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# **Software Requirements Specification**

**for**

# **Quitch**

**Version 1.0 approved**

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**GROUP 7**

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## Revision History

<b>Name</b>	<b>Date</b>	<b>Reason For Changes</b>	<b>Version</b>
Update	Jun 6th, 2020	System enhancement	1.0

# **1. Introduction**

## **1.1 Purpose**

This document describes the software requirements for the Quitch mobile application (version 1.0). After the initial release, the team will make modifications to enhance the learning experience of users by adding both functional and usability requirements to the system. This SRS will specify necessary adjustments for both the learner's end and the educator's end to acquire users' satisfaction in learning and managing materials for their classes.

## **1.2 Product Scope**

Quitch is a learning platform that utilizes the use of gamified quizzes to help students acquire new knowledge and put those pieces of knowledge into practice. The software is a mobile application that can be installed on both IOS and Android devices. It aims to provide a learning environment on a handheld and portable device that is implemented in educational institutions and/or business corporations. The application is a great way to learn either in or outside the classroom.

## **1.3 References**

'Our story – Quitch' n.d., quitch.com, viewed 7 June 2022, <<https://quitch.com/about/>>.  
<https://www.smashingmagazine.com/author/nickbabich> 2018, 'A Comprehensive Guide To Mobile App

Design — Smashing Magazine', Smashing Magazine, viewed 9 June 2022  
<<https://www.smashingmagazine.com/2018/02/comprehensive-guide-to-mobile-app-design/>>.

# **2. Overall Description**

## **2.1 Product Perspective**

Quitch is a mobile learning platform that is designed to help learners gain knowledge in a fun and engaging way without grading purposes. It was originally developed by the Swinburne academics and they are interested in students' ideas about this app. However, because they won't be able to assess all of the projects, teaching staff will choose a small list of 10-15 project deliverables from across the course, with 5 being chosen to present to Quitch.

The diagram below will help readers understand Quitch's system.

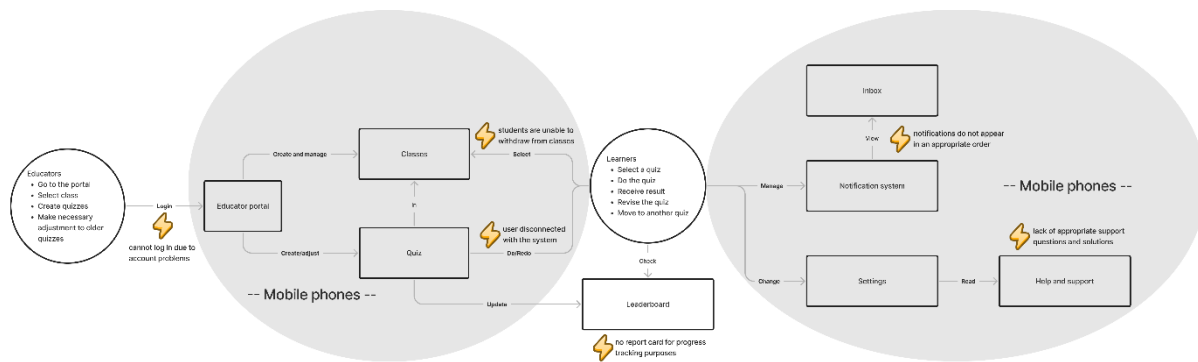


Figure 1: System workflow

## 2.2 Product Functions

There are 3 main functions in the product:

- **Creating quizzes:** The educator can create quizzes for learners after seeing that there are enough learning materials. There are many question types for educators to have the most accurate assessment of learners' knowledge.
- **Doing the quiz:** After being created by educators, learners can do the quiz. Each turn the learner does the quiz, they have 3 times to have false answers. However, learners cannot save the script, get out to see the learning material and complete the rest later. Then, learners will see the quiz result and the details of each question. Besides, if the quiz result is good enough, the learner will gain the badge. Otherwise, they will need to revise the learning material and take the quiz again.
- **Ranking learners in leaderboards:** The rank of the learner is decided by their gained badge after doing the quiz. There are many kinds of the leaderboard: the leaderboard in the whole server, in the class, or in that kind of quiz.

