A feedback report serves a twofold purpose. First, it allows us to gain insight from a diverse group of prospective users of Toohak via interviews. Second, to lay the groundwork in response to the value insights we gained via feedback to refine our product further. The direct interaction with users allows us to have a deeper understanding of the constraints that the user might be facing and any other features that might be demanded from the user. As a result, it guides us to develop a more user-friendly product.

1. Elicitation:

Via a sequence of thoughtfully created questions and elaborate open-ended discussions we not only endeavored to understand the challenges faced by the user but also tried to be cognizant of the aspirations and motivation that worked as a driving force while using the quiz tool. We carefully selected the study group so we get an inclusive solution that meets the needs of a broad user base.

1. Mingyuan Zhang

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Questions	Responses
1. What was your use case? If you have experience as a creator, how much authoritative freedom do you get as an admin in running quizzes? Is there any unanticipated restriction present while administrating quizzes?	I only have experience using using as a student as my only scenario was in the classes.
2. Are the current analytical tools sufficient for giving feedback on the results of the quizzes or do you have any specific requirement that you wish to add?	I would appreciate a feature to track my progress for the sessions in which I participate.
3. What are your thoughts on the competitive and social elements of Toohak? Is the system fair and satisfying?	Yes, I feel that it is a fair system.
4. Are there any extra functionalities or enhancements you'd like Toohak to have that aren't currently available in other online game-based quizzes or similar	I want the ability to check the results of every user participating in the quiz. It will me to understand my position in the class. I also think a profile where I can track my progress will be really helpful.

	platforms?	Things	to	do	with	the
ŀ	difficulty le	vel of the	e qu	izzes	, or sa	ving
;	any relevant	informa	tion.			

- Use case and Impression: Mostly used quiz tool as a student/player end user. It will be a productive tool to aid in academic studies
- Challenges Faced: Using the tool from a competitive motivation user felt the need to have a proper view of what is the result of the whole class and where he stands. Also, he felt an urge to have a user profile to track his progress.
- Requested Improvements and Features: The user urged to have a feature to portray the result of the whole class and his position highlighted on it. He further felt a user profile to track his progress might be a lucrative feature for him. He also suggested having a hint feature for each question.

2. Samuel Wangadi

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Questions	Responses
1. What was your use case? If you have experience as a creator, how much authoritative freedom do you get as an admin in running quizzes? Is there any unanticipated restriction present while administrating quizzes?	I only have used it from the user end.
2. Are the current analytical tools sufficient for giving feedback on the results of the quizzes or do you have any specific requirement that you wish to add?	Yes, I feel like the current analytical tools are sufficient for the usage I have,
3. What are your thoughts on the competitive and social elements of Toohak? Is the system fair and satisfying?	I don't find it fair. I feel like the scoring system is not fair and time constraints are too steep.

4. Are there any extra functionalities or enhancements you'd like Toohak to have that aren't currently available in other online game-based quizzes or similar platforms? Things to do with the difficulty level of the quizzes, or saving any relevant information.

I think a hint feature will be helpful as sometimes the questions are really hard to finish in the time frame. So the hint feature might be useful.

- Use case and Impression: Mostly used quiz tool as a student/player end user. It was a productive tool to aid in academic studies.
- Challenges Faced: The strict time frame made the user uncomfortable and caused him unnecessary anxiety to do the tasks
- Requested Improvements and Features: The user expressed his interest in having a more generalistic timer for each question as the point system is already time-focused. He also suggested having a hint feature for each question

3. Mingyang Cai

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Questions	Responses
1. What was your use case? If you have experience as a creator, how much authoritative freedom do you get as an admin in running quizzes? Is there any unanticipated restriction present while administrating quizzes?	I actually have experience from both the player and creator end. I used to create flashcards to assist me in my studies. I felt like there was proper authoritative freedom within the tool.
2. Are the current analytical tools sufficient for giving feedback on the results of the quizzes or do you have any specific requirement that you wish to add?	I think a feature tracking my progress will be useful for me as it could be beneficial for me.
3. What are your thoughts on the competitive and social elements of	I feel it is quite fair and it satisfies my needs.

Toohak? Is the system fair and satisfying?	
4. Are there any extra functionalities or enhancements you'd like Toohak to have that aren't currently available in other online game-based quizzes or similar platforms? Things to do with the difficulty level of the quizzes, or saving any relevant information.	I would like a hint feature that can assist me when I use it for my studies, I feel like it will have a great impact on my studies. Moreover, I would appreciate the feature of tracking my progress.

