



UNIVERSITY OF AGDER

Project report on Applifun resource gallery

MM-403 G 18H Interaction Design

Human-centred design activities

Group: "Feide-login - Applifun"

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Abstract

This report will describe the process of planning, designing, testing and evaluating a prototype of a web application called “Applifun”. Our platform will require FEIDE-login, where the target user groups are teachers and students from 1st to 10th grade in elementary school. By designing a solution which will improve students access to educational resources needed for educational activities, and by offering teachers a better overview of available resources, we hope to make a better platform than existing solutions.

We followed guidelines and design principles familiar in the Human-Centered Design approach by involving the intended users in the whole design process. Methods used was data gathering and research of other similar solutions, creating user stories and scenarios that evolved into functional and nonfunctional requirements necessary for acquiring efficient user tasks. Building prototypes and user testing provided valuable feedback for evaluations and further development, which was an iterative cycle. End result was a digital prototype created in software based prototype.

Keywords

Prototyping, Human-Centered Design, Heuristic Evaluation, User Requirements, Usability Testing

1 Introduction

The use of computers, tablets and smartphones in schools are on the rise in Norway. This increase in use of technology in class have been spawning a plethora of resources and applications. Every school has their own solution for accessing these resources. While there are some existing collections and lists of resources, there is also a need for an improved global solutions that will benefit both students, teachers and parents.

Our goal is to create a platform usable for student from 1st to 10th grade in school, where all educational resources and purchased applications per school are gathered at one place with only one login. A solution like this would provide a better oversight of resources with improved efficiency for both students, teachers and parents compared to existing solutions in the market.

During this report, we will walk you through our process of creating user stories for our stakeholders. We will show you how we built scenarios, both conceptual and concrete, which helped us create a set of user tasks that would prove valuable when deciding the user requirements.

To optimize the users interactions within the platform, we designed and optimized a conceptual model. From this model we could start creating low-fidelity paper prototypes and get feedback from fellow students immediately. We got feedback on whether or not our mental models matched theirs. This approach was an effective method for discovering possible improvements, and lead us to the next step; a high fidelity prototype where we decided to use the Adobe XD software [1].

User testing with feedback and evaluation of the platform was extremely important, as the main goal and method within Human-Centered Design are the users involvement in the entire design process.

2 Human-Centered Design

When defining Human-Centered Design, it is all about involving the user in the design process from the early start to the end; with planning and research, user testing with feedback and evaluations according to desirable requirements. There are methods to follow and principles to take to consideration when designing a system for human interaction. We do this to better understand intended users needs, actions and environment. According to the standard ISO document (2010) [2] there are four Human-Centred Design activities to take place in designing a interactive system:

- understanding and specifying the context of use
- specifying the user requirements
- producing design solutions
- evaluating the design

While planning and designing the web application in our project, our intended users were young students, teachers and parents. This is a user group with a wider range of technological skills, abilities and cognitive expectations. As humans we have different abilities as well as limitations, our brain works in ways where understanding of how memory, attention, emotions and cognitions is functioning when designing a interactive system is important [3]. We have to apply functions and design to fit the mental model of users, with how users expect to interact.

Benyon [3] suggested some design principles to be implemented when designing an interactive system for human use. Learnability, the ease of use, safety and accommodation are principles that help users access the system, learn and remember the system, giving users the sense of being in control of the system and knowing what to do and how to do it. This will also provide safety and security in a way that suits the users [3].

Implementing those principles to our design, will create a usable and efficient interface of familiar symbols, colors and menus. Here it is necessary to create prototypes for testing and evaluations, both by intended users and experts users; in both natural and more controlled environments. Only by testing it on intended users conducting relevant tasks, it will be possible to see if the application fulfill the requirements.

Referring to the figure under (*see figure 2.1*) for an illustration of the process from start to end, describing the iterated steps necessary from the planning phase, to understanding and specifying the context of use, the need to clarify user requirements, designing a solution into evaluating the design from user requirements, finalized in a solution that meets those user requirements.

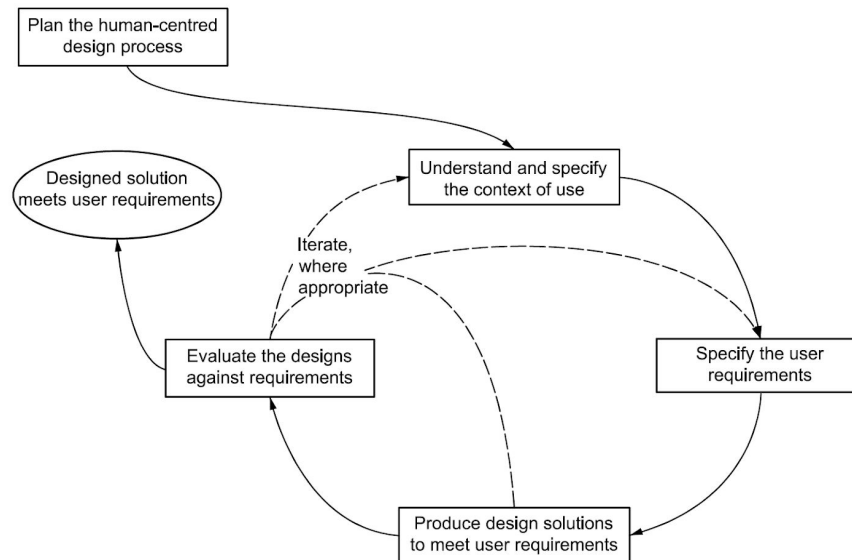


figure 2.1 Interdependence of human-centred design activities [2]

3 Context of use

3.1 The problem Space

Based on experience as parents with school kids , we noticed a lack of a simple overview of what apps and web resources that are purchased, available and recommended for each district, and in turn their schools. During our time here at University of Agder we have gotten familiar with the ease of use with FEIDE-login across multiple platforms, and we propose to create a solution as a web page for users to log in with FEIDE and see what iPad and FEIDE-resources their affiliated school (and grade level) have available/recommend.

