



COS20001: User-Centered Design

4.1) Software Requirements Specifications

Group 4

Table of Contents

1. Introduction	2
1.1 Purpose	2
1.4. Scope	2
1.5. Reference	3
2. Overall Description	3
2.1 Product perspective	3
2.2 Product Functions	4
2.3 User classes and Characteristics	4
2.5 Design and Implement constrain:	4
3. External Interface Requirements	5
3.1 User Interface	5
4. System Features	8
4.1. Homepage	8
4.2. Content Creation Feature	11
4.3 Communication	14
4.4 Profile and setting	16
5. Other nonfunctional requirement	18
5.3 Security Requirement	18

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 PURPOSE

The primary aim of this project is to improve the functionality and performance of Quitch - “a gamified mobile learning platform” (Wust 2021, p. 35). One of the aspects that would be enhanced includes further personal customization, which will give users more freedom over their choice of personalization. In addition, there will be functional customization to ensure users’ flexibility when designing, creating, and adding new content. Moreover, after careful observation of data from various surveys and feedback from the users, we will also enhance the cross-platform compatibility of our platform. These modifications will also increase the efficiency of both the product as well as the user.

1.4. PRODUCT SCOPE

Overall, one of the problems that the current state of the app faced was that it is only accessible via mobile phones; to address that, our platform will be made into a website; however, there will also be a mobile version for our app so as to provide the users with a variety of options. Not only will this help with the mobile issue, but also widen the ability of what it can do. Our project focuses mostly on expanding the personalization aspect of the Quitch, more built-in themes and backgrounds will be

included to help the user change themes according to their preferences; different fronts will be included alongside for the same aesthetical reason, “customizing products and services is among the most critical means to deliver true customer value” (Hvam, 2008). Apart from the customization of the user interface, we will also aim at giving the users options to personalize their content namely more question formats, multiple correct answer modes, revision creation, and so on.

1.5. REFERENCE

- (1) Wust, A., Swart, T., Oates, G. and Lottering, N., 2021. Breaking Boundaries: Effectiveness of Gamification and Student Co-Creation for Anatomy Remote Learning. The FASEB Journal, pp. 35.
- (2) Hvam, L., Mortensen, N.H. and Riis, J., 2008. Product customization. Springer Science & Business Media.
- (3) Hoffman, A 2020, Web Application Security, 1st edition., O'Reilly Media, pp 15–18.
- (4) Vesanen, J. 2007, What is personalization? A conceptual framework, European Journal of Marketing, Vol. 41 No. 5/6, pp. 409-418.

2. Overall Description

2.1 PRODUCT PERSPECTIVE

Quitch may be a good place to start making studying/learning more entertaining, but after careful inspection and dissection, it still has so many problems that must be tackled, which is why this project came into the picture in the first place. Therefore, our product will be made to replace Quitch but will keep all the existing features of Quitch including course and quiz creation, inbox, and setting. However, we will supplement it with an addition of features to enhance the users' experiences.

2.2 PRODUCT FUNCTIONS

The features that we shall provide the users with are as follows:

- Homepage – our greeting page will welcome the users with news and updates.
- Content creation – the main feature of our platform, which will enable the users to create original content or edit from preexisting templates.
- Communication – An enhancement in the connection between the educators and students will also be our priority.
- Profile and Setting – We shall provide the users with a variety of options to customize their profile and appropriate settings to make changes to our platform.
- Security and protection – The users' information integrity shall be protected with standardized protocols and appropriate policies from our team.

2.3 USER CLASSES AND CHARACTERISTICS

Our platform will be focusing on the enhancement of a preexisting game-based learning application; therefore, it will harness the power of games to define and support learning outcomes. Educational practitioners will be the main user of our teacher's portal; however, their students will be the end-users. Our ambition is to introduce this effective method of teaching and learning not only to the education of students but also to the training of recruits in companies.

