

IMD11112 Design Dialogues

Assessment 2

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Introduction

“Explore Lions Gate” is a mobile app which allows to scan QR codes and then provide the user with information about the object assigned to the QR code. In the first step a QR code will be attached to every kind of object in the Lions’ Gate. When scanned the app provides the user with a brief description about the object. For example, for a plant, vegetable or fruit and the app then gives information about planting, how to take care, harvesting and storing the plant once harvested.

In addition, the app can provide the user with information when you can or should interact with the object. For example, it informs the user when the plant should be watered time or when the moment is close the plant should be harvested if it is a harvestable plant.

This enables people to explore the Lions Gate and obtain information about the plants or interact with the other systems in the Lions Gate. No guide would be needed who introduces the students, guest or other university employees to the Lions Gate.

Also the responsibility of taking care about the plants could be shared between a bigger group of people and the communication and information when to take care of which plant could be organised over the mobile application.

All used methods used in this assignment come from the book Designing User Experience: A guide to HCI, UX and interaction design (4th Edition) (Benyon, 2018).

Understanding

Semi-structured interviews

The interviews were held unstructured with three different possible users. Two of the are unexperienced and not currently taking part in a shared garden place. The third interviewed person is involved in a community garden in Germany. Therefore, the group already has some experience with permaculture but the majority of it is unbiased and unexperienced about the topic. This should ensure that the answers received are not already answered in the heads of the participants before they are even asked and also the people have enough distance to the topic to bring in unusual and new ideas.

Output of the interview

The participant had the following opinions about the idea and advices:

“The idea could help people to start getting involved in public gardening. The fear of doing something wrong isn’t there so much anymore.”

“It could be nice to use this to just explore the Lions Gate in the longer breaks in between my lectures. To be honest I didn’t even know that this exists.”

“As someone who has no green thump at all it would be nice to have an app like this. And I don’t have to google. Scanning seems more easy.”

“I wouldn’t like to have too much information in the app. Just the rudimentary information about the object. Probably no one wants to stay outside for too long and read a whole book. You better do that inside. Just check the website then.”

“It would be nice to see a status about the plant. Like when it was watered the last time and when it was planted. When I for example I scan a carrot then it should also tell me around when it can be harvested and also give me information how the plant looks when it is ready to be harvested.”

“It could have too little content to be honest. But I could only tell when I really would use the app. Hard to tell.”

Further use

The output of the interviews was used as a basis for the following brainstorming. Giving first ideas and enable the participants to think of ideas how to realise the ideas.

Review

The interview was useful to get a feeling about what the people think about the general idea. I personally had the feeling that the people were quite sceptical about the idea, also because they couldn’t really understand what permaculture is and what is done there. Also the idea about the application was really rough at the time the interviews were held.

The next time I go through the design process I would hold the interviews at a later time. When more information is available and also take more time explaining about permaculture in general.

Brainstorming

The brainstorming workshop was held with three other students. Every one of the three students is studying in another field. The subjects studied are computing, marketing and economy.

After an introduction of the idea the participants started to collect ideas which information should be stored in the app, how much into detail the information should go and also which features the app should include. This was done by every participant individually. The collected ideas were then presented to the other participants, then discussed and finally the best ideas were collected.

Output of the brainstorming

- As there is not much memory neither on a QR code nor a NFC chip only a content ID is scanned on the chip. A QR code can be used easier than a NFC chip. Just a camera is needed. When the user scans the QR code with the app, the app then retrieves the data from a database.
- Only people who receive a login can change the status (e.g. when it was watered and planted) of the plant. This ensures that not any unauthorised people play with it and falsify the results
- After scanning the QR code, people should be asked if the plant still looks like on the current photo. If not the can take a new photo of the plant which is then updated in the app. This can ensure that the people see the information about the right plant.

- A stick with a QR code printed on a piece of plastic should be enough. This helps with keeping the cost small. Also a QR code doesn't need any connection to the internet, so no cables need to be laid.

Further use

The requirements and ideas collected in the brainstorming are used as the basis for the Envisionment.

Review

Now when I am finished with the design evaluation, I have to admit that this brainstorming wasn't too useful in the end. At the time of the brainstorming it provided me with ideas especially on how to technically solve the problem but most of the ideas out of the brainstorming were being discarded during the process. It still had its usefulness at the point of execution though.