3.2 Existing Solutions

Today there is still not one collective platform for all educational applications usable at schools in the district. Every school has their own solution for accessing these applications; but still many of them require their users to log in with FEIDE. Some schools have a downloadable word document with links to different resources on their website; others have a direct links to some of the available applications. Some schools have gathered the links in a list hidden deep on website, and some write links directly on the printed homework plan. These solutions makes it difficult and cumbersome for students and parents to find the tools they need for their homework. There are some existing solutions who list resources, but they all lack the possibility to view recommended and purchased resources and apps for each school.

3.3 User Stories

Fictional user stories was created to obtain a simplified understanding of interactions needed. This was done to understand the intended users of the platform. In clarifying how it can be used. Is this type of application useful for students during class, as part of a class activity and for homework activity? How can it be used in class and in what type of scenarios?

Here are some examples of user stories from the students perspective:

As a student during class in school, I want to be able to find and use apps and resources relevant to the subject. In class we are using tablets in several class activities, but it is important to find correct applications fast and easily, so we do not spend much time searching online, as well as having to log into every different application.

At home doing my homework in Math, I have to do some assignments, and I can use my tablet for that. By logging in with FEIDE, I get an oversight of all available subjects and apps for my class.

3.4 Scenarios

3.4.1 Conceptual Scenario

We asked ourselves the question; What do we want our platform to solve? In the case of students, we came up with the conceptual scenario below.

Students with any degree of basic computer skills will be able to access relevant web resources for their class at any time via the Internet, either by use of a computer, tablet or smartphone.

3.4.2 Personas

Who are these users, and what skills and knowledge do they possess? Can we put ourselves in their shoes and get a glimpse of their perspective and perhaps understand their mental model? Personas helps us focus on the users, and it is recommended to print them out and keep close by during the design process to keep the eye on the ball. The ball being Human-Centered Design.

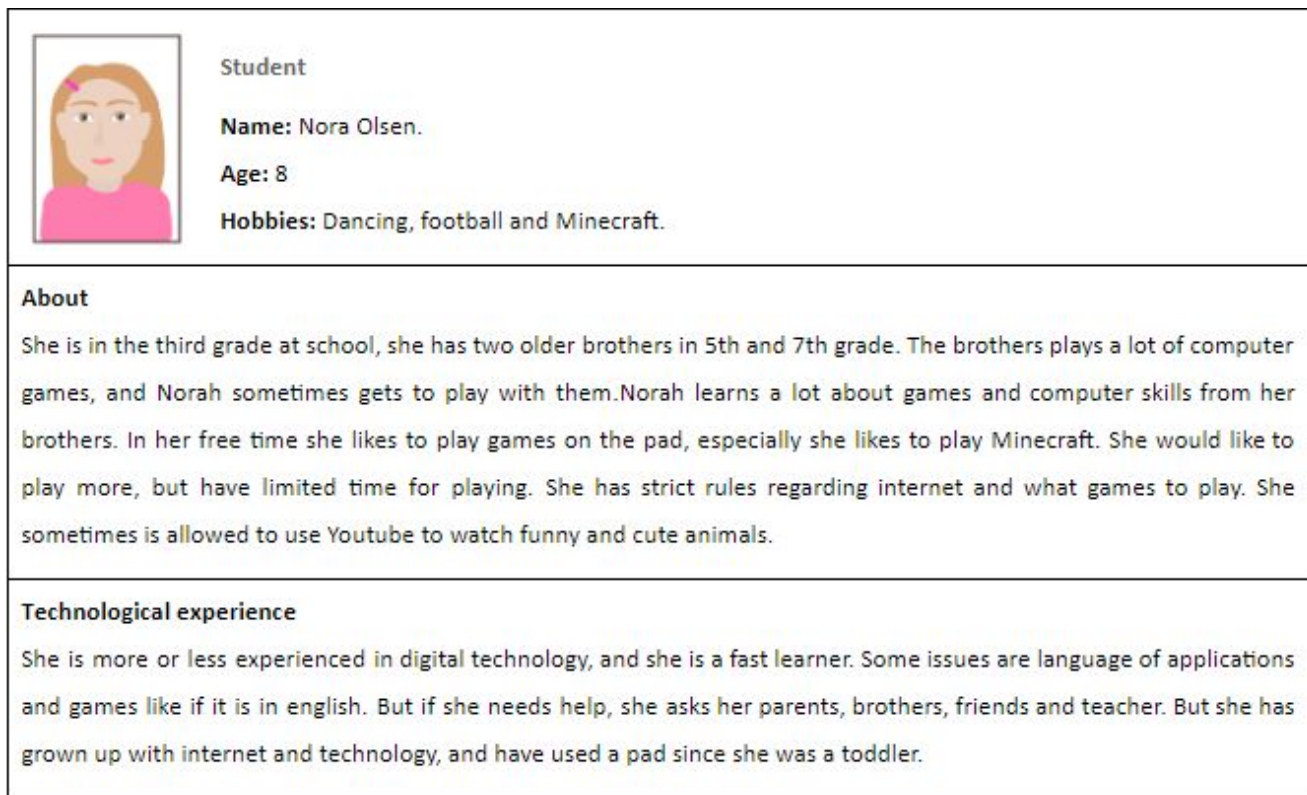


Figure 3.1 Personas

3.4.3 Concrete Scenario

After getting a feel for conceptual scenarios and having established a set of personas for our stakeholders, we went on to more detailed cases, with specific actions described in how a persona interacts with the platform.

