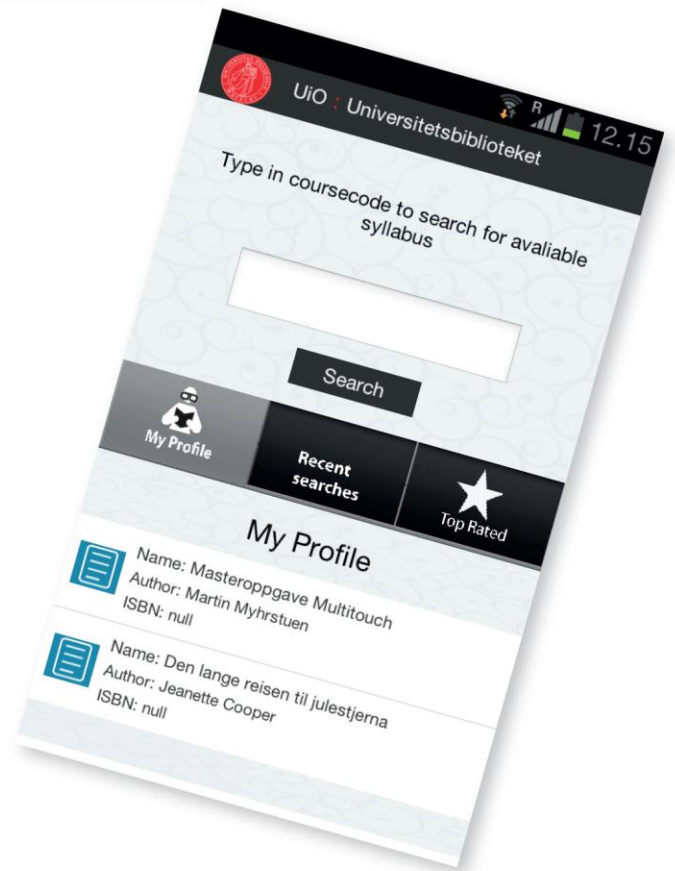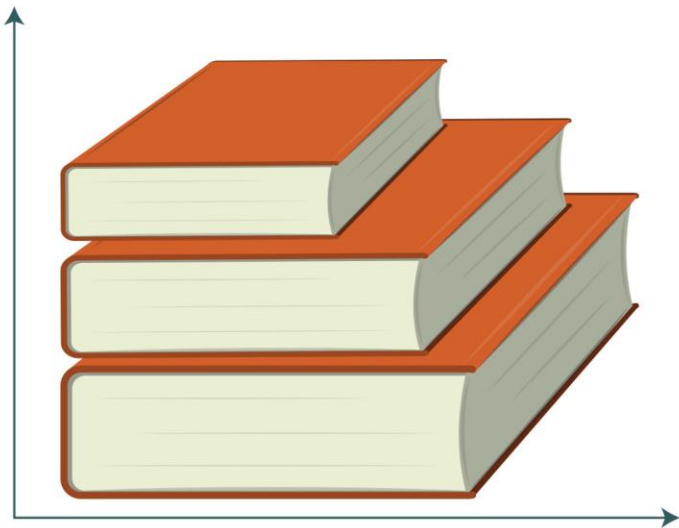# BibApp

Project report

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Abstract

Today's society is clearly affected by technology. The library as an institution is going through some changes trying to keep up with the rest of society. In this project we try to help the library build a strong user foundation by developing a mobile application to reach new users and also keep the ones they have. We are contributing in modernizing the library. We believe that to make the perfect product you need to listen to the users.

Or even better: Let the users decide!

Contents

1. Introduction

The library has always been an important public institution in our society, like museums and theatres. But with the rapid changes technology has entailed these socio-cultural institutions have fallen behind and have not been able to evolve with the same speed as the rest of the society. Peter Dalsgaard writes in his article *Challenges of Participation in Large-scale Public Projects* that: "For many institutions, the case is that they play important roles in the public sphere not only due to the materials they house and curate, but because they have also become bearers of culture and places of public engagement and participation." (Dalsgaard, p.1). The background for this project was therefore to help the University of Oslo Library adapt to the society and the student's demands, by engaging the students in the development of a mobile application for the library.

In this project we have created a mobile application for the University of Oslo Library, the *Realfagsbiblioteket* has been our customer. The goal with this project is hopefully to make the library more used by the students and most importantly make it easier and cheaper for them to find their syllabus each semester. We know, by own experiences that it can be time consuming and expensive for students to find their syllabus. That's way the main and first idea with this application (see picture of our first sketch) was that you could plot in your subject code, get a list with the required syllabus, and see if that syllabus was available at the library and in that case where. Our costumer really liked this idea so we went for it. The final solution is based on the users' opinions about how an application for the library should work and look like.

Picture 1: Sketch of our first vision.

1.1. Project group

The team members are: Ingrid Arnesen, who has a BA in Digital Media from the University of Oslo, Jorun Børsting who has a BA in IT, language, logic and psychology from the University of Oslo, Sun Lin who has a BA in Arts from the Communication University of China, Martin Myhrstuen who has a BA in Informatics from NTNU and Jan Gustavsen who has a BA in Applied Computer Science from the Oslo University College. This educational diversity has helped us to see the project from various angles, something that has benefitted us.

1.2. Getting started

After one of the first meetings with some people from the *Realfagsbiblioteket* we made a schedule for our project (see attachment 1). In the beginning we didn't make a plan for the whole project, we wanted to plan and make decisions as the project developed. We had some deadlines and aims that we needed to follow, but other than that we did what we felt was necessary to finish our project. But we new from the beginning that Martin would be in charge of our high-fidelity prototype, because he is the only one in our group with good programming skills. The rest of us would contribute with what was needed to finish our project. The project schedule was developed without help from the library people. But our contact person and the library people helped us in the beginning to guide our project in the right direction.

We were able to keep the deadlines that we had to follow. And we used the time we had well and were able to collect the data we wanted and make a well working high-fidelity prototype.

2. Design process

2.1. Participatory design

For our project we wanted to use participatory design (hereby referred to as PD) as our design approach. We felt that this approach would fit our project because we could easily get access to the right users and because our project was small-scale. Many researchers argue that participatory design is well suited for small-scale studies. But Peter Dalsgaard argues in his article *Challenges of Participation in Large-scale Public Projects* that PD could also be used in larger studies, like the building of a new public library in Denmark. In large-scale projects, like the new *Realfagsbiblioteket*, you could use PD as a design approach on small-scale projects within this large-scale project. (Dalsgaard). We also felt that PD fitted our project because one of the goals for the project was to involve the users. The library people wanted the students to contribute, they wanted the students to take control, because we were the initial user group and we would also have a better idea of what was needed. Since the focus was on the users to begin with, we felt that PD would be the best approach for our project. But we were not sure in the beginning if we would be able to find users that would have the time and opportunity to help us through the whole project. But when the library provided us with gift certificates from the university book store to give our users, we felt that PD would be feasible.

PD is a design approach developed to actively involve users in the designs process, to listen to their opinion and let them make decisions. It is believed that when respecting the user's "voice" you could make a more usable and popular product/system. The Scandinavian tradition on PD is based on the idea of democracy, that everybody should be heard and that their opinion matter. In the book *Routledge International Handbook of Participatory Design* Liam J. Bannon and Pelle Ehn define PD this way: "It has to do with participation, with how stakeholders - especially developers and planners - cooperatively make or adjust systems, technologies and artefacts in ways which fit more appropriately to the needs of those who are going to use them." (Simonsen and Robertson, 2013, p. 41). Bannon and Ehn also write that PD is an ongoing iterative process. Were you continuously evaluate your data throughout the designs process, something we did in our project. They also argue that "Participatory Design has been influenced by this action research tradition, in terms of attempting to change situations, not simply study them." (Simonsen and Robertson, 2013, p. 42). This fit with the aim of our project. We wanted to make the library more used by the students, which will require some kind of action or change from our side. We have together with some participants developed an application (the action) that hopefully could be used by the students to make it easier for them and more desirable to use the library.

2.2. Pros and cons with participatory design

The design approach we used have many similarities with another design approach called users-centered design, were you also involve the users in the design process. But how PD differs from user-centered design is that we have actively involved our users/participants not just when collecting data, but also invited them to participate in our meetings and asked for their opinion when making decisions. This has worked out really well for us. The participants we used liked our idea and wanted to contribute in the development of our mobile application for the library. One of our participants even contacted us, because she suddenly remembered something she wanted to tell us about how the application should work and look like. It was important to us to use the same participants throughout the whole project, because then they would get to know every aspect of our project and could participate in all the stages of the design process.

Using PD has its pros and cons. It's a good way to let the users drive the product/system in their direction. So you could make a product/system that is wanted by the

users and based on their needs. But our user group is not homogeneous, and to let a selected number of users decide, could lead to a product that does not fit everybody (our user group). But maybe this could be fixed if you are a bit selective when selecting your participants. And also remember that we (the project group) are in charge, and don't have to do everything the participants tell us to do, but take it into account. PD could be a very time consuming and exhaustive process for the participants. But some participants get very engaged in the project and don't feel like they are wasting their time, they are actually having fun. In user-centered design you don't necessarily use the same users through the whole project, which is good if some of the participants don't want to contribute in the project any more. A good thing we experienced with PD was that we developed a close relationship with our participants. And that we had a lot of fun together. It was fun to see our participants engage in our project. And you could tell that they really wanted to help us make the best mobile application for the library, which was designed by the users and for the user's needs.

It would have been difficult for us to use experimental design approach, because the goal with our project wasn't to reject or prove a hypothesis, we didn't have a set of factors that we wanted to compare. Our goal was to identify the user's needs and find out what we could do to improve them. The first idea we had was very basic, so we wanted to collect data to get some idea of what the users wanted, then evaluate this data and then collect more data based on what we had found. (Lazar et al., 2010, p. 21).