2.5 DESIGN AND IMPLEMENTATION CONSTRAINTS:

Our team design is primarily aimed at the end-users which are the students; therefore, the design of our platform will be modern and minimalistic with different touch of pop culture to the user interface,

however, this might pose difficulties for our educators as they might not like the funky energy of our platform. For that reason, our team shall also introduce different customization regarding background, fonts, and color so it would solve this problem.

As mentioned in the scope analysis of this document, we are aiming at providing users with compatibility with different devices, which will also be problematic for our implementation because our initial platform will only be available on desktop devices and mobile devices. However, other suggestions from the users will definitely be taken into consideration.

3. External Interface Requirements

3.1 USER INTERFACE

The user interface serves as one of the most critical pieces of any software that decides whether a user stays or leaves the site. An optimal interface should strive for a good first impression and constantly seek to provide the best customer experience possible.

To achieve this, the GUI needs to be concise and distinctly display key features so that it stands out from the rest of the options. A user should never be left scratching their head wondering what they should do next or how they could access what is otherwise a key feature of the application.

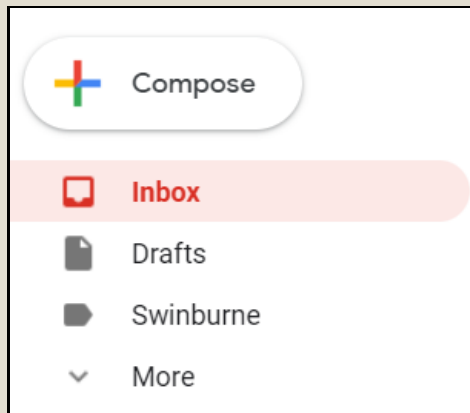


Figure 3.1.1. Example from **Gmail**: The compose mail button stands out from the rest of the options.

As mentioned above, concision is vital to UI designing as it provides users with adequate information while still being brief and steers clear of UI cluttering. Avoid overly abstract icons as they may confuse new users about what the icons mean to represent.

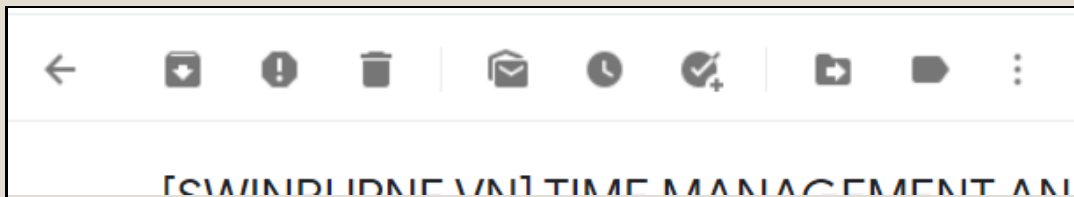


Figure 3.1.2. Example from **Gmail**: An abstract set of icons may seem overwhelming to newcomers.

A navigation bar is also important for easy navigation and a feedback/support section being always present, allowing users to receive help or ask any questions regardless of their current status.