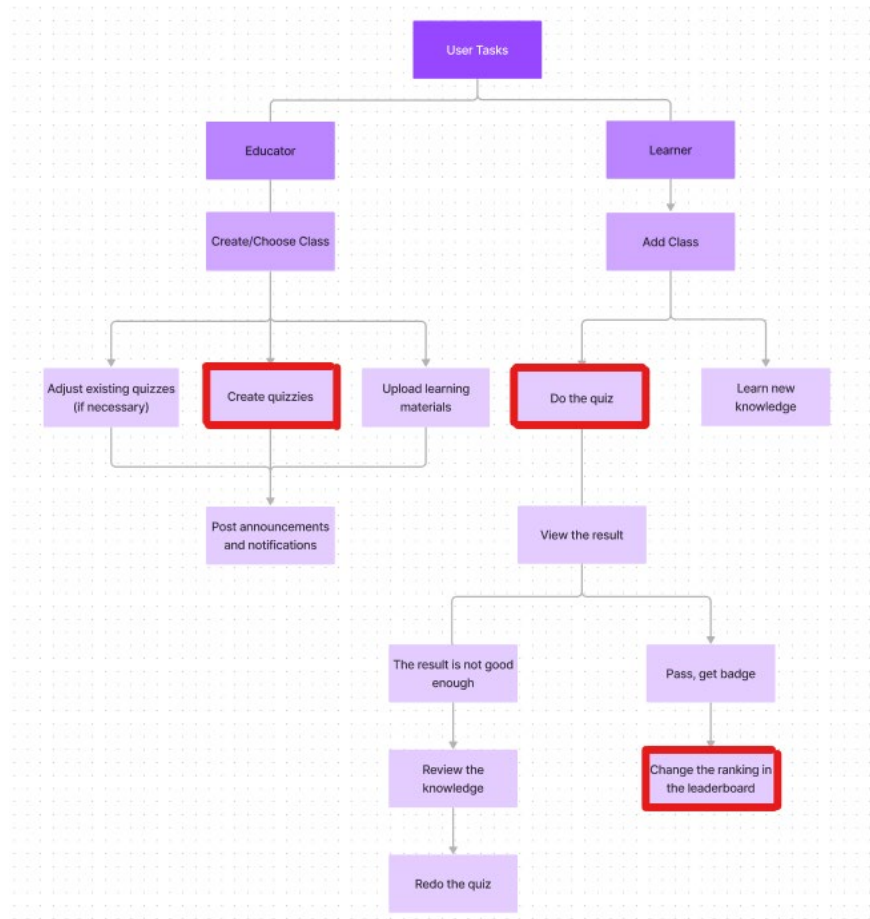


Figure 2: Hierarchical Task Inventory (HTI)

## 2.3 User Classes and Characteristics

Quitch is a learning platform being executed in the form of gamification. Therefore, the user classes of this product are diverse, including educational institutions, workplaces and associations. The discussion about the pertinent characteristics of each user class is conducted as below:

User Class/ Characteristics	Educational institution	Workplace	Association
Frequency of using	Usually. The app is mainly created for learning, so it is the most suitable for educational institutions. The potential of Quitch in this class is remarkable	Rarely - Sometimes. Quitch can be applied in both workplaces and associations, but not as usual as in educational institutions. The app can mostly be used when workers need to learn some skills or knowledge that require a short time.	

Technical expertise	Low - High. The technical expertise in educational institutions varies and has strong relationships with educational levels.	Middle - High. The technical expertise varies from middle to high due to the competitiveness of the workplace.	Low - High. The technical expertise can be low, medium or high due to the difference in ages, jobs and backgrounds.
The subset of Product functions used	Many- A lot. Educational institutions use a number of the subset of product functions from many to a lot, due to the level of complexity of the quizzes required.	Upper-Many - A lot. The number of the subset of products used here varies from many to a lot because of the high level of complexity and abstractness of the quizzes.	A few - A lot. The number of the subset of product functions used here can be a few to a lot depending on the quizzes' information.
Educational levels	Low - High. The educational levels varied due to the learners' and educators' levels.	Middle - High. The educational level here is higher than in educational institutions, due to the background of workers.	
Experience in applying technology.	Low - Middle. The technology is being applied in education recently, but not enough to be assessed as high-level. Academic institutions mostly use simple-function apps with low frequency.	Middle - High. The experience in the workplace is based on the department. Some kinds of workplaces do not require high-level technological experience.	Upper - Middle - High. The technology in associations is applied widely with high-level, even cutting-edge applications.
Security or Privilege levels	Low - Middle. The security system in learning institutions. Despite improving information protection systems recently, it is not enough to be as modern as associations and workplaces are. Besides, this class seems not to invest a big amount of money in security systems or privileges.	Middle - High. The security and privilege level here is quite high when data is more important. The privilege is based on the department and the company.	Upper - Middle - High. The bigger the company is, the more significant the security system is. Data is one of the most vital in an association, so it is obvious that the security system is essential. The privilege level of associations is also high due to their influence