2.3. User group

Our target population/user group is the students at Oslo University. This is a huge user group so we decided to focus on the students at the Faculty of Mathematics and Natural Sciences, because they are the students that are most likely to use the *Realfagsbiblioteket*. We are designing *for* our user group, one of the reasons why PD is a good design approach. But there are other interests in out project as well. Our stakeholders are us (the project group), our user group, our participants, the people working in the *Realfagsbiblioteket*, especially our contact persons at the library, Fredrik H. Juell, Line Nybakk Ankerhol, Andrea A. Gasparini and Kyrre Traavik Låberg and Alma Culén our contact person with the library. (Lazar et al., 2010, p. 187).

We included six participants in our project; they followed our project from the beginning until the end. They are all Informatics students at the University of Oslo. One is a

bachelor student and the rest are master students. Three of them are boys and three are girls. These persons were selected because they were available, but we also believed that their input and expertise would be good for our project. To have a gender balance like this was a deliberate choice because we believed that this could affect their opinion about the application. We tried several times to have a meeting with all our participants together, but this proved to be impossible. We were never able to agree on a date and time when we could all meet. But I don't think that affected our project negatively. Since they met us two and two at a time they were never affected by the other participant's opinions.

2.4. Methods

In our project we have used several methods. First we conducted a survey to better understand how the students use the library and for what purpose. Second we conducted a workshop where we used *fictional inquiry* as a technique, followed by a semi-structured interview. Then we had a semi-structured interview with the library people. And last we had a second workshop with our participants where we showed them our high-fidelity prototype and discussed the design and what symbols/icons they thought would fit our application. Semi-structured interviews fitted our project the best, compared to unstructured interviews and fully structured interviews, because we could prepare some of the questions before the interview. We knew what we wanted to ask the participants about, but we also wanted to be open and ask questions as they develop and occurred during the interview. This triangulation (combination of methods) has given our project a good and steady data foundation. We collected both quantitative data (survey) and qualitative data (workshops and interviews). (Lazar et al., 2010, p. 189, 148-149).

Surveys and interviews are all well known and well used methods within the field of PD and HCI. But in the first workshops we conducted we used a technique called *fictional inquiry* to help engage our participants. This method/technique has developed within the field of interaction design, to enhance the participant's creativity and innovation in a project/study. We started the workshops with a scenario. When using a fictional frame like this you could "foster creativity and transgress the workshop participants' understandings and preconceptions of the current situation." (Biskjaer, Dalsgaard and Halskov, p. 2). When using techniques like this in PD you are not just collecting data about your user group, you get them to participate and engage in your project. They understand the use situation better and can

therefore use their input to improve today's situation. (Biskjaer, Dalsgaard and Halskov. p. 2-3).

3. Evaluation

3.1 The beginning

Our first vision was based on our needs when it came to the library and finding syllabus. We felt that it was difficult and time consuming to use Bibsys. It was easier to just go to a bookstore and by books there. We pitched our first vision to the library people and the really liked it. They said that they experienced that a lot of students spend a lot of time and effort finding their required syllabus each semester. We now had a vision and aim for our project, but we needed to gather more information about our users.

Vision	A mobile application where you can search for subject code and get your syllabus list and where the book/article is at the library.
Aim	Make it easier for students to find syllabus at the library. And get students to use the library more.
Design specifications	None

Table 1: Project development. Showing the first phase of our project.

3.2 Survey

After we had settled on an idea that everybody was happy with, both us and the library people, we thought the next step should be to conduct a survey (see attachment 2) to collect some data about the users. Our aim with the survey was to find out if the students use the library at for what purposes. We also wanted to know where they normally bought/borrowed 3,14 cmtheir syllabus. If they would be interested to read comments and also be able to comment on books and articles they had read. And we also wanted to know if they would be interested in using a mobile application for the library or not.

When we had agreed on the topics and what information about the user we wanted to collect, we started making the first version of our survey. It was important to start with some general and easy question, to get them going and have the more important questions in the end. We tried not to make the survey too long. We wanted it to be quick and easy for the users to fill it out. So most of our questions were unorded closed-ended, they had alternative

answers. (Lazar et al., p. 112) To erase some of the errors or incorrectness we conducted a pilot test. We got some of our fellow student to fill out the survey and tell us if there were things/questions we should change. But there was one question that was quite important that we should have asked differently. We asked: "Do you use any of the libraries at the university?". But this could mean those who have just been at the library ones, many years ago. We should rather have asked: "How often do you use the library?".

In the beginning of our project we wanted the focus to be on all the students at the university, not just students from the Faculty of Mathematics and Natural Sciences. So we printed our about 100 surveys and went to *Fredrikkeplassen* at Blindern, and asked those students we met if they would be so kind to fill out our survey. Almost everybody said yes. After the data collection we registered all the answers in Google to get an automated and clear overview over the results.

3.2.1 Result

The most important thing we noticed was that about 90 percent of the students we asked would be interested in both reading and giving comments on books and articles. And also the majority of students would have used a mobile application for the library if one existed. After the survey or idea was still the same, but we knew that we had to add some extra functions.

Vision	Same as before. But with an extra function for commenting on books and articles and reading other comments.
Additional aim	Bring in a social aspect.
Design specifications	None

Table 2: Project development after the survey.

3.3 The first workshops

3.3.1 Planning

We wanted to plan the workshops well to ensure that we got feedback on the most important aspects of the functionality of an application. To ensure this we looked at the survey results and the whole group had a brainstorming session were we agreed that the goal with the workshops would be to find every possible solution to the application functions. Based on the

brainstorming we made low-fidelity prototypes in Photoshop, see picture below. The low-fidelity was made in a way to embrace discussions around functionality and design. The Low-fidelity was not made as a design solution to a final high fidelity, but to support the discussion surrounding the functionality and design solutions we uncovered in the brainstorming session. The low-fidelity prototypes are made by customizing GUI iphone PSD templates from a blog called Teehanlax. They are free to use for designers for noncommercial purposes.
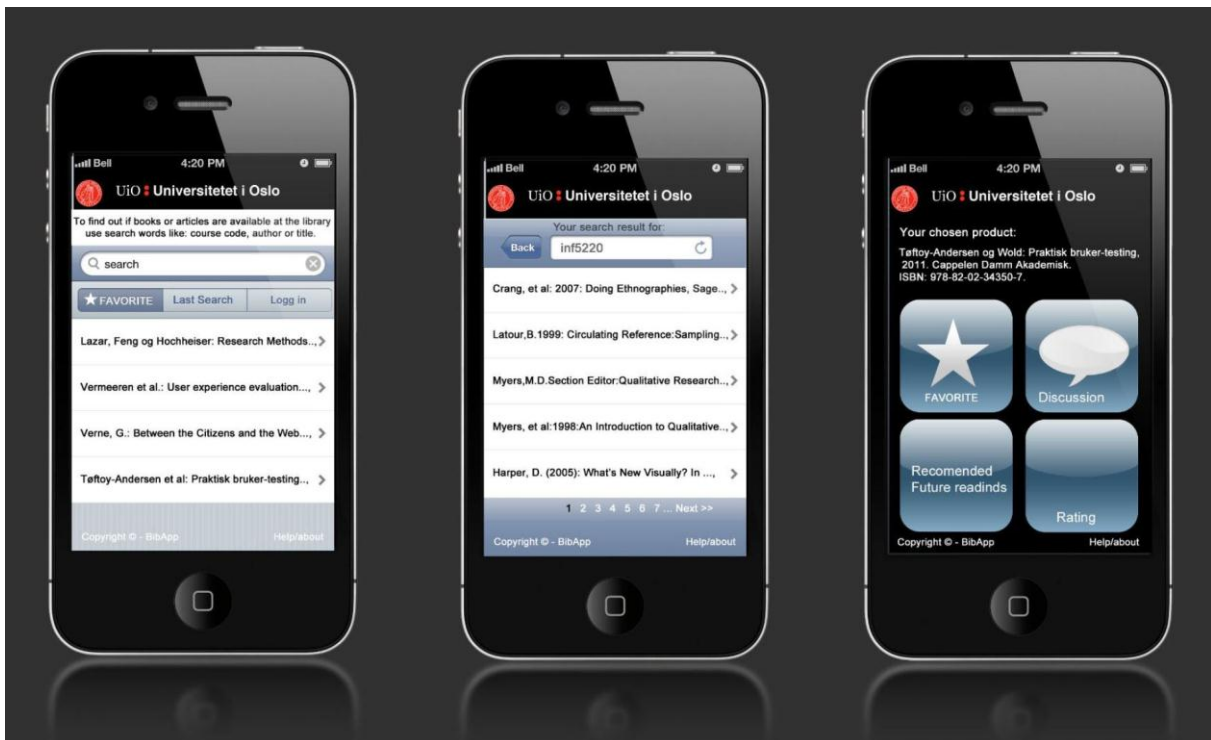
Picture 2: Low-fidelity prototype.

3.3.2 Pilot test

Before we performed the workshops we did perform a pilot test. In this pilot test we got feedback on our workshop plan. (See attachment 3). The participants in the pilot test said they liked the scenario and the drawing session. They did say we should use pencils and erasers instead of pens and they would like to have color pencils. We were two people performing the pilot test and the participants said they liked this because the group rooms are not that big. They also liked that one of the group members administrated the workshop and one took notes, this way the group members were occupied with things and did not just sit and look at them. They said it would be uncomfortable with more than two group members. They also liked to be two participants performing in the workshop together because they felt more at

ease when they were not part of one big group. We had planned to perform the workshop with many participants and with the whole group. Since it is important for us that our participants are comfortable we changed our plan accordingly. So we planned to conduct three workshops with two participants. In hindsight the answer of the participants might be biased by us performing the pilot test with two participants and two group members. It would have been interesting to test if the participant would have answered differently if we performed the pilot test with five group members and six participants.

3.3.3 Conducting the workshop

Picture 3: The group room where we conducted the workshops.

In the first workshops we wanted to get data about which functions the participants wanted. We wanted to structure the workshop to insure we got free input from the user, but we also wanted to insure that we covered the most important aspects of the possible functions for a library application. We started the workshop using fictional inquiry by presented a scenario (see attachment 3) of a socially active student looking for a quick way to get their library books. Then the participants got pictures of empty iphones to draw their suggestions on how a library application could look like. We thought that it was important that the blank paper phones were true to size and as neutral as possible in colors. The size is particularly important since when designing an efficient application, the small size of the phone is an important constraint. The participants drew how they thought the app should look like and then they explained their design.

