



10.1 CORE

Results and Problem
Identification (GROUP)

GROUP 7: Le Nho Bach, Le Quang Minh,
Luong Trac Duc Anh, Nguyen Anh Tuan



Part 1: Summary of data collected during evaluation

1. Participant demographics

	Age group	Gender	Owned a smartphone	Education level	Learning platforms knew of	Frequency of using learning platforms (1 - 5)
P1	18 - 24	Male	yes	Bachelor's Degree	Quizizz, Kahoot!	5
P2	18 - 24	Female	yes	Bachelor's Degree	Quizizz, Kahoot!	2
P3	18 - 24	Female	yes	Bachelor's Degree	Quizizz, Kahoot!	2
P4	18 - 24	Male	yes	Bachelor's Degree	Quizizz, Kahoot!, Quizlet	2

2. Results

2.1. Effectiveness, efficiency, and satisfaction tables

Task 1: Join any class that is available to you on the platform (Efficiency)

	Unassisted Task Completion	Errors	Assists	Completion Time (sec)
P1	100	0	0	23
P2	100	0	0	7
P3	100	0	0	15
P4	100	0	0	34
Avg	100	0	0	11.3

Task 2: Complete any quiz that is available to you in the class that you have just joined (Satisfaction)

	Unassisted Task Completion	Errors	Assists	Clarity Rate (1 - 5)
P1	100	0	0	5
P2	100	0	0	5

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P3	100	0	0	5
P4	100	0	0	3
Avg	100	0	0	4.5

Task 3: After completing the quiz, check the leaderboard and view your performance (Satisfaction)

	Unassisted Task Completion	Errors	Assists	Difficulty Rate (1 - 5)
P1	100	0	0	1
P2	100	0	0	3
P3	100	0	0	2
P4	100	0	0	1
Avg	100	0	0	1.75

Task 4: Turn off the application's sound effects (Efficiency)

	Unassisted Task Completion	Errors	Assists	Completion Time (sec)
P1	0	0	1	25
P2	100	0	0	9
P3	100	0	0	17
P4	0	0	1	35
Avg	50	0	0.5	21.5

Task 5: Send a personal feedback that you have for us via the application (Satisfaction)

	Unassisted Task Completion	Errors	Assists	Difficulty Rate (1 - 5)
P1	100	0	0	1
P2	100	0	0	5
P3	100	0	0	2
P4	100	0	0	2
Avg	100	0	0	2.5

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2.2. Comparison to expected results

Task	Expected result	Result	Target met (Yes/No)	Note
T1	Less than 20 seconds	11.3	Yes	The expected result was well-met
T2	2.5 or more	4.5	Yes	The expected result was well-met
T3	80% or more	100	Yes	Every evaluator has completed this task
T4	Less than 20 seconds	21.5	No	2 evaluators needed assistance with this task
T5	2 or less	2.5	No	Participant 2 found it challenging to complete this task

3. Satisfaction data

	Task 3 Difficulty Rating (1 - 5)	Task 5 Difficulty Rating (1 - 5)	SUS Score (1- 100)	Recommend to a friend (1-10)
P1	1	1	81.3	7/10
P2	3	5	88	8/10
P3	2	2	88	8/10
P4	1	2	81.3	7/10
Avg	1.75	2.5	84.65	7.5/10

3.1. Comparison to expected results

	Expected result	Result	Target met (Yes/No)	Note
Task 3 Difficulty Rating	2.5 or less	1.75	Yes	Every evaluator has completed this task
Task 5 Difficulty Rating	2 or less	2.5	No	Participant 2 found it challenging to complete this task
SUS Score	68/100	84.65	Yes	Participants gave a positive result.

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	(standard)			The SUS score was exponentially higher than the standard
Recommend to a friend	7/10 or more	7.5	Yes	The chance for the product to be recommended to other users is high

Note: Thanks to the enthusiasm and contribution of all members, the overall SUS score of our team is quite high. Because the distribution of participants only ranged in the group aged from 18-25, this result can fluctuate among different group ages. Evaluating different group ages can lead to more precise results. However, the main user group is still from 18 to 25, therefore we expect this evaluation score to remain positive.

