

Design and Implementtation of an Intelligent Educational Tutor (Intellituor) for Nursery Schools Children

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ABSTRACT

The technology of today gives opportunity to completely new ways of developing educational systems for both teaching and learning. Education is the process of facilitating learning or the acquisition of knowledge, skills, values, beliefs and habits. Transitions from preschool to primary schooling are major milestone in the lives of young children. The learning environment encountered in most nursery school setting is one which is characterized substandard facilities; irregular curricula and a varying pace at which some students learn quicker compared to others. The solution would therefore be to create an educational software. The Intelligent tutoring system is system designed specifically for nursery school children. The system is smart phone based that runs on the Android operating system. The Objective is to develop an intelligent and interactive Educational software that will render quality teaching to Nursery Schoolpupils. Object Oriented Analysis and Design Methodology (OOADM) was used for the analysis of the existing systems and the development of the proposed System. The analysis shows that most nursery schools are of poor qualityand unbalanced and has poor learning environment. They also lack appropriate media and technologies.The result of this study is a mobile learning application for nursery school pupils that will allow them to complete exercises that are primarily focused on teaching them a particular subject and allow the teachers to monitor the performance of all pupils using the system. The tools used for the development areHTML, CSS, JavaScript, PHP, Mysql. The Operational evaluation shows that the mobile learning application has more features and enhancements than any existing learning application for nursery school pupils.

Keywords: Intelligent, Education, Mobile Application, technology.

INTRODUCTION

Knowledge Transfer is a means of sharing information, abilities, and ideas across various people with different capacities [1,2,3,4].One basic use of education is the transfer of knowledge and some effective ways to transfer knowledge include but not limited to: mentorship, guided experience, simulation, work shadowing, paired work, community of practice, eLearning and instructor-led training. Education could be formal, informal or non-formal [5,6,7,8]. Formal education is a structured and systematic form of learning with certain standard delivered to students by trained teachers. Transition from preschool to

primary schooling is a major milestone in the lives of young children [9,10,11,12]. Although most children successfully navigate this transition, it can be problematic for children who have not mastered the basic educational competence needed to do well in school [13,14,15]. This study is focused on reviewing the conceptual method of teaching kindergarteners (kindergarten student) and designing an intelligent mobile educational application (software) that would aid both teachers and parents alike in giving these young minds educational training they require at this stage of life [16,17,18].

SUMMARY OF BACKGROUND:

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education frequently takes place under the guidance of educators, but learners may also educate themselves. Education can take place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational [19,20,21]. The methodology of teaching is called pedagogy. Education can be formal or informal. Formally, it is commonly divided into such stages as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship. In some regions, education is compulsory up to a certain age [22,23,24]. An intelligent educational system (IES) also known as an intelligent tutoring system (ITS) is a computer-based system that aims to provide immediate and customized

instruction or feedback to learners, usually without requiring intervention from a human teacher. IESs have traditionally been thought of in terms of their functional subsystems. The three obligatory subsystems are those containing domain knowledge, a model of the learner's current state, and teaching knowledge [25,26,27]. They have the common goal of enabling learning in a meaningful and effective manner by using a variety of computing technologies [28,29,30]. It's typically aimed at replicating the demonstrated benefits of one-to-one, personalized tutoring, in contexts where students would otherwise have access to one-to-many instruction from a single teacher (e.g., classroom teachings/lectures), or no teacher at all (e.g., online homework). ITSs are often designed with the goal of providing access to high quality education to each and every student. This research work is aimed at designing an integrated intelligent tutor system that will facilitate knowledge transfer/education among kindergarteners [31,32,33,34].

STATEMENT OF PROBLEM:

Teachers are the backbone of the entire preschool/kindergarten/nursery school system. These teachers, young and experienced, are given the task of educating children in their eating habits, reading skills, health habits, and developing their cognitive skills.

- a. The recent assessments of learning achievements in some countries (Nigeria being one of such countries) have shown that a sizeable percentage of children are acquiring only a fraction of the knowledge and skills they are expected to master [18].

- b. Understanding and learning rate are quite different for various individual and this most classroom teachers are constrained from considering during their lesson hours because they have a time frame to meet up with the already stated academic schedules/calendar
- c. Poor learning environment which leaves the children with little or no motivational spirit to be actively involved in acquiring knowledge through passively consume content.

