

Elicitation

Criteria for Interview Questions

To elicit the most valuable feedback from our target users, the interview questions focus on aspects deemed important by our team in creating the quiz. However, these questions must remain open-ended to allow for interesting and innovative suggestions. The aspects that our team found important can be categorized into 3 groups.

- User Experience
- Security
- Feature Suggestions

Interview Questions

User experience

1. When using Tahook what is your imminent impression, does it engage you? How does it compare to looking at lecturer slides?
2. Have you tried to create a quiz yourself? Is the process intuitive? If you have encountered any difficulties in generating a quiz, or adding questions or uploading images?
3. Following on to (2), what methods did you use to solve, was following the error pop-ups enough. Did you look on forums/online?

Security

4. Is the security of your personal quizzes important to you? What if it compromised your ability to share your quizzes to your friends?

Feature Suggestions

5. What classes do you go to in university and what about the class makes it interesting?
6. Have you ever encountered a tool a lecturer used to teach a concept that you now use as well? If so, what was that tool?
7. Any new statistics or interesting modes you would like to see?

Interview Answers

Target Users	
Name	Email Address
Caleb Verco (Student) (Pseudonym)	z5479933@ad.unsw.edu.au
Andrew Tam (Student)	z5421469@ad.unsw.edu.au
Victor Zhang (Student)	z5422356@ad.unsw.edu.au

Caleb Verco:

1. The prototype front end of Toohak is a work in progress. However the root URL should include the option for quiz makers to signup and for guests to immediately join an active quiz.
2. Overall the login process should be standardized, simplicity is key and it should not require a forum to login/signup.
3. Same as Question 2
4. Apart from the usual passwords and potentially implementing two factor authentication, security should not be a massive issue. Early implementations of Toohak are mostly for UNSW students only, so hacking/stealing other quizzes are more seen as petty and isn't something that is particularly detrimental to a students learning or staff's privacy.
5. I don't go to lectures. Why? It has a bad reputation, lectures are long and considered a 'bad investment of time.'
6. In terms of improving engagement Tahook should not directly replace lecture slides or be in competition with lecture slides. A cool implementation is a sort of mix between lecture slides and interactive quizzes.
7. New modes or ways for point scoring would be refreshing. For instance a sudden death mode where if two students had very similar scores, they could have a sudden death at the end for everyone to see. There should be better visuals to show statistics, for instance a distribution of scores across questions, median, highest or lowest. This can also be used by a teacher to see what topics students struggle with. Also would be cool for questions/quizzes to be 'liked' and this may be useful feedback to the quizmaker.

Andrew Tam:

1. There should be some audio and visual feedback when interacting with the button, and the resulting outcome.
2. The quiz creation is mostly seamless, but barebones. There is an inability to upload images, making the experience of creating each one not very unique.
3. I wish I got the error feedback more quickly, I was wondering if the site was broken when I was using it.
4. Security of these quizzes are important to me, as within close friends groups there is sensitive information. If there was a security risk I would be less likely to use the app.
5. I go to Media and Art classes, some with practical, others with more theory. What makes it interesting is usually the content of it, with the practical elements.
6. No.
7. It'd be cool to see a podium. Leaderboard. Answer Correct Percentage, Streaks

Victor Zhang:

1. Compared to looking at lecture slides, its a lot more interactive and actively tests how I'm able to recall my knowledge relevant for the course
2. Creating Quizzes is a time-consuming and annoying process of choosing the right questions and creating answers, but with available options for quiz creation it is usually streamlined and intuitive
3. What I needed to fix to solve error pop ups in Tahook has been fairly intuitive for me

4. Usually it isn't a concern, but if it does stop me from sharing quizzes with friends then it is something I'd be inconvenienced by
5. I attend computer science classes The engaging parts of the lessons occur when the lecturer clearly and enthusiastically presents new theories and help us apply it afterwards
6. I have not used a tool that I've encountered a lecturer using that I started using myself
7. A Quiz battle royale mode would be an interesting idea. I would like Tahook to be able to let me revise my results after completing a quiz, to differentiate itself from alternatives like Kahoot don't have that capability.

Summary and Solutions for Interviewees

User Experience

Users emphasized the need for a visual cue front page for guests to participate in active quizzes and a more intuitive sign-up and login process. A button could be added on the login page which invites guests to join active quizzes. It would be on the login page since guests would not be able to access any other pages without logging in.

The users also expressed their desire for more enhanced visual and audio feedback during button interactions, expressing difficulties in discerning whether delays were due to webpage loading or button functionality issues. To address this, a solution involving visual cues such as changing the button's colour or having an outline around it. This would provide clear feedback that the user's input has been registered. Additionally, audio feedback such as a chime can be an alternative to further enhance the user experience.

