

Part A

Questionnaire Plan

To gather feedback for my prototype, I will be creating a survey that will allow me to check my prototype has fulfilled all the functional, non-functional, KPIs and UACs, as well as allowing for open ended feedback so that I am able to use this to improve the prototype for future development. This will overall allow me to ensure my prototype fulfils the brief by gathering information from users, as well as allowing me to get valuable information for analysis. This means I need to ensure my questions are relevant and will gather me useful information. In order to do this, I will use closed questions (qualitative) as well as open questions (quantitative) so that I can best achieve this. I will also be creating two questionnaires, one which is non-technical that all users or clients who test this will have to fill in (as it is designed to be understandable for all), as well as a technical questionnaire in which people with knowledge of programming will understand. This will allow me to get the best feedback I can as I am getting feedback about the front end as well as the backend. To allow me to fulfil this, I will be using Microsoft Forms in order to create my questionnaires as it is very easily accessible as most people have a Microsoft account. Overall, the goal of my survey will be to gather useful and relevant information about the front and backend of my prototype from an audience of technical and non-technical users so that I am then able to analyse this feedback to allow me to create a plan for future iterations and updates of the prototype.

For my non-technical questionnaire, I have separated it into two sections, one section which relates to the functionality of the program and the features, and the second section which asks about the experience of the program and how the user feels after and while using it. This allows me to check that the program both works and is enjoyable to use, both being important factors as these will determine if the user comes back to the prototype. The software needs to be easy to use as well as inviting for the user. Within my non-technical survey, I have also combined some questions, as users will not see the same menu based on if they are a teacher or not. For example, I have asked if the user could see the learning/teaching resources, as a user will not see both, only one. For my technical questionnaire, I will be asking questions about the functionality of the code and if there are issues or improvements to be made. This means that in the future I use this to update the prototype and ensure it runs efficiently and uses the best code to solve my problems.

I asked many users to test my prototype and then fill in the surveys so that I can determine if any changes need to be made, as well as check if all my requirements are ticked. On average it took about 15 minutes to complete. I gave half of the users a code to create a teachers account, while the other half a code for a student account. All the results from the surveys have been properly recorded and formatted in an excel spreadsheet so that they can be best viewed. I then took the results and summarised them:

The Technical Survey Summary:

What went well:

1. Most didn't encounter errors
2. None of the code was done incorrectly
3. Nothing could have been done better
4. The code was easy to navigate through and read
5. The comments are readable
6. All users could work off and add to this code if given
7. The naming conventions made sense
8. It was described as exceptional

What will need to be improved:

1. The game didn't work as the php server wasn't running

The Non-Technical Survey Summary:

What went well:

1. Most users use this to learn or play the games, with all being able to do this.
2. All users said it was easy to use
3. All users could make an account
4. All users could sign in
5. All users could navigate through the pages
6. All users could access the games
7. All users could access the learning/teaching resources
8. All users could see the rewards/monitoring
9. All users could use the accessibility screen
10. The prototype runs efficiently
11. The prototype is easy to read
12. The prototype was fit for purpose
13. The games and learning/teaching resources were the most enjoyed – they were considered engaging, simple/easy to use as well as having lots of fun and unique content.
14. All users had a good first impression with the prototype, it looked and worked well
15. Users on average had an 8/10 experience with the prototype, meaning very positive
16. Users said the look of the app was 8/10, meaning the app looks very good
17. Users were 7/10 likely when recommending the prototype to a friend, meaning very likely
18. Nothing was confusing/frustrating with the prototype
19. Users overall liked the look of the app, the learning resources, account creation and the games
20. It got rated 4.25 stars out of 5, meaning positive feedback
21. The quality was rated 4.5 stars out of 5, meaning good quality
22. The functionality was rated 3.75 stars out of 5, meaning it functions alright
23. Users said it was a good first prototype

What will need to be improved:

1. Some of the buttons and games didn't work/do anything
2. Some users couldn't access content when not logged in
3. The design was not eye-catching/interesting to some users
4. The assignment button didn't do anything
5. The higher education modules didn't work

6. Some users wanted rounded buttons
7. The games, learning/teaching resources, login/account creation and the assignments screen were the least enjoyed – some didn't like the password validation, as well as the assignments not working, and the games and resources not being on par and wanting different resources.
8. Users want assignments and more games to be added
9. The functionality was rated 3.75 stars out of 5, meaning it could be improved slightly

Functional Requirements

GibJohn Tutoring wanted a solution that would allow students to get resources and teachers to monitor students. It requested it follows the functional requirements:

1. be able to provide interactive teaching and learning resources in a range of subjects
2. be able to provide access to digital content to encourage wider learning
3. able to support assessment and monitoring of learner progress
4. ensure it is following legislation and regulatory requirements in relation to computers and the education sector so that the solution is able to operate without legal concerns
5. include validation to ensure the solution can function as intended while not crashing
6. feature a logging in system and account creation so that teachers and students are able to join a class together and track progress as well as do tasks and get resources
7. log previous work and assessment material completed by students to allow teachers to monitor progress
8. repository to store work and content for students and users to access
9. content available for many subjects
10. user interface

Firstly, when looking at my question asking about if the user was able to create an account, 100% of users were able to do this, as well as 100% also being able to log into their account. This means I can say I fulfilled the functional requirement number 6.