The next phase of the workshop was planned to ensure that we got feedback on the most important aspects of the functionality of an application. To ensure this we used the low-fidelity prototype. In this phase of the workshop we had prepared some questions (see attachment 3) about the low-fidelity-prototype. But we also focused on being flexible since we wanted to capture the participant's opinions about the functionality of the application. Here we asked questions as the conversation evolved.

Since we hoped that the participants would agree to work with us in our design team and contribute in more workshops we had a focus on planning the workshop in a way that made the participants as comfortable as possible. We also used consent forms in all of our workshops to insure informed consent.

After the workshop we asked if the participants wanted to continue to work with us in our design team. They gave us feedback that it was fun and that they were exited to see how our application progressed. When they all said yes to participate in our project, we changed our design approach from user-centered design to participatory design.

3.3.4 Result

After the first workshops we could start working on our high fidelity prototype. Our focus was always on making a design solution based on the users' opinions. But the group also knew that there were probably going to be some technical constraints making it hard for us to make an application identical with the users' suggestions. We decided to make an application as close to the design requirements as possible, but keeping the suggestions that were not possible to implement as important suggestions and future work.

We analyzed our data (see attachment 4) from the workshop and made design requirements (see attachment 5). The most important thing we noticed was that all our participants talked about personal settings. In the low-fidelity prototype we had functions called "favorite" were you could save books and articles that you liked. Almost all our participants said they didn't have any favorite syllabus, but that they rather would be interested in adding course codes, books and articles to a function called "my profile".

Vision	Same search function as before. But six additional functions has been added; rating, abstract, availability, relevant reading, my profile and discussion.
Additional aim	Personal settings.
Design specifications	Clear menu structure.

Table 3: Project development after the three first workshops.

We also wanted to make sure that the application was designed in a way following the requirements of the university library design requirements and working with Bibsys. To insure this we performed an interview with the stakeholders to insure we knew what their opinions were.

3.4 Interview with stakeholders

In an attempt to include as many of the stakeholders as possible in the design process, we arranged a semi-structured interview with three employees from the library. These three participants were the same people who had followed our project during the design process, so they had some idea of what our project consisted of.

Before the interview we put together a test-plan (see attachment 6) on how we would conduct the interview, and which questions/tasks the participants would have to answer/do. We also made a consent form (see attachment 7) they had to sign, just to make sure they knew that the information they provided never would be used inappropriately.

The main focus of the workshop was to get feedback on the icons we had used or would like to use in our application. We had already gathered some information about this from our participant, but the feedback from library employees was also important in this aspect because they work with books and articles on a daily basis and know what they associate with the different "library" symbols. They were handed different sets of icons, and asked if they associated any of these with features we wanted to implement in our application. The workshop lasted for a good hour, and resulted in a lot of valuable feedback.

3.4.1 Result

The main results from the interview were that there was no need to create new icons for something where it is already known icons to symbolize it. We should instead use symbols people know from before, that already has an association to it. But the library people said that they appreciated humor and would like icons to be altered in a fun/cool way. But they consistently said that in the end it was the user's opinion that mattered, not theirs.

3.5 Second round of workshops

3.5.1 Planning

When determining the method for the evaluation of our solution we wanted to build on our experience from the workshops earlier in the design process. We decided that the best way to do the evaluation was by continuing with workshops with participants from our design team. Our participants were eager to see how the high-fidelity application looked like, which were a

good starting point for the evaluation. We experienced that our workshops were efficient and that the participants enjoyed them. We could have performed experiments, but felt that we wanted to perform a new workshop with the same participants evaluating our high-fidelity prototype with a semi-structured interview. We experienced that one of us were occupied with taking notes during the first workshops. To eliminate this we conducted the last workshops by recording them. We experienced that this was much more efficient during the workshop, but to transcribe the interview afterwards would be very time consuming. When planning the workshops we wanted to focus on design and build on the data from the first workshop. We experienced it as positive to integrate things to discuss during the workshop. We wanted results from the meeting with the library to be integrated in our workshop, but we did not want it to limit the freedom of the responses from our participants. In this workshop we wanted the users to design the icons for page three of our application. We decided to show the participants many pages of different icon suggestions and use these suggestions as conversation openers. The icon suggestions from the library were part of the icons showed to the participants, but we also added more suggestions. These icons were designed to visually have the same style by us in illustrator and photoshop. We did not tell the participants which icons the library people suggested, but the participants asked us what the library wanted and was focused on this. We told them that the library wanted the header, seal and logo to be standard UiO, but the rest of the application was up to the participants to decide if it was supposed to be standard or more creative.

We planned to show our participants our application first and then conduct a semi-structured interview (see attachment 8). We wanted them to be able to use the symbols we had prepared when giving us design suggestions.

3.5.2 Conducting the workshops

The workshop started with the participants signing a consent form (see attachment 9) and then the audio recorder was started. The participants were showed the application on a smartphone, got to play with it and ask questions. We did not want to start with our questions because we wanted to make sure we did not influence the user's opinions about the application and get some open feedback about on it.

Then we followed up with some questions about the design and functions as the participants had access to the application and could navigate the different sites of the

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application while explaining and answering our questions. By having the application when asking questions we got feedback on the functionality of the application and we also observed how the user interacted with the prototype and if there were usability issues. We experienced that it was good not having to take notes about what the user said since then we could also register the interaction with the application.

Then we laid out many paper sheets of possible icon pictures, we tried to cover many different styles and layouts. Our intention was to use the pictures as conversation starter and not final design solutions. To insure this many of the icons were not made as standard icons with backgrounds, but simple small illustrations of different things with different looks. We told the participants to use these pictures as inspiration and not to think about the specific color of the icons since that would be easy to change. We also said that these are just suggestions and that if they have any suggestions of what they like not represented on the paper sheets we would like to hear them. The participants immediately said that they felt some icons could be used and pointed out colors and illustrations they liked. Then we started asking our questions guiding the conversation through the different functions.

3.5.3 Result

We experienced that for except of one icon all the other icon suggestions from the participants were not identical with any of the suggestions on the paper. In the meeting with the library they suggested using a person reading a book with glasses looking like a nerd to represent the related readings. This icon was the only icon the participants choose, but interestingly they did not want to use it for the related readings function, but for the 'my profile' function. After analyzing our results (see attachment 10) we found out that it was important to discard the icons we designed based on the meeting with the library and redesign the icon for related readings to be used for the 'my profile' function. They wanted text with the icons and it should be as big as possible. All the participants said that the icons and text in our application were too small. Some icons they couldn't even see what was representing. All the changes of the icons were made by using a combination of Illustrator and Photoshop which Martin then implemented in the application. The size of the text was made as big as possible to meet the participant's wishes. The participants had different opinions about the colors and style of pages and icons, but we decided to go for the opinions that the majority of the participants

wanted. As one of our participants pointed out "*when it comes to color and style of the design this it is obviously very individually and there are many different preferences*".

Vision	Has not changed.
Additional aim	None
Design specifications	Tidier overall design and a complete style. It should be simple and quick to understand and use. Cool design could be an advantage

Table 4: Project development after the three second workshops.

3.6 Comparing the first and second workshops

We now have experiences from workshops with low-fidelity prototypes and workshops with a high-fidelity prototype. Both workshops started with different tasks planned to support open feedback. It was much easier to get free feedback when there was no high-fidelity prototype developed and we were in the beginning of design process. Then we could give them blank phones and get the participants to design the application they wanted. Here it was important that we did not show our low-fidelity prototype before the user did their design. In the last workshop this was addressed by letting the participants use the application without any instructions or questions from us. Then both workshops had questions that were very right to the point, like in our first workshop we started by asking "What functions do you think an app for the library should have?". The answers to this question made the basis for the design of our application. The second workshops were more to evaluate the design and structure of the application. Here the user evaluated and made suggestions on how the design of the application should be changed. One challenge we did meet in the second workshops was that many of the participants were very focused on what they thought the library wanted an application to look like. We had to address these concerns as they were raised. The main point with this project was that the library people wanted the application to be designed to the likings of the students. In hindsight we should probably have planned to tell the participants this in the beginning of our last workshops.

4. Analyzing

Our analyses are based on the interpretation of text files and transcripts from the audio recorded workshop. We went through the data files and identified the opinions that most of

the participants agreed upon. In the first workshops we found it useful to sort the requirements based on the different application pages and one category representing the application in general. "Assigning categories to the different opinions as they appeared in the text" (Lazar et al., 2010, p. 211.) was useful to list all the instances of the categories in a list. We can also see connections between the categories and similar opinions that are mentioned on different pages. Our analysis resulted in a list of new requirements. The result validated some aspects of our application design and identified a list of areas in need of revision and changes.

A challenge with the workshops was all the different viewpoints. There are also often one person having an opinion and others agreeing, but not saying it out loud. It is therefore important to also be aware of body language and other observable signs off agreement. Participants typically nod their head and said "mmm" when they agreed. When analyzing the audio recordings from the last workshops we learned that the audio tapes were not enough. We got much more insight when analyzing the audiotape combined with the notes of observations of the nonverbal reactions. In general our participants had many of the same opinions and if they disagreed they discussed the issue and found common grounds. The biggest difference was in the color preferences some wanted red and black, but most of the participants wanted blue. We decided to use blue since most of the participants wanted this. Our analysis is informal, but

> "shares many characteristics with more rigorous established practices such as content analysis or discourse analysis. These approaches may differ in their level of attention to detail and their conformance to established practice but the goal is always the same: to help researchers move from an unordered and undifferentiated mess of interview data to clear, structured understanding." (Lazar et al., 2010, p. 211).

Lazar et al., (2010) argues that "informal techniques are often sufficient". (Lazar et al., 2010, p. 211). But in hindsight we should probably have performed a more formal analysis to aspire for generality and more validity. (Lazar et al., 2010, p. 211.)