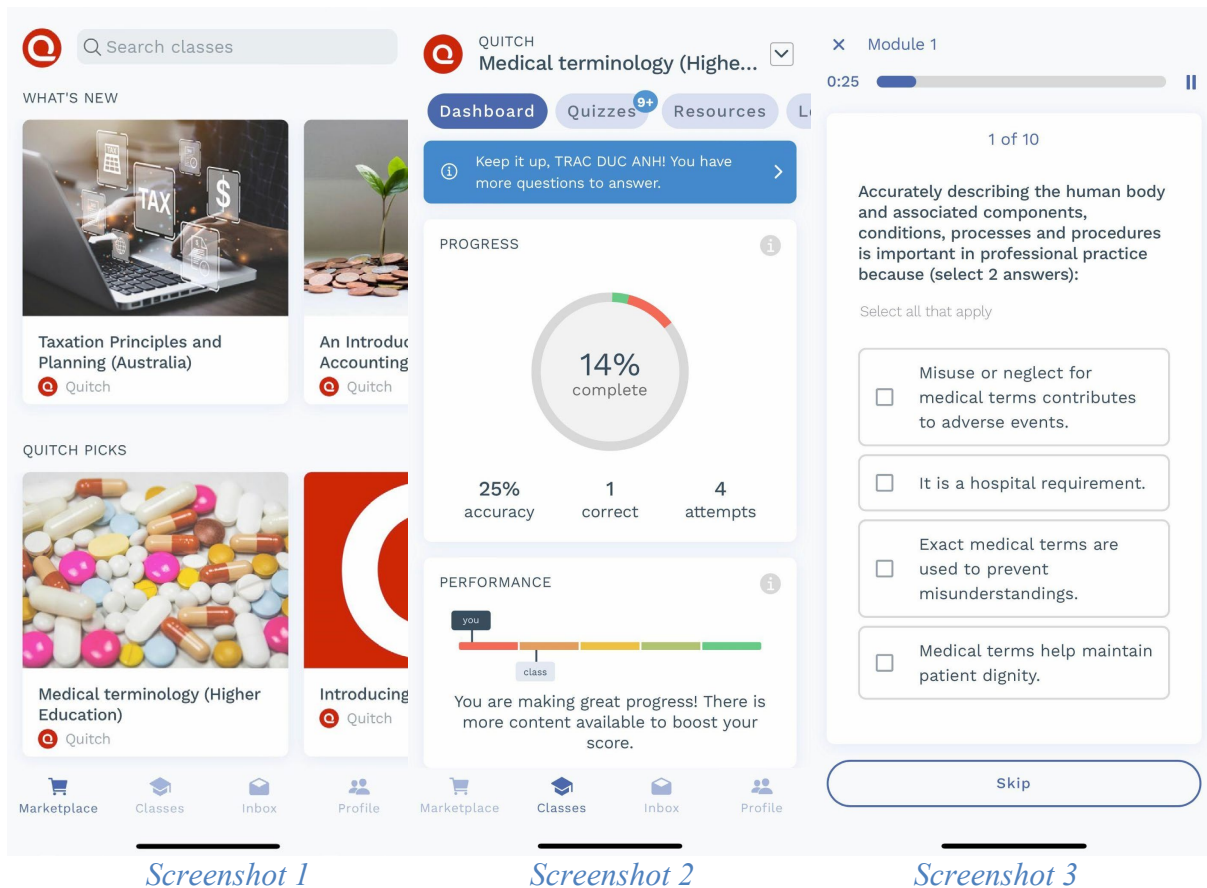
In conclusion, the educational institutions and workplaces are the 2 most suitable classes for Quitch due to their high level of frequency and subset of functions. The experience, educational level, security, or technical expertise are not too important in using this app.