7. Were you able to create an account?

[More Details](#)



8. Were you able to sign in?

[More Details](#)



Next, when looking at my results, 100% of users were able to access the teaching and learning resources, meaning I have fulfilled functional requirement number 1 as well as functional requirement number 2. To further support this, I have allowed for non-logged in users to see content, and 75% of users could. The learning resource also allows me to fulfil my functional requirement number 8 and 9, as it is what is used to access the content for many subjects from a repository.

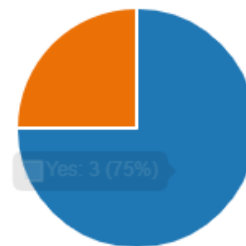
11. Were you able to access the learning/teaching resources?

[More Details](#)



17. Could you access content even when not logging in?

[More Details](#)



However, due to this being 75, I will need to ensure that the learning resources page doesn't require the user to log in and ensure it doesn't require any user details. When looking back through the code, there is no where in which the user details are used, meaning that it should not matter if the user is logged in. I also checked the code in which the button's functions are changed, and it all should work as when not logged in, the user is set to be a student. This could potentially be user error, however, to solve this I will test all the features within the learning resources screen while not logged in to ensure there is no issue.

Next, when looking at my responses for my survey, I can say that I fulfilled functional requirement number 3 as 100% of users were able to access either the rewards or monitoring screen. As half of my testers were given a teacher account, this means 100% of teachers were able to monitor students.

12. Were you able to see the rewards you have received or give rewards/monitor students?

[More Details](#)



I can also use this as proof to completing my functional requirement number 7, as if the user was able to monitor a student, then it means there was data to be monitored. To support this, my gamified learning is what records results from users. Meaning, that if the user is able to access the games, they are also able to have results recorded. This means they were able to record results as 100% of users could access the games.

10. Were you able to access the games?

[More Details](#)



Also, based on my responses, I am able to fulfil having a user interface as the majority of users are promoters of the design of the interface. As well as 75% of users saying the interface is eye-catching and the interface overall having a positive response

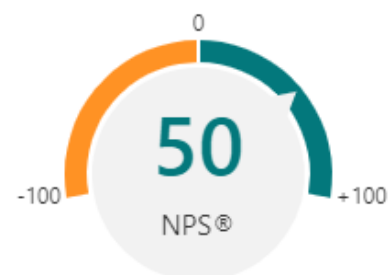
18. Was the design and interface eye-catching?

[More Details](#)



30. How satisfied are you with the look of the app?

[More Details](#)



28. What was your first impression with the prototype?

Responses:

it was really nice to interact with

It looked nice

It worked well and looked very professional.

It looked well made and a lot of time had gone into it

For functional requirement number 4, I would say that I have fulfilled this, however I have no direct evidence to show this. When looking at the technical survey, 100% of users thought nothing could have been done better, meaning I can assume that if there was a security issue or a way to improve it, that they would mention it here.

6. After looking at the code, is there anything you see that you think could have been done better?

[More Details](#)



I also feel as if this can overall be improved as despite this rating being good, it means the interface can have a better design while being more eye-catching and enjoyable to use.

Finally, I have somewhat fulfilled my functional requirement number 5, as feedback from my technical survey indicates that most of the users encountered no errors, however one error was encountered when the php server was not active for the gamified learning to enter a score into the database. This may be the fault of me not setting the prototype up properly before allowing testing, yet in future I shall ensure the server is active before allowing testing.

2. Did you encounter any errors

[More Details](#)



Response

i tried to access the game but the php server wasnt active

After overall looking at the results of my questionnaire compared to my functional requirements, I have managed to fulfil most of them, however some of the other ones I have no proof of me fulfilling, yet I feel I have fulfilled. This will overall be the fault of the survey, as it means I have missed some appropriate and important questions that I need to get this data, yet I have taken security measures like hashing to protect user data. I also will need to make a few improvements to some features as despite me being able to say I have fulfilled it; user feedback indicates that it could be improved. For a future iteration of the prototype, I have used the feedback from the users to create the following requirements for a future iteration:

- Ensure the learning resources page doesn't require the user to log in or require any user details for the user to be able to see resources
- The interface will have minor changes in design and colours to have a better design while making it more eye-catching and enjoyable to use.
- Run the PHP server on a device constantly and monitoring it to ensure the server does not go down
- Ensure that all the pages and buttons work and function

Non-Functional Requirements

The client also wanted it to fulfil the non-functional requirements of:

1. allow for collaborative teaching and allow for the use of learning tools
2. include accessibility features to support a wide range of users
3. contain a learning reward system
4. make use of gamified learning
5. ensure that the solution runs efficiently on all devices to allow for as many to access the solution as possible
6. scalability to allow for the company to add to the model when new features are needed so that a new solution doesn't have to be made
7. readability to ensure that the students can access their work from as many devices as possible with ease for the best learning experience
8. security to ensure that user details are kept safe so people can't gain unwanted access to an account
9. usability to ensure that the solution is fit for purpose and can be easily used to do so
10. access to free content without logging in
11. have a simple and eye-catching user interface for students to ensure students of all ages can navigate it as well as being engaging
12. be able to perform and function well

Firstly, when looking at non-functional requirement 1, I would say that I have not fulfilled this due to the prototype not having any collaboration tools implemented. When asking the users, they agree saying they could not use it. This is to be expected as the page has nothing on it and does not work.

14. Were you able to use the collaboration tools?

[More Details](#)



This means, in the future I will need to implement this to fulfil all the non-functional requirements. Yet, due to this being one of the non-functional, it is of less importance than the functional requirements, meaning it may be in a later update due to it being of a lesser priority.

Next, I was able to fulfil non-functional requirement 2, as 100% of users said they were able to use the accessibility screen

13. Were you able to use the accessibility screen?

[More Details](#)



I also feel as if it would be beneficial to update this in the future to add more accessibility setting, however this would be of the least importance as no users are requesting this, yet it would be beneficial.

Next, I would say that I have fulfilled non-functional requirement 3 as I have implemented a reward system that gives medals based on score. When looking at the questionnaire responses, 100% of users were able to see their rewards based off their scores.

12. Were you able to see the rewards you have received or give rewards/monitor students?

[More Details](#)



Next, when looking at non-functional requirement number 4, I would say that I have fulfilled this, as the games are used to record scores for the monitoring of students. 100% of users were able to access the games.

10. Were you able to access the games?

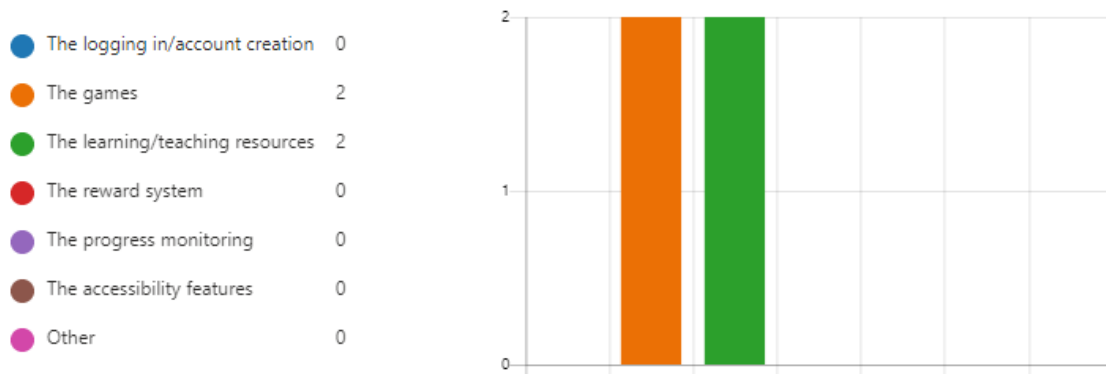
[More Details](#)



Due to the games being a much-enjoyed feature by users, it pushes this feature to a high priority.

22. Which feature did you enjoy the most?

[More Details](#)



But based on user feedback, there's still improvements to be made. Some users feel the games weren't as good as the rest of the program, while other users are saying they enjoyed the game yet want more with more types.

Responses

Games weren't quite on par with the rest of the program.

Different types of games for the gamified learning. Crosswords are good but they could be other types

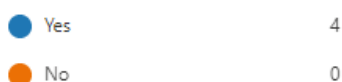
I enjoyed the crossword feature in the gamified learning but the resources page was a bit lacking

This means that this should be the first thing implemented for future iterations as lots of users enjoy these features and would like to see more.

For non-functional requirement number 5, I would say that I have fulfilled this, as 100% of users said the solution ran without crashing or lagging, meaning it ran effectively.

14. Did the prototype run efficiently and could be used without crashing/lagging?

[More Details](#)



Next, for non-functional requirement number 6, I would say that I have fulfilled this, as 100% of developers who looked through the code said they could work from and add to it when given this code.

12. If given this code, would you be able to work from it and add to it?

[More Details](#)



I also feel I have allowed for scalability as the navigation bar at the top can be changed and customised based on the pages that the developers want the users to go to and changed based on how many there are.

Next, with non-functional requirement number 7, 100% of users said the prototype was easy to read, as well as developers saying even the code was easy to read and navigate through

15. Was the prototype easy to read?

[More Details](#)



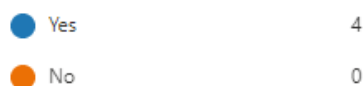
8. Is the code easy to navigate through and read?

