identify their various forms and learn how to use. It will be difficult to him without hearing its voice [4].

7.3. They don’t use methods for development of child’s intelligence:

The traditional way that they use is not helpful to develop child’s intelligence [4].

8. Methodology

Software engineering method will be used and waterfall model is the suitable model for this kind of software due to it is very simple to understand and use, each phase must be completed in its entirety before the next phase can begin. At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or discard the project.

Dark Basic Professional and 3D MAX, Photoshop, Fps creator, movie maker, 3d world studio was used to build and implement the system, Dark BASIC Professional is the most advanced games development package built on the BASIC language currently available, 3D max Formerly known as "3D Studio," 3ds Max is a 3D modeling, animation and rendering program from the Media and Entertainment division of Autodesk, Inc., San Rafael, CA (www.discreet.com). Widely used in the areas of interactive games, visual effects for movies and industrial design models, the software lets you create 2D shapes that become the cross sections of the 3D models [5].

9. Data Model Use Case Diagram

The system mainly uses computer graphics, games and multimedia in order to teach this kind children, the following diagram (Figure: 1) shows how the new system will be used.
9.1. Use Case Index:

Table 1: Use Case interpretation

<table>
<thead>
<tr>
<th>ID</th>
<th>Use Case Name</th>
<th>Primary Actor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open application</td>
<td>Teacher</td>
</tr>
<tr>
<td>2</td>
<td>Select Menu</td>
<td>Teacher</td>
</tr>
<tr>
<td>3</td>
<td>Choose Level</td>
<td>Teacher</td>
</tr>
<tr>
<td>4</td>
<td>Open Lesson</td>
<td>Teacher</td>
</tr>
<tr>
<td>5</td>
<td>See Lesson</td>
<td>Student</td>
</tr>
<tr>
<td>6</td>
<td>Associate lesson to actual example</td>
<td>Student</td>
</tr>
<tr>
<td>7</td>
<td>Give test</td>
<td>Teacher</td>
</tr>
<tr>
<td>8</td>
<td>Take test</td>
<td>Student</td>
</tr>
</tbody>
</table>

10. System Manual

The new teaching system will use the sign language which is a method of communication, as between speakers of different languages, that uses hand movements and other gestures to convey the message to the other side commonly develop in deaf communities, which can include interpreters.

10.1. Alphabet Lessons

Alphabet page where the user can enter for lessons or tests of alphabet, and the hand sign is used to specify each letter as it shown in the figure 2:

10.2. Math Lessons:

For the mathematical lessons the hand fingers will be used for numbers 0 to 9, the following figure 3 shows that

10.3. Color sign

There are different sign will be used to specify the main colors, the following figure 4 shows these colors.
10.4. Test Menu

The system allows the teachers to provide different kind of test for the students, figure 5 shows how the test will be conducted.

![Figure 5: Test Signs Menu](image)

The student will choose the correct sign to complete the correct word or the system will give him the best answer.

11. Conclusion

The advantages of new system is that the teacher taught children, generally known how to deal with them and how to convey information to them. They can use many ways, including images, sounds and representation, etc. But they must teach child with special needs, he has to use other ways of dealing with them, such as sign language and trying to teach lip reading, and others. The system will facilitate communication between the teaching and children.

Use of games and multimedia in education is fun for all children. When we use multimedia many colors and animations has been used which is very attractive for those children’s. Children always need to develop their intelligence and skills. The system can make games and tests related to their studies and at the same time they got benefit from them instrengthening their intelligence and speed of understanding.

The system make these children respond to the education and facilitate the delivery of information to them.

The limitation of this system is the system is designed only for children in the age of 2 to 5 year’s age only so others, and also the system is the system is not include more subject like Arabic alphabetic and religious studies.

The test implementation of the system shows the acceptance and response of the majority of children with special needs to the system, which affect positively on them and their attitudes.

We recommend that in the future the system can be developed to be applicable to ages of those kind of peoples, and can includes more subject to maximize the advantage's and uses of this system.

12. References


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Assistant professor, Dean at Future University of Khartoum, Sudan. He holds PhD degree in Knowledge Management area from the Multimedia University, Malaysia Bath, 2010 in addition his M.Sc. and B.Sc. in information Technology. He published more than 15 journal and conference scientific papers. Dr. Nour Eldin has more than 15 years of experience including teaching, training, in M.Sc. B.Sc. levels. He is assigned to be adjunct staff (Senior Lecturer) at multimedia University, Malaysia and he is supervising four PhD students based on Sudan from Multimedia University, he is Supervising Eight students at the Masters level from Sudan University of Science and technology, and Open University of Sudan. He also leads and teaches modules at both B.Sc. and M.Sc. levels in computer science, and knowledge management. He was Manager of International Computer Driving License (ICDL), Future University Center from June 2003 up to date.