- Use case and Impression: The user had experience using the quiz tool as both creator and player. He used to create kind of flashcards to help with his studies and also regularly participated in the Kahoot round at the end of every tutorial. It will be one of the most productive apps in the user's arsenal.
- Challenges Faced: There is no feature to help out or assist in learning when he used to create flashcards using flash Toohak.
- Requested Improvements and Features: The user felt that the implementation of a hint feature would have been helpful for him. It might be a good feature that can nudge the user to the right answer when it is used for creating flashcards to assist with learning.

2. Analysis & Specification:

Use Case 01:-

In a quiz session for every question, the user would want an option to get a hint of how to solve the current question.

- Add a "?" or "\rightharpoonup" icon for a hint underneath every question.
- When clicked on the icon a pop-up will appear.
- The pop-up will have a "X" in the top right corner to close the pop-up.
- The pop-up will contain a hint that will nudge the player in the right direction to solve the question.

Use Case 02:-

The user would like to have a profile that stores the progress of the user so that they can track their performance for a specific course.

- Instead of keeping the record for just the login session, it might have to store data for a longer period.
- In the profile, there would be a "\(\disp\)" icon underneath "Your Stats".

- The "\(\display \)" icon will lead to another page where all the progress can be tracked by the user.
- It will only save the data for a certain period i.e. 1 term. This is to make the feature cost-effective.
- After the time has passed the profile will delete itself.

3. Validation:

Name	Comment	
Mingyuan Zhang	I believe the new feature will create a more satisfactory experience for me.	
Samuel Wangadi	I strongly feel that the proposed implementations will make the environment more fair.	
Mingyang Cai	With the new functions, this will be a highly productive feature for me.	

4. Interface Design:

Implementation of Hint feature:

Get the hint for the current questions

Routes to edit:

Routing	Method	POST/v2/admin/quiz/{quizid}/question
Parameters	path	quizid
	header	token
	body	{ "questionBody": { "question": "Who is the Monarch of England?", "duration": 4, "points": 5, "answers": [{ "answer": "Prince Charles", "correct": true }], "thumbnailUrl": "http://google.com/some/image/path.jpg", "hint": "This is a demo hint."

		}			
Responses	Responses				
Code	Example value	Description			
200	{ "questionId":5546 }	OK			
400	{ "error": "error" }	 Question string is less than 5 characters in length or greater than 50 characters in length The question has more than 6 answers or less than 2 answers The question duration is not a positive number The sum of the question durations in the quiz exceeds 3 minutes The points awarded for the question are less than 1 or greater than 10 The length of any answer is shorter than 1 character long, or longer than 30 characters long Any answer strings are duplicates of one another (within the same question) There are no correct answers The thumbnailUrl is an empty string The thumbnailUrl does not end with one of the following filetypes (case insensitive): jpg, jpeg, png The thumbnailUrl does not begin with 'http://' or 'https://' If the length of hint is less than 1 or larger than 100 characters. 			
401	{ "error": "error" }	Token is empty or invalid (does not refer to valid logged in user session)			
403	{ "error": "error" }	Valid token is provided, but user is not an owner of this quiz			

Routes to create:

Routing	Method	Get /v1/admin/quiz/{quizid}/session/{sessionid}/hint	
Parameters	path	quizid	
	path	sessionid	
	header	token	

Responses		
Code	Example value	Description
200	{ "hint":"This is a demo hint." }	OK
400	{ "error": "error" }	If any of the following are true: • Sessionid does not refer to a valid session within this quiz • Any session for this quiz is not in QUESTION_OPEN state
401	{ "error": "error" }	Token is empty or invalid (does not refer to valid logged in user session)
403	{ "error": "error" }	Valid token is provided, but user is not an owner of this quiz

The interface of the profile history feature: Get the history of the last 10 quiz the player has played

Routing	Method	Get /v1/admin/user/history
Parameters	header	token
Responses		
Code	Example value	Description
200	{ "quizId": 5546, "timeLastPlayed": 1683019484, "description": "History Class Test 1", "numQuestions": 1, "questions": [{ "questionId": 5546, "question": "Who is the Monarch of England?", "correct answers": { "answerId": 2384, "answer": "Prince Charles", "correct": true } "player answers": { "answerId": 2384, "answerId": 2384, "answerId": 2384, "answerId": 648, "correct": false, } }], "duration": 44, "thumbnailUrl": "http://google.com/some/image/path.jpg" }	OK
403	{ "error": "error" }	Valid token is provided, but user is not an owner of this quiz

5. Conceptual Modelling - State Diagrams :