[More Details](#)



10. Are the comments readable?

[More Details](#)



I feel as if his overall shows that readability was an importance when developing the prototype, as it is very important for students to be able to understand their work, as well as it being important for

the code to be readable for other developers to understand, in which this will ultimately help scalability as they can understand and add to the code with ease and no assistance.

Next, when it comes to non-functional requirement number 8, security has been implemented by hashing passwords that are entered into the database. When asking developers about the code, 100% said nothing is incorrectly done as well as 100% saying they see nothing that they think could have been done better. I feel as this overall shows how the security has been done effectively as well as the hashing being done correctly as other developers would not change it.

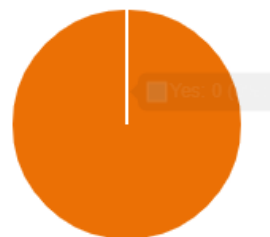
4. After looking at the code, is there anything you see that's incorrectly done?

[More Details](#)



6. After looking at the code, is there anything you see that you think could have been done better?

[More Details](#)



For non-functional requirement number 9, 100% of users said that the prototype was fit for purpose, meaning useability has been ticked, as well as 100% of users saying that they were able to complete their goal.

16. Was the prototype fit for purpose?

[More Details](#)



3. Were you able to complete this goal?

[More Details](#)



Some of the goals consisted of:

- “To learn something new”
- “To revise”
- “To learn.”
- “I wanted to do some gamified learning”

This means that overall I would say that the prototype is fit for purpose as users could use it for what they wanted and accomplish this, as well as 100% of users thinking the prototype was fit for purpose.

Next, I feel as if I have partly fulfilled non-functional requirement number 10, as only 75% of users said they could access content even when not logged in. This means that in the future I must ensure that resources are accessible to users even when not logged in by ensuring at the resources page does not use the user’s account details.

18. Could you access content even when not logging in?

[More Details](#)



For non-functional requirement number 11, I feel as if I have partly fulfilled this. Many users say they enjoyed the design of the prototype, with 75% of users saying it was eye-catching.

19. Was the design and interface eye-catching?

[More Details](#)

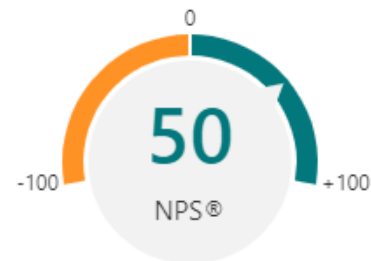


As well as users being overall promoters using the Net Promoter Score. The Net Promoter Score (NPS) gives a measurement for the quality of the customers experience. It allows us to tell if the user would promote it, be very negative about it or be neutral.

31. How satisfied are you with the look of the app?

[More Details](#)

Promoters	3
Passives	0
Detractors	1



Also many users had good first impressions relating to the look of the prototype.

29. What was your first impression with the prototype?

Response

it was really nice to interact with

Response

It looked nice

Response

It worked well and looked very professional.

Response

It looked well made and a lot of time had gone into it

35. What did you like or not like?

Response

the overall look and appeal of the app

Users also rated the quality (in which the question specifies that it is referring to the looks) 4.5 stars out of 5, meaning overall people are enjoying the looks of the program.

37. How would you rate the quality?

[More Details](#)

4
Responses

★★★★☆
4.50 Average Rating

However, some user feedback indicated the design could do with some changes to make it look more interesting.

21 Could you explain to us why any of these features didn't work, or if you found anything difficult as well as your experience?

Please add as much detail as possible as this will allow us to fix and improve the prototype!

(Leave this blank if not applicable)

Response

I would have liked it if most of the buttons were rounded as i think it looks more professional

This overall means, for future iterations, I will need to change the buttons to make them curved, as well as potentially change the layout of some buttons or change some colours

Finally, for non-functional requirement number 12 I feel that I have overall ticked this requirement, as when checking the user for if the features worked, all of them were 100% for if they were working. As well as this, 100% of users said it ran effectively.

15. Did the prototype run efficiently and could be used without crashing/lagging?

[More Details](#)

● Yes

4

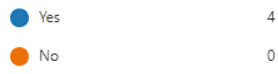
● No

0



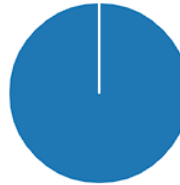
7. Were you able to create an account?

[More Details](#)



8. Were you able to sign in?

[More Details](#)



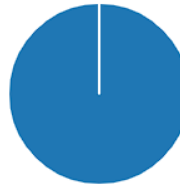
9. Were you able to navigate through all the pages?

[More Details](#)



10. Were you able to access the games?

[More Details](#)



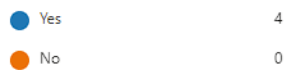
11. Were you able to access the learning/teaching resources?

