Is eLearning app is being as effective as traditional classroom lectures for theoretical lectures?

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Abstract-Internet has affected our lives have changed people's lives on different scales including teaching and learning. The web has nowadays become one of the favourite channel of learning, thus opening doors for people around the world to access education for free, or at affordable rate. According to Statista, by 2019 there will be 2.5 billion smartphone users [1]. eLearning can significantly reduce everyone's time. But does it really work?

For this research, I used some topics from International Project Management. This research consider only theoretically subjects and not the programming languages. The app allows it users to learn the topics and test their learning process by taking part in quiz inbuilt the app. In the quiz, questions on only those topics will be asked which users have marked as "learned". This way the users don't need to worry about out of topic questions which are sometimes faced in the traditional classroom setting.

Keywords: eLearning, eLearning vs traditional classroom.

1. Introduction

As the usage of Internet and the smartphone has increased to an enormous level, our learning method also needs to be modified thus making it compatible with today´s Era. Mobile phones have been become part and parcel of daily lives where we Humans are constantly dependent more on our phones than on computers, we are more space independent. Having said that, is it right to say that, eLearning apps can be the future of Learning?
It enables much faster delivery of products as users can access eLearning material anytime, and anywhere, with flexibility not only in terms of time but also learning speed. Since eLearning provides various types of interactive content and multimedia, users can retain much more of what they learn and improve their skills and performance. Learning when users have more free time or concentration, will lead to performance enhancement and higher efficiency. What makes e learning more unique is the idea that such apps allow their users to revisit any information they need and whenever they wish too.

2. Smart Learning App

2.1. Research Approach

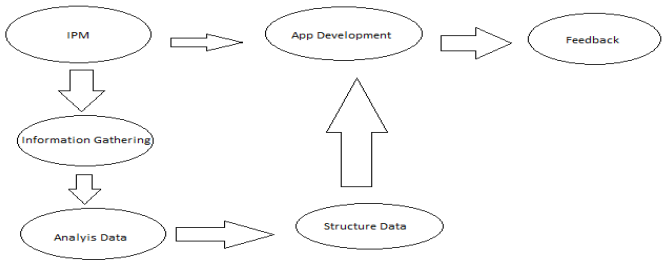

Figure 1: Application Development Approach

To evaluate the comparison between eLearning app and classroom lectures, first requirement was to develop the required app with a subject. I choose IPM (International Project Management) as a subject for my research.
To begin with, I gathered and analysed all the data for the topics which was then structured in a format for the app development. This was also required for future, for instance, if I ever wanted to add more subjects/topics to this app.
After the development, I needed to consult some fellow students/ Professors, who have already attended lectures on IPM or has given one. I requested them to use this newly developed app, so that I get good number of reviews to write down the conclusion.

2.2. Research Method

For an android app development, I chose the Xamarin C# platform. To show the data in a structured format, I first created a common structure for all the topics and subtopics as shown in fig 2.

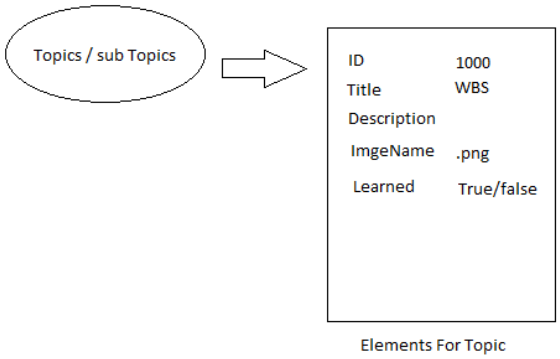

Figure 2: Data structure for topics and subtopics

Each Topic have a unique ID like 1000 for Work Breakdown Structure (WBS) and if there is any subtopic to a topic, they also have the same structure, but ID will be Topic ID plus 1 for each subtopic. For example, like if a topic has ID 1000 and has 4 subtopics then the ID for the subtopics will be ID 1001,1002,1003,1004. The one important element is "**Learned"** key. When user enable the learned switch, app will store that topic as learned topic in the database. This is important because when user want to take the inbuilt quiz, app will ask only the questions related to the learned topics.
When a user will start quiz, app will look for the learned topics and filter the topic related questions. The questions are multiple choice with 2 categories. Either some questions will have more than 1 right answer, or the question will have only 1 right answer to be chosen from list of choices. When user will take the quiz, app will store the result in the database with four elements like Topic name, correct answer, incorrect answer and the chosen answer (correct/incorrect). When user select the wrong answer, app will show the correct answer.

