Augmented Reality Children Storybook (ARCS)

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Abstract. This paper talks about the background of Augmented Reality (AR) and how it helped to change the world. Thus, advantages of AR are highlighted to support the powerful technology with evidence. As a proof, some related works done by researchers were provided to illustrate how well does AR cope with teachings nowadays. The objectives and problems of this project will be included and reviewed for future works.

Keywords: Augmented Reality, Children, Storybook

1. Introduction

Preschools have become a regular part of the educational system in our culture. Children who had gone through preschools will be sent to elementary schools after they graduated from the preschools. It is a compulsory and also a law for all the children over the world to start their education since then. What about the time before that? There is no actual statement of when education should be started but most of the people believe that, the earlier the better. Therefore, encouraging the young ones to fairytales or even bedtime stories is a great start.

2. Problem Statements

With the advanced technology nowadays, children found that reading in traditional way is dull and boring whereas there are so many entertainments out there which is much more interesting than reading according to an interview of a tuition teacher from Vital Year. Therefore, the teachers have to come out with ideas which attract children attention or interest to make the study more interesting in order to encourage the reading habit according to the teacher. Thus, she also stated that children learnt faster if they can interact with the object or even play a role in a story.

Furthermore, approximately 20 to 30 percent of school-age children have difficulties learning to read and at about 15 million youngsters do not have access to the wonders of books and other kinds of texts for learning and enjoyment according to Dr. Reid Lyon who is a research psychologist and serves as the Chief of the Child Development and Behavior Branch. Children who do not read in the young age tend to have difficulties to develop their vital language skills. So, it is very important to encourage children to read and researchers believe that the younger a child start receive education, the faster and the more the child can absorb the knowledge.

3. Objectives

The objective of this system is to promote reading habit to the children who do not read much nowadays. ''Professional and personal success is related to a person's ability to speak, listen, read, and write effectively''. Therefore, in order to provide successful language learning, Pesola [1]

suggested that storytelling is "one of the most powerful tools for surrounding the young learner with language".

Thus, the system not only was designed to promote reading habit, it provides entertainment and makes reading more interesting at the same time. Furthermore, audio and graphics are better for children's understanding than reading the lengthy words on a book in the traditional way itself.

4. Related Works

Unfortunately, there are too many entertainments which are more tempting than reading in the traditional way for children nowadays. As technology improves, reading has been replaced by the successful products of technology such as games and cartoons and therefore it is no longer an interesting subject to children anymore. Therefore, a research on learning English using computer technology was carried out in China and also has been proven a success [2]. Thus, with the effectiveness of learning the relation between the earth and the sun developed by Shelton & Hedley using AR application [3], more AR application was build to improve education.

Besides, there is some evidence that preliminary education in preschool can be helpful for children in their fourth and fifth year prior to entering kindergarten. Activities that seem to be successful in helping children prepare to enter elementary school are those that fall under the heading of "reading readiness" including learning one's ABCs and acquiring some rudimentary skills in writing letters and words, along with word recognition in reading. Thus, activities that foster basic math skills such as counting and adding are also helpful. There is, however, a wide degree of variation among children in terms of skill level at this age depending upon individual temperament, family background, and cognitive capacity [4].

Therefore, in order to assist children to learn, learning words using AR was developed by Juan and his team had also been proven effective as out of 32 children, 81% like the game designed for words learning [5]. Last but not least, a multimedia storytelling website proves that students are fond of graphics and audio and tend to learn more compared to the traditional way of reading [6]. As a result, in order to promote reading habit to children, a powerful technology, Augmented Reality (AR) will be used in this project.

5. Proposed System

Listening to stories draws attention to the sounds of language and helps children develop a sensitivity to the way language works'', said by Isbell [7]. She stated that children tend to learn more while they are listening to stories because stories are fiction which most of it are fairytales that will not happened in the reality. It challenged children's imagination, hearing and seeing while listening to stories. Therefore, AR was brought in to build a system which include audio and graphics which allows children not only to read aloud with but interact with the system at the same time.