[More Details](#)



12. Were you able to see the rewards you have received or give rewards/monitor students?

[More Details](#)



13. Were you able to use the accessibility screen?

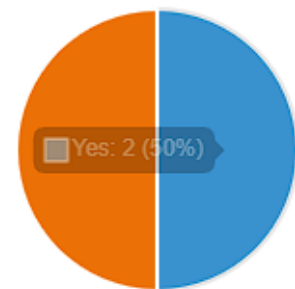
[More Details](#)



However, there is also evidence suggesting that the program sometimes does not function correctly.

5. Did any feature within the program not work or not function as intended?

[More Details](#)



6. What feature and how did it not work as you expected?

Responses

the games for higher education but is ok because the app is only a prototype.

Some of the buttons didnt work

This means that for future iterations, I will need to ensure that all the games and buttons are functional to overall best ensure that the prototype is able to function and perform well.

Key Performance Indicators

When creating the prototype, we also needed to take into consideration the key performance indicators. As described before, these are:

1. Is the solution able to run/load up within a short amount of time when accessing learning resources as well as gamified learning
2. Does the solution load up other screens it is opening within a short amount of time, such as changing screen from a login screen to a home screen
3. Does the solution close any unneeded pages when they are not shown and can be closed, for example closing pages that are hidden or are not needed to keep the program running
4. Is a user who is not logged into an account able to access content and resources
5. Is the solution able to run effectively while not overloading any hardware and evenly spreading the workload across available resources
6. Does the solution run over multiple cores and threads instead of overloading/ only using one when it comes to CPU usage and GPU usage
7. Is the program able to boot up without any errors
8. Can the program start up without using too many system resources
9. Is the program able to run for a long period of time without crashing
10. Can the program run with only a small amount of resources so that we can best ensure it has support for older devices or older OS versions
11. Can the solution be ran/opened or installed
12. Is the solution able to open the teaching/learning resources effectively
13. Can the solution access the database/data storage location so that it can pull details from it for logging in/ checking student progress and scores
14. Can the solution access the database/data storage location so that it can add details to it for account creation

Firstly, when comparing my prototype to key performance indicator (KPI) number 1, 2, 5, 6, 8, 9 and 10 I would say that I have fulfilled these as 100% of users said that the prototype ran well, and if either of these were an issue to the user, they would have answered no. As well as this, if the workload was too much for the device and it used too many system resources, then it would crash or lag, meaning the user would answer no.

15. Did the prototype run efficiently and could be used without crashing/lagging?

[More Details](#)



Next, for my KPI number 3, I would say that I have fulfilled this as all pages are closed when not shown. When looking at what other developers answered, 100% said nothing could have been done better, meaning I can assume that they considered my method of navigating forms effective and efficient.

6. After looking at the code, is there anything you see that you think could have been done better?

[More Details](#)



Next, I would say that I have partially fulfilled KPI number 4, as 75% of users could access content even when not logged in.

18. Could you access content even when not logging in?

[More Details](#)



This means I must ensure that the resources page does not use any account details so that I can ensure its accessible to all.

When it comes to KPI number 7 and 11, when reading all the user's first impressions, they were all very positive, yet if the program crashed it would be negative. I feel as if this proves that the program booted up with no errors due to the users having a good impression. Due to them also having a first impression means that the program was installed as well as ran.

29. What was your first impression with the prototype?

Responses

it was really nice to interact with

It looked nice

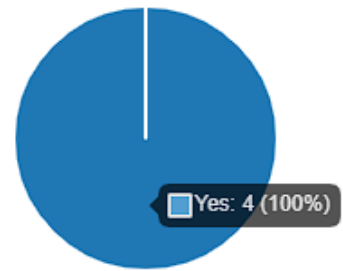
It worked well and looked very professional.

It looked well made and a lot of time had gone into it

Next, for KPI number 12, I would say that I have fulfilled this. Based on user evidence, all users were able to access the learning and teaching resources page, meaning that I did boot up. As well as that, 100% of users said ha e prototype ran efficiently, meaning we can assume that due to neither of these being a no, that the learning/teaching resources ran effectively without crashing.

11. Were you able to access the learning/teaching resources?

[More Details](#)



15. Did the prototype run efficiently and could be used without crashing/lagging?

[More Details](#)



Finally, for KPI number 13 and 14, 100% of users said they could create an account and then log in using this created account. This shows that the prototype did store the details in a location for later access as well as access the database to store the details in the first place.

7. Were you able to create an account?

[More Details](#)



8. Were you able to sign in?

[More Details](#)



However, I feel that I have partly fulfilled KPI number 13, as the user's details as well as the database are not used when opening the gamified learning to submit a score. However, the database is used when submitting the score, yet only the score is entered and no other user details. Therefore I feel as if I have been partly fulfilled as it enters the database yet doesn't get any details from it. Within future iterations, I will implement it so that the user details are retrieved from the database, sent to the html through a cookie, and then used when submitting the score to add all the user details along side the score.