A good framework for designing and describing this type of situation and activity was PACT analysis (People, Activities, Context, Technology).

Short example of a PACT analyse in our context:

People : Student, 8 year old girl, experienced in digital technology, a fast learner.

Activities: Using Salaby for practising math during class.

Context : Math class in the classroom, or doing homework at home

Technology : Tablet and internet

Students can use resources that use FEIDE login if they have a tablet and internet available during class. In this example scenario below there will be a student practising addition in a resource called “Salaby”.

Nora is sitting down in class, and she gets a tablet from her teacher Kari. Kari tells all the students to log in on the website. Nora opens the website and logs in with FEIDE to get a list of resources available for her school and grade level. Kari tells all the students to find the “Math” subject. After logging in, Nora sees a list of subjects, she clicks on “Math” and gets a list of resources for that subject. Kari tells her students they will be practising addition today, and tells them to go to “Salaby”. Nora clicks on “Salaby” to go to the resource she needs to practise addition.

As you can see it is much more detailed and personalized than the conceptual scenario. We now know students can get instructions and help from their teachers during class. Nora is a student In third grade, and they have individual password and user login for feide. A list of resources on the website for each school/class/subject is what we aim to provide.

4 User requirements

User requirement specifications are generated from understanding the needs of users and the context of use. These requirements was specified by using the Volere Requirements Specification Template [4].

4.1 Functional Requirements

The users must be able to perform certain tasks. From concrete scenarios we can see multiple user tasks; “Log in”, “Find math subject” (see figure 5.1) and “Navigate to resource called Salaby”. The concrete scenario we made for a student helped us in creating users tasks that we could test later in development. While testing and evaluating we also used a couple more tasks; “Go back to subject gallery” and “Log out” (see appendix B and D). To make the functional requirements as specific and clear as possible. We used Volere shell [4] as a guide to specify the functional requirements for the platform.

Requirement #: 3	Requirement Type: 2	Event/BUC/PUC #: 2.1
Description:	Student locate subject	
Rationale:	Student can reorder the resource list by choosing a filter, and also be able to filter by ratings, alphabetically or date.	
Originator:	Chief Engineer	
Fit Criterion:	No need for login at this stage; log in after chosen resource.	
Supporting Materials:	Work context diagram 2.6	
History:	October 2018	

Figure 4.1 Volere shell [4]

Among other functional requirements we have filtering options, which makes it possible for the users to sort each external web applications within a subject, by rating, alphabetically and date.

4.2 Non-functional Requirements

Non functional requirements refer to properties functions must have, such as performance and usability [4].

Look and feel requirements

The focus here was that the product had to be attractive to both younger kids as well as teenagers. The application needed a modern look with professional and interactive possibilities, where design and interaction had to be compatible with computers and portable devices. The user interface design therefore required a touchscreen compatibility. Symbols and icons needed to match the mental model of student and teachers, as well as the design had to comply with the “Forskrift om universell utforming av IKT-løsninger” [5].

Usability and Humanity Requirements

About making the product usable and ergonomically acceptable to all users. This application is to be available on computers and tablets. Design therefore need a functionally design for touch screens.

Ease of Use Requirements

It is about how easy the finished application is to use by its intended users, in finding the information you are looking for as fast as possible. The application need to be as easy for young children to use as for adult with much or minimal technological skills.

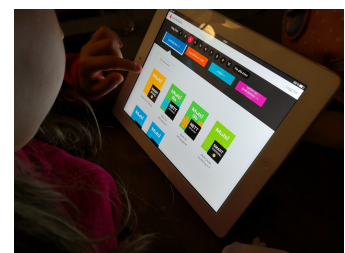
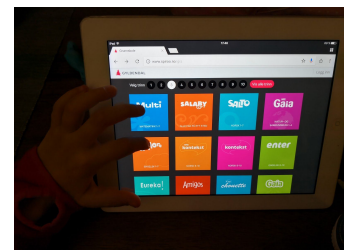
Personalization and Internationalization Requirements

Users should be able to choose language; norwegian bokmål or english, and to change how text are to be displayed for example larger text and/or contrast colors.

Learning Requirements

For a student it should be easy to learn fast; so use in classes and homework will be effective and productive. For a parent it should be easy to understand when helping younger students. For a teacher it should be easy to understand in where to locate information about students; how to follow up in students progress and recommend resources.

Use of familiar design; icons, buttons, colors. Minimal use of text and more use of icons. It should be a minimal learning curve and easy to remember for next time logging in. Avoiding users making mistakes using of application, it is



possible to have a short instruction video as a help function. Also about design choices that will help user understand how to navigate pages.

Understandability and Politeness Requirements

A written language that are easy to understand and also use of familiar icons. Implementing design with familiar colors, fonts and icons that make it easy to understand, that make it easy for users to understand and recognize where to click.

Accessibility Requirements

When making a website product for the municipalities we must comply with the Norwegian legislation called "Forskrift om universell utforming av IKT-løsninger".

Performance Requirements

The website should have an average response time of 0.5 seconds, and shall achieve 99 percent uptime. When no internet connection, there must be feedback, and when leaving mid session, users should be able to pick up exactly where they left off last time they were online. We need to support 10 000 simultaneous users at first, and be able to process 100 000 users within the two first years of launch (there are more than 600 000 students in grade 1-10).

Operational and Environmental Requirements

The product will be used by students in a classroom environment, students at home, teachers in a classroom environment and administrator in an IT-department

5 Produce design solutions to meet the user requirements

5.1 Conceptualizing Interaction

Conceptualizing it is about having a clear understanding of what, why and how to design something. Within this it is necessary to understand the users specific needs and kind of details activities they will perform using the application [6]. By creating a more detailed Conceptual model, it will provide a higher level of description, see figure 5.1. It is about designing the human interaction, where the aim is to bring the concept of usability into the design process, in creating products that are easy to use, effective and enjoyable [6].