4. Comment data

	What did you like most about the prototype?	What did you like least about the prototype?	How did you find and do the quiz?	What problem did you encounter in completing a quiz?	How would Quitch improve your learning productivity?	What would you most want to change about the app's appearance?
P1	clear interface. It is very easy to do quiz on this application	There are no sound effect or meme on quiz, which leads to stress when doing quiz. It likes an exam.	Easy to find the quiz but it may be more interesting if sounds or special effect is added to quiz.	I have no problem as well.	I think I can review lessons by doing quiz.	I like the design and nothing needs to change.
P2	I really like your page color and profile page, it looks professional	The order of pages is quite confused	I got invited by a member of project team	I think there was no problem	The interface is easy to use so it might be more interesting to do the quiz	more photos would be better
P3	What I liked the most about the prototype was the contrast between elements, as well as their	What I liked the least about the prototype was that some elements were not really	In the class	I encountered no problem in completing quiz.	It improves my learning productivity by presenting quizzes on a very basic, yet professional interface,	I wouldn't want to change the app's appearance, I think it's very good.

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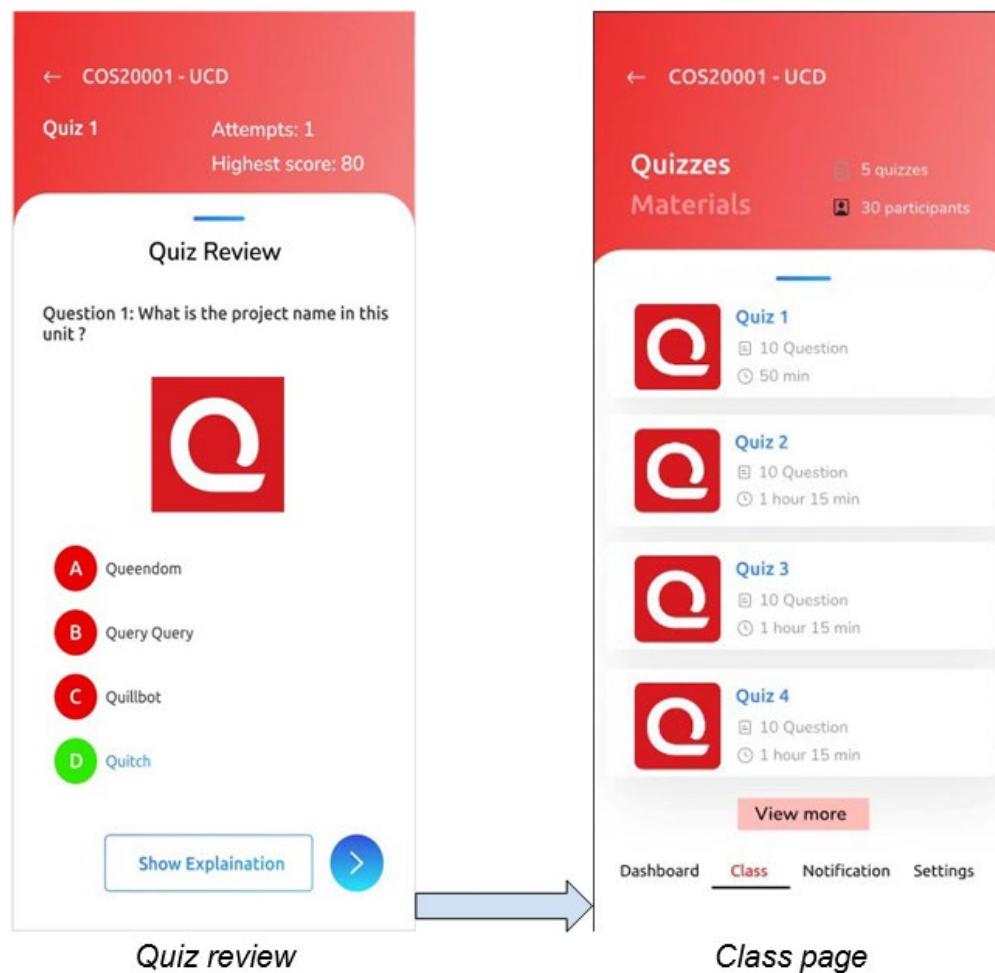
	smooth connectivity.	distinguished from others, even though they were emphasized.			making learning comfortable task.	
P4	I really like how supportive the app is, especially for the frequently asked question part since I find it very useful for a new user like me	I think that the review part after finishing the quizzes is not really meet up my expectation since it doesn't show which question i did wrong make it hard for me to revise	I click on the class button at the bottom and then just choose one of the class which will lead me to the quiz	No problem	I think Quitch might be a very useful tool that will help me revise the knowledge after lecture	I don't really a big fan of logo since quite plain and it doesn't really stand out from other apps