4.1 Validity and reliability

There are questions regarding validity when analyzing our data since it is text files. Reading and analyzing texts are in its nature subjective. (Lazar et al., 2010, p. 211.) This might lead to bias, since the analysis may be influenced in some degree strong or small by the personal

opinions of the individual performing the analysis. To increase validity multiple researches can perform independent analyses of our data. It indicates a reasonably valid analysis if their comments are similar and it is possible to measure high values of inter-rater reliability. (Lazar et al., 2010, p. 212). We did discuss the analyzed results in the group to see if there were different impressions of the users' opinions. Lazar et al. (2010) argues that "validity may not be a particular concern if your interviews are aimed at understanding user requirements." (Lazar et al., 2010, p. 212). This is true for our project we were interested in understanding and learning what the user wanted the application to be. We also worked close with the participants this semester and Lazar et al. (2010) also argues that "you will probably present your findings to them once your analysis is complete" and hopefully the participants will let you know if your result is faulty in some way. We did present our high fidelity prototype to the participants based on the analysis of the first workshops. We experienced that they did tell us what they felt was not in accordance with their opinions about the design and functionality. They did express that they wanted it to be simple and easy to understand. This regarded especially the size of the text and the color of the functions. We also experienced that the users changed their mind when seeing the application, the opinions evolved during the process. It was the participants that wanted icons and expressed that they wanted six icons for the functions. But when interacting with our app they found this layout not to be efficient enough. One participant stated that: *I think it is inconvenient to have to use so many icons to get to what I want. And there should only be four such icon buttons*". They did also say that they still liked icons, but not that many. Seeing how opinions evolved was interesting, but it also shows that it is challenging to collect data about opinions since given time they can alter. This might be related to problems of recall. Since the first data collection was "separated from the task and context under consideration." (Lazar et al., 2010, p.179). We found that it was useful to get feedback on our solution which illustrates the requirements based on the opinions in the first workshops. Lazar et al., (2010) also argues that "this feedback is very useful for refining your understanding." (Lazar et al., 2010, p. 212). To strengthen our result we did show our application in an informal way to our participants after the last changes and they liked the outcome.

Picture 4: High-fidelity prototype
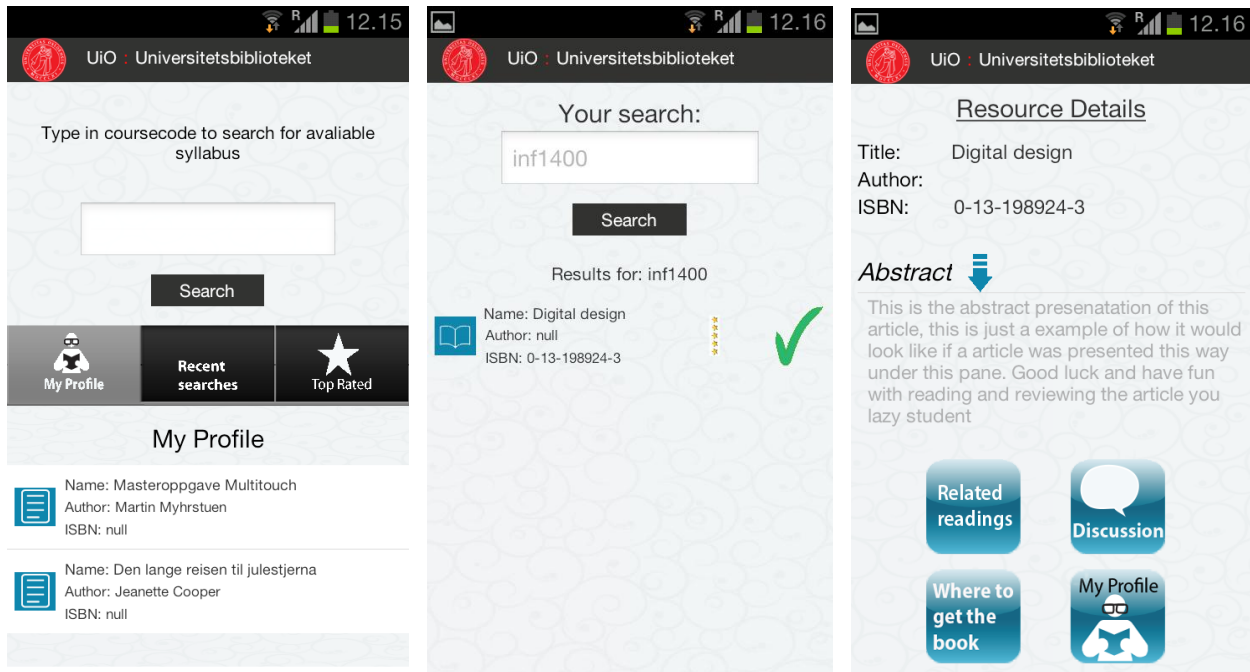
5. Result

Over you can see the design of the application and how it turned out at the end of the project. This section will shortly describe what the application can do, and which features that is included in the final work.

The first page contains the search function as the main feature. Here the user can type in a course code as the search-word, and press the "search" button to get the results. Underneath the search function we have three tabs, each containing different features the users said they would find useful when using the application.

- My profile: This tab is supposed to be a personal "my profile" page. Here the user can add articles or books he/she wants to include in their personal profile.

- Recent searches: This tab is simply a list of what the user searched for the last three times.

- Top rated: This tab contains a list of the top rated articles and books in the specific user's faculty.

The second page of the application is the search-result page. This page contains the results retrieved when the user does a search. Also this page has the search function on the top, in case the result-list returned is empty, or the user wants to make another search without going back to the first page. The result-list contains the title, author and ISBN of the book/article, an icon that indicates if it is a book or article, a star-rating icon which tells the user something about how well the book/article is rated and finally an icon that tells if the book/article is available on the library or not.

The last page is the "resource-details" page. This page contains detailed information about the article or book. It has the title, author and ISBN on the top, an abstract-text represented in a drop-down list in the middle, rating options and four buttons, one for each function we wanted to include. These four functions are:

- My profile: This tab is supposed to be a personal "my profile" page. Here the user can add articles or books he/she wants to include in their personal profile.

- Discussion: This is the function where the users can discuss the article or book. This will display the latest comments on each resource.

- Related readings: This is the function which tells the users if there are any related books or articles on the resource already chosen.

- Where to find the book: This is a function that tells the users on which library they can find the resource.

6. Challenges

When developing and designing the high-fidelity prototype we encountered some problems and challenges along the way. Some of these challenges were simply android-development related, but some also relates to the already existing systems and standards of the University, like Bibsys and the representation of books and articles in each course code. In this section we will describe some of the challenges we encountered during this project, how we resolved them and what needs to be looked further into in possible future work.

6.1 Retrieve syllabus information

In order to effectively implement the main feature of our application, we needed some way of retrieving the syllabus for each course on the University. As it is today, there is no good way of doing this and the solutions that do exist is poorly developed and does not return a good enough result both in regards to accuracy or the amount of information retrieved. As we see it, there is two possible ways to store this information. Either in a database separated from the BIBSYS system, or implemented directly into the Bibsys database so that each book or article has the possibility to be linked to a course code. In order to implement the first option, there has to be a change in the way each teacher and professor publishes their respective syllabus lists. We will address this challenge later in "Standardization of syllabus list".

The second alternative is actually the way we chose to solve this problem. In order to make this work, employees from the science library had to manually alter the Bibsys database, and connect books to their respective course code. Then you have to make a search through the Bibsys-API to retrieve the correct information. At the moment this solution has its limitations. First of all a search only returns the books listed in each syllabus list and not articles as well. Second, you have to use a course code as the search-parameter, searching for a book will not display which course it belongs to.

6.2 Standardization of syllabus list

As mentioned earlier there is a need for standardization on how the syllabus lists are represented on the University. As it is now, teachers and professors on different faculties have different ways of posting this information on the web. This makes it almost impossible to parse and retrieve the data for further storage in a separate database. If there had been made some rules or guidelines that all employees on the University had to follow, it would make this task a lot easier. This is definitively a challenge in further development and future work, and something that could be worth looking into.

6.3 Connecting to Bibsys

Bibsys is a system that allows users to search for available books and articles in all of the libraries in Norway. It is a fine tool if you want to find out if a library has the book or article you are looking for. The Bibsys-API is not that highly developed yet, and it was a challenge

to implement this into our application and make it work properly. The web API returns a long text string in a JSON-format, which has to be decoded so that it is possible to extract the information we need, such as title, author and ISBN. Java has external libraries you can import to perform this specific task, and after some back and forth we managed to return correct results from a search on all the course codes at IFI.

6.4 Abstract representation

The abstract representation is something all our users would love to have implemented in the application. The abstract presentation of an article or a book is something that is essential to many in finding out how interesting they find the plot to be. This abstract presentation is not something that is included in the information you get after making a search in Bibsys. We do simply not know how to implement this in a good way, and is something that has to be addressed in possible future work. Nevertheless, we have implemented an abstract presentation in our application, just to make an impression to the users on how it would look like if implemented properly.

6.5 Ethical issues.

Research ethics require that when you design a study you must focus on treating participants fairly and with respect. "This means that the participants have to get information about the nature of the study that they can use to make a meaningful decision as to whether or not they want to be involved. This notion of informed consent is a critical component of modern research in human subjects." (Lazar et al., 2010, p.368). To address this, our consent form had info about the study and why we are doing it, the procedures involved and potential risk. we did also explain this to the participants when meeting them and when giving them the consent form in the beginning of the workshop. We did also assure the participants that their privacy would be protected both verbally when agreeing to participate and when they got the consent form. We did limit the information that was collected by using pseudonyms instead of their real names in the notes, we call them H1-H6. By doing so we did not need to obtain consent for the collection and storage of personal information, but we still decided to give out consent forms with info about the workshop at the beginning of the workshop to make sure that participants were informed about the study and knew that they are anonymous and able to

quit the workshop if they wanted at any time, without having to explain the reason for this. (Lazar et al., 2010, p.381). We made them sign two consent forms so they had one to take with them with our contact info in case they wanted to contact us or if they wanted to read the information about the workshop again later. We did not take any pictures/video of the participants, but the last workshops were audio recorded. So in these workshops this was explained in the consent form. Even though we did write in the consent form and explained that they are anonymous and so, some asked anxiously when drawing on pictures of empty iPhones if they were going to be named and were very relieved when we said no. We were focused on making environments which would make the participants feel safe and at ease.