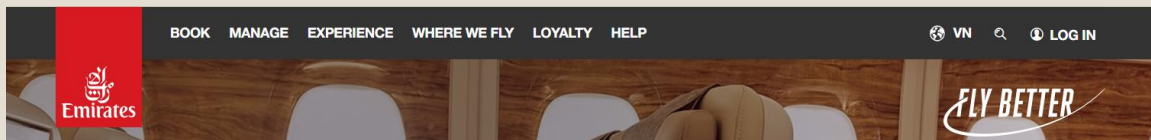
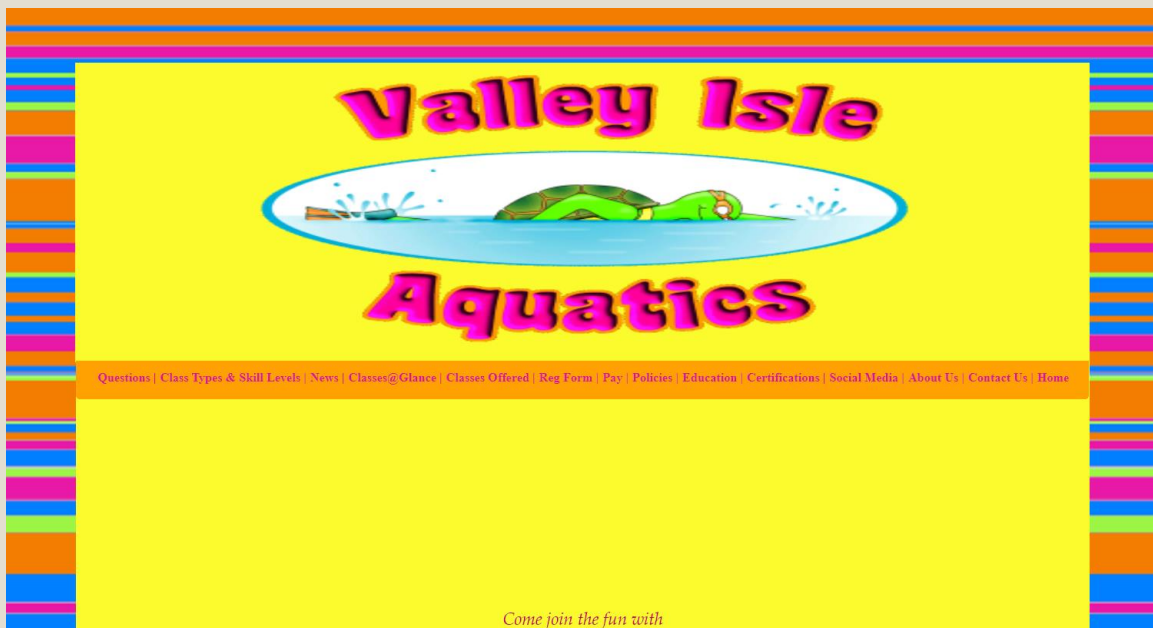


Figure 3.1.3.1. Example from **Emirates Airlines**: A navigation bar allows quick shortcuts to other sections of the website.



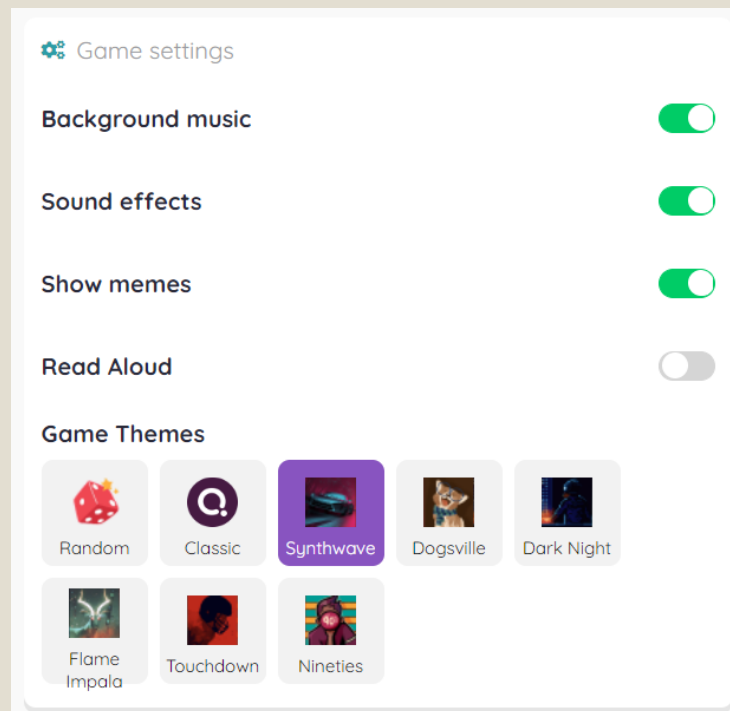
Figure 3.1.3.2. Example from **Emirates Airlines**: A persistent feedback shortcut always accessible from the side.