## 2.4 Design and Implementation Constraints

Currently, Quitch is only supported on mobile devices, with no desktop or website counterparts. The management system of the application is under development, with low learner uptake and inconsistent engagement within the system. Educators are also currently having difficulties involving their portal, with unnecessary measures to create new content.

# 3. External Interface Requirements

## 3.1 User Interfaces



The picture on the left shows the content in Quitch. In this part, users can choose which topic they would like to learn, and the content is also updated to make Quitch more varied. The picture in the middle is the dashboard. It shows users' progress, the number of correct questions they get, and the number of attempts users take. The dashboard also has a rating bar to rate your performance. The



picture on the right is the quiz. In this part, users have to choose one of four answers to move to the next question. If they do not know the answer, they may press skip to move to the next one.

GUI standards that were used in the process of creating the Quitch interface:

- Minimizing cognitive loading to curb users' confusion and misunderstandings of the app functionalities.
- Decluttering unnecessary buttons to provide a comprehensive but convenient taskbar and test functions.
- Use familiar screens and metaphors to optimize user tasks.
- Minimizing the required input from the user, with most of the interaction coming from a choice button, rather than typing out a text.
- Use visual weights (like the percentage displayed in figure two to emphasize important information.
- Consistent design throughout every page, from the search bar to the dashboard, with the same colour palette, text size, and curved button design.
- Optimize the application for portrait mode, which makes the experience of using the program on a handheld device more enjoyable for learners.

## **4. System Features**

### **Requirement list:**

1. Adjusting existing quizzes/learning material
2. Media engagement
3. Content creation features
4. Visualization
5. Learning progress management
6. Data management
7. Products integration
8. Result representation
9. Reach out to at-risk students
10. Prompting correct answer/ solution after making an incorrect answer
11. Language changing
12. Accessible leaderboard
13. Notification management
14. Menu for easier navigation throughout the app
15. Free-of-charge accounts for university students
16. Casualness

17. Corporate use
18. Design features
19. User authentication
20. User data security

## 4.1 Material and Content

### 4.1.1 Description and Priority

A content management system is one of the key features in any educational application on the market besides the user interface at the time of this documentation. Good learning materials are crucial, but a good system that can control and optimize how that content is created by the educators and taken in by the learners can both save time, human resources, and students' energy to learn and apply their knowledge.

### 4.1.2 Functional Requirements

#### *REQ-1: Adjusting existing quizzes/learning material*

- **Requirement:** The quiz/knowledge needs to be synchronized. When the quiz is being updated, learners cannot take that quiz. The same thing happened to academic material. When revision material is updated, the quiz involved cannot be taken. There are also notifications and announcements for learners in the class.
- **Rationale:** Synchronization is required to ensure that all students have the same knowledge test and revision. The notifications and announcements are used to let learners who used that quiz/learning material know that there is an adjustment so they should recheck the quiz/material.
- **Note:** If learners are taking the quiz, there is an announcement that there is an adjustment. The quiz will be closed immediately but the answer to other questions is kept for learners.

#### *REQ-2: Media engagement*

- **Requirement:** The user can add other media options like videos in addition to the already existing image option
- **Rationale:** Improve the quality of the question and be more suitable for younger employees.
- **Note:** Implement other types of media options such as videos or short clips

#### *REQ-3: Content creation features*

- **Requirement:** Users can easily create and manage materials for their classes.
- **Rationale:** As can be seen in the current state journey map, teachers are having numerous difficulties in editing content. Content creation is time-consuming, as

teachers have to duplicate the materials and quizzes on every platform available so that students will not miss out on important assignments.

- **Note:** The content management system can be further enhanced with the option to share on multiple programs, or rather a simple push notification option in the settings so that the scenario of unaware students missing out on instrumental materials can be removed.

#### *REQ-4: Visualization*

- **Requirement:** The user is provided access to visualized content, including questions and other learning materials.
- **Rationale:** The visualization can improve studying effectiveness. The demonstrations can trigger the learners' memory and imagination. Adding more visualization can help learners remember longer and easier.
- **Note:** The visualization can include diagrams, charts, pictures, and pseudocodes,...