There are also only adult participants that "are capable of understanding the implications of agreeing to participate in the research" (Lazar et al., 2010, p.384). This might be more complicated if working with children or subjects that were not able to understand this. To make sure the participants felt secure and at ease we did ask them in the pilot test of the workshop how they experienced the test and what they would change. We did do some changes after this. The participants were given a gift card for their participation and they said they enjoyed the tasks after completing the workshop.

In our application, the users can register and have a personal profile and they can give comments or discuss books and articles. If the profile contains personal information this is an ethical issue. Other privacy issues could be related to saving browsing history and what information users can access about other users. The social functions should only be accessible to users who register and log in. There should be administrators responsible for the comments and discussions not to violate the rules of our social functions. The rules should protect the user's privacy and ensure a friendly, safe and supportive environment for all users.

7. Universal design

It is important to try to design an application that works for as many different users as possible without modifications. (Lazar et al., 2010, p.400). Our participants wanted the text on the application to be as big as possible to make sure the application is easy to use. This will also help include users that have moderate vision impairments. The users who are blind will have to use some form of individual adaption's (like speech recognition) and assistive tools to be able to use the application. The colors we use are also important, some colors used together will make the application impossible to use for color blind users. This is not a problem for our

application since the colors are blue, white and black. Also the icons we used should be intuitive. The main focus of our application is to design it based on our participants, but it would be important to also in the future make adoptions to aim for usability for all users, also users with impairments.

8. Conclusion

Using PD in this project was a fun and beneficial design approach. It was really the right approach for this project. Our aim was to include the participants in all phases of our project, which we did. It was time-consuming and difficult sometimes but when we saw what we gained it was worth it. We really enjoyed working together with our participants and the library people. And we can truly say that we are satisfied with the outcome of this project. We have identified the users needs when it comes to a mobile application for the University of Oslo Library, information which will be very useful for the library. We have also developed a well working prototype, with the functions and the design the users wants. The final step now would be to develop the final product.

In this project we have learned and experienced so much. First of all we learned how to work together as a group and use our personal and educational differences as an advantage. And we have learned how to involve users actively in the whole design process. New friendships have been formed and an interest in the library and HCI has bloomed.

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Tables   **Page:**

Pictures   **Page:**

Attachments

We have chosen to include and cite additional material as attachments, this includes:

Attachment 1: Plan schedule

Time	Place	Reason	Members
06.09.2012 14:00	VB	Meeting	The whole group
13.09.2012 14:00	VB	Meeting	The whole group
17.09.2012 11:00	Uiversity	Pilot test after class	Ingrid
18.09.2012	University	Do the survey	The whole group
19.09.2012	7. floor	Do the survey	The whole group
20.09.2012 10:00	IFI	Go through the data	The whole group
20.09.202 14:00	VB	Meeting	The whole group
27.09.2012	IFI	Make mock-ups	The whole group
03.10.2012	IFI	Meeting	The whole group
Week 40		Make: test plan, final mock-ups, have pilot test	Jorun, Ingrid
Week 40		Start work on high-fidelity prototype	Martin
Week 41		Design and conduct the final test. Analyze the data. Make list of requirements.	Jorun, Ingrid
The whole semster		Work on high-fidelity prototype	Martin
18.10.2012		Make midterm presentation	The whole group
22.10.2012	Classroom	Midterm presentation	The whole group
23.10.2012		Meeting	The whole group
30.10.2012		Meeting	The whole group
02.11.2012		Interview with the library people	Jan, Martin
02.11.2012		Icon suggestion from the library.	Jan, Jorun
05.11.2012		Work on presentation for the library breakfast	Jan, Selina, Jorun and Ingrid
06.11.2012		Presentation at the library breakfast	Selina, Jorun and Ingrid
Week 45		Plan a workshop. Find icons and different types of design styles to present for the users	Jorun Selina and Ingrid
08.11.2012		Conduct three interviews with our participants	Jorun and Ingrid
12.11.2012		Make a set-up for the final report	Ingrid
13.11.2012	7. floor Ifi	Meeting about the final report	The whole group
15.11.2012		Evaluate the data from the interviews	Ingrid, Jorun
16.11.2012		Finalise the design of the app	Selina, Martin and Jorun
22.11.2012		Go through the final report. And make presentation.	The whole group
25.11.2012		Deliver and correct the final report	Ingrid and Jorun

Attachment 2: The survey we conducted

Survey about the University of Oslo Library

This is a survey being used to collect opinions about a possible new product. The product is meant to be a tool for helping students find syllabus at the library. Your participation is voluntary and anonymous.

1. What is your gender? ☐ Male   ☐ Female

2. How old are you? _____ years

3. Which faculty do you belong to?
   ☐ Faculty of Humanities   ☐ Faculty of Law
   ☐ Faculty of Mathematics   ☐ Faculty of Medicine
      and Natural Sciences
   ☐ Faculty of Dentistry   ☐ Faculty of Social Sciences
   ☐ Faculty of Theology   ☐ Faculty of Educational Sciences

4. Which degree?
   ☐ Bachelor ☐ Master   ☐ One year program   ☐ Single subject

5. Are you a exchange student?   ☐ Yes   ☐ No

6. Do you use any of the libraries at the university? ☐ Yes   ☐ No

7. **If yes** ...   8. **If no** ...
   ... which library? _____   ... why not? _____
   _____   _____
   _____   _____
   ... for what purposes?
   _____
   _____

9. Have you used Bibsys?   ☐ Yes   ☐ No   ☐ Do not know

10. Have you used the University of Oslo Library homepage
    (http://www.ub.uio.no)?   ☐ Yes   ☐ No   ☐ Do not know

11. Do you sometimes have problems finding your required syllabus at
    the **library**?   ☐ Yes   ☐ No   ☐ Have not tried

12. Do you sometimes have problems finding your required syllabus at a
    bookshop?   ☐ Yes   ☐ No   ☐ Have not tried

1.

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13. Do you sometimes have problems finding your required syllabus at **online**?

□ Yes   □ No   □ Have not tried

14. Do you think you spend too much **money** on the required syllasbus each semester?   □ Yes   □ No   □ Do not know

15. Do you think you spend too much **time** finding the required syllasbus each semester?   □ Yes   □ No   □ Do not know

16. Would you prefer to print out a article or copy it in the library if that is possible?   □ Print □ Copy   □ Do not know   □ It does not matter

17. Do you like reading **articles** on a computer, a tablet or on paper?

□ Tablet   □ Computer   □ Paper   □ Do not know   □ It does not matter

18. Do you like reading **books** on a computer, a tablet or on paper?

□ Tablet   □ Computer   □ Paper   □ Do not know   □ It does not matter

19. Would you be interested in reading other peoples reviews/comments on a **book** you are thinking about borrowing from the library?

□ Yes   □ No   □ Do not know

20. Would you be interested in reading other peoples reviews/comments on a **article** you are thinking about borrowing from the library?

□ Yes   □ No   □ Do not know

21. Would you prefer to buy your syllabus at Amazon (cheaper) and wait a few days for it to arrive, or would you prefer to but it right away at Akademika (more expensive)?   □ Amazon   □ Akademika   □ Do not know

22. Where do you usually get your syllabus from?

□ Akademika   □ Libris.no   □ Finn.no   □ Library   □ Other:_____

23. Would you be interested in using a mobile-application for the University of Oslo Library?   □ Yes   □ No   □ Do not know

24. If you could use a mobile-application to find out if the University of Oslo Library have any of your required syllabus, would you use it?

□ Yes   □ No   □ Do not know

Thank you for participating!

2.

Attachment 3: Scenario and questions prepared for the first workshops.

Først: Fictional inquiry/scenario

Du har kommet tilbake fra sommerferien og har startet et nytt semester på Blindern. Men du er enda i sommerferie modus og har masse planer med vennene dine fremover og lite penger igjen etter ferien. Men pensum må anskaffes for det. Du ønsker å gjøre det så billig som mulig og tenker dermed at biblioteket kan være en mulighet. Du tenker også at det kunne vært interessant å finne ut hva andre har syntes om boken eller artikkelen du har som pensum. Så du printer ut pensumlisten din og stikker bort til biblioteket. I resepsjonen møter du en blid og imøtekommende dame. Du gir henne pensumlisten din og spør om de har noe av det på listen tilgjengelig på biblioteket. Hun forteller deg da at du må selv søke opp hver bok eller artikkel i Bibsys. "Ja vel", tenker du. "Det kan da vel ikke ta så lang tid?" Du finner en ledig data ved resepsjonen og logger deg inn. Du finner lett bibliotekets nettside og Bibsys. I søkefeltet skriver du tittelen på den første boken på pensumlisten din og trykker søk. Meldingen du får opp sier at resultatet av søket er null. "Det var da som bare", tenker du da du oppdager at to av bokstavene i tittelen har byttet plass. Du går tilbake til søkefeltet for å prøve på nytt. Denne gangen finner du ønsket bok, og i tillegg er den tilgjengelig på biblioteket. "Men er det verdt å bruke tid på å lese den?" Og hva handler den egentlig om?", undrer du. Du rister på hodet over hvor mangelfull informasjonen på Bibsys er. Før du rekker å søke opp neste bok, tikker det inn en SMS fra bestevennen din. Vennegjengen er samlet i Frognerparken og du er savnet. Grillen er varm og ølen er kald. Du titter ned på pensumlisten din. "Dette orker jeg ikke bruke tid på," tenker du og stikker til Frognerparken.

Så: Drawing session

Spørsmål

Hvilke funksjoner synes du en app for biblioteket skal ha?

Hvilke funksjoner burde den første siden ha?

Når man får opp pensumlisten eller ønsket bok, hvilken informasjon er da viktig å få med en gang?

Når du velger ønsket bok eller artikkel hvilken informasjon er da viktig å få opp?

Har du noen formening om designet?

Ville dere benyttet dere av en slik app?

Attachment 4: Notes taken at the three first workshops

Pilottest

Synes det er best å gjennomføre den to og to sammen mer komfortabelt. Synes også at siden rommene er såpass små passer det best om det kun er to som administrerer oppgavene. Passer fint med en som stiller spørsmål og guider oppgavene, mens en skriver notater. Dersom man skulle ha flere deltagere måtte man nesten ha laget noen form for skillevegger slik at man ikke spionerer på hverandre når man sitter så tett. Best med blyant og viskelær og ikke pen. Fargeblyanter er også bra.