OBJECTIVE OF THE STUDY:

This research work is aimed at the design and implementation of an intelligent educational system and the objectives of the system are:

- a. To build an intelligent tutoring system that will render quality teaching to nursery school pupils

1. SUMMARY OF LITERATURE REVIEW:

The operational objectives of preprimary education as stated in the National Policy of Education [18] include:

- i. Effecting a smooth transmission from the home to the school;
- ii. Preparing the child for the primary level of education
- iii. Providing adequate care and supervision for the children while their parents are at work;
- iv. Inculcating in the child the spirit of enquiry and creativity through the exploration of nature and environment, art, music and playing with toys, etc;
- v. Develop a sense of co-operation and team spirit;
- vi. Inculcating social norms;
- vii. Learn good habits, especially good health habits; and
Teaching rudiments of numbers, letters, colours, shapes, forms etc.

This anticipated system is an intelligent educational tutor (intelligent tutoring system) with attractive graphic user interface and audio sound that will be appealing to kids. When the user loads the app on his/her mobile device, an attractive but interactive 'Front/Landing Page' interface appears on the screen with a music for kids and after the music comes the audio sound that directs the user on how to use the app. On clicking the 'I'm Ready' button, the user is taken to the 'Select User' interface where the user can select his/her User Name or 'Add User' to

PROPOSED SYSTEM METHODOLOGY/IMPLEMENTATION.

For this proposed system, the object-oriented analysis and design methodology was used. Object-oriented analysis and design (OOAD) is a technical approach for analyzing and designing an application, system, or business by applying object-oriented programming as well as using visual modeling throughout the software development process to guide stakeholder communication and product quality. OOAD in modern software engineering is typically conducted in an

through play. Recently, there has been a rapid growth in web-based intelligent tutoring systems (ITSS) and also a new drive in mobile-based intelligent tutoring systems to support teaching processes, with the aim of helping students adaptively navigate through online learning materials. Digital learning is more relevant than ever. Laptops, cellphones/mobile phones, and tablets have become an intrinsic part of the student experience. Due to classroom sizes, it's often impossible for educators to give students the attention they deserve. In turn, students can become disinterested in learning. The advantage of apps is that each lesson can be tailored to the student's skill level

As more sophisticated apps emerge, teachers will have more options to engage students in the classroom.

obtain a User Name if he/she is a New User. To create a User Name, the user clicks on the "Add User" button and he/she is taken to the 'Register Now' interface. Once registered and has a User Name, the user clicks on the 'Take Lesson' button which leads the child to the activity page. The app is built for nursery pupils and the user has to make choices by clicking on either of the buttons that appear on the user interface. Depending on the choice made, the user is taken to the appropriate interface to continue with his/her activity there.

iterative and incremental way. The outputs of OOAD activities are analysis models (for OOA) and design models (for OOD) respectively. The intention is for these to be continuously refined and evolved, driven by key factors like risks and business value. With iterative models it is possible to do work in various stages of the model - analysis, design, and even code - in parallel. The object-oriented paradigm emphasizes modularity and re-usability. The goal of an object-oriented

approach is to satisfy the "open-closed principle". The software life cycle is typically divided into stages going from abstract descriptions of the problem to designs then to coding and testing and finally to deployment. The earliest stages of this process are analysis and design. The analysis stage deals with "what" and design stage is concerned with the "how". In analysis stage, contacts were made with users and domain experts - which include students, teachers, some parents and some school's administrators - to define what the system is supposed to do. Implementation details were ignored at this phase. The goal of this phase is to create a functional model of

the system regardless of constraints such as appropriate technology and this was done via use cases and abstract definitions of the most important objects. The design phase refines the analysis model and makes the needed technology and other implementation choices. In object-oriented design the emphasis is on describing the various objects, their data, behavior, and interactions. The design has all the details required for implementing the design in code. The object oriented analysis and design methodology was adopted for this project because it is very easy to understand, maintain and reuse.

RESULTS, DISCUSSION AND CONCLUSION.

The Intelligent Educational Mobile App design is the process of defining the elements of the mobile app such as the architecture, modules and components, the different interfaces of those components and the data that goes through the system which satisfies specific needs and requirements of the children's education (kindergarteners' curriculum), through the engineering of a coherent and well-running system. The purpose of the System Design is to supplement the system architecture providing information and data useful and necessary for implementation of the software elements. Basically, Systems design can be categorized into three:

Conceptual design - which is concerned with what the application (app) should do, Logical design - this is concerned with what the app should look to the user and Physical design - this involves how the app should be built. These three categories are properly dealt with in this project work. The implementation aspect of this research work is concerned with the process of defining how the information system (Intelligent Educational Mobile App) should be built (i.e., physical system design), ensuring that this software built is operational and used, and finally ensuring that the software meets quality standard (i.e., quality assurance).

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