The theme is another integral aspect of designing. A monotonous theme with colors that do not support each other or with low contrast will fail to grab the attention of the users. A good theme needs to be vibrant, support, and elevates each other.



3.1.4. Example from **Valley Isle Aquatics**: Example of a bad palette where the colors are too bright and too straining to the eyes.

Personalization options should also be a big bonus as it offers the user another layer of customization and aids greatly in the process of getting used to the app. Options such as dark mode, built-in quiz themes or font size customizations are some notable features in this respect.



3.1.5. Example from Quizizz: A set of personalization options.

4. System Features

4.1. HOMEPAGE

Description & Priority

The Homepage is the soul of any application or website. It is usually the first thing any user sees when visiting a site and a good first impression means there is a higher likelihood of the user staying or re-visiting the website later on. Thus, getting the right design is crucial for the website's success.

Priority: High.

Priority component rating:

Benefit	Penalty	Cost	Risk
9	7	7	8

Functional Requirements

4.1.1. Navigation Bar

Requirement: Users will be able to access different key pages through a navigation bar located at the top of the page.

Rationale: A navigation bar would serve as the perfect tool for easy navigation throughout the site.

Note: The navigation bar should always be present (unless during a quiz).

4.1.2. News And Updates

Requirement: Users shall be able to view news or updates regarding their enrolled courses on the menu.

Rationale: A news section on the main page would allow users to stay up to date on their courses upon booting up the site.

Note: This section should be placed first to make sure users can receive updates as soon as possible.

4.1.3. Courses And Quizzes

Requirement: Users will be able to browse and access pre-made or featured quizzes.

Rationale: A Featured Quizzes section allows users to discover other topics outside of their enrolled classes.

Note: NA

4.1.4. Search Bar

Requirement: Users will be able to manually search for classes or quizzes via a search bar.

Rationale: Manually finding a course/quiz will help the users better pinpoint a particular course.

Note: The search bar should be located on the navigation bar.

4.1.5. Play Now

Requirement: Users will be able to quick-join quizzes through a generated PIN or QR code.

Rationale: Quick entry to a quiz will help save time and reduce user's annoyance.

Note: A bell icon on the navigation bar would also work as a shortcut and a notification system.

4.1.6. Tutorial

Requirement: Users will be able to receive instructions on how to use the website through a Tutorial page.

Rationale: Tutorials will help greatly with making the users get used to the website and learn of all its functionalities.

Note: NA

4.1.7. Personalization

Requirement: Users will be able to customize and personalize themes, quiz backgrounds, fonts, or languages as they see fit.

Rationale: Personalization options is another feature that would aid in the process of making the users get comfortable with the website by giving the users the ability to mold their experience.

Note: The users will pick out a set of pre-made backgrounds, change to dark theme, adjust font size, and change languages to their liking.

4.2. CONTENT CREATION FEATURE

Description and Priority

Our product provides users with the ability to create content. This feature includes multiple functions, namely create quiz, create course, create revision, generate feedbacks. The feature gives the users two options: utilizing the available templates from our application for an easier process or creating original content for better personalization.

This feature is considered High priority in our project. The main reason users come to our platform aim is to create educational and sufficient content for their purposes and it offers just that.

Priority: High.

Priority component rating:

Benefit	Penalty	Cost	Risk
9	9	8	9

Functional Requirements

4.2.1 Create Quiz with templates

Requirement: Users can choose interesting templates and only need to add the content into the template.

Rationale: Users may want to create quizzes quickly, efficiently and they do not care too much about personalization.

Note: NA

4.2.2 Create original Quiz

Requirement: Users can create original content starting from scratch. Our product displays a blank working page with the needed tools to design and add content. Photos, videos, audios can be easily added into the quiz.

Rationale: Users may want to personalize their works and implement special designs.