Workshop 1

Sted: rom 1251 Scheme VB.

Klokkeslett: 11.30-12.15

Følgende er hva de sier etter å ha tegnet egne skisser av applikasjonen. H1 fokuserte mer på å snakke slik som appsidene var ment å fungere ved å starte på side 1 og deretter presentere de i sin naturlige rekkefølge, mens H2 snakket mer generelt om alle sidene som ble skissert uten å følge noen slik rekkefølge.

Notater:

H1: liker ting enkelt

Side 1: Må inneholde et søkefelt som er enkelt og lett forståelig til sitt bruk. Det må komme

tydelig frem hva man kan bruke som søkeord slik som emnekode, tittel, ISBN og eventuelt andre søkeord.

Side 2: Gir en skrollbar liste over flere treff sortert etter tittel eller ISBN. Viktig her at den er oversiktlig og lett å bruke.

Side 3: Går inn på artikkel får opp navn, forfatter, tilknyttet kurs og tekst om innhold.

For alle sidene:

Viktig appen er enkel, rask og fungerer bra. Liker svært dårlig mye unødig info slik som splash-fields, ting som popper opp og tekst/elementer som ikke trengs.

Viktig at appen gir klare tilbakemeldinger på hva som skjer, slik som klare indikasjoner på at etsøk pågår når man søker etter ting.

H2: Ønsker å kunne abonnere på sine fag og legge til ytterlige fag/fjerne fag.

Ha en funksjon for "mine fag" der pensum blir lagt inn.

Når man får opp artikler/bøker osv. kun krysse av om man har lest, kjøpt eller lånt den aktuelle boka. Flott om man kan benytte lista seinere ikke bre første uka. Mulighet for a sjekke tilgjengelighet på bibliotek, Akademika eller Amazon. Vil også vite om boka også tilhører andrefag.

Deretter presenterte vi våre prototyper og det som følger er H1 og H2 sine refleksjoner og tilbakemeldinger på dette.

Best rated burde være relevant for fagene man tar. Må fort og enkelt kunne rate. E-bok må også være der og også kunne rates.

Side 1: Viktigste funksjon er søkefunksjonen og man må være enkelt å utføre et søk. Det må stå klart hva som er søkeord, men hold de enkelt ikke for mye. Det blir rotete. Husk at det må stå at man kan søke på emnekode og ikke navn på emne. Eksempel inf1500.

Prototypen sitt søkefelt er greit. Lurt med favoritter. Men vil også ha oversikt over sine fag.

Side 2: Venteliste med push til appen når boka er kommet til biblioteket og man kan hente den. Bedre med scroll nedover. Viktig å kunne sortere etter f.eks. best rated or most popular.

Siden framstår som litt rotete, for mye informasjon.Men søkefelt bra.

Rating er interessant.

Bra man lett ser hva som er bok og artikkel. At man ser tilgjengelighet er bra. Største problem er nok at det er for lite luft, for trangt mellom de ulike infoene om bok/artikkel.

Blyant for rating så ikke bra ut, stjerne bedre. Dumt stjerne allerede er i bruk som favoritt symbol. Men ikke lett å bytte til noe annet, da stjerne representerer favoritt overalt ellers. Vi foreslår at dere tar bort stjerne på favoritt og lar denne funksjonen kun representeres med ordet favoritt eller "legg til i mine favoritter". Ikke ikoner bedre slik funksjonene på førstesiden er.

Usikker på om "legg til i mine favoritter" skal stå der, passer i grunnen bedre på side 3.

Side 3: Flott om man kan bestille bok og få opp plassering, relevant videre litteratur på samme tema.

Både H1 og H2 sier de ville lastet ned og brukt appen. Spesielt hvis pensum ikke bestod av hele boka men av enkelte kapitler i ulike bøker. Savner å få opp en samlet bok liste for egne fag.

Synes det er irriterende å måtte klikke så mye for å få det man trenger i Bibsys.

Workshop 2

kl.10.00- 10.45

Sted: Rom VB.

Det er en ganske kjølig oktober morgen, de to kvinner som idag skal gjennomføre oppgavene ankommer med tykke jakker, kaffe/appelsin drikk, godt humør og er interesserte i oppgavene gitt. De to kvinnene er venninner og har en god stemning underveis, praten sitter løst og rommet har en god stemning. De stiller spørsmål og er interessert i oppgavene, men også prosessen underveis.

De tegner iherdig i vei når de får tildelt de blanke arkene. De spøker litt rundt tegne ferdighetene sine, men stort sett er de stille og jobber fokusert med oppgaven, blyant og fargeblyanter blir brukt om hverandre.

H3: Jeg klarer ikke helt å se oppsettet hvordan applikasjon skal organiseres, men har klare tanker om funksjoner jeg ønsker å ha. Ikon representert med bøker. første side klikke inn kommer til innlogging og søk

Side 3 liste velge forfatter tittel år og sortere.

4 profil side som angir lånte bøker når hvor og hvor lenge gul grønn rød kode når utløpt og epost når snart utløpt happening, ikke mine søk, men mine fag sammendrag eller andre lignende artikler søk side får opp sammendrag kommentarer.

Våre prototyper.

side 1: må være enkel, for mye skremmende. Dette ser svært greit ut.

Side2: Artikkel er tilgjengelig hvis du logger på, det burde stå der. Si ifra hva som er tilgjengelig.

Har det relevante. Oversiktlig skjønner det. Alt her er viktig. Penner moro. kult med penn nytt, nytenkende og spennende. Kunne hatt hjerte på favoritt, men for useriøst og jentete.

Tilgjengelig ikon forslag: grønt/rødt lys. Runding rød eller grønn. Mye ikoner ellers godt med skrift. Ikke sikkert man skjønner ikon med en gang. alfa krøll som e-bok symbol.

Side3: rød tegn på ikon. Om den er diskutert antall vises.

Min profil fint. Burde ha rating med penner. Hvor mange kommentarer og rating?

Min side, kunne lagre fag du har søkt opp. sikkert på favoritter, kunne lagre mappe med egne.

Mappe på første siden. Kjapp link inn til fagene, mapper synlig på førstesiden.

Ikke mine favoritter, men mine fag. Lagre på profil siden. Under artikler ha relevante artikler.

Relevante tema interessant, spesielt hvis du skriver master om noe. Få sammendrag og sjekke hva som er interessant.

Ark med referat/notatblokk ikke notat og penn det er allerede brukt og virker som om de skal skrive noe.

Vanskelig med ikon, men finere med ikon. Ha systematisk. Mindre ikon tar for mye fokus fra

teksten.

H3: Kunne være interessert i å bruke appen hvis den inneholdt funksjonene jeg er interessert i.

H4: Kunne vært interessert, men ikke på telefon. Ipad hadde vært interessert.

Workshop 3

kl.11.00- 11.45

Sted: Rom VB.

De neste er to menn, kommer litt forsinket til avtalen veldig godt humør også på disse. De er gode venner og jobber bra sammen. Det er lunsjtid og en har med seg kaffe og en cookie, mens den andre har med seg en yoghurt. Dette blir spist/drukket mens senarioet presenteres.

Senario:

De har mest fokus på blyant og forslag til funksjoner, fargeblyantene blir ikke brukt ennå. De er konkurranse-rettet og snakker seg imellom om at de skal lage det beste forslaget i en kameratslig og sportslig ånd. Men sier også at ikke selve tegnekunnskapene er på topp. De spør seg imellom hvor mange slides de skal ha, ender opp på at man minst skal ha tre. Deretter utfordrer de hverandre til å ta 4 slides.

H5 fargelegger over tilslutt. Dette følger H6 opp og farger sine også.

H6 litt usikker på om han gjør dette riktig, men jobber fokusert.

H5 er svært fokusert og vet hva han skal gjøre.

Presentasjon av sine egne skisser:

H5: Første side: logg in, "husk meg" knappen viktig, brukernavn passord logginn. Logger inn en gang. Kun loggut funksjon på andre sider. andre søkefelt,

Neste side: får opp rating tittel søk på bok navn tittel også videre. Kommer an på algoritmen. sorter på relevans med rating på siden. Sier om boka er verdt å lese stjerner tall osv.

Neste side: bok abstrakt tilgjengelighet nederst horisontale tabs legge inn rating får opp mer tekst slipper å scrolle. Bestill funksjon.

Neste side: hvor den er tilgjengelig. Velger bibliotek som er ønsket hente den og bestill.

neste side: kvittering du har bestilt kan hentet sted adresse kart.

Hjem knapp.

H6

første side: logg in evt. gjest. Gjest kan søke, men ikke lagre søk.

Man logger inn og søker opp bok. enten ved hjelp av QR kode scann eller tekst, fri tekst søk tittel forfatter osv. treff etter relevans boka valgt, deretter kan man velge å kjøpe reserver eller låne. Anmeldelser ledet til Amazon eller e-bok register av anmeldelser.

Presentasjon av våre prototyper.

Side1: Relevant, favoritter lagre søk flott. ikke hete favoritt men lagre bok/søk.

Side2: Rating kan fjernes får det på side 3. ikke viktig å ha om tilgjengelig her. mer relevant på side 3. Jeg ville sett etter mest mulig tittel. H6 uenig vil ha tilgjengelighet først. H5 sier ja kanskje det. Bestill funksjon ønskes.

Stjerne bedre og antall best. Rotete med penner.

Ønsker heller scroll. eventuelt back , men scroll er best. Årstall viktig

Avaliable rød eller grønn Bra med ikon for bok/ artikkel. Ikonene burde ligge i en egen kolonneved siden av navnet på boken eller artikkelen i stedet for under.

Fint med relevant litteratur og hva som er referert.

Jeg ville brukt den. Bedre med App finner ikke det som trengs på bibliotek siden er så knotete.

Gir dårlige svar bøker man vi ha er i Agder. kult med rating er god/ ikke god. smart å lagre søk hater å søke i Bibsys. Avansert søk må skrive mye. Tidkrevende og blir lett irriterende. Kult med en App som er bedre.