User Acceptance Criteria

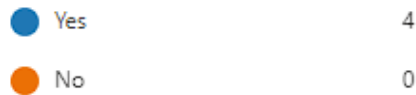
Finally, the last items to take into mind when developing the prototype was the user acceptance criteria (UACs). Due to there being so many, some may be grouped together if they share the same evidence. These consist of:

1. Is the user able to access online learning resources
2. Is the user able to access interactive online learning resources
3. Can the user select and view the resource they want
4. Can the user access resources for a range of subjects
5. Is the user able to select the subject they want to see resources for
6. Is the user able to create an account
7. Is the user able to log in using the account details they have used for an account
8. Is the user able to pick if they are a student or teacher before creating an account
9. Is the teacher able to enter a code to confirm their identity of being a teacher
10. Is the student able to enter a code/use an education email to confirm they are a student
11. Can a teacher access interactive teaching materials
12. Can the student access interactive learning materials
13. Can a user who is not logged in still access digital content
14. Can all users access digital content
15. Can a teacher set a student assessments/work
16. Is a teacher able to create a class/group of students online
17. Can a teacher see the result of students work
18. Can the teacher get a graph or statistics to monitor the students progress
19. Can the student join a class
20. Can the student see what work is set to them, when its due and what teacher it is from
21. Can the student submit the work and have their score saved
22. Can the student view their previous work/marks and see their own progress
23. Can the student see teacher feedback
24. Can the student submit requests to teachers for help
25. Can the teacher submit feedback to students
26. Can the teacher respond to student requests
27. Can users collaborate
28. Can teachers collaborate with teaching tools
29. Can students collaborate with learning tools
30. Are there accessibility features for users with disabilities
31. Are there separate pages where appropriate and appropriate links to each page
32. Is there a reward based on students scores
33. Can the user/student access gamified learning

Firstly, for UAC 1, I would say I have fulfilled this as 100% of users said they could access the learning resources.

11. Were you able to access the learning/teaching resources?

[More Details](#)



As for UAC number 2, I would say I have fulfilled this, as UAC 1 proves they could access the learning resources, while user feedback indicated that many found both the learning resources enjoyable.

24. Why did you enjoy it the most?

Referring to the games:

it was engaging

I found the crossword idea very fun and it was unique to many other gamified learning that I've done before

Referring to the learning resources:

Because it was simplistic and easy to use.

There is lots to read and learn about

Meaning overall, I feel as this feature is considered fulfilled due to qualitative user feedback indicating so.

Based off the evidence for UAC 1 and 2, I would say that UAC 3 has been fulfilled due to users being able to access the resources on the page, as well as some user feedback stating that "there's lots to read and learn about", indicating that the user was able to select many options and find exactly what they were looking for. As well as this, the learning resources had an overall good reception, with other users even saying:

35. What did you like or not like?

i liked the learning resources

This feels like even more valuable feedback as the question is very open ended, giving the user a good opportunity to state anything they didn't like as well as like, meaning overall the user had a positive experience as they had the option to say either good or bad and chose a positive.

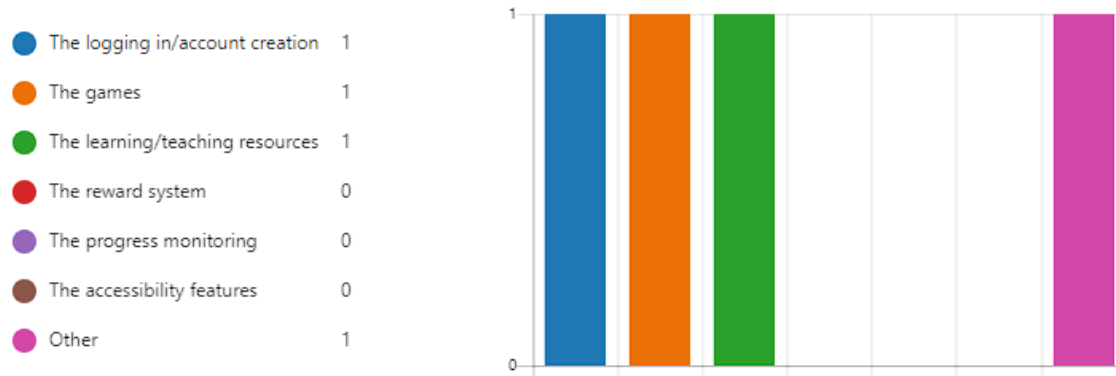
I feel as if UAC 4 has been partially fulfilled, as a few resources work for testing purposes (about 12 or so), however I couldn't implement them all due to it being a prototype with time constraints. I also feel as if user feedback indicated the same, as despite many enjoying it as seen before, some are the opposite.