## 4.2 Internal Analysis

### 4.2.1 Description and Priority

The internal analysis has a high impact on determining the success of any application because of its insight into the performance of users and actions required for improvements. Furthermore, strong connections between educators and learners leverage the management and so, the use of products needs to be affordable.

### 4.2.2 Functional Requirements

#### *REQ-5: Learning progress management*

- **Requirement:** Users can view their performance on the Quitch App
- **Rationale:** To help monitors and learners understand the participants' strengths and weaknesses which helps them to have specific improvement plans. To do this, learners can track their progress on the dashboard and the monitors, they can track learners' progress in their reports.
- **Note:** The progress can be shown as points/percentages. People can also see others' progress to have motivation.

#### *REQ-6: Data management*

- **Requirement:** Users can export data and can use a variety of sharing methods.
- **Rationale:** To provide the business and other teams with deep insights into how each group of learners perform in the program. To do this, monitors go to the report and export data of participants enrolled in the quizzes or can share the data with other members.
- **Note:** Data can be exported in a file format (e.g. CSV file) if the number of users is small, however, a large group of learners may require a database management system to supervise data.

*REQ-7: Products integration*

- **Requirement:** The system integrates products that fall under the same category for easier monitoring
- **Rationale:** To leverage resource management by grouping products and monitoring the quality of outputs from learners.
- **Note:** Feature upgrade will be necessary as products of the same kind should be logically sorted and easy to navigate.

## 4.3 Result management system

### 4.3.1 Description and Priority

The result management system plays an important part in *Quitich*. After finishing all quizzes or tests on *Quitich*, educators need to manage all the details of students' results. To minimize errors and track results' details, the platform will need a result management system.

### 4.3.2 Functional requirements

*REQ-8: Result representation*

- **Requirement:** The result needs to show the right and wrong questions as well as the explanation or where can the learner see in the learning materials.
- **Rationale:** The quiz should not only show the result. Users (learners) need to check their results to know where they have mistakes and revise their knowledge.
- **Note:** The explanation has a short description and a link point to the material for the full explanation.

*REQ-9: Reach out to at-risk students*

- **Requirement:** Users (learners) who have a result of below 50% or have not participated in any activities will be identified and sent announcements by *Quitich*.
- **Rationale:** To improve the chance of success for all learners, the app will provide appropriate support. Users (learners) can base on the support to improve their performance.
- **Note:** The app will send notifications to learners.

*REQ-10: Prompting correct answer/ solution after making an incorrect answer*

- **Requirement:** Users (learners) need to review their incorrect answers and have a chance to see the correct answer and solution (if able).
- **Rationale:** The current issue prevents users (learners) from acquiring knowledge in a meaningful way. After making incorrect answers, they need to know the correct answer to understand, remember and avoid the same mistakes. Therefore, an auto short prompt to users' screens must be made to help learners enjoy the best learning experience.
- **Note:** None.

## 4.4 Settings System:

### 4.4.1 Description and Priority:

The settings system is one of the most vital features of the app and involves interface, notifications and accounts management. When learners can change the settings based on their characteristics and preferences, they will have a better studying experience, which leads to increased study inspiration. Therefore, a flexible platform can improve learning productivity significantly.

### 4.4.2 Functional requirements:

#### *REQ-11: Language changing*

- **Requirement:** Users can change to their native languages.
- **Rationale:** Users can change to their native languages to understand the content more deeply and easily. To change the language, the user needs to go to the settings, click in the drop-down list and choose their native language.
- **Note:** The app will display the selected language throughout, but course material, such as questions and announcements, will stay in the organization's default language.

#### *REQ-12: Accessible leaderboard*

- **Requirement:** The leaderboard must be accessible for all learners to compare their learning results to others.
- **Rationale:** The leaderboard shall be put on the main page showing the ranking of the user and top users/ users in the same classes. The ranking of the user can motivate learners to study more. There are many leaderboards. The user can click on the leaderboard where they want to see details to check their ranking as well as others' ranking.
- **Note:** The leaderboard can be divided into boxes. One box is used to show 3 top users in the whole app. Then there are many boxes showing the top users in the classes. The user's rankings are also presented in those boxes.