Example comments:

- “The order of pages is quite confused”: This suggestion was later adopted as our group has adjusted the label and order of pages, which is presented in our 6.2 task - Evidence of Iterative Design and final prototype.
- “I think that the review part after finishing the quizzes doesn't really meet my expectations since it doesn't show which question I got wrong, making it hard for me to revise”: This suggestion was remarkable because it helped us adjust the result page. The added function seemed to be useful for users.

Part 2: Problems identified during usability evaluation

1. Problem: Pages were not in order. The Quiz Review page's Return button took the user back to the "Class" page rather than the "Your Score" page when they clicked it.



Explanation of problem: It made users confused about what they should have done when they clicked on the Return button.

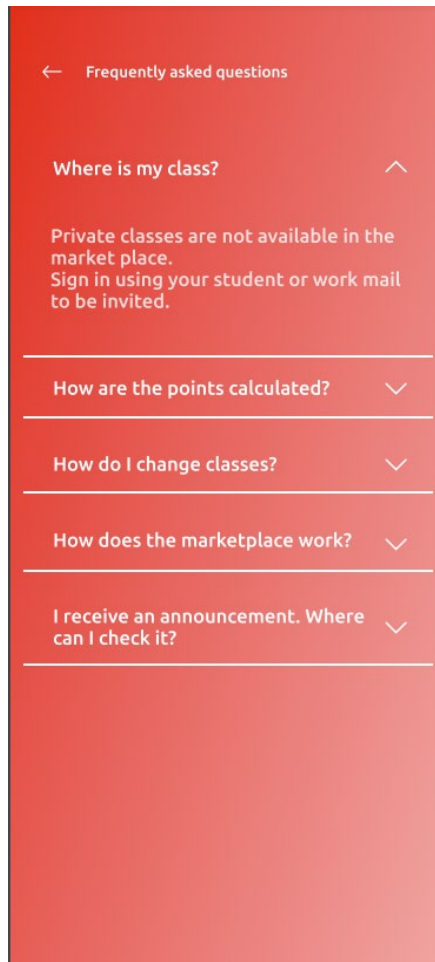
Severity of problem: Major problem.

Change: Fixed the connection between pages. The user should have been taken back to the Your Score page after clicking the Return button on the Quiz Review page.

Reason for change: It helped users know what they should have done next when they click on the Return button.

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2. Problem: Users could not view multiple support questions at the same time