It is important to ask how it is possible to optimize a users interactions with the product. The process of designing an interactive product is very much an iterative process. Incompatible and unusual design will be eliminated early in the process, that will save time and effort later on in the process [6]. This prototype was tested in several steps, where user evaluations and observations gave foundations for further developments and improvements.

5.1.1 Usability Goals and User Involvement

Designing and creating the product is addressed through a user - centered approach, where users need to be involved from the early start of planning phase to end evaluations. This process of involving users in the process included research, interviews, user testing, observations and questionnaires.

Usability goals [6]:

- effective to use (effectiveness)
- efficient to use (efficiency)
- safe to use (safety)
- have good utility (utility)
- easy to learn (learnability)
- easy to remember how to use (memorability)

5.1.2 Conceptual Model

In creating a conceptual model we envision the interactions for the platform based on the needs of intended users and specified requirements.

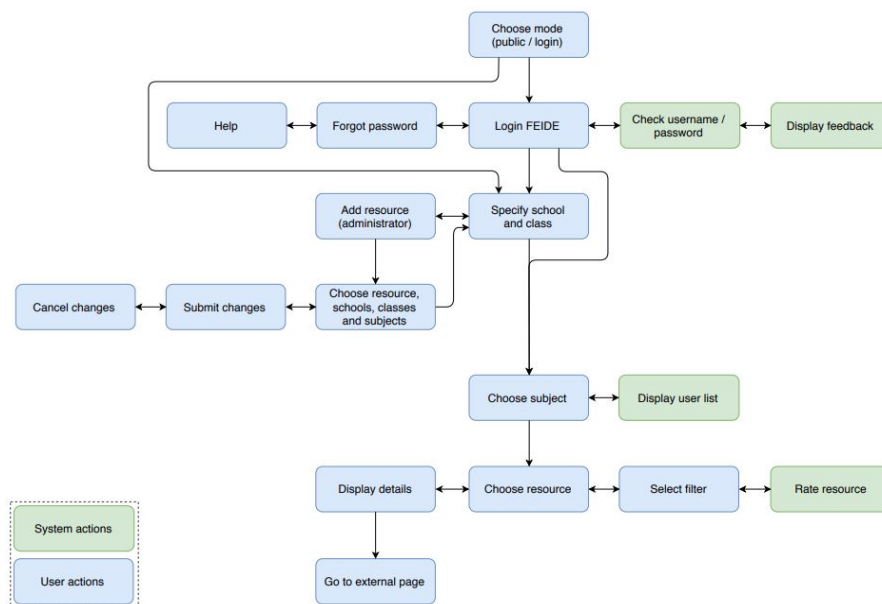


Figure 5.1 Conceptual Model [7]

5.2 Low-Fidelity Prototype

Iteration was a necessary process throughout our design project. By iterate on an early stage we minimized the time spent on developing our product. We got an early idea how we wanted to progress further into the development of Applifun. However, we preferred to spend more time iterating more on a low-fidelity prototype. By iterating on paper, we could easily identify where we could minimize the interaction pattern for the users.

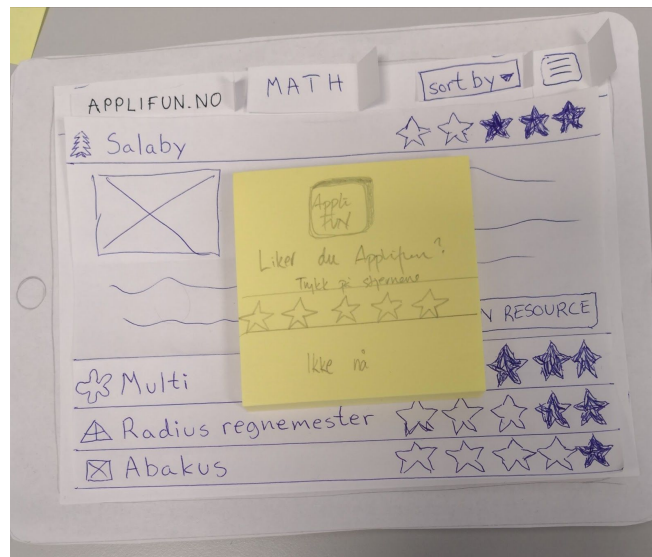


Figure 5.2 Low-Fidelity paper prototype

At Applifun's early stages, we spent some time drawing a low-fidelity prototype version. We needed to get the idea on paper.

5.3 High-fidelity Prototype

As an educational resource mainly for younger student, interface interaction cannot be too complicated. While creating a digital prototype in Adobe XD [1] we quickly realized that even though this report and course is in english, we had to make a Norwegian prototype to better be able to test young students from Norwegian classrooms.

Some deliberate simplifications were made, e.g. we omitted two stakeholders from the prototype, to allow us to still learn the Human-Centered Design process but also be able to complete the assignments on time. We opted for students and parents, because we are familiar with both, and could more easily picture the mental model of those stakeholders. Teachers and School administrators were therefore omitted from the prototyping and user testing.

Rating a resource is another thing we deliberately excluded, because the users first interaction with the prototype would never show the parts that would allow you to rate. Rating will only pop up after a period of use, and not within the two first months.

Some parts of the design were out of our hands. We had no influence on the design of the FEIDE-login page which are on an external website.