#### *REQ-13: Notification management*

- **Requirement:** The learners must be able to change the notifications based on their preference and phone using frequency.
- **Rationale:** More advanced notification settings can be implemented to help learners manage. There is a notification setting that the user can see in the navigator bar. Users can click on radio/checkbox buttons to change the notification based on their preferences. their learning tasks through daily reminders. The notification pop-ups must also be shown in a logical order for prioritizations that can be seen on the mobile app.
- **Note:** The most recent and important notifications appear on the top of the list, and teachers will be able to see if the resources have reached the students yet.

*REQ-14: Menu for easier navigation throughout the app*

- **Requirement:** There is navigation that allows the user to go throughout the app.
- **Rationale:** The menu shall help users browse and navigate through the app more easily. We can strongly enhance the user experience and satisfaction by making them feel more comfortable with the time saved while using the app. When the element of navigation is secured, then different functionalities like the leaderboard and achievement system can be fully accessed with ease. There is the navigator bar which has buttons representing pages. The user can click on those buttons to quickly move between pages.
- **Note:** The menu shall be seen on the top right corner of the page. When users click on the menu bar, they shall see the parts that are covered in this app like the username, profile, notification, and the general settings.

*REQ-15: Free-of-charge accounts for university students*

- **Requirement:** The system needs to detect university students' accounts through their academic emails.
- **Rationale:** Some college students are complaining about the costs which prevent them from continuing working on the platform. The students need to have a purchased academic account for their studies. The user needs to link their credit card/visa to the account, then register and paid.
- **Note:** When the students logged in to Quitch accounts through their academic accounts, the system will identify whether they are available and make a free charge for some courses.

## 4.5. Usability Requirements

### 4.5.1 Description and Priority

In addition to various functional requirements that can easily be seen from the user interface of Quitch, usability is another instrumental element that can determine the success of the program by enhancing user satisfaction when using the application to learn.

### 4.5.2 Usability Requirements

*REQ-16: Casualness*

- **Requirement:** Users can create a casual design for the platform.
- **Rationale:** Easy for users to use, allowing users to add more bite-size information/knowledge.
- **Note:** Save users time, effort, and frustration with intuitive design choices.

*REQ-17: Corporate use*

- **Requirement:** The users' settings for corporate use be modified to be more appropriate for learners who are working in corporations.

- **Rationale:** Easier to handle work domain functions and more suitable for the workplace.
- **Note:** Related to data management and products integration

*REQ-18: Design features*

- **Requirement:** Users can have more access to design features to add content for quizzes and the system shall optimize the experience for educators in managing and publishing their learning content.
- **Rationale:** Some teachers and educators are complaining about the limitation of the current creation and design board for their quizzes. As a result, the bad performance of this feature reduces the competitive edge of the application. So, additional design features can help the teachers to generate higher-quality quizzes in a shorter time and with less effort.
- **Note:** The design features can include multiple options and functions for creators (teachers) such as design toolbar or toolbox, media (videos, podcasts) insertion when they make the quizzes and managing the contents inside.

## 5. Other Non-functional Requirements

### 5.1 Security Requirements

*REQ-19: User authentication*

- **Rationale:** Extra authentication process involving security codes for mobile phones and/or emails is essential to avoid account loss and data theft.
- **Note:** For educational institutions, the system can require the use of an education email (.edu) for more effortless authentication of the student. The use of Microsoft accounts is also a resource-saving approach, as the company has already developed their software (Authenticator) to make the log-in process more secure and less time-consuming.

*REQ-20: User data security*

- **Requirement:** The data of the users need to be fully protected or can only be used with the permission of the users. There is a security system for the product to ensure that there is not any illegal access from a third-party application or irrelevant users.
- **Rationale:** The information of the users is essential to be secured. The loss of the data can lead to users harm. These harms cannot only critically affect the users but also decrease the product owner's reputation and the responsibility to fix them.
- **Note:** The data can include basic information (name, age, address,...), phone number, email,... When the product needs to use users' data, there will be a message/notification to users to get permission.

## 6. Other Requirements

### Appendix: Analysis Models

Here are the diagrams related to previous tasks that the team has completed in the process of listing out functional and usability requirements.