35. What did you like or not like?

I enjoyed the crossword feature in the gamified learning but the resources page was a bit lacking

25. Which feature did you enjoy the least?

[More Details](#)



When looking at this bar graph, I feel as if it shows how no one aspect was heavily disliked by users, meaning overall each aspect was well made. However, there have been some complaints about the learning resources, meaning that even though it is not considered a major issue, changes will still need to be made.

27. Why did you enjoy it the least?

I think there could have maybe been a bit more notes or potentially a link to a youtube video

21. Could you explain to us why any of these features didn't work, or if you found anything difficult as well as your experience?

It worked well, but I hope the modules for higher education come to work.

I overall feel user feedback indicated how users are upset by the lack of resources for all subjects, as well as some being upset with the content in the resources, meaning for future iterations these may need to be investigated.

For UAC number 5, I feel as if evidence already provided previously shows how users could access a range of resources, however some users were upset by the lack of some buttons and modules working. This means, for future iterations that all the subject buttons could be made to work, as when developing only 2 subjects working for primary and high school level and 2 for higher level. So for the future, all subjects will be made to work.

For UAC 6, I feel as this is completely fulfilled, as 100% of users could create an account.

7. Were you able to create an account?

[More Details](#)



I also feel like this is the same of UAC 7, as 100% could sign in after creating an account, as the account uses the details of the account just created.

8. Were you able to sign in?

[More Details](#)



For UAC number 8, I would say this should no longer be considered a UAC, as the approach I took with my prototype lead to the user's teacher status being decided by the code used when creating an account. Codes are designed to be sent to an education provider for staff and students upon request, meaning the user will have no need to answer if they're a student or not, as the code they are using to create an account will already contain this information. Therefore, this has not been fulfilled due to development changes and will not be implemented as it is unnecessary.

I feel as if UAC 9 and 10 are like 8, however the code is used to check if they're in education, as well as link them to their school and teachers. This UAC is still partly relevant, and due to 100% of users being able to create an account, we can assume that they could use the codes given to them to prove they are in an education setting (teacher and students). I feel as if UAC 9 and 10 could be simplified to ask if the code could be used to create an account that links to the correct status of the code, i.e. if the code is for a teacher account, the account made using the code will have the teachers' settings and menu options. Yet, due to users being able to create an account (evidence above), then we can assume that the codes worked.

For UAC 10, the use of verification emails has not been implemented, however this could later be in future iterations and used alongside with the code for an extra added layer of security.

UAC 11 and 12 will not have been fulfilled at all due to no collaboration tools being implemented on either platform (student or teacher), meaning this will need to be added in a future iteration.

1. Were you able to use the collaboration tools?

[More Details](#)



For UAC 13, I would say this has been fully fulfilled, as based off my survey feedback, 100% of users could access content even when not logged in.

18. Could you access content even when not logging in?

[More Details](#)



I feel that UAC 14 has been mostly fulfilled, as evidence above indicates how students as well as non-logged in users could access the resources, however no teaching resources have been implemented, meaning a part of this UAC has not been fulfilled. This will need to be added for future iterations.

UAC 15 has no been implemented at all, meaning this will need to be added for future iterations.

UAC 16 may no longer be a requirement; this is because using the code system means that classes and groups can be pre-made before even allowing users to create accounts. However, I would still like to allow this to be a feature in the future, as it allows for teachers to create classes after the accounts are made, as students can change classes and their pupils change year to year. I feel as if I have not fulfilled this requirement, yet it shall be added in future iterations as I would consider it an important feature, as many other features (i.e., setting work for students) seems useless if the teacher is unable to select the correct students.

I feel as if UAC 17 and 18 have been fulfilled, as 100% of users said that they could monitor students work, meaning this page will have allowed them to see a line graph of all the completed exams as well as the scores, meaning they can see all the work they have done too.

12. Were you able to see the rewards you have received or give rewards/monitor students?

[More Details](#)



UAC 19 relates to UAC 16 with the idea of people joining and inviting to classes. However, as discussed before, this has not been implemented, meaning it will need to be added in the future iterations.

UAC 20 also has not been implemented, as no collaboration tools or anything similar have been added, the only feature that links students to teachers is the monitoring screen, in which teachers can see students who are in the same class, yet there's currently no way to assign a student to a class. This means that UAC 20 has not been implemented yet will be added within future iterations.

1. Were you able to use the collaboration tools?

[More Details](#)



I feel as if I have partly fulfilled UAC number 21, as currently a student is able to submit a score after a game and have it saved into the database, however no information other than the score is saved. This means that the score is saved, however it technically isn't their score anymore as their name is not attached to it. This means that within future iterations, I will need to add the feature in which the details are sent to the game before the game sends the information to the database.

I feel as if UAC 22 has also been partially fulfilled, as a student can view their progress within the form of a percentage, and get a medal based on that. This means that a student can view their progress, yet not specifics about their marks on a single piece of work. This means, that within future iterations I will have to add a feature for students to see specific scores and exams from the past.

