



Final Year Project Proposal

TU857

E-Learning Web App for Second Level Students

Maya O'Connell
D20125203

School of Computer Science
TU Dublin – City Campus

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This proposal has potential to be an excellent project.

Patricia O'Syne

Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

Maya O'Connell

Maya O'Connell

21/10/2022

Summary

The aim of my final year project is to introduce an e-learning platform designed to be implemented in secondary level education, to improve comfortability in classroom engagement as well as aiding students in everyday learning through various other app features. This application could also be beneficial as implementing an online learning environment alongside in person class could minimize the difficulty many teachers experienced in the case of the pandemic, where they had to implement an online classroom, as well as ensuring comfortability of use for both students and teachers.

I intend to create a web application which can be used by teachers and students for a more interactive class. Teachers can create a group, which students can join. Within the group, students can find the content uploaded by their teachers (such as resources, presentations etc), as well as quizzes and polls created by the teacher. As well as this, I intend to implement a Q&A section, where students can post questions, which can then be discussed in the class, to aid in students comfortability and engagement. I also intend to implement a private chat messenger, so that if students have private questions, they can contact a teacher directly if too uncomfortable to do so in class/ on the forum where others can see. I will implement a profanity checker to ensure offensive language is blocked from being posted, giving a user three warnings before blocking them from posting for 24hrs. If a user is blocked, it will be visible by the teacher.

Background (and References)

For my project, I am going to use the subject of SPHE as an example of how the implementation of the e-learning platform could aid in improving engagement in secondary level education. My initial interest in this application stemmed from the way in which the SPHE curriculum was delivered in schools, with many past students feeling they learnt little despite studying the topic from a young age. SPHE is incredibly important in ensuring students are learning life skills such as identifying healthy relationships, safe sexual health, how to care for their mental health etc. All things which will help them through their adult life. Creating a safe space for students to engage in classroom discussion and activities could hugely improve what students take away from the classroom.

There are online resources for the sexual education such as spunout, sexualwellbeing.ie and WISER. While all of these are sites are filled with information, they are mainly fact page focused, which would not be beneficial for people with other learning styles. Kazu (2009) looks at the importance of students being taught in ways which meet their style, as it impacts the effectiveness of lessons, as well as motivation in students. I want to create an app which has something for each learning style, to make it as beneficial, enjoyable and effective as possible.

According to O'Brien(2019), a study completed by students found the sex education curriculum to be out dated, focusing mainly on the risks of sexual activity, and teaching only a biological version of reproduction. It found that students want 'a safe space where they can discuss, ask questions and talk about all aspects of relationships and sexuality.'

Introducing an application to encourage students participation could bridge the gap in Irelands failing sex education curriculum. Allowing students to post questions without the eyes of everyone on them, can aid in creating that safe space students are lacking.

To ensure the web app meets the basic expectations of an educational web application, I researched blogs such as Palko(2021), to pinpoint essential features. Key features I will ensure to take onboard are a clear user interface, high quality content, video and interactive content, knowledge testing content and simple user login.

Proposed Approach

This application will provide a safe space for students to feel comfortable to ask questions and encourage normalizing classroom discussion. The app will allow students to post questions, which could then be discussed in class, or other students could respond on the post. It will also allow students to privately message the teacher, to ask questions which they don't feel comfortable asking in front of other students.

There are three main areas to my approach:

- Design and research
- Implementation
- Testing/ Maintenance

Design and Research

- I intend to further investigate areas which past students would have wanted improvements on
- As I intend to have monitoring on inappropriate or offensive posting, I will need to research into the best method for implementing this (may use Natural Language Processing, but will consider this further as I go).
- I will need to research the most suitable database for this application, to ensure a highly efficient application. I will research the various types of databases and choose which is best suited to my system.
- As I have no experience in game design, I will research the most suitable technologies for creating story line and point and click type games, to be used within the application.
- I have prior knowledge in React, which I intend to use for my front end, as well as NodeJS and Express for my backend. However, I will further research to expand my knowledge in these technologies.

Implementation

- I will get a better understanding of the full design of this app, through creating use cases and prototypes
- I will develop the front end first, using React. I will ensure the User interface is designed with a clear flow to the application pages.
- Once the front end is developed, I will work on the backend.
- Implementation of monitoring and filtering out inappropriate or offensive posts/ messages.
- I will create educational mini games.

- I will host and launch the application.

Testing/ Maintenance

- I will test the application using a variety of testers, some students, some teachers as well as a random group of ages.
- I will test the application using both black box and white box testing, to ensure to find any flaws within the application.

Deliverables

- Project dissertation
- A hosted web application
- Interim report

Technical Requirements

Laptop

Database

React

NodeJS

Express

Visual Studio Code

Game engineering technology

Conclusion

In the case of SPHE an e-learning platform could be a beneficial way to implement new methods of learning, and reaching new levels of engagement from students. From my research, it is clear that Ireland's sex education is not doing enough for it's students, between the content and the way in which it's taught. This app could provide a safe outlet for teachers with their students to improve in class discussions in uncomfortable areas, improving the education of teenagers as they come into adulthood to better understand their bodies and be prepared for future experiences. I will implement this in a way which is safe for all users. I hope to create an application which will meet the needs of all learning types, making it easier for students to feel motivated and focused around the topic.

References

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Appendix A: First Project Review

Title: An eLearning system for anonymous feedback sessions with built in polling, using node.js;

Student: C10701531

Description (brief):

An eLearning system for lecturers and students to use to increase engagement in lectures. For the lecturer, they can create a session, in which they can create a quiz and view overall quiz results, post lecture slides, and monitor disruptive behaviour, by blocking users that are disruptive.

Student users can vote in polls, take quizzes, view their quiz results, ask anonymous questions.

What is complex in this project:

Using the 'socket.io' library to implement rooms – this allows for communication within this room (group of sockets) without notifying sockets which are not in this room.

What technical architecture was used:

AngularJS, NodeJS, ExpressJS, Websockets, JSON, MongoDB

Explain key strengths and weaknesses of this project, as you see it.

The use of sockets.io rooms is an efficient way of broadcasting to a specific set of clients as it removes the needs to refer to the individual socket id of each client.

The user did not implement all features intended due to time constraint. The user describes how small problems caused delays in the project.

Appendix B: Second Project Review

Title: Edu-Play

Student: Richard J Power

Description (brief):

An application designed for children in the 8-12 age range, to aid in their learning. It does this through the use of various games which would return the score to the user instantly. The games included maths game, spelling games and trivia games. A web application was also created for teachers or parents to update the contents of spelling or trivia games.

What is complex in this project:

Incorporation of gamification of design was a focus of the project, to ensure it was accessible to the target audience as possible. The user applied this, as well as gaining feedback from the target demographic to ensure the best possible design.

What technical architecture was used:

HTML, PHP, SQLite database, CSS, Java

Explain key strengths and weaknesses of this project, as you see it.

The app was design choices were evaluated by its target audience. This ensured the layout would be clear and what the target audience would want in an application.

However the main component of the application is an android application, reducing the user reach. A web app could be a better choice as it allows access for a greater number of users.