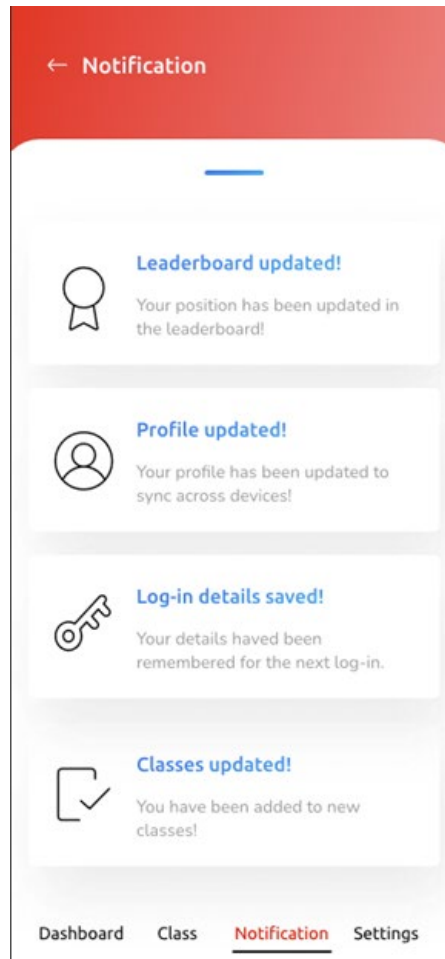
Explanation of problem: The design made it difficult for users to seek necessary help

Severity of problem: Minor problem.

Change: Implemented more answers to the support questions.

Reason for change: It would leverage the interaction between users and the system

3. Problem: Notification (went straight to the “Class” section)



Explanation of problem: Clicking on the notification caused confusion, as it redirected you to another page without clarification or notes.

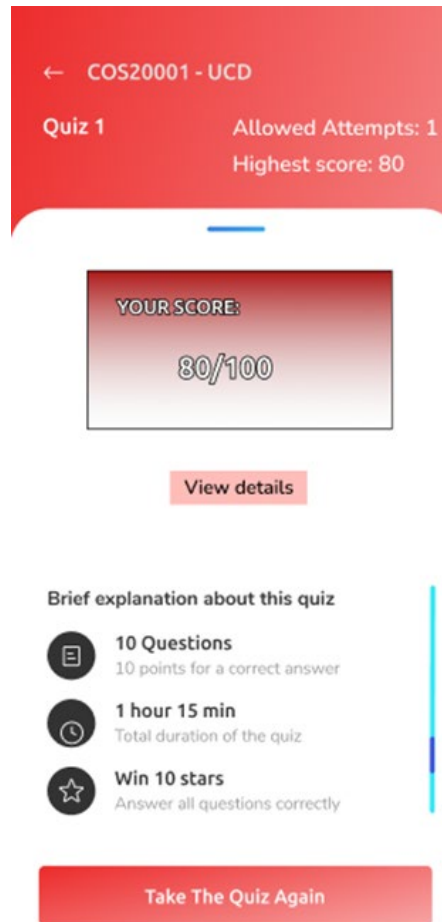
Severity of problem: Minor problem.

Change:

- A pop-up message with the necessary information on that notification would be helpful when it comes to keeping the user updated with the current state of the app.
- Provided the user with an option to redirect to a newly added class.

Reason for change: Added details for more straightforward information and explanation.

4. **Problem:** No list of wrong answers.



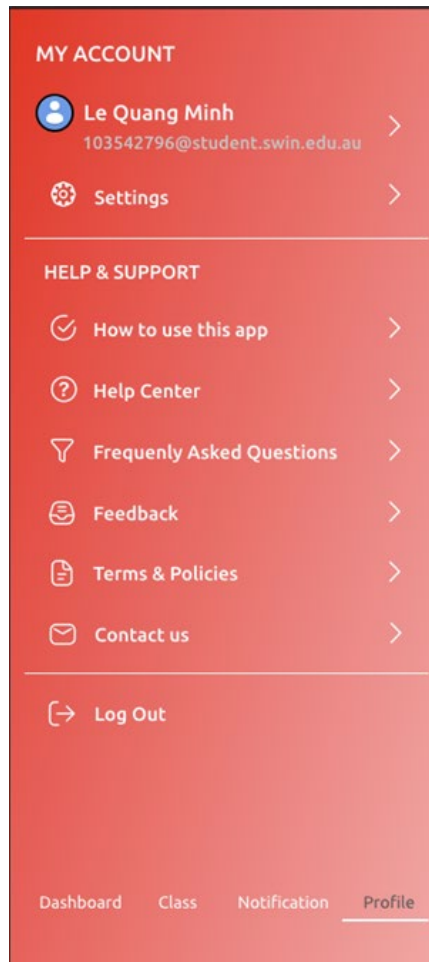
Explanation of problem: After completing the quiz, the user had to see the answer section to find where they make mistakes, which cost a lot of time.