Attachment 5: Requirements list

List of requirements for the library application

Page 0:

Log in

Be able to save your username and password, or a "remember me" function

Page 1:

Search field: Subject code/name, author, title, ISBN

Instead of "favorites" we should have a list of "my subjects" or "my profile"

People were not interested in using a "best rated" function that are not related to their courses.

Page 2:

Shows the result of your search.

A scrollable list. And have the possibility to sort the list

Symbol that shows:

- if it is a book or article

- rating (how many has rated the book/article)

- if it is available at the library or not

Use symbols and different colours for each category/functions

Page 3:

Use symbols and different colours for each category/functions

Functions:

      - Rating: give rating
      - Discussion
      - If the book is available - where
      - My profil: Your subjects, books you have borrowed and when you have to return them
      - Relevant topics/books/articles
      - Abstract

The app in total:

Clear menu/menu structure

Find a better name for the "favorite" function

Use stars to show rating

Attachment 6: Plan for the interview with stakeholders

Vi vil gjennomføre et intervju av ansatte ved realfagsbiblioteket angående ikoner til en app til mobil hvor studenter kan finne pensum og annen relevant litteratur.

Intervjuet vil bli tatt opp på mobilens lydopptaker.

Spørsmål:

Kan dere fortelle hvordan dere syns følgende ikoner til app-en bør se ut?

Tenker på form, farge, plasserring på skjermen og størrelse på ikoner.

Kommentar

Tilgjengelig

Abstrakt

Favoritter

Relevant litteratur

Kan dere kanskje tegne de?

Vi har lagd noen ikoner som dere kan se på. Hva syns dere om dem?

Form, farge, plasserring på skjermen og størrelse på ikoner.

Forstår dere hva de ulike ikonene betyr? Er de selvforklarende?

Attachment 7: Consent form used at the interview with stakeholders.

BibApp INF4060

Samtykkeskjema

Samtykke i deltagelse i intervju der det presenteres forsjellige ikoner til app-en for Realfagbiblioteket.

Dette er en studie som utføres av studenter i faget interaksjons design inf4060 ved Universitetet i Oslo.

Formålet med studien er å samle inn brukeres, stakeholdere, sine meninger om ikoner og bruke dette til å endre design av ikoner slik at de er best mulig egnet.

Intervjuet vil bli tatt opp på mobiltelefonens lydopptaker, samt at vi vil ta notater underveis.

Deltagelse i denne studien er frivillig og samtykke til deltagelse kan når som helst trekkes tilbake uten at man må oppgi grunn.

Alle opplysningene fra studien behandles konfidensielt. Alle deltagere i denne studien vil bli holdtanonyme og din deltagelse vil ikke bli registrert med ditt navn. Det er ikke deg personlig denne studiensamler informasjon om, men om design av ikoner og deres egnethet.

Lydopptaket vil bli slettet ved slutten av semesteret, desember.

__ Jeg har lest og forstått hva studien går ut på.

__ Jeg er villig til å delta i studien.

Sted og dato:

Underskrift for samtykke

_____

Hvis det senere skulle være ønskelig å kontakte oss for spørsmål eller annet, send en e-post til

jan7ville@hotmail.com.

Attachment 8: Prepared questions for the semi-structured interview in the three second workshops.

Spørsmål

Først:

Vise frem appen vår.

Påpeke at vi trenger hjelpe med design biten. Og at den kun er et oppsett/rammeverk for hvordan appen skal funke.

Spørre om de har noen bedre forslag for ikoner. Og bedre forslag til hvordan designet kan se ut.

Så vise frem våre forslag.

Om design, layout:
Er design/utseende viktig for deg når det kommer til mobil applikasjoner?
Siden vi lager en applikasjon for Universitetsbiblioteket burde den ha samme design og farger som Universitetets nettsider?
Burde funskjonene i applikasjonen vår representeres med både ikon og tekst? Eller hadde det holdt med bare en av delene?

Ikoner:

Rating:

- Hvilket ikon kan du tenke deg at best kan representere 'rating'?

- Vårt forslag er tomler eller stjerne, hva synes dere om det?

Discussion:

- Hvilket ikon kan du tenke deg at best kan representere 'discussion'?

- Vårt forslag er snakkebobler, hva synes dere om det?

Available:

- Hvilket ikon kan du tenke deg at best kan representere om en bok er tilgjengelig på biblioteket eller ikke?

- Vårt forslag er et grønt eller rødt merke, hva synes dere om det?

My profil:

- Hvilket ikon kan du tenke deg at best kan representere 'my profil'?

- Vårt forslag er en siluett av en person, hva synes dere om det?

Future reading:

- Hvilket ikon kan du tenke deg at best kan representere 'future reading'?

- Bibliotektes forslag er en nerd som leser eller en globus, hva synes dere om det?

Abstract:

- Hvilket ikon kan du tenke deg at best kan representere 'abstract'?

- Vårt forslag er en bok, hva synes dere om det?

Etterpå:

Hva synes dere om appen?

Hva burde forbedres?

Hvilken av funksjonene vil være mest nyttig for dere? Hvorfor?

Attachment 9: Consent form used at the three second workshops.

Samtykkeskjema

Samtykkeskjemaet gjelder deltakelse i et intervju der det først vil blir presentert en mobil applikasjon laget for Realfagbiblioteket. Intervjuet utføres av studenter i inf4060 ved Universitetet i Oslo.

Formålet med studien er å samle inn brukernes meninger om en mobil applikasjon for Oslo Universitetsbibliotek. Dataene som samles inn vil bli brukt til å forme og tilpasse designet på applikasjon etter brukeren meninger og synspunkter.

Intervjuet består av to deler. Du vil først bli vist vår prototype, deretter stilles det spørsmål vedrørende dens design.

Din deltakelse i dette prosjekt er frivillig. Intervjuet vil bli tatt tatt opp. Du kan til enhver tid trekke deg og din samtykke tilbake: både før, under og etter din deltakelse i prosjektet.

Personvernombudet for forskning har regler for lagring og oppbevaring av innsamlet informasjon. Disse reglene overholdes i dette prosjektet. All informasjon anonymiseres og vil ikke kunne tilbakeføres til deg. Det er ikke deg personlig denne studien samler informasjon om, men om design av en applikasjon og dennes brukervennlighet.

Sted og dato:

Underskrift for samtykke

_____
___

Hvis det seinere skulle være ønskelig å kontakte oss for spørsmål eller annet, send en mail til ingrid.arnesen88@gmail.com.

Attachment 10: Notes from the second workshops.

Workshop 4:

Vi legger frem appen vår.

På peker at vi skal først og fremst snakke om design.

Nå skal vi se på appen vår og fint om dere gir tilbakemeldinger på hva dere mener om appen og vi vil gjerne få forslag til endringer.

Skjønte ikke helt det skiltet for available burde jo være grønt? Det burde også se annerledes ut.

Men synes det virker enkelt og oversiktlig med siste siden. Likte at tittel og forfatter står for seg selv. Klart og oversiktlig. Vi lurer på ikonene og er interessert i deres mening om hva som best representerer de ulike funksjonene. Det er 6 funksjoner. Abstrakt, diskusjon, ledighet/hvor på biblioteket den er. rating, Relevant litteratur. Synes dere det er viktig at designet er gjennomført og fint? Eller er det viktigst at det er enkelt å bruke og fungerer bra? Det viktigste er at det er enkelt og forståelig uten mye rot. Om det er stilig design er jo det en fordel, men hvis ikke det er enkelt å bruke den så gidder jeg ikke å bruke den, det er jo en hovedsak. Lett å bruke er første prioritet, men fint design trekker jo opp. Det er vel derfor man liker forskjellige apper og hvis det altså er fint design. Det skal jo også være for universitets bibliotek så viktig at vi bruker de dere UiO fargene. At man fort kjenner igjen at det er universitetet da. Da burde det også være litt proft lagd må være mer ryddig design.

For min del er ikke det et krav, men for universitetet er sannsynligvis det et krav. Ihverfall logoen og seglet. Seglet vil jo også kunne fungere som en hjem knapp og det er jo i prinsippet smart. Ja, men synes dere at funksjoner representeres både med tekst og ikon?

Da må det jo synes disse symbolene er jo veldig små da. Da at man har et ikon ved siden av og på de første bør det vel stå tekst også. Men de må være mye, mye større. Jeg ser jo ikke hva det er, må jo ha forstørrelses glass. Min side eller et eller annet. De må være mye større.

Viser frem mange ark med ikoner og illustrasjoner.

Her var det mye stiler å velge mellom. Den var kul til om du liker. Altså til ratingen. (peker på en tegning av flere stjerner sammen) Sterke og tydelige farger er fint. Jeg legger merke til at det er mye mer dybde i noen. Noen er flatere. De skal helst ha samme farge og siden de skal være små må de være enkel i designet slik at man lett oppfatter hva de er.

Rating: Rød er for ikke likt og hvit hvis det ikke er rated eller noe. Ellers så trenger du ikke og rate den hvis du er nøytral. Det er vel gjerne slik at du enten liker den veldig godt og gjerne vil rate eller veldig dårlig. Men vis den ikke er rated vil man jo gjerne vite det også, for da gidder man kanskje ikke gå inn på den. Vi jo gjerne at det skal fremstå. Stjerner som rating er bra. Den kan jo være stjerner. Men hvis man skulle bruke tommel kunne det ha vært når du skal trykke på selve om du liker det eller ikke? Hvis du ser at den er på 3 så er den helt grei. Men hvis du har sånn som på facebook den like'en så er jo den veldig tilgjengelig. Men liker kanskje allikevel best stjerner. Greit å ha rett under boka.

Til diskusjon: det holder med bare snakkeboblene, en holder og helst i blå. Men blå er kanskje ikke UiO farger? Sort, rødt og blått da. Diskusjon skal helst være en snakke boble.

Available: Skjønner ikke det krysser som ikon knapp? Men som rød eller grønn i en liste er det jo veldig forståelig. Grønn må jo være tilgjengelig og rød ikke tilgjengelig.

Et annet forslag? Da synes jeg det er bedre med en bok bak. Og hvis det kommer en hjelpetekst også. Kanskje best kun med tekst? Likte ikke skiltet som er på første siden nå. Veldig forklarende, men hadde kanskje ikke skjønt hva som var tilgjengelig.