The system was build to encourage children to read. While there are so many successful examples of the effectiveness of E-learning which includes computer technology such as multimedia and so on. AR will play an important role in the system as it is a powerful technology which has proven success in the earth-sun relationship learning by Shelton & Hedley. The system will provide read aloud function so that children can listen and read along at the same time because much of the language children learn reflects the language and behaviour of the adult models they interact with and listen to [8]. Figure 1 shows the system architectural of the project.

6. Research Scope

This research is to develop an AR based storybook for young learners from age 4 to 12 in Malaysia. The research is carried out in order to encourage reading habits among children nowadays and also to improve their English as Second Language (ESL).
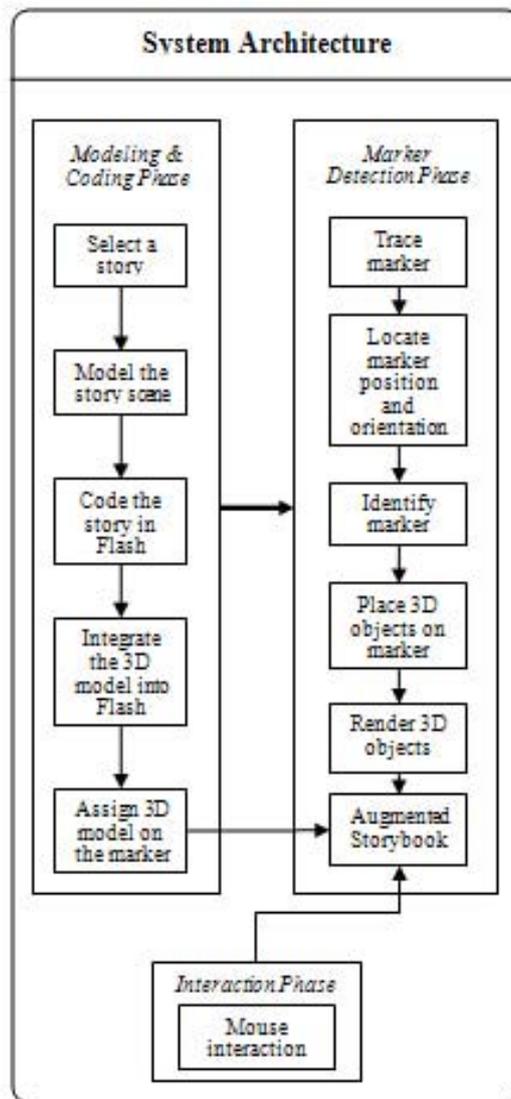
Figure 1: System architecture graph for Augmented Reality Children Storybook (ARCS)

Children will be educated through reading, listening and watching. They can listen and read along with the system provided audio and watch various stories available in the application. These not only will help to improve their reading skills but literacy skills as well.

As the targeting audience are the young learners who aged from 4 to 12, the application have to be engaging and enjoyable so that it will motivate them. Hence, fun and attractive interface will help to capture the children's interest. However, every child has different learning skills and levels. Therefore, various stories will be included in the application for different categories of interest. The stories will include categories such as picture books, fiction, traditional literature which includes myths, legends and fairy tales and so on.

7. Summary

In a nutshell, as the computer technologies are so advanced now, we should take into consideration that computer technologies not only can provide entertainment but also able to assist human beings in the daily tasks as well. Furthermore, education can be much more interesting and interactive by applying computer technologies such as multimedia into in. In order to promote the reading habit to the children nowadays, this AR Storybook not only provides knowledge but entertainment at the same time. With so many successful examples of how computer technologies were applied in education, this AR Storybook will be one of it as well. Since the children prefer

audio and graphics, the AR Storybook will provide not only these but allow interaction so that children can learn and play a role in the story at the same time.

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