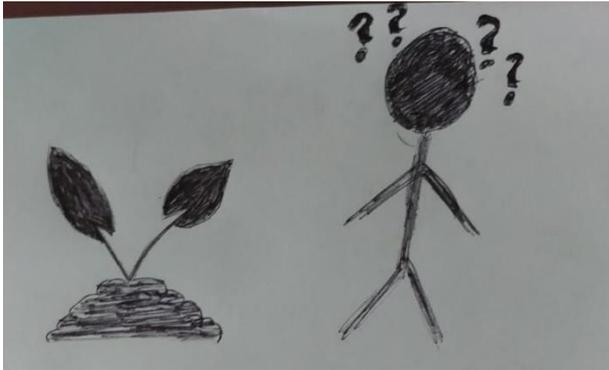
Envisionment

Storyboard

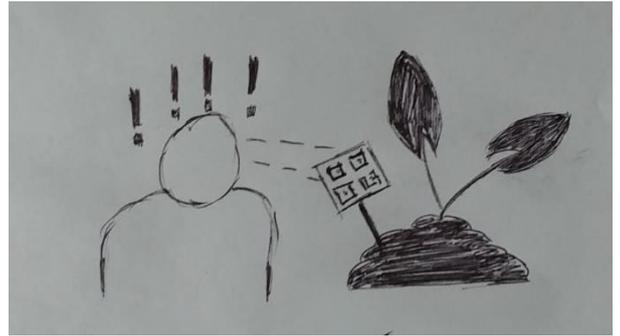
The following story board tells a user story using the app in the Lions' Gate. I chose sketching a story board first of all to visualize how using the app could look like. That could help in the future to easily explain the app to other people. Pictures are often better suited for this than an explanation with text.

The most important reason for me is to check if there is a gap in the use of the app how I imagined it. Also bad idea can be discarded directly and good other ideas can be added easily.

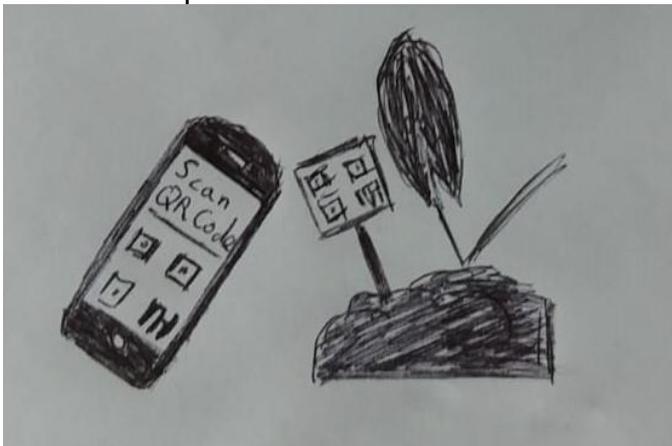
Furthermore it is a nice addition that sketching is a method which can be done quickly. With other deadlines in other subjects also coming close this is a nice side effect.



1: Person sees the plant and doesn't know what kind of plant it is.



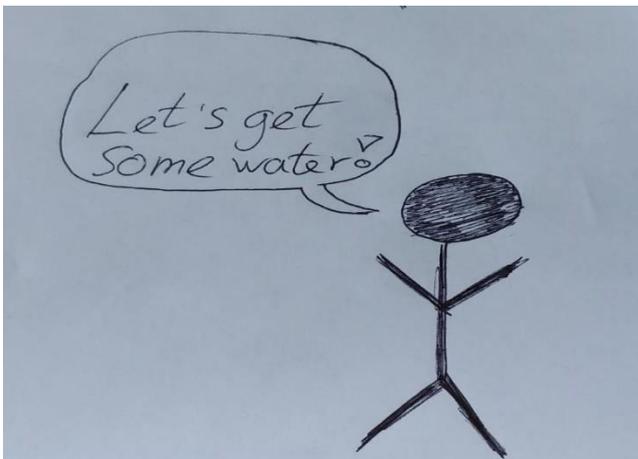
2: Person sees the QR code.



3: Person scans the QR code with his app



4: The app displays the information about the plant and also sees that the plant needs to be watered.



5: The person goes to get some water.

Problems and requirements

A problem that came to my mind when sketching a story and afterwards thinking about it could be, that the users don't even know that they have to use a special app for scanning the QR code. A solution to this could be that when you scan the QR code with a simple QR scanner app, it directs you to the app store where you can download the application.