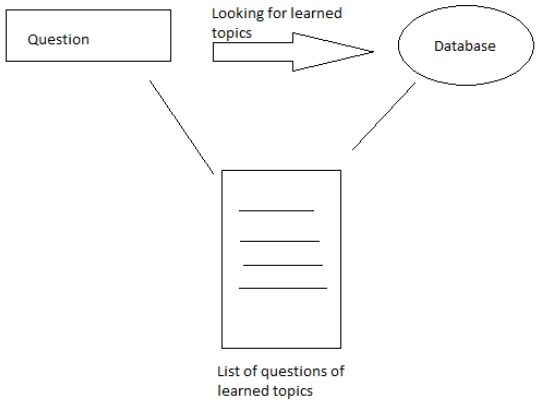

Figure 3: Quiz Architecture

2.3. Architecture

When user select a topic from the list, the app will navigate to a new page where it will show detailed topics and if that topic has subtopics, the user can tap on those subtopics and the app will show the details of that selected subtopic. The structure of the detailed page is same as for the main topic and subtopics page so that the app can reuse the same page to show the information. This increases the response time and uses less resources (battery power) of smartphone. When user is sure he/she has learnt a particular topic, they can enable the "learned" button. They can disable this button anytime if they think they haven't learned yet if they perform bad in quiz.

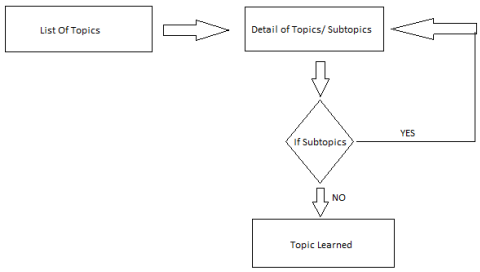

Figure 4:Topic Detail

2.4. App Framework

When user open the app, they can see the list of topics as shown in fig.5. They have option to select any topic. When the user selects a topic, a new page will show the details of the topic like text, images and the subtopics (if any) as shown in fig.6.

Figure 5: List of Topics

Figure 6: Detail of topic

Fig.7 show the structure of the quiz. Questions will be asked based on the learned topics and fig.8 shows the result of the answer. If the selected answer is wrong than the app will show the right answer. User can see his/her performance with the help of results as shown Fig.9 so that they know where they have to concentrate to improve.

Figure 7: Quiz

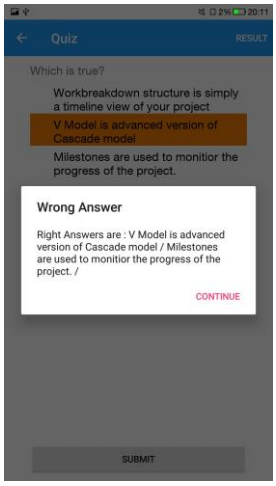

Figure 8: Result of question

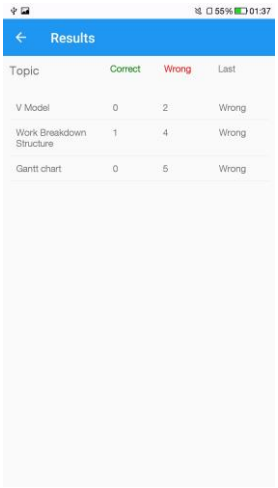

Figure 9: List of Results

3. Conclusion

Based on the three user's feedback I have some results but for the conclusion of this research questions, I require more users. Based on the existing users, eLearning apps are powerful and very efficient to enable learning anytime and anywhere. People can control their learning process with the help of time flexibility and taking the quiz. Representation of the data, especially for topics with long text is very important to attract users. Enhanced UI and a good data structure are two key points for lengthy topics.

Reference

Number of smartphone users worldwide from 2014 to 2020 (in billions)
https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/
[Accessed 23 May 2019].