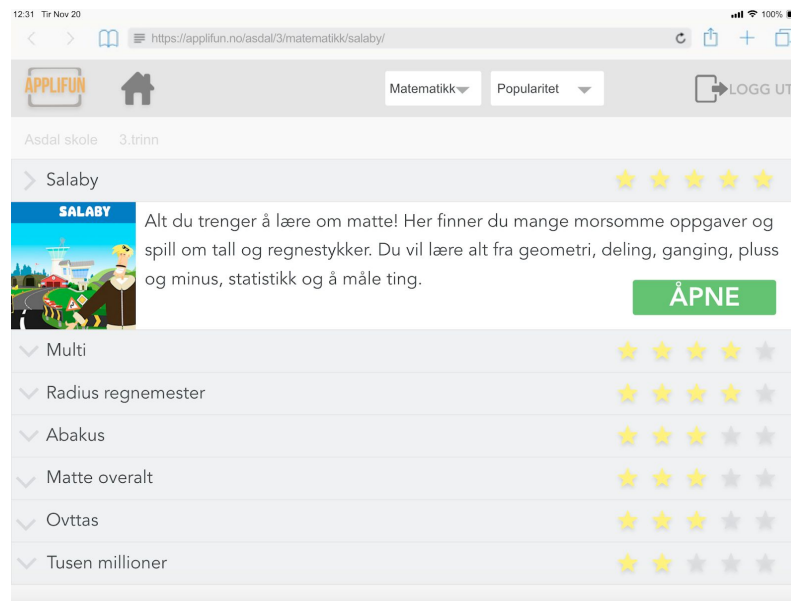


Figure 5.3 High-Fidelity partial prototype

6 Evaluate the designs against requirements

The Applifun web application in the first high fidelity test, was found to be somehow easy to interact with and navigate (see Appendix A). Based on our testing we can conclude that the age of our test participants plays a major role in how efficient Applifun is used. Adults managed Applifun easy, whereas the younger ones had some trouble navigating within the platform. This was especially noticeable when conducting a bigger task, like locating a resource within a subject. Logging out was also an issue for some test participants, to locate the button in a fast and efficient way.

Another trending issue was the touchable areas. As this platform is targeted for medium sized touchscreens, the users sometimes had problems trigger the right spots for the buttons. This led to several attempts and unnecessary time, trying to click a simple button.

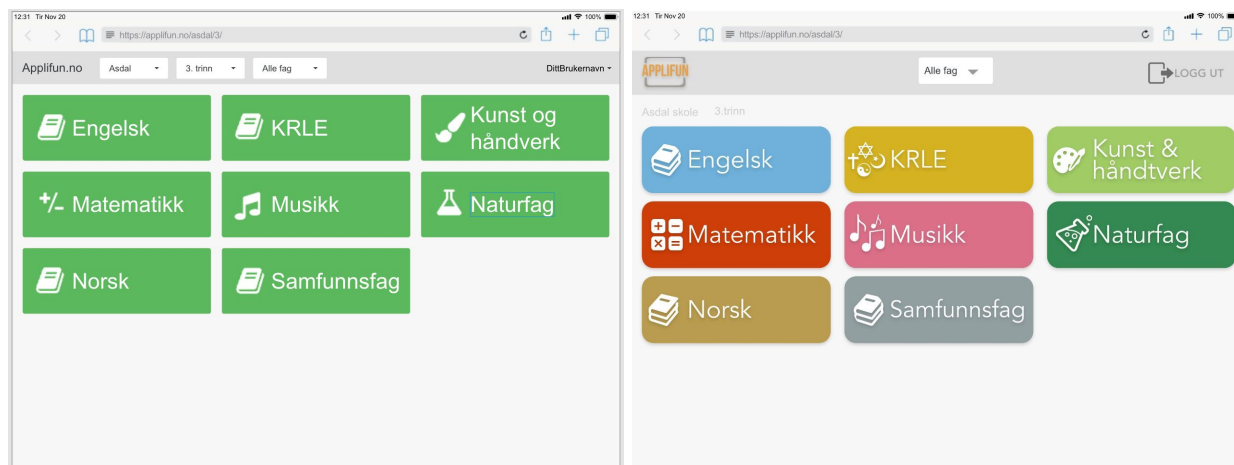


Figure 6.1 Prototype Before-After

We improved Applifun based on our feedback (see *appendix B*). By improving the prototype with simpler text, less options, more colors, it resulted in a more efficient time spent on the user tasks. Particularly with the younger ones, spending less time navigating throughout Applifun.

6.1 Heuristic Evaluation

The heuristic evaluation method was first put forward by Jakob Nielsen [9]. We used the theory to evaluate our design against the user requirements to minimize problems in usability in a more effective way. A heuristic evaluation was conducted during our first round with user testing.

Error Prevention

During the iteration process on the digital version, we were able to identify potential user errors [8]. Students will only have access to own school and grade, which avoids too many choices for the users. We improved our digital prototype even further after our first sessions of user testing. Removal of complicated text (description) and using more descriptive symbols and icons, reduced the error prevention percentage.