More feedback was given about the unappealing appearance of the UI. Our team can explore a more modern design overhaul using assets designed for both mobile and desktop platforms. Revamping the UI not only addresses our aesthetic concerns but it enhances our site's credibility and professionalism, potentially contributing to customer retention.

Security

All users emphasized the importance of having their private information secure. To increase the security of our website, two-factor authentication methods can be used. As users' emails are already stored upon login, a generated code can be sent to their email during login attempts. The code would be time-sensitive. It is crucial for the security measures to be non-intrusive and provide users with the option to disable two-factor authentication if they choose.

Feature Suggestions

Users express a desire for a more comprehensive understanding of their performance in the quiz compared to their peers. Our team envisions a system that employs tools such as box plots to provide a visual representation of the class' performance. Interviewees also suggested an answer

correct percentage, a feature our team deemed crucial for self-assessment and improvement. This further emphasizes how users value the importance of transparency.

Users desired a method of expressing their thoughts of quizzes using a rating system. While our team likes this idea, we aim to expand on it further by introducing the option to like or dislike specific questions. We intend to empower the users to offer detailed feedback through text directly to the quiz creator. Naturally, there will be an option for the quiz creator to opt-out of receiving direct notifications for each feedback comment.

The interviews underscored users' interest in more diverse quiz-taking methods. While interesting, suggestions for elimination and battle royale quiz styles were deemed less engaging due to participants being forced to sit out. In response, our team proposes implementing a team-based mode, inspired by game shows like Family Feud. This approach encourages participants to discuss, cooperate with each other, facilitating mutual learning.

Analysis and Specification

Teachers

User Stories

As a teacher, I value a website that allows for me to create, find and customize quizzes quickly while engaging my students. Having the ability to be able to track and analyze individual student performance is crucial to see what concepts my students struggle to comprehend, allowing me to adapt and focus on certain topics to meet the needs of my students.

Acceptance Criteria

- Support for multiple types of questions. Multiple choice, true/false or open ended questions
- Customize quiz settings. Time limits, randomize question order, player limit
- Search bar and quiz filters. Filter by difficulty, rating or creation date
- Features that engage students and encourage activity. Polls, point systems
- Detailed analytics of individuals and overall class performances
- Cheat prevention system
- User management. Ability to remove or add students to quizzes
- Documentation or tutorials to guide users around the platform

Students

User Stories

As a student, I want a quiz website that is intuitive but also has elements that make the learning experience enjoyable and interactive. Having immediate feedback, different question formats and a clear understanding of my results compared to the class enhances my engagement with the material. I also want a website that is accessible on multiple platforms as sometimes I may forget to bring my laptop to school and would still want to participate on my phone.

Acceptance Criteria

- Website is intuitive and allows for people to navigate it on their first try. Friendly interface
- Gamification of the website. Points system, badges, leaderboards.
- Immediate Feedback. Helps students understand their shortcomings with clear explanations as to why they are incorrect.
- Question variety. Include different question formats, multiple choice, true/false. Include multimedia elements such as images or video clips.
- Device compatibility. Format looks professional and clean throughout all platforms including desktop, phones and tablets.
- Student Progress. Ability to check a student's performance over time and what specific content they are struggling in

Corporate Trainers

User Stories

As a corporate trainer, I want a website that allows for a seamless and easy creation of custom quizzes. These quizzes need to have the ability to be accessed privately so that company information is not leaked. Employee details must not be leaked as well. It is important that there are multiple multimedia types to have a variety of custom questions to enhance the effectiveness of the employee training program.

Acceptance Criteria

- Customize quiz settings. Time limits, randomize question order, player limit
- Question Variety. Include different question formats, multiple choice, true/false. Include multimedia elements such as images or video clips
- Security. Quizzes should be able to be hidden and only accessible to certain people. Similar to Google Doc. Two-factor authentication is needed.
- Scalability. Ability for the quiz to scale the number of users to meet the needs of the organization

Use Cases

Name	Analytics of Class and Individuals
Summary	Details for individual questions are shown by box plots
Rationale	In Kahoot, the website displays the collective class responses and the distribution for each question. Despite this, teachers face limitations in identifying individual students who answered incorrectly, stopping them from providing targeted assistance. The ability to discern which specific topics challenge their students empowers teachers to adjust their teaching plans and concentrate on areas where the class encounters difficulties. This information will be accessible to the teacher only after the completion of the quiz, located beside the “Edit Quiz” button under the label “Quiz Results.” Students will be able to view their own results.
Users	Teachers and Corporate Trainers
Goal in Context	Store and transfer data from an active quiz to DataStore to later display.
Preconditions	Quiz has been played
Success End Condition	Data is displayed in a digestible format. Only the quiz maker is able to see these results
Failed End Condition	No data is saved or data is saved but not displayed. Any user is easily able to access and view other user’s inputs and results.
Trigger	Once the quiz has reached the action state of FINAL RESULTS the data is transferred to DataStore and kept there until summoned by the “Quiz Results” button.