Severity of problem: Minor problem.

Change: After completing the quiz, there was a list of wrong answers, which helped the user to see their mistakes. Otherwise, they could still scroll to see the whole quiz if they wanted.

Reason for change: Having the “View mistakes” function could save users time to see their faults, which helped the learners study faster and more effectively.

5. Problem: The setting was hidden from the dashboard



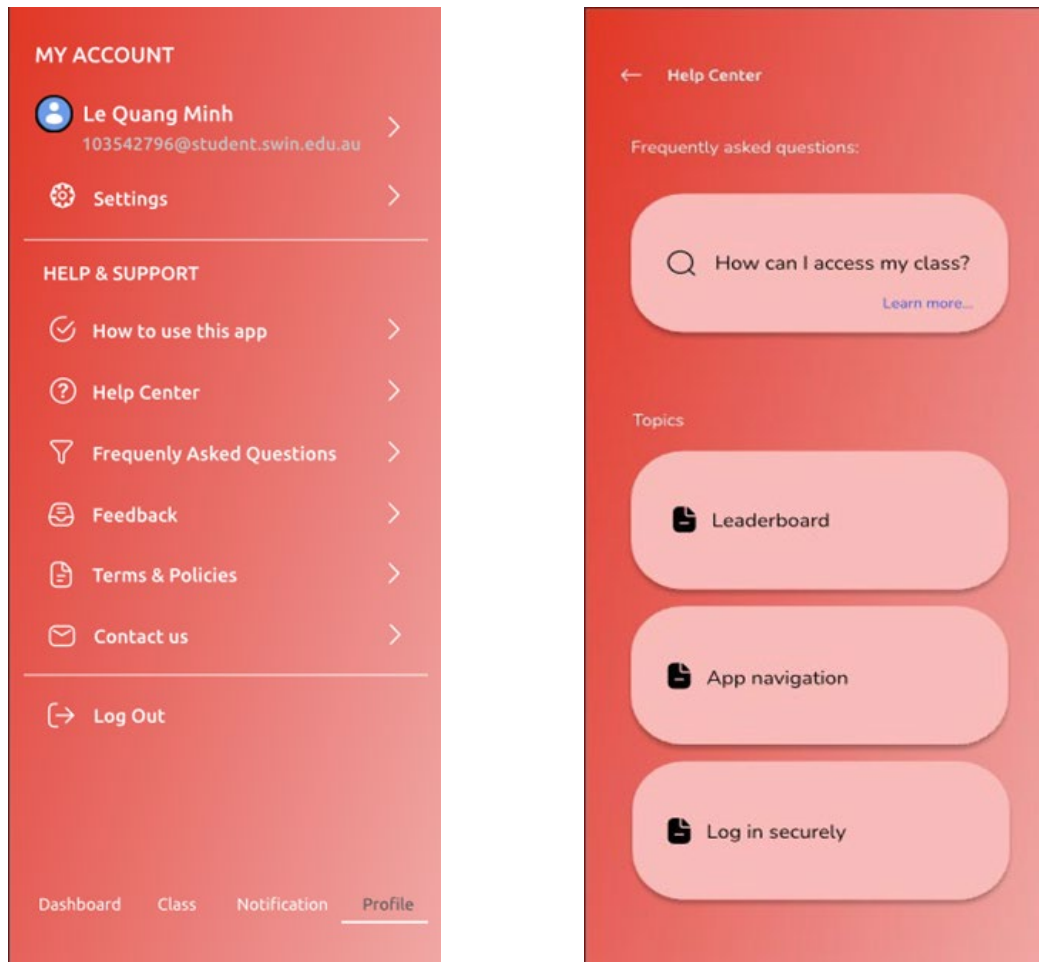
Explanation of problem: The user could not aware that the Settings are hidden inside the Profile. He needed a lot of time to discover where the Settings were.