Output

The storyboard was later used for explaining the participants of the testing questionnaires how the app should be used.

Also the storyboard was later translated into a user journey map.

Review

The storyboard was helpful to me to think through the process of use myself and also it was helpful for the participants later asked in the testing and Envisionment. Also it helped me with my nightmares about art class at school as people said I wouldn't draw as bad as they would have expected.

Wireframe



Figure 1 The screen once the application is started



Figure 2 The screen after scanning a QR code

The wireframes helped me especially in putting the idea into a simple concept of an app. In the process of creating the wireframes I reduced the number of pages from three to two and developed a concept on how to have all the information available at least teased on one screen. The idea to have the fold-out elements was developed during this Envisionment method.

Output

Like the storyboard the wireframes were later used for explaining the participants of the testing questionnaires how the app should be used.

Also it can be later used as a starting point if the application would be actually realised and made responsive.

Review

As the storyboards the wireframes helped the participants of later stages in the design process with having a feel of how the app would and could be used. A proper prototype would have been more useful but wasn't possible to be realized in the short time available which was due to some unfortunately factors.

Testing

Usability scale

For testing I was using the System Usability Scale (Benyon, 2018). The participants were my flat mate and my mother. Both are familiar with using their smartphone and apps. I introduced them to the idea, showed them the storyboard and the wireframes. I told them how I was imagining people using the app. Afterwards they should answer the questionnaire in the following figure.

The System Usability Scale

The SUS is a 10 item questionnaire with 5 response options.

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.
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.

The SUS uses the following response format:

Strongly Disagree 1	2	3	4	Strongly Agree 5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scoring SUS

- For odd items: subtract one from the user response.
- For even-numbered items: subtract the user responses from 5
- This scales all values from 0 to 4 (with four being the most positive response).
- Add up the converted responses for each user and multiply that total by 2.5. This converts the range of possible values from 0 to 100 instead of from 0 to 40.

Figure 3 The System usability scale

Results

Question	Participant 1	Participant2
1	3	4
2	1	1
3	4	5
4	1	1
5	5	5
6	1	1
7	5	5
8	2	1
9	4	5
10	3	1
Score	82,5	97,5

With both scores quite far over 68 point which Jeff Sauro suggests as an indicator (Benyon, 2018) for a reasonable level of usability, a good usability of the application should be ensured.

Output

The results of the questionnaire and especially the additional notes made me think of what the application should achieve. Should more functions be added or should it just be a simple entry point for people new to the Lions Gate. With me being a fan of solutions which specialise in one area and do this well, I decided to continue with the second choice. This means the application should just give information about people new to the Lions Gate. Features like the information when a plant should be watered actually don't have a bigger use and will not be developed further.

Review

As the system is fairly simple and there is not much room to misuse the system. The scores of the questionnaires confirm my own impression.

Still I have to consider in this case that both of the participants are friendly towards me and therefore the questions could be answered more positive than with neutral participants. Also both told me when asked if they have additional notes to the questions, that regarding point 1, the system could be too simple for repetitive use and could use some additional features.

AttrakDiff

In addition I used the AttrakDiff online questionnaire¹. The people answering the questionnaire were all students from my bachelor course. I provided them with the storyboard, the wireframes and we held a short video call where I explained them the idea of the application. Afterwards everybody of them anonymously answered the questionnaire.