Note: Need to review and study the layout of other software specialized in designing such as PTS, PowerPoint.

4.2.2.1 Customization for quiz

Requirement: There shall be different format of quiz, power-ups for end- users to use ,and the option to create questions with multiple correct answers.

Rationale: The end-users' entertainment shall be prioritized in order for our product to appeal to them.

Note: Instructions shall need to be provided so that the end-users can understand different formats and power-ups.

4.2.3 Create Course with templates

Requirement: Teachers can create courses with our application's available templates. The templates allow teacher to implement documents, podcasts, videos that contain the lessons and quizzes for students to practice.

Rationale: Teachers may not have too much time so they need a quick yet competent way to make courses. Therefore, the templates

will allow teacher to implement documents, podcasts, videos that contain the lessons and quizzes for students to practice.

Note: NA

4.2.4 Create original Course

Requirement: Teachers can create personalized courses with the provided tools. The tools provided are capable of basic to complex designing and content handling. The features in “Create Course with templates” remain the same.

Rationale: Teachers want to personalize the course to fit the characteristics of the targeted student group.

Note: Need to review and study the layout of other educational portal such as Canvas.

4.2.5 Create Revision

Requirement: Teachers can create revisions for students before exams or during the duration of a course.

Rationale: Teachers want to help students check their knowledge before exams. Moreover, using quizzes has proven to be one of the best ways to revise knowledge.

Note: This function is quite similar to “Create Course”. However, the content inside Revision is specially selected to serve the purpose of preparing students for special occasions.

4.2.6 Generate Feedbacks

Requirement: Students receive statistics feedback about their performance after completing the quiz.

Rationale: Students need to know about their performance after every quiz to be aware of their progress.

Note: The feedback contains the number of questions that students got right and wrong, the answering speed. Also, students can review the questions they got wrong to revise knowledge.

4.3 COMMUNICATION

Description and priority

Communication between the students and teachers is an important aspect of any educational system, as it will be crucial in maintaining the connection between two parties and consequently improve students' grades and students' success rate. Therefore, it will be extremely vital to provide an effective chatting system or messenger system to establish solid communication between users and educators.

Priority: Medium.

Priority component rating:

Benefit	Penalty	Cost	Risk
8	7	8	7

Functional requirements

4.3.1 Messenger between users and educators

Requirement: The users shall be able to direct message their educator in case problems arise.

Rationale: An effective, timely, and direct communication method between students and teachers shall be extremely important to the academic success and wellbeing of a course. Therefore, there must be a messenger system integrated with the software design.

Note: There shall also be option for users to form group chat for team project.

4.3.2 User can also block or remove unnecessary/spam chat

Requirement: The users shall be able to remove unnecessary chat and block spam chat.

Rationale: Chats from previous courses or past conversions may draw unnecessary and an option shall be provided for the users to delete them. Similarly, spam chat might be a big issue for any communication system and before we can block it completely the users shall be able to block spam chats.

Note: An unblock option must also be provided to avoid users mistakenly block their contacts.

4.3.3 Announcements from educators and the software

Requirement: The users shall be informed of any changes that have been made by the educators or updates from the software itself.

Rationale: If the users are not informed about possible changes, it may be difficult for them to keep track of adjustments from their teachers. Therefore, announcements shall be delivered to the users promptly.

Note: Announcement of new courses or quizzes shall also be informed to the users.

4.3.4 Limited size documentations

Requirement: The users and educators alike shall be able to send documentation via the messenger system.

Rationale: Some small-sized documentation will be extremely unnecessary to post on the course or sent via emails, therefore, there

shall be options for users to send documentation from the messenger.

Note: It is recommended that documentation larger than 25MB shall not be allowed to share via messenger system.

4.4 PROFILE AND SETTING

Description and priority

Users' ability to personalize their profile and overall setting customization of an application is vital in improving user experience and navigation (Vesanen 2007, p.411). Most of the time when the user needs to make changes to their account or have questions that need help, they often come to the setting page. Therefore, providing users with a helpful set of options and settings will result in improved retention, and valuable feedback, and subsequently improve user experience with the application.