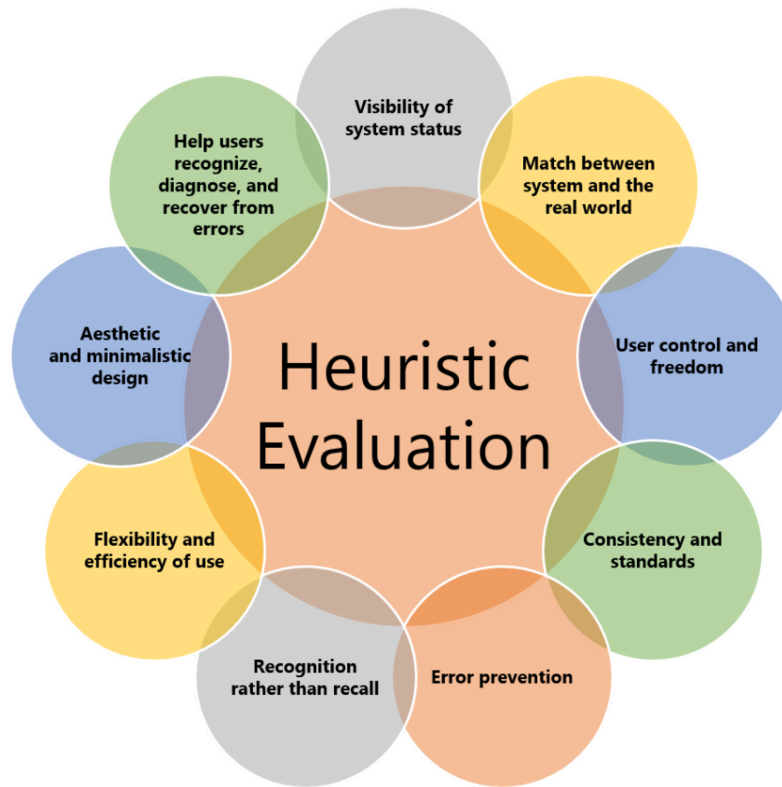


Figure 6.2 Heuristic Evaluation Bubbles [11]

Visibility of System Status

Homepage is public, but visitors get the option of logging in or continue without. This prevents the users from doing unnecessary steps when logged in. We went with a very visible “log out”-button because it is important for the users at all times to know their log in status, and during testing we found that it was too hard for the younger test participants to find the log out function. Class and school is located below the top navigation bar when logged in to help users recognize where they are.

Consistency and Standards

We used the Bootstrap UI kit for web applications, and we strive to use simple action verbs for all buttons and links. During testing we were made aware of some inconsistencies in alignment [10] of the subjects in the grade sections. E.g. 1st grade does not have “French” which is early in the alphabet, therefore the alignments of the following subjects were not consistent. This particular part was improved, and now the subjects are always in the same vertical and horizontally position for a cleaner consistency with alignment in our design.

Flexibility and Efficiency of Use & user control and freedom

Another concern we previously had was the narrow clickable area around “DittBrukernavn”. This caused a lack of efficiency of use in our product. In an updated version it now has an icon next to a login status with a larger font, which is clickable and easier to interact with. (see Appendix B).

After our first round of user testing, we found out that we needed to improve the flexibility inside Applifun to optimize the efficiency. We implemented a home navigation icon to increase familiarity for the younger students and an Applifun logo instead of just text.



Figure 6.3 Logo and home navigation

Depending on the login status, the home icon will either navigate the user to the login page (not logged in), or navigate the user to the subject screen (logged in).

Recognition rather than recall

To minimize the stakeholder’s memory load [6] we experimented with different icons next to each subjects name, and different colors. We made sure to use familiar icons and covers of textbooks to match the students and the teachers mental model. When a user have used a resource before, they will more likely remember and recognize the icons better than the text.



Figure 6.4 before (above) and after (below)

Help users recognize, diagnose and recover from errors

Adobe XD [1] has some limits to prototyping, but we did our best to provide the user with accurate information and a suggested solution to guide them along the way of our partial prototype. As we did not design the pages for each school, grade and class, we made some small helpful notifications to explain the limitations in our prototype. The figure below shows clearly a problem, and gives the user guide to a solution [8].



Figure 6.5 Screenshot of guideline

Aesthetic and minimalist design

During our development of Applifun, we discovered that we had made the text in the description of the resources too complicated for younger students. For our older audience, long descriptive texts might also not get read, and it will inadvertently hide relevant information. We improved this part by simplifying the text for students, and using less text for parents.



Figure 6.6 Logged in description (above) and parent description (below)

Match between system and the real world

Teachers and parents are used to a wide vocabulary, and it became apparent during testing that students (ranging from the age of 6 to 16) needed an easier language. We reworked the words and phrases to accommodate the problem (see figure 6.6).

6.2 Analytic Results

During the initial testing of our high-fidelity prototype, we timed our participants progress. From these numbers, we could find what tasks was easy and what tasks that was too hard. E.g. logging out took more than 5 seconds for 40% of our participants, so we decided to make that button more visible in the final prototype.