Severity of problem: Minor problem.

Change: Re-labeled the profile section to “Settings”, then divide the section into “Account settings” and “In-app settings”.

Reason for change: Taking a lot of time in finding support features in the app could decrease the learning productivity and satisfaction of users

6. Problem: Help and support



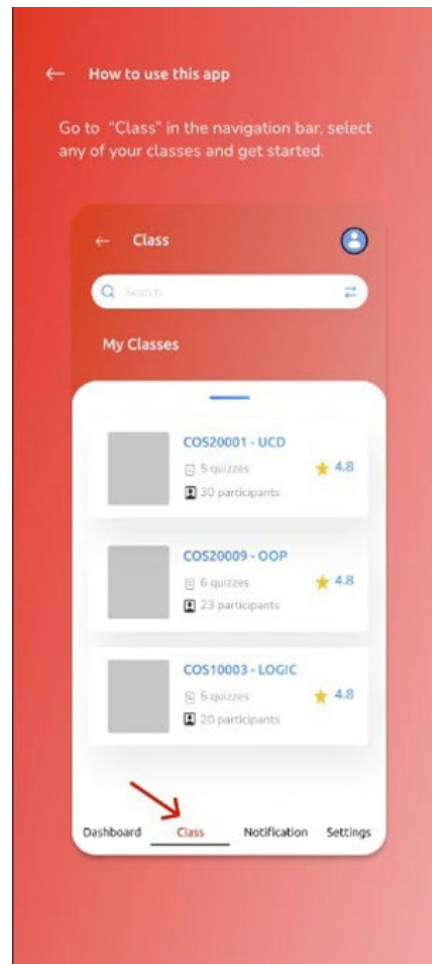
Explanation of problem: Redundant options, made it hard for users to select what feature they want to use.

Severity of problem: Minor problem.

Change: “How to use this app” and “Frequently asked questions” features could be integrated into the Help Center, making the options presented on the screen clear and well labelled.

Reason for change: These changes made the app feature more well-categorized, e clearly labelled and made navigation easier for the user.

7. Problem: How to use this app (no instructions, redirected you to the “Class” section)



Explanation of problem: Confusing with no detailed instruction for first-time users

Severity of problem: Major problem.

Change: Added several pages that clarify the main sections and usage of the software.

Reason for change: New users always need instructions to improve their understanding of the app and reduce the chance of them making technical mistakes during an important quiz or graded exam.

Part 3: Limitations and improvement approach

- Preparing a demographic questionnaire that enables identification of the primary user group: We did this part quite well. However, we think that there might be more critical demographic questions that divide the user group more specifically.
- Preparing tasks suitable for use in a usability evaluation: This part took us a lot of time to generate suitable questions. There was one remarkable question that helped us to find an extreme problem in our prototype. Otherwise, because my group expected the users to complete tasks longer, we did not prepare enough tasks. If our forecast about time

limitation was better, we would have more tasks or the tasks would be more sophisticated.

- Following ethical guidelines for interactions with human research participants: Because our tasks and forms did not require too much personal information, it is easy to consider the ethical guidelines for users. We think that we had reasonable ethical guidelines that provided information security and comfort to evaluators.
- Conducting a usability evaluation professionally: Despite having a friendly and comfortable evaluation environment, we still had a professional manner during the meeting. Having the same group age as the evaluators was a kind of advantage, while we could conduct without being perplexed or awkward.
- Minimizing the potential for bias when interacting with participants: We always tried to keep an open mind when conducting the evaluation. We understand that the bias could hide the problems of the prototype or decrease the effectiveness of the feedback. From my point of view, we ensured that we minimized the bias. However, in the future, if we can keep our minds open but still ask more usability questions, we can have more and more quality feedback from evaluators.
- Issues with remote evaluation (e.g., internet, tech issues, etc.): Since we conducted the usability evaluation online, the Internet sometimes became unstable and lagging, which required us to record again and again. Besides, the recording app did not meet our expectations but was still good enough to have an evaluation. If we could do it again, we think it would be better to have an offline meeting.
- Recording observations of participants interacting with an interface: Using recording platforms is new to most of us. Before recording the sessions, we decided to use OBS Studio, a recording platform suggested by our group member Luong Trac Duc Anh. To learn how to use it, we searched for videos about this platform's tutorials on the Internet and asked Luong Trac Duc Anh, who uses it frequently to help other members who are new to this platform.
- Coordinating the questionnaire and task presentation: The questions on the forms were put in the titles of each section. Due to the small size of the title, it required the evaluators to look more carefully. Some of them shared that the size of the question text is too small to see. We should have noticed this before conducting the evaluation. We supervised the evaluators during the meeting and guided them every time they felt perplexed about the questions.
- Taking notes during the evaluation: Since we had to deal with Internet connection issues, there were some parts that we did not catch up with. To deal with this issue, we asked the participants to answer the questions and express their thoughts on the prototype again, so we could get all of the key information in.