UCD 3.3 - Group 7: Le Nho Bach, Le Quang Minh, Nguyen Anh Tuan, Luong Trac Duc Anh

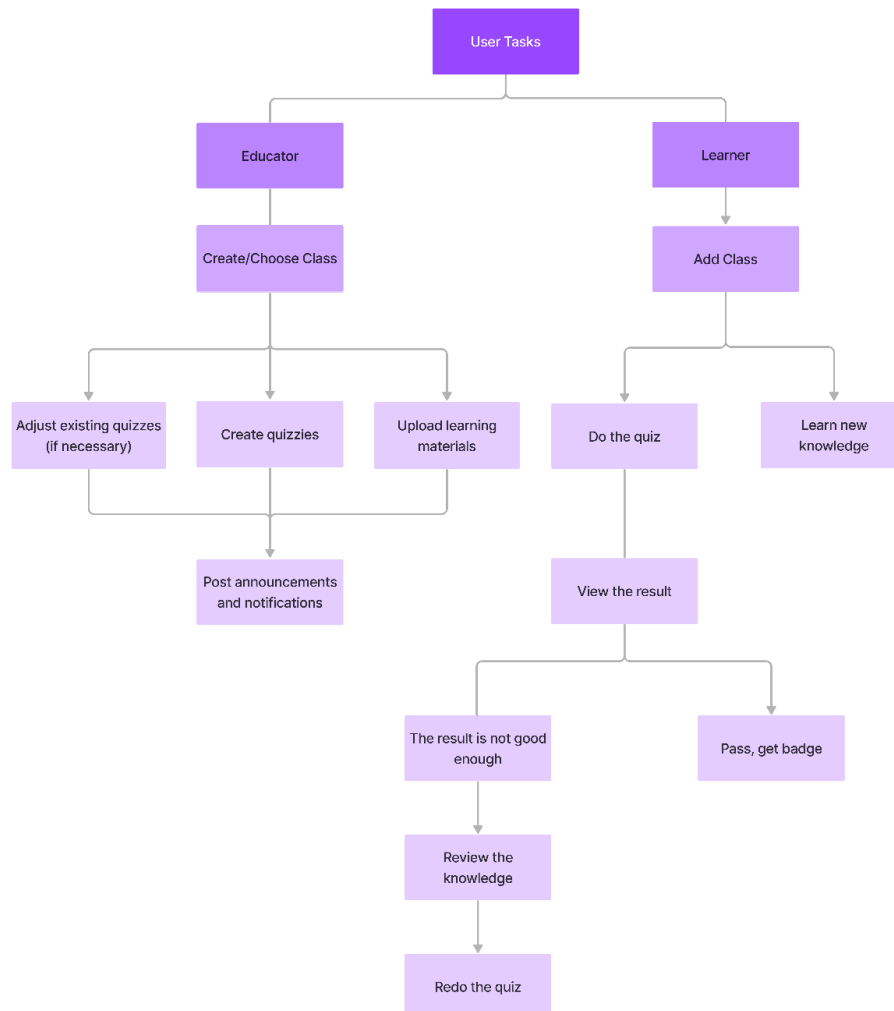


Figure 3: HTI from CORE Task 3.3



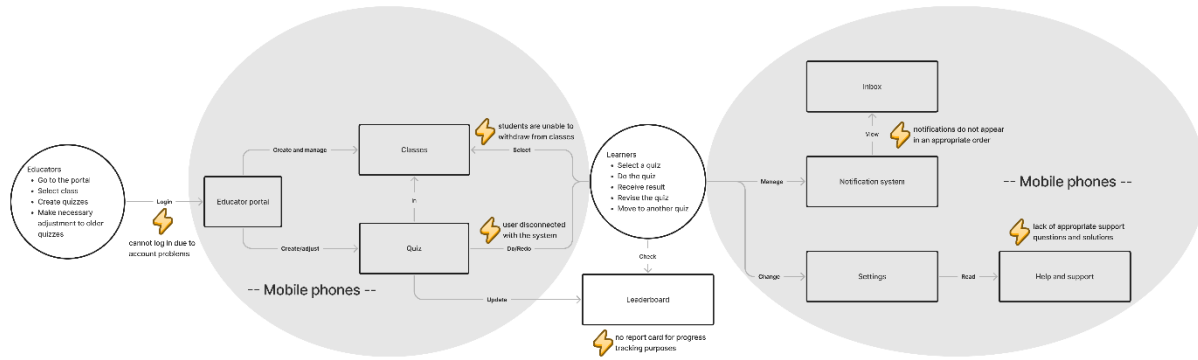


Figure 4: System workflow from CORE Task 3.2