Results

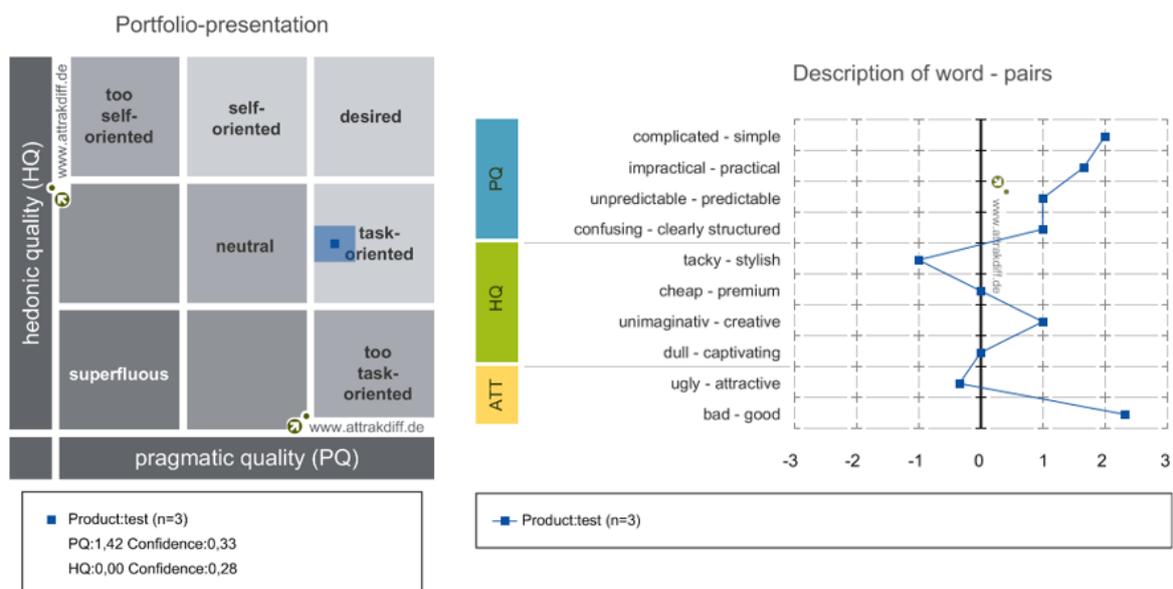


Figure 4 Results of the AttrakDiff questionnaire

¹ <http://attrakdiff.de/>

The results give a clear feedback that the application should be usable easily but can still improve design wise.

Output

Form the answers you can see that the participants think that the concept of the prototype appears simple but could us some polishing in design.

Review

The AttrakDiff questionnaire was a quick an easy way to receive feedback but it doesn't provide you with detailed conclusions. Just with some basic benchmarks which you need to evaluate yourself then and hopefully draw the right conclusions from it.

Design

Design approach

The approach for the design was to collect ideas and requirements from the interviews and brainstorming. These ideas were then visualised with a story board and wireframes. In the testing people were asked with the help of questionnaires about their opinion of the general idea, the storyboards and the wireframes. Out of all these steps conceptual scenarios will be created now and also a conceptual model will be developed. Later the design and requirements will be evaluated in the chapter "Evaluation".

Conceptual scenarios

Scan QR codes

Once the app starts a simple QR code scanner will be visible. The user then can scan an QR code which belongs to the object the user is interested in.

Access information about objects

A QR code contains a content ID. Once a QR code is scanned the application receives the data from the database which belong to this content ID. The content is then displayed properly in the application

Access other sources

This is not a real feature but only a link which can lead to other websites or applications related to the object which information are currently displayed in the application.

User journey map

The following user journey map (Figure 5 User journey map) demonstrates where the user switches between the physical/real and the virtual environment. The storyboard and the conceptual scenarios are used as the basis for this map. The journey map is much clearer and clean than the storyboard. It also shows how the app can include other systems or features of the Lions Gate²