Part 4: Raw data

Notes written during evaluation (these are raw unfiltered data, therefore grammar or punctuation can be different from formal writing):

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UCD - ID 01

Tasks:

- 1 - join class - fast
- 2 - quiz - ok
- 3 - leaderboard - ok
- 4 - notification - taking long time, not finishing
- 5 - settings - ok

Feedback:

- Adjust login
- Notification
 - + not necessary
 - + update class notification
 - + pop-up within notification
 - => not convenient
- Help and Support
 - + Add HTU and FAQ to Help Center
- Fix Profile

UCD - ID 02

- Note:

- + Page order Quiz review page is not good.

Suggestion: Fix the order. When users click the Return button in the Quiz review page, it should return to Your Score page instead of Class page.

- + Leaderboard is pretty hard to see.

Suggestion: The dashboard part should only include the leaderboard.

- + Good design, easy to understand the content in the prototype.

UCD - ID 03

What impresses you the most ?

- The elements are clearly viewed with appropriate functionalities
- Smooth connection between actions from page to page

What function do you think our interface can improve ?

- Nothing till now. They are pretty well

Disadvantage ?

- Cannot view multiple support answers at the same time
- Not clear relationship between My performance and ranking features.

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UCD - ID 04

Tasks:

- 1 - join class: quite fast
- 2 - complete quiz: ok
- 3 - leaderboard: ok
- 4 - notification: ok
- 5 - settings: need time and guideline to access the settings, forgot to save the settings

Feedback:

- Settings is hidden in the Profile section -> Cost users a lot of time to find
- The Help Center is supportive
- The review after completing the quiz need to have an option to see wrong answers only

Screenshots of Google Spreadsheets

UCD Evaluation Tasks (Responses)

ID. Participant ID (we will tell you what to put for this Question)	Task 1 - Please select your task completion time	Task 2 - Please rate the quiz's user interface clarity (Do you understand how to answer questions? Does the design make the question clear?):	Task 3 - Please rate the difficulty of this task:	Task 4 - Please select your task completion time	Task 5 - Please rate the difficulty of this task:
	1 From 10 seconds to 20 seconds	5		1 From 20 seconds to 30 seconds	1
	2 From 10 seconds to 20 seconds	5		3 Less than 10 seconds	5
	3 From 10 seconds to 20 seconds	5		2 From 10 seconds to 20 seconds	2
	4 From 10 seconds to 20 seconds	3		1 More than 30 seconds	2

UCD Post Study Questionnaire 2 (SUS) (Responses)

