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CS6460

Qualifier Question

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STEPS: Student-Teacher Education Process Supplement

Qualifier Question

You are going to develop a customizable trivia/quiz app:

- What is the problem you are solving? What solutions are out there already? What's working and what's not working?
- Why is a (app/website - whatever you are doing) a good solution? Are there any design considerations based on your demographics?
- If you continued this project beyond this semester, what roadblocks would you face getting this into a classroom? How would you overcome them?

The Problem and Existing Solutions

There is a strong demand for educational video games and that demand is growing¹. Teachers have found that students are generally more engaged when learning takes the form of a game. During an interview with a 4th grade teacher, I found that she uses educational games in her classes almost every day. These games are intended to get students “excited about learning” and is something “they look forward to” (S. Howell, personal communication, May 28, 2018). Specifically, video games appeal to current school-age students because of the involvement of mobile devices, tablets, and computers in their every day lives. These video games have the same benefits as a traditional game-based learning tool or technique, but appeal to the modern generation of students². However, these games only benefit the learning experience of students if they both entertain the student and contain relevant educational content.

A quiz-style video game meets both requirements of an effective educational game. By providing an objective scoring system, a competitive atmosphere is created, and students will try their best to get the higher scores. Additionally, the educational content can be edited to fit any environment because the quizzes are user-created. While there are already plenty of education-focused trivia games on the market, there are very few which are made primarily to benefit teachers. This is the problem which I would like to dedicate my project towards solving.

Kahoot! is an application that teachers can use to quiz their students in a real-time environment³. A quiz is projected onto a screen and the students pick their answer on a personal tablet. The teacher can choose to view the results at the end of the quiz and can see individual student's statistics. This is close to the product that I have in mind but does not offer any kind of long term performance tracking for teachers to observe. The app also only works when all participants are answering questions at the same time. Ideally, there would be a way for individuals to compete against each other by taking the quiz at their leisure and competing for higher scores. Kahoot! does a great job of getting students actively engaged in learning, but does not provide teachers with enough data to help their students who are struggling or track progress over time. The

teacher can download results at the end of a quiz, but there is a lot of extra work required to combine results from many quizzes.

StudyMate is a plugin for Canvas which specializes in user creation of flash cards, assessments, and games. It can be used by teachers to assess students or by students to create personal study tools. However, StudyMate is only usable within Canvas, which drastically limits the audience it is available to. This sort of application should be accessible on the various app stores or through a website that can be opened in any web browser so that students of all ages can use it.

There are many other trivia games out there, but very few provide teachers with adequate data to help teachers understand student deficiencies and improvements based on long-term performance.

An Ideal Solution

Based on the existing quiz-style applications on the market, an ideal application would have the following characteristics^{4,5}:

- Available on a variety of different platforms.
- Gives users the option to create and enroll in classes with student/teacher roles.
- Can generate flexible quizzes based on user-supplied questions.
- Provides meaningful statistics to teachers for each student and the class as a whole.
- Contains a database of created quizzes which users can share, search, and use.

If each of these traits are achieved, the existing problem of a lack of educational quiz games made with teachers in mind will be solved. The application will appeal to students by providing a competitive, interactive learning environment and will gather data that will help teachers understand where their curriculum is lacking.

The consumer base for this product would be teachers and students of all levels. As such, the quiz creation tool should be relatively simple, but give the option for the inclusion of multimedia for questions and answers that are better shown through visual/audio means. For example, the quizzes should only require the very basics to create a quiz so that a 5th grader could make a quiz to study vocabulary and share with his friends while still allowing college seniors the ability to create a quiz that shows pictures of different portions of the human anatomy as possible answers. Providing a platform for visual learning will heighten the effectiveness of the educational aspect of the application especially as it pertains to an ESL classroom^{6,7}.

Possible Roadblocks

This project has a few possible issues: the scale and infrastructure required to maintain the project, convincing “old-school” teachers this is an effective tool that would help their teaching methods, and being overshadowed by existing quiz-style games.

As this application gets used by increasingly more students and teachers, the database required to keep all the generated quizzes, statistics, profiles, etc. is going to be massive. This will require servers to keep track of the data as well as backups and administrators to maintain the system. In order to mitigate this

issue, an additional team member could be brought on with the sole responsibility of maintaining the servers and databases of quizzes and profiles.

It is also concerning that teachers may be resistant to a product which is so dependent on technology⁸. In order to convince them that this is indeed a tool that would benefit them, the application would need to be supported by additional interviews with teachers of various grade levels who voluntarily used the application⁸. To ensure that these interviews put the application in a positive light, it would need to deliver information that teachers actually want to see based on feedback from interviews done prior to development. The three conditions for educational technology to be used by teachers outlined in Zhao's paper are that teachers must see the technology can more effectively meet educational goals than the techniques currently used, the technology will not cause disturbances to higher-level goals more, and the teacher will have sufficient ability and resources to effectively use the technology⁹. All of these concerns will be addressed in a short promotional video specifically aimed at teachers.

The last, and biggest, concern is that existing quiz games will overshadow this product. Hopefully, the unique element of centering around benefiting teachers instead of just providing educational content to students will make it stand out. Teacher testimonies on the effectiveness of the application and how they were able to use it to change their old teaching methods will bolster the demand for the application.

Each of these roadblocks has both a definite possibility to diminish the effectiveness of the application as well as a definite attack plan to mitigate the roadblock's effects. By addressing these roadblocks in the early stages of development, they should not hold back the application from being successful. I am extremely excited to propose my game plan for developing the Student Teacher Educational Process Supplement (STEPS, a possible name for the application) in the next paper.

Works Cited

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