² <http://blogs.napier.ac.uk/thelionsgate/resources/>

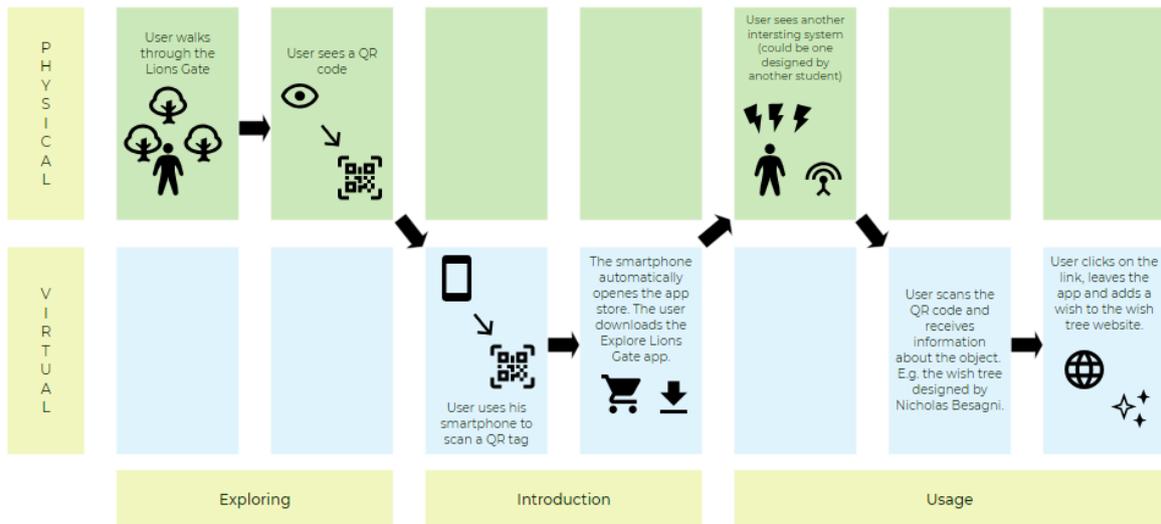


Figure 5 User journey map

Conceptual model

Also a conceptual model was created which shows the different instances involved in a user journey (Figure 6). A database will be needed. The application only receives data from the database and can't write or delete from the database. The content has to be added manually to the database.

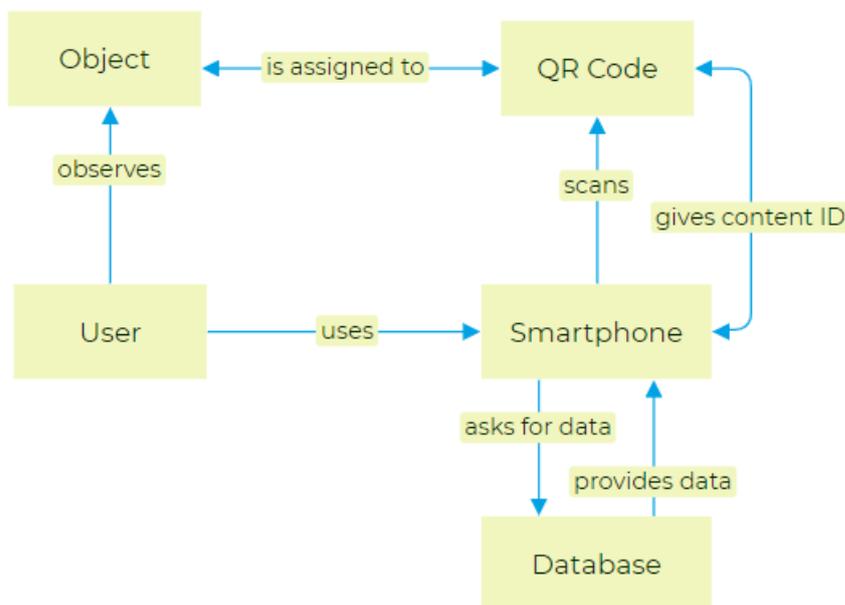


Figure 6 Conceptual model / Interaction between instances

Reworked wireframe

Also one wireframe was reworked at this stage as features which were planned in the beginning were discarded.

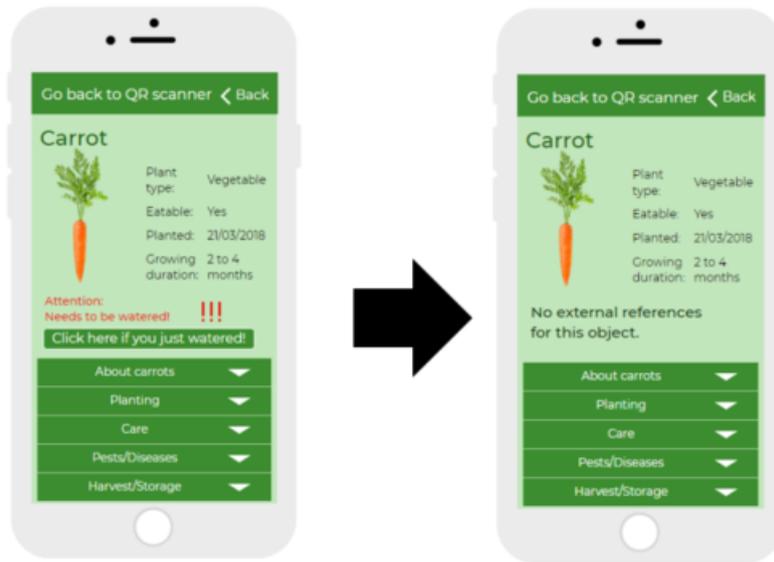


Figure 7 Reworked wireframe

Colour

The colour scheme of the application is kept in green tones.