ID. Participant ID (we will tell you what to put for this Question)	1. I think that I would like to use this system frequently.	2. I found the system unnecessarily complex.	3. I thought the system was easy to use.	4. I think that I would need the support of a technical person to be able to use this system.	5. I found the various functions in this system were well integrated.	6. I thought there was too much inconsistency in this system.	7. I would imagine that most people would learn to use this system very quickly.	8. I found the system very cumbersome to use.	
	1	3	2	4	1	4	1	4	2
	2	3	1	4	1	4	1	5	1
	3	4	1	5	1	4	1	4	2
	4	4	2	4	1	4	2	4	2
9. I felt very confident using the system.	10. I needed to learn a lot of things before I could get going with this system.	11. Please rate the feature "Class"	12. Please rate the feature "Quiz"	13. Please rate the feature "Leaderboard"	14. Please rate the feature "Settings"	15. Please rate the feature "Notification"	Any other comments about your experience with the prototype.	SUS Score (Scale 100)	
4	2	5	3	5	4	3 Great! However, I am confused about the notification a little bit.	81.33333333		
5	1	4	5	3	5	3 No	88		
4	1	5	4	3	4	5 No	88		
3	1	4	4	4	4	4 No	81.33333333		

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UCD Post Study Questionnaire 1 (Responses)

1. Participant ID (we will tell you what to put for this Question)	2. What did you like most about the prototype?	3. What did you like least about the prototype?	4. How did you find and do the quiz?	5. What problem did you encounter in completing a quiz?	6. How would Quitch improve your learning productivity?	7. How likely is it that you would recommend this prototype to a friend or colleague?	8. What would you most want to change about the app's appearance (colors, design, logos,...) ?
	1 clear interface. It is very easy to do quiz on this application	There are no sound effect or meme on quiz, which leads to stress when doing quiz. It likes an exam.	Easy to find the quiz but it may be more interesting if sounds or special effect is added to quiz.	I have no problem as well.	I think I can review lessons by doing quiz.		7 I like the design and nothing needs to change.
	2 I really like your page color and profile page, it looks professional	The order of pages is quite confused	I got invited by a member of project team	I think there was no problem	The interface is easy to use so it might be more interesting to do the quiz		8 more photos would be better
	3 What I liked the most about the prototype was the contrast between elements, as well as their smooth connectivity.	What I liked the least about the prototype was that some elements were not really distinguished from others, even though they were emphasized.	In the class	I encountered no problem in completing quiz.	It improves my learning productivity by presenting quizzes on a very basic, yet professional interface, making learning comfortable task.		8 I wouldn't want to change the app's appearance, I think it's very good.
	4 I really like how supportive the app is, especially for the frequently asked question part since I find it very useful for a new user like me	I think that the review part after finishing the quizzes is not really meet up my expectation since it doesn't show which question i did wrong make it hard for me to revise	I click on the class button at the bottom and then just choose one of the class which will lead me to the quiz	No problem	I think Quitch might be a very useful tool that will help me revise the knowledge after lecture		7 I don't really a big fan of logo since quite plain and it doesn't really stand out from other apps

UCD Demographic Questionnaire (Responses)

1. Participant ID (we will tell you what to put for this Question)	2. Which of the following includes your age?	3. What is your gender?	4. How long have you owned a smart phone?	7. How often do you use online learning platforms?	5. What is your level of education?	6. Which of these learning platforms have you ever used or heard of?
1	18 - 24	Female	3 - 5 years		5 Bachelor's Degree	Quizizz, Kahoot!
2	18 - 24	Female	5 years or more		2 Bachelor's Degree	Quizizz, Kahoot!
3	18 - 24	Male	5 years or more		2 Bachelor's Degree	Quizizz, Kahoot!
4	18 - 24	Male	3 - 5 years		2 Bachelor's Degree	Quizizz, Quizlet, Kahoot!

UCD Evaluation Explanatory Statement (Responses)

1. I am over the age of 18 and consent to participate in the project named above. I have been provided a copy of the project Explanatory Statement to which this consent form relates and any questions I have asked have been answered to my satisfaction.	2. In relation to this project, please check the box with your response to the following:	Signature - Your name and date
Yes	I agree to be observed by the researchers, I agree to allow the researchers to record my actions and voice while using the system, I agree to allow the researchers to record video of my face while using the system	Luong Thuy Tien- 20/07/2022
Yes	I agree to be observed by the researchers,	Dao Mai Anh - 20/07/2022
Yes	I agree to be observed by the researchers,	Do Tuan Dat - 20/07/2022
Yes	I agree to be observed by the researchers,	Tran The Trung - 20/07/2022