Initial Plan

IPad application to aid learning within primary schools

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CM3203 One Semester Project (40 Credits)

Project Description

With the ever increasing use of tablet devices in schools the market for educational applications increases. The application I will be developing will target this growing market and will facilitate teacher's assessments and students learning within UK primary schools. Market research conducted by the British Educational Suppliers Association, in April 2013, on the use of tablets and apps in schools revealed the following statement which supports the development of an educational application,

"By the end of the year there will be about 260,000 tablets for use by pupils in classrooms across the UK maintained schools and academies. It is forecast that by the end of 2015 the number will have increased to over 600,000; with a further increase to 1.8 million by the end of 2020" (BESA 2013, p. 7).

I have chosen to develop the application for iPad's as through researching the tablet market I have found that Apple iPads are the current dominators of the education market and are the preferred platform in primary schools.

"Eighty-eight percent of primary and 91% of secondary schools define a preferred tablet platform indicating the strengthening in preference over the last year. For primary schools the preferred platform is the iPad using Apple iOS, although this preference has weakened since 2012" (BESA 2013, p. 24).

Although there is a decline in iPad preference the research indicates they are still the current dominator. If this were to change in future the application could be developed to support various environments however the timeframe available for this project is not suitable for developing the application for all tablet devices.

I will be developing an application for use in primary schools which will facilitate students learning and enable teachers to assess the students' progress. The application will be aimed at government run schools within wales and will focus on one of the compulsory subject areas; mathematics. I will also develop this application to specifically target students in year 6. The application will be programmed in Xcode which is the necessary environment for developing Ipad applications.

The project will involve creating an IPad app that will assess students' level of mathematics as well as offering them a way of practising questions they struggle with. When using the application the students will be presented with an assessment in the form of questions or a set of practice questions, which they will be required to answer. Their level will be derived from the score they achieve and will determine the difficulty of questions in their next assessment. The application will generate a lower level set of questions for student who are struggling and will allow them to practice these questions until they are able to reach the next level. Students who pass their level will be given higher-level questions, which will enable them to further progress. I will also be creating a website which will be used by teachers to

view the progress of all their students. Data generated from the application will be posted to a database enabling the website to query this database and present the results to the teacher.

The intention is that the application I will be developing will be used by the students within the classroom during a lesson or as a homework type activity where the student can complete the practise questions. The teacher will use the website to monitor progress by viewing students' assessments results for the subject at different times of the year.

This application will benefit the teacher by automating the marking process by calculating each students score and level within the application. In addition it will simplify the teacher's assessment process as it will enable the student to be assessed based on their personal ability rather than having the same test for all students. The website will enable the teacher to compare a student's achieved level with the overall class and identify students who may need additional support. The application will benefit students by enabling them to develop there mathematic skills by progressing through the various difficulty levels of questions.

Aims and Objectives

The aim of the project is to design, implement and evaluate a system which will enable year 6 students to practise mathematical questions and be assessed on these questions. The assessments will enable the student to be automatically assigned to their correct ability level in accordance to levels defined by the UK national curriculum. In addition, the system should include a website for the teacher which will use the levels generated by the application in order to facilitate the monitoring of students levels over a period of time.

Objective 1: Study and identify the requirements for the application to be developed.
   Tasks:
- Discuss what the current assessment process is in a primary school with a primary school teacher in order to develop an understanding of what the system is required to do.
- Evaluate current educational applications that are currently used within schools by the target user of the application I will be developing.
- Research the criteria used to categorise students into levels.
- Develop questions sets that are suitable for the various mathematical ability levels using the research.

Objective 2: Design the structure of the system and its functions.
   Tasks:

- Design a database which will be used to store the data generated by the application and enable the website to query the data.
- Model the structure of the system in a class diagram.
- Model the interactions between the different components of the system and the users in a use case diagram.

Objective 3: Design interfaces for the application which is suitable for use by students and a website interface which is suitable for use by teachers.
  Tasks:
- Research known and proven methods for good usability in design which will be used to develop the interface.
- Conduct user testing and heuristic evaluation on the application with likely users.

Objective 4: Implement the application to satisfy requirements.
  Tasks:
- Learn to program using XCode.
- Establish a method to store the data and connect the application data to the website.
- Use the designs to implement the structure and interface.

Objective 5: Test and evaluate the system to ensure its fit for purpose.
  Tasks:
- Ensure the system behaviour acts as intended through testing.
- Determine whether the system meets initial requirements through comparison.
- Identify future improvements or developments for the system.

Objective 6: Produce a report documenting each stage of the project
  Tasks:
- Record & document each stage of the development throughout.
- Compile each stage of development into one document.

Work Plan

Week 1 (27/01/2014)
Research the different level classifications for year 6 pupils and establish the kind of questions they should be able to answer at each level.
Research other applications to see if similar applications exist and evaluate these to aid my design.
Research standardised usability guidelines for children and non-expert users.
#Milestone: Submit Initial Plan

Week 2 (3/02/2014)
Complete research and document findings.
Conduct requirement analysis for each component of the system and document these requirements.
Begin research into Xcode features and how to use them.

Week 3 (10/02/2014)
>Project progress review meeting
Design the functionality of the system.
Produce an Entity Relationship Diagram to model the database.
Create a use case diagram to model interactions between the user and different system components.
Create a class diagram to model structure of the system.
Complete Apple Developer tutorial (basics tutorial).

Week 4 (17/02/2014)
Design the user interfaces for both the application and website, taking into account the usability features researched, by creating a non-functional prototype of each view.
Complete Apple Developer tutorial (storyboard tutorial).

Week 5 (24/02/2014)
Produce test cases based on the requirements specified and the intended functionality.
Outline the heuristic evaluation plan listing the heuristics that will be used.
Complete the design section of the final project report.
Complete Apple Developer tutorial (Add data tutorial).
#Milestone: Design section complete.

Week 6 (3/03/2014)
>Project progress review meeting
Implement the database using the designs.
Implement the website interface and functionality using the designs.

Week 7 (10/03/2014)
Implement application interfaces without functionality.

Week 8 (17/03/2014)
Add functionality to the interface and connect application to the database.
#Milestone: Implementation phase complete.

Week 9 (24/03/2014)
Conduct the testing using the test cases created in the design stage. Conduct heuristics evaluation.

Week 10 (31/03/2014)

Evaluate the system using results from testing. Identify and document future improvements.

Week 11 (7/04/2014)
>Project progress review meeting
Write up reflection of project and finalise report.

Easter Recess (14/04/2014 – 04/05/2014)
To be used if project runs over plan deadlines.

Week 12 (5/05/2014)
#Milestone: Submit final report

References

BESA 2013. *Market Research: Tablets and apps in school 2013[Online].* London. Available at: http://www.besa.org.uk/sites/default/files/tab2013_0.pdf [Accessed : 30 January 2014].