Name	Two-factor Authentication
Summary	Users are prompted with a method of two-factor authentication when attempting to login
Rationale	Users of the website should have confidence in the security of their personal information. Especially for corporate trainers associated with significant companies, ensuring that unauthorized access to their accounts is impossible. Implementing two-factor authentication enhances security by requiring users to verify themselves through generated codes sent to the emails they provide for login. This additional layer of protection reinforces the trust users have in our website.
Users	Teachers, Students and Corporate Trainers

Goal in Context	Add an extra layer of security to user accounts
Preconditions	Users must already have an account
Success End Condition	Users are sent a generated code to their email inbox and have 5-10 minutes to input the code. They are able to login afterwards.
Failed End Condition	Users are either unable to login after completing the instructions correctly or the incorrect code allows them to login anyways.
Trigger	Once users successfully enter their email and password into the login page, a code is generated and sent to their inbox. The website will have a designated text box which will resemble a password input. Within DataStore, a dedicated section for codes will house the generated code, automatically clearing itself every time the user logs into their account.

Validation

User Comments

Victor Zhang:

I'm very satisfied by these potential changes as it would address most of my key problems I have with Tahook and also address something Kahoot currently is not able to do. But a quiz battle royale mode would be cooler.

Andrew Tam:

Teachers being able to review each student's answers is great for teachers as they can see on a classroom scale how well their teaching methods are working / if students are able to grasp the concepts being taught. Students being able to go back and review their own answers allows for reflection rather than just a binary 'You are correct/wrong' state being implied, which is counterintuitive to the point of learning. Having 2fa greatly provides relief to security concerns as a user, as it provides a layer on top of a password, even if it's just that.

Caleb Vecro:

Oh yeah also for stats I mean like some post game stats. What you have currently I did not think of but I believe it is more important/better than what I had in mind anyways.

Interface Design

Name and Description	HTTP Method	Data Types	Exceptions
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adminShowQuizResults Quiz results for the overall class session is shown only to the quiz creator	GET	Body Parameters: (userId, quizId, sessionId, token) Return type if no error: {}	400 Error: <ul style="list-style-type: none"> Invalid userId Invalid quizId Invalid sessionId 401 Error: <ul style="list-style-type: none"> Invalid Token 403 Error: <ul style="list-style-type: none"> userId is valid but not authorized to access quiz
adminShowQuestionResults Question results for the overall class is shown only to the quiz creator	GET	Body Parameters: (questionPosition, questionId, token) Return type if no error: {}	400 Error: <ul style="list-style-type: none"> Invalid questionPosition Invalid questionId 401 Error: <ul style="list-style-type: none"> Invalid Token
adminShowStudentResults Show a specific students results, available only to the teacher and that specific student	GET	Body Parameters: (userId, userId, quizId, sessionId, token) Return type if no error: {}	400 Error: <ul style="list-style-type: none"> Invalid userId Invalid quizId Invalid sessionId 401 Error: <ul style="list-style-type: none"> Invalid Token 403 Error: <ul style="list-style-type: none"> userId is not authorized to access the other userId
twoFactorCodeGeneration Generates a numeral 6 digit code upon login	PUT	Body Parameters: (userId, token) Return type if no error: { generatedCode }	400 Error: <ul style="list-style-type: none"> Invalid userId 401 Error: <ul style="list-style-type: none"> Invalid Tokens
sendTwoFactorEmail Sends the generated code to the email of the login user	POST	Body Parameters: (userId, email, token) Return type if no error: {}	400 Error: <ul style="list-style-type: none"> Invalid userId 401 Error: <ul style="list-style-type: none"> Invalid Tokens
receiveTwoFactorCode Check whether the generated code corresponds with the userId and is within the time period assigned	PUT	Body Parameters: (generatedCode, token) Return type if no error: {}	400 Error: <ul style="list-style-type: none"> Invalid generatedCode 401 Error: <ul style="list-style-type: none"> Invalid Tokens

Conceptual Modelling - State Diagrams

Analytics of Class and Individual