Task per participant in seconds

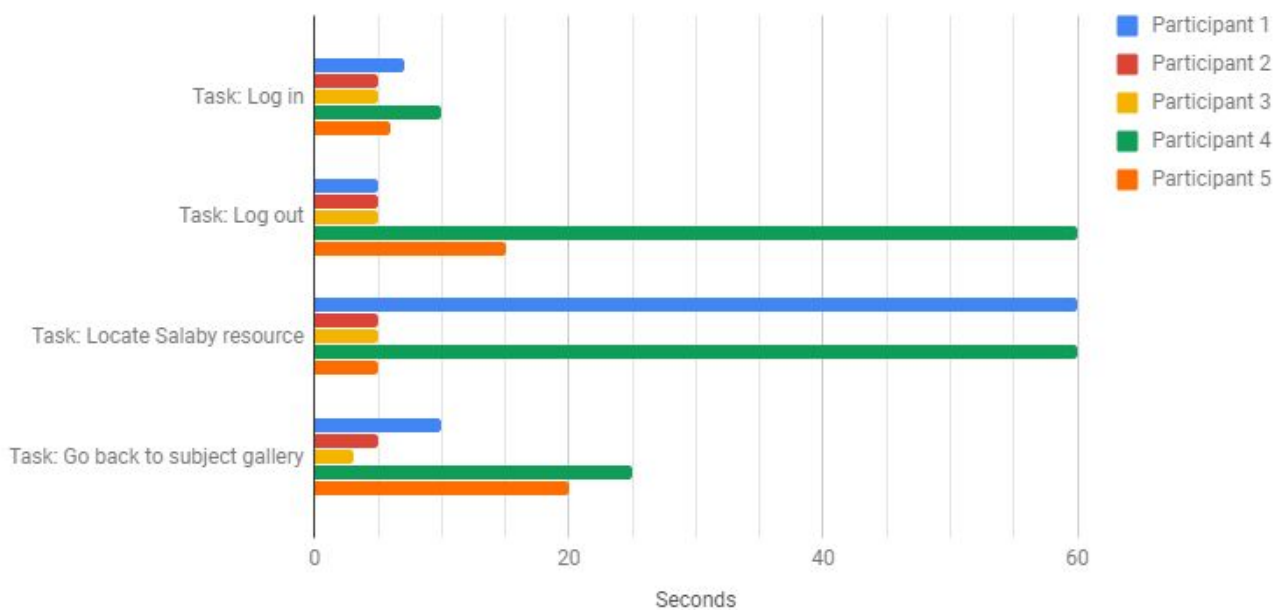


Figure 6.7 Tasks per participant in seconds

We also created a questionnaire for our test participants (see Appendix C) for them to answer when the testing of the prototype was done. We gave them a set of alternatives to gauge how they experienced Applifun in accordance to Likert Scale [6]. Our results are in Norwegian because our target group were from age 6 and up, and we did not want to lose any relevance in translation.

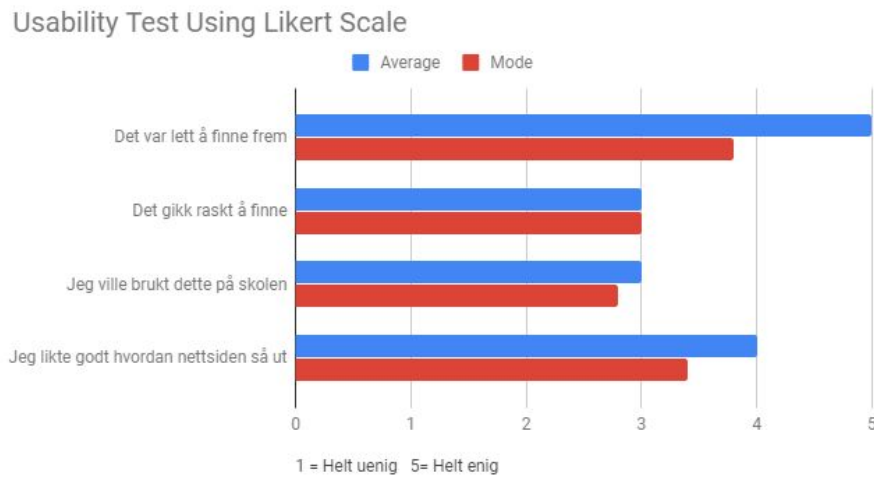


Figure 6.8 Usability Test Using Likert Scale [6]

7 Conclusion and Recommendations

This final report describe our project in Interaction Design where we have learned the whole process of developing a partial prototype. We have gone through all the steps from planning an idea to performing user testing, iteration of the product, evaluation and completing the process of making a partial prototype. This project has been a comprehensive process, which have increased our competence within the subject matter greatly. This project made us aware of many new aspects, and after we have gone through this course of Interaction Design we have also learned to apply new knowledge into a product.

Due to limited time, and lack of initial overview of all the modules and assignments at the start of this class, we did not know how to best distribute the workload and schedule our time and resources for our specific project in accordance with Human-Centered Design. For future classes we recommend giving students access to view details about all assignments early on, to better decide what to omit and how to schedule their time, as well as avoid doing the same work twice only slightly different.

With more time, we would have wanted to perform the usability test one more time with the final version of the prototype, to get some more comparable results using the Likert Scale [6] questionnaire.

For future development, to help returning users, we recommend adding the most used subjects/schools at the top of the respective dropdowns. We also recommend adding a profile page for teachers and school administrators where they can choose what school/grade/class (if any) they want as their default page after login. Logged in stakeholders should also get access to a “last used” section for to easier find favorite resources. Often used options should be added to the top of most dropdown menus to easier facilitate both administration and use.

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Appendices

Appendix A: Usability Test Plan Dashboard

USABILITY TEST PLAN DASHBOARD

AUTHOR Linda K. Arida, Inge Pedersen & Stian Isaksen		CONTACT DETAILS		FINAL DATE FOR COMMENTS	
PRODUCT UNDER TEST What's being tested? What are the business and experience goals of the product? The website application "Applifun". A new concept of online learning environment for children (1-10th grade)	TEST OBJECTIVES What are the goals of the usability test? What specific questions will be answered? What hypotheses will be tested? - Would younger children take advantage of learning more efficient using technology, above ordinary classroom teaching? - Could this online learning concept be more cost efficient than we see of today's teaching in schools?	PARTICIPANTS How many participants will be recruited? What are their key characteristics? - 3-5 participants recruited - Must own a laptop (link to prototype will be handed out)	TEST TASKS What are the test tasks? 1. Recieve a list of 3 user task for the project. #1; Log in #2; Navigate to Salaby resource #3; Log out	RESPONSIBILITIES Who is involved in the test and what are their responsibilities? Inge Pedersen - Recruiter, interviewer Linda K. Arida - Silent observer Stian Isaksen - Service assistant, note taker	LOCATION & DATES Where and when will the test take place? When and how will the results be shared? - University in Agder, Grimstad @ Cafeteria - Thursday 22/11-18 - 12.00 pm
BUSINESS CASE Why are we doing this test? What are the benefits? What are the risks of not testing? To identify and explain errors before proceeding to high-fidelity prototype development.					
EQUIPMENT What equipment is required? How will you record the data? - Consent form - Device / smartphone - Questionnaire form - DSLR (documentation)					
PROCEDURE What are the main steps in the test procedure?					
<div>0-10 min meet and greet with participant</div> <div>10-20 min Pre-test interview</div> <div>20-40 min carry out the test task</div> <div>40-45 min Post-test questions</div> <div>45-50 min Post-test interview</div> <div>50-55 min Debrief / pay incentive</div>					