The background colour is a light green. For the header and the foldable elements, a darker green is being used.



Figure 8 Colour scheme

Typography

As a font the simple style Montserrat will be used. This fits the simple style of the app. On a dark background white text will be used and on light background a dark green will be used as text colour.

Evaluation

Expert evaluation

After the conceptual scenarios and the user journey map were completed an UX expert was consulted. He was provided with all the information available about the design at this point.

The feedback was mainly good. The design would be simplistic and there isn't much room to change the appearance of the application. Still the design would lack enormously in the aspects how the user's attention should be drawn onto the application, how the QR codes are integrated into the Lions Gate and also which content the application should hold in detail. All this was only introduced with a few words or not at all.

The user journey map and conceptual design although give a clear understanding on what resources the app uses and how the app would be used once published and started.

Review

As many lacking points were issued by the expert the expert evaluation was helpful for this application, giving many points to be clarified before continuing developing the app.

Cognitive walkthrough

Two possible users both students at Napier university were asked four questions to evaluate the usability of the application again. They were provided with the same information as the UX expert in the expert evaluation.

Will the people using the system try to achieve the right effect?

“The system doesn’t seem to give much room to misuse. It should provide people with information about the thing the QR code belongs to. If they just scan it out of curiosity and then don’t want to read about it then fair enough. But if that’s what they intend to do then the app will do what they want.”

“I agree with what she said. Nothing to add.”

Will they notice that the correct action is available?

“As mostly student will use this app and they know how to use a smartphone I see no way they would choose a wrong action. Are there actually wrong actions?”

“Again the application has only pages. One for the QR code scanner and one with the description. I mean if people want to know about the planting then they can click on planting. Just if there are links added which go to another website then it should be clear that it’s a link and when you click it, it could maybe say that you are leaving the application now and go to another source.”

Will they associate the correct action with the effect they are trying to achieve?

“Same as with the question before. Not much room for wrong actions. A QR scanner should scan QR codes. Maybe add a small explanation on how a QR code looks on the scanner page.”

If the correct action is performed, will people see that process is being made to the goal of their activity?

“The application is really streamlined. The right action is forced. Can be maybe a critic that there is not much room for decision for the users but you seem to want that.”

Output

The cognitive walkthrough confirms the impression from the AttrakDiff questionnaire. The usability of the application should be good enough and not the problem if the design would fail.

Review

The cognitive walkthrough was much more personal than the questionnaires used in the testing section. It helps me personally to draw the right conclusions when the questions are asked in an interview setup than just get them answered with text.

Conclusion

The design approach for the mobile application has been more or less successful. Overall most of the requirements on how to develop the app later are clear now but it isn't really clear yet how the design could be embedded in the Lions Gate.

The interviews and the brainstorming were helpful to create more user requirements and also point out possible problems the application could have. Still I was often validating my own idea or confirming that the idea works more than actually ask the possible users what they want. If I would do the assignment again I would focus more on the users wishes. Also I more or less ignored some of the participants' proposal through the process because I personally didn't like them. I should have engaged with these ideas more neutral. My personal opinion shouldn't matter as much as of the one that was asked. I am not designing the application for myself but for others.

In the Envisionment process, the storyboards helped working out thinking gaps in the process and the wireframes helped with reducing the number of pages needed to realise the mobile application. Also both methods were really helpful when explaining the concept of the application to the participants of the other methods.

Overall no ethical issues should occur when using the application. No personal data are held by the application. Also during the design process, the consent of the participants for using their answers were given.

Compared to the first coursework the conceptual model of the application isn't as detailed yet. Some additional steps would be needed to complete this.

In conclusion, I did plenty of mistakes during the design evaluation I am now aware of but I am still quite happy with the outcome of the assignment as I think the idea of the application is waterproof. With some extra work in advance the development of the application could be a success and also the acceptance of such an app could be high.

References

Benyon, D. (2018). *Designing User Experience: A guide to HCI, UX and interaction design (4th Edition)*. London, United Kingdom: Pearson.

Google. (2018, 10 21). *Google Fonts*. Retrieved from <https://fonts.google.com/specimen/Montserrat?selection.family=Montserrat>