Priority: High.

Priority component rating:

Benefit	Penalty	Cost	Risk
8	9	8	9

Functional requirements

4.4.1 Profile setting

Requirement: the users shall be able to set up their profile picture, name, and language.

Rationale: The options for users to personalize their profile will be very important as it will enhance their experiences. Therefore, our

product shall offer users the ability to customize their basic information.

Note: NA.

4.4.2 Overall setting

Requirement: The users must be able to the overall setting of the software (brightness, notifications, in-app sounds, password, username, etc.)

Rationale: As our product emphasizes users' personalization, therefore, we will provide students with options to adjust the overall setting of our software.

Note: Security-related settings must also be available, however, it will be discussed later in this document.

4.4.3 Account management

Requirement: The users must be able to change their username, password, and their email account on the platform.

Rationale: The users must be able to change their account settings in case they lost their email and need to create a new one.

Note: A confirmation should be sent to the user's phone or another email to confirm any changes made to the user's account.

4.4.4 Bug reporting, contact information

Requirement: The user shall contact the developers in case they need to report any bug or send any supportive recommendation.

Rationale: The users must be able to report bugs or flaws that were missed during their use of the application, as well as send a supportive recommendation to enhance the product. For that to happen, users shall contact the developing team through the provided contact information.

Note: NA

4.4.4.1 FAQ

Requirement: The developing team shall specify some frequently asked questions or problems and the information on how to solve such problems for the users.

Rationale: Users with questions probably have to wait for the team to provide them with support which may take time and somehow frustrating for a simple question such as “How do I change my profile picture”. For that reason, compiling answers to common questions can help the users to save time and therefore improves their experience.

Note: Questions can also be categorized into different sections to help the user to navigate easier.

5. Other nonfunctional requirement

5.3 SECURITY REQUIREMENT

Description and priority

Application security refers to security measures used at the application level to protect data, code, and customers' information from being stolen or hijacked. Today's apps are connected through several networks and databases; therefore, they are more vulnerable to security threats and breaches (Hoffman 2020, p.16). For that reason, our application will introduce some standard yet effective cyber security protection to protect our clients from the threat of cyberspace.

Priority: High.

Priority component rating:

Benefit	Penalty	Cost	Risk
8	9	8	9

Requirements

5.1.1. Website security

Requirement: The customers' information must be protected by Hypertext Transfer Protocol Secure (HTTPS)

Rationale: HTTPS will encrypt data in transit from both sides: the clients and the users, therefore, it will keep communication secure so that malicious parties can't take advantage of the transmission. Moreover, a platform using HTTPS is more trustworthy for users as it displays a sense of authentication.

Note: Implementing HTTPS protection will cost an amount of money, but it will be more secure for the users.

5.1.2. Account protection

Requirement: Users' accounts shall be asked to perform a two-factor authentication (2FA) in case of new login before they can gain access to the account.

Rationale: Despite the fact that usernames and passwords have been the standard of account authentication for a very long time (Hoffman 2020, p.16), nowadays, the risk of users' accounts being compromised is omnipresent and there should be another layer of protection to make sure that the people trying to gain access to an account are whom they say they are.

Note: 2FA can be performed in many different formats from submitting a personal identification number (PIN), to checking a confirmation message that is sent to your phone, for the convenience

of the users, our platform will send a confirmation mail to the users' mail account in case of new login.

5.1.3. End-user license agreement and policies

Requirement: The users shall be introduced to our platform's end-user license agreement (EULA) and other policies regarding the protection and usage of their data on our platform.

Rationale: EULA can be seen as a contract between the developing team and the users, our platform agrees to provide the users with a license to use the application and in contrast, the users shall have to be obliged to some of our policies

Note: Consultancy services from a legal practitioner might be required.