My profile: lurt å gjenbruke det folk kjenner til. Slik som på facebook når man ikke har noe bilde. Dere liker helst at ting er standard? Ja, ellers må du bruke den mye for å lære seg den. Men hvis det er kombinert med tekst da er det jo veldig forståelig. Hvis bare tekst standard er greit. Synes det er trygt med standard.

Men kan jo gjøre noe annet også. Hvis det står hva det er under er det veldig forståelig. Synes den related readings likeså gjerne kunne vært min profil ikonet. Den er annerledes og morsom å ha som det. Ja, den var litt mer morsom(de blir enige om dette).

Videre litteratur: kan være den for eksempel med eller uten typen på toppen(peker på en bokstabel med en ugle på toppen). Bok stabel er veldig forklarende som videre litteratur.(de er enige om dette) Den er fin. Related readings er best ord.

Abstrakt: Ønsker side hvor det er litt tykkere tekst på toppen. Abstrakt er jo mest en side eller frittstående tekst. Ellers så går jo en pen kanskje men da virker det som om du skal skrive noe og det blir jo feil. Hva er egentlig vanlig? Kanskje det ikke er noe som er typisk. Helst ikke en blyant. Da tenker man at man skal skrive noe selv. Det kan jo bety to ting også at noen har skrevet noe. Synes ikke den gjør noe.

Gjennomført stil er jo fint. Jeg liker rødt og svart og hvit. Synes rødt med svart synes mer tydelig. Synes det kan bli litt mye rødt. Kunne ikke bare hatt noen røde elementer innimellom. Kan jo også bruke blå.(her liker en blå den andre rødt,hvitt og svart)

(Tar seg tid til å se på og bruke appen konsentrert) Ja, altså det burde være mye større logo. Alle ikon burde ha samme farge. Ikke bare svart, for dystert og trist. Skal jo ikke være så kjedelig. Eller at man bruker rødt rundt. Synes det kan bli litt

for mye rødt. Elementer av rødt er fint. Men jeg synes jo at blått er veldig fint da. Skal ikonene være mer firkanta eller runde?. Firkanta liker jeg best. Jeg synes frittstående uten noe rundet er best. Firkant eller uten noe rundt. når det gjelder farge og stilen på designet, er dette tydeligvis veldig individuelt og det er mange ulike preferanser. Synes det er lettere å bli enig om de andre tingene.

Workshop 5:

Vi legger frem appen vår.

På peker at vi skal først og fremst snakke om design.

Nå skal vi se på appen vår og fint om dere gir tilbakemeldinger på hva dere mener om appen og vi vil gjerne få forslag til endringer

Jeg synes de ikonene på første siden kunne vært bedre. Jeg synes ikke de ikonene for bok og artikkel i Bibsys ikke er noe gode heller. Jeg er veldig glad i bøker og når jeg tror det er en bok blir jeg veldig glad. Men så å ja, det er en e-bok også må jeg skrive ut 250 sider for å få lest det på papir og det gidder jeg ikke. Liker at ting er lagd slik at man ikke misforstår.

Vi skal fokusere på design og bruk av ikoner.

Vi lurer på ikonene og er interessert i deres mening om hva som best representerer de ulike funksjonene. Det er 6 funksjoner. Abstrakt, diskusjon, ledighet/hvor på biblioteket den er. rating, Relevant litteratur. Synes dere det er viktig at designet er gjennomført og fint? Eller er det viktigst at det er enkelt å bruke og fungerer bra?

Ja, synes det skal samsvare. Det må være større det er altfor smått alt sammen. På side en vil det ikke trenge å være tekst til ikon, men på side to trenger man tekst. Det der kan godt være tekst for min del. Men større tekst. Gjerne pil slik at man ser at noe vil falle ned.

Til diskusjon: Hva skal diskusjon vise det blir jo mange kommentarer. Ikke et forum. Mange emner innenfor en bok. Men forum er jo litt 1999 også da. For eksempel et sted det er forum er jo for eksempel en ski side. Et sted er kjøp og utsalg. Er disse skiene bedre enn de skiene? Altså forskjellige tråer folk starter. Diskusjoner er jo ofte slik at man starter et tema. Da må man kunne svare på kommentarer og at ting knyttes sammen. Kjempe spennende som en portal hvor man kan gjøre disse tingene, men vet ikke hvor bra det er på selve appen. Bra å kunne lese det i appen, men kanskje når man skal diskutere og skrive passer det bedre med en web forum som da appen knyttes til.

Viser frem mange ark med ikoner og illustrasjoner.

Mye farger eller enkelt. Tredimensjonalt eller flatt. Mange valg muligheter.

Rating: Til rating er det best med stjerne. Tommel brukes jo med tall hvor mange som liker og

ikke. Stjerner er best, kommer an på formålet hva ønsker jeg å vite hvor mange som liker eller hvor mange som liker bedre. Må jo ha antall som har rated. Nok mer ukritisk med tommel opp og ned. Vil helst at stjernene bare er der og at man da kan trykke. Her er det masse plass.

Rating er stjerner.

Diskusjon: diskusjon er snakkeboble. Lett gjenkjennelig.

Alle disse ikonene blir så små så litt vanskelig. Comment eller discuss.

Snakkeboble å diskutere.

Available: Tilgjengelig på biblioteket eller ikke. Da må man legge til ditt bibliotek. Slik at du får opp hvis det er på ditt bibliotek og ikke at den finnes i men langt opp i nord. Slik som e-boker med rettigheter langt oppi nord et sted. Stor skuffelse når det ikke er tilgjengelig i sitt bibliotek. Vil kunne legge det til. Viktigst for meg er om den finnes på mitt bibliotek eller om jeg må bestille den.

Vil jo ha mulighet for å bestille. Ikke bra med rødt skilt available.

Grønt må være tilgjengelig. Det er for smått, må være større. Hvis det skal være skrift må det være leselig. Ikon pluss skrift. Standard løsning på tilgjengelighet er fint. Må skjønne det med en gang.

Relevant litteratur: Synes ikke det burde være brille lesende person.

Passer bedre til min profil.

Fint om det er en stil og det samsvarer. Liker best en stil som er likt.

Relevant litteratur kan være en bok og et pluss tegn.

Abstrakt: Abstrakt burde dukke opp av seg selv. Default vises.

Rating kommer automatisk og abstrakt. De andre kan være ikon. Synes dere burde omorganisere siste siden. Jeg synes det er unødvendig å måtte trykke på så mange ikoner for å få tak i det jeg vil ha. Det burde bare være fire sånne ikoner. Resten burde bare være der. Rating kan være stjerner som man også kan bruke til å rate og som viser ratingen. Abstrakt kan være slik det er tekst. Altså jeg liker ikoner men ikke så mange.

Fint om man kan lagre en book på min profil. Relevant bok vil da lagre den på siden. + bok legg til i min leseliste. Viktigst at design er gjennomtenkt og trenger ikke unødvendig trykking.

Workshop 6

Vi legger frem appen vår.

På peker at vi skal først og fremst snakke om design.

Nå skal vi se på appen vår og fint om dere gir tilbakemeldinger på

hva dere mener om appen og vi vil gjerne få forslag til endringer

Den der available den burde være grønn. Det er veldig lite alt sammen. Men synes jo det er fint også. Dere har jo fått til mye. Ikon skal være en gjennomgående stil.

Burde man følge UiO stilen? Dere står fritt til å velge det dere liker.

Synes det er kult om man finner på en litt annen vinkling. Synes man kan prøve noe nytt og at det ikke må følge den samme strukturen.

Viser frem mange ark med ikoner og illustrasjoner.

Rating: hmmm? Rating eller like? Binært med tommel og like funksjon. Litt for enkelt, må ha antall. Stjerner kanskje ikke så mange gidder.

Available: Available må være annerledes. Vanskelig å se at det står available. Grønt eller rødt lys eller kryss tegn. Burde være tydelig med en gang. Ikke tommel opp og ned til ledighet ihvertfall. Synes kryss eller grønt lys bare ne runding, kjedelig men tydelig. Skjerm liten må synes tydelig. Kan bare være en rød eller grønn runding.

Diskusjon: Snakkeboble, for diskusjon. Hvis det blir mange ikon kan bli forstyrrende. Hvis dere har ikoner passer det bra. Men ikke kombinert med liste. Trenger tekst til ikonene også når det er 6 ikon.

My profile: Min profil er best med en person. En avatar er en fin ting å bruke det er vanlig og

folk forstår det. Ellers kan man jo kanskje skifte det ut til eget bilde også eller lage en gravatar. Du laster opp det bilde så brukes det på alle dine profiler.

Relevant litteratur: Relevant litteratur, synes ikke en med briller burde være ekstra. Bokstabel er bedre.

Abstrakt: Abstrakt er tekst bare. Vanskelig å gå for noen ikoner for det. Men ønsker helt klart en stil og det er viktig å gjennomføre. Veldig viktig at det ikke ser ut som en gratis app for android.

Abstrakt bretter ut noen tekst linjer. Ikke med pen det blir mine notater, føler da at det betyr at jeg må skrive et eller annet. Gå for enkle linjer på et ark som illustrerer at her er det noe tekst. Siste siden kult med ikoner.

Veldig glad i ikoner, men det blir kanskje litt mange? Synes det er veldig kjedelig med liste på alle funksjonene. Kanskje faner på siden det er jo fint. At innholdet hopper inn på siden.

Animasjon som hopper opp også stilig. Liker farger. Liker ikke glorete, men kjedelig med svart.

Bruk samme farger. De ikonene med mange farger ser billige ut. Liker bokser, et tema som går igjen. Jeg liker blå jeg. Behagelig og beroligende å se på. Synes det burde være et gjennomført tema. Viktig å tenke på copyright. Gå for samme stil over hele. De burde passe sammen. Rødt og svart er et problem for fargeblinde. Tenke på hva som er lurt i forhold til svaksynte. Alt er fint bare det er blått. Blått og hvitt er kult. Kanskje Orange og svart også. Ikon må ha noe med det det representerer, vanskelig å finne ikon for seks funksjoner.