For UAC 23-26, no features like these have been implemented and teachers can not set feedback or respond to questions, as well as students not being able to submit a request for help or see any feedback. This means all these features will have to be added in a future iteration, however I would say they are of lesser importance.

UACs 27-29 have also not been implemented, as stated previously that no collaboration tools have been implemented, meaning this will need to be added within a future update.

1. Were you able to use the collaboration tools?

[More Details](#)



For UAC 30, I feel as if it has been partly fulfilled, as there is an accessibility screen that has a functional dark mode setting in which 100% of users were able to use. This setting may be effective for dyslexic people making the text easier to read.

13. Were you able to use the accessibility screen?

[More Details](#)



However, this is the only accessibility option, meaning that more will need to be added in the future to accommodate for as many disabilities as possible.

For UAC 31, 100% of users were able to navigate through all the pages, indicating that the links for the pages were appropriate and that users had no issues with them.

9. Were you able to navigate through all the pages?

[More Details](#)



Also, none of my qualitative data indicated that users thought the design looked cluttered, meaning that I can assume that pages have been appropriately separated when needed in order to ensure the pages are not cluttered.

I would say UAC 32 has been fully fulfilled, as 100% of students were able to see the reward/medal they have received based on an overall percentage of their scores.

12. Were you able to see the rewards you have received or give rewards/monitor students?

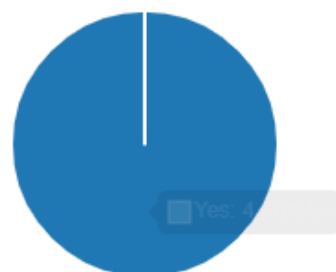
[More Details](#)



Finally, I would also say UAC 33 has been fully fulfilled, as 100% of users said they could access the games.

10. Were you able to access the games?

[More Details](#)



Conclusion

Overall, the prototype was very well received by users, as it preformed well, was easy to use and looked nice.

Many testers enjoyed the designs of the pages, as well as the learning resources and games. These should allow for students to learn with ease as the prototype should be interesting and engaging to use.

The accessibility screen and rewards screen worked, however more options could be added to the accessibility screen, as well as more options to view specifics about a student's work could be added. Testers were able to use the dark mode feature, as well as use the rewards screen to see an overall percentage of their scores and a medal based off that.

The testers enjoyed the games, with them liking how engaging and fun the games were compared to the learning resources. One tester stated that the games were "engaging", while another user "found the crossword idea very fun, it was unique to many other gamified learning that they've done before". However, more games need to be produced and added for different subjects, as well as the submission when a student is finished with the game needs to be completed.

Modules to develop further would be the learning resources, as more could be added for a range of subjects as well as more videos and different types of resources could be added.

Testers also reported that in the future they would like the assignments screen to have full functionality, meaning this will need to be looked into to allow for the setting of work by teachers. Another thing that needs development is the login system, as some testers came to me directly and stated they got an error that they couldn't create an account, yet one was made anyway.

Changes Required:

Issue	Solution	Priority
Error message shown when making an account, yet the account is still created	Make the program check if code is a teacher account or student first, and then check the appropriate table, as currently it checks both no matter what.	High
PHP server was not running	Ensuring that it is running constantly and moving it to a server in order to ensure this	Medium
Some users could not access learning resources when not logged in	Ensure that the learning resources screen does not use any account details to ensure an account is not needed	Low
Some users think the design is not eye-catching and are not satisfied with the look	Change around the style, formatting, and colours slightly to make the page look interesting, yet not too cluttered as well as having bright, interesting colours.	Low
The collaboration tools do not work	Implement the creation of classes and groups to allow for them to then collaborate.	Medium
Very few accessibility features	Add more features to the accessibility screen, for example allow text sizes to be changed.	Low
Games were not as good as the rest of the program	Add some changes to the design and functionality of the games to ensure it fits the programs colour scheme	High
Wanted more types of games	Add more games for each education level as well as each subject on the games list to ensure all the modules work and give the user a wide range of games to choose from.	High
The games for higher education did not work	Ensure that all the subjects have a game attached to them, as well as ensure the games and buttons work	High
Some of the buttons did not work.	Ensure that each page has functionality and that each button added functions	Medium
Game does not add score with user details to database	Send the user details over to the game before the score is added to the database so that all the details can be added together at once.	High
Not all the learning resources work	Add a resource for all the not working subjects	Medium
Not all the games work	Add a resource for all the not working subjects	Medium
Resource page was lacking	Add more interesting features to my learning resources like videos.	Low
Verification emails for added security	Send an email to ask the user to confirm their account before the account is created	Low
No teacher/student collaboration	Add the collaboration features as well as make the page function	High
Students can't view scores on specific tests	Allow for students to check scores for specific tests and not just see a percentage.	Low
Students can not see feedback and teachers cannot give feedback	Allow for feedback to be given after the collaboration tools have been implemented	Medium