Appendix B: Usability Test Plan Participants

Participant 1	
Place of test: Natural environment (In the wild) Device: Android mobile	
Age: 8	Student, 3rd grade
Experience level:	Using Feide on regular base
#1: Log in	Easy, 7 seconds
#2: Log out	Easy, 5 seconds
#3: Find math subject	Medium, 10 seconds
#4: Find the Salaby resource	Difficulty first time, after second time easy. 1 minute.
#5: Go back to subject gallery	Easy, 10 seconds
General feedback/observations:	<ul style="list-style-type: none"> • Did not read longer texts, but recognized the name of the platform. A familiar picture/logo from the platform would have made it even easier. • But familiar interaction patterns for where to find log in made it easier for logging in and out. (Placement on User Interface). • Quote: "Needs more colors."

Participant 2	
Place of test: Natural environment Device: Android mobile	
Age: 11	Student, 6th grade
Experience level:	Using Feide on regular base
#1: Log in	Easy, 5 seconds
#2: Log out	Easy, 5 seconds
#3: Find math subject	Easy, 5 seconds
#4: Find the Salaby resource	Easy, first attempt ok. 5 seconds.
#5: Go back to subject gallery	Easy, 5 seconds
General feedback/observations:	<ul style="list-style-type: none"> • Add a search field instead of dropdown list. • Quote: Needs a slagord; "En innlogging, en utlogging!" • An icon on top that will take you back to a oversight of subject, as well as resources. Back/forward or home. • Quote: "More colours and illustrations/pictures".

Participant 3	
Place of test: Natural environment Device: Android mobile	
Age: 40 +	Parent
Experience level:	Not using Feide on regular base.
#1: Log in	Easy, 5 seconds
#2: Log out	Easy, 5 seconds
#3: Find math subject	Easy, 5 seconds
#4: Find the Salaby resource	Easy, 5 seconds
#5: Go back to subject gallery	Easy, 3 seconds
General feedback:	No comment

Participant 4	
Place of test: Natural environment Device: iPad	
Age: 7	Student, 2nd grade
Gender: female	
Experience level:	Used Salaby before, but never logged in with FEIDE or any other service
#1: Log in	Hard at first, needed to learn what logging in is. Easy second time, under 10 seconds.
#2: Log out	Hard, had to search for more than 1 minute.
#3: Find math subject	Easy, under 15 seconds
#4: Find the Salaby resource	Hard, took too long to read everything. And the button text was the last she read. More than 1 minute.
#5: Go back to subject gallery	Medium, 20-30 seconds
General feedback/observations:	<ul style="list-style-type: none"> • Felt a button or image was needed to get back. • Felt it was too few images/colors. • Text was too long under “Salaby”, took too long to get to the button-text. • Too many menus, hard to find what you need.

Participant 5	
Place of test: Natural environment Device: Laptop (Win 7)	

Age: 40+	Parent
Gender: female	
Experience level:	Never used Salaby before, familiar with FEIDE-login. Good computer skills.
#1: Log in	Fairly easy. Took around 6 seconds to hit the login button.
#2: Log out	Slightly tricky. Got confused about “dittBrukernavn”, but understood the logic. 15 seconds.
#3: Find math subject	Again, confused with the navigation system. Too small too notice. Around 10 seconds.
#4: Find the Salaby resource	Salaby, which is the first one (on top of the list), made it an obvious choice to choose first. 5 seconds.
#5: Go back to subject gallery	Medium, 20 seconds.
General feedback:	<ul style="list-style-type: none"> • Felt a button or image was needed to get back. • Felt it was too few images/colors. • Fill out the site more with bigger interface. “Fullscreen” view? • “dittBrukernavn” should be fixed. An icon of some sort?

Appendix C: Applifun Questionnaire

Participant	Hvor mye hadde du brukt Applifun på skolen?	Hvor mye hadde du brukt Applifun hjemme?
1	Lite	Mye
2	Ingenting	Veldig mye
3	Noe	Mye
4	Lite	Lite
5	Ingenting	Veldig mye

Participant	Det var lett å finne frem	Det gikk raskt å finne	Jeg ville brukt dette på skolen	Jeg likte godt hvordan nettsiden så ut
1	Helt enig	Verken enig eller uenig	Verken enig eller uenig	Verken enig eller uenig
2	Litt enig	Verken enig eller uenig	Verken enig eller uenig	Litt enig
3	Verken enig eller uenig	Verken enig eller uenig	Litt enig	Litt enig
4	Litt uenig	Helt uenig	Helt uenig	Litt uenig
5	Helt enig	Helt enig	Verken enig eller uenig	Litt enig

Applifun spørreskjema

Tusen takk for at du prøvde Applifun.

Hva syns du om Applifun?

	Helt uenig	Litt uenig	Verken enig eller uenig	Litt enig	Helt enig
Det var lett å finne frem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Det gikk raskt å finne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg ville brukt dette på skolen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg likte godt hvordan nettsiden så ut	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Har du lyst til at vi skal lage denne nettsiden?

	Ingenting	Lite	Noe	Mye	Veldig mye
Hvor mye hadde du brukt Applifun på skolen?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor mye hadde du brukt Applifun hjemme?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SEND

Appendix D: Applifun Usability Test

Tasks	Seconds per task				
	#1	#2	#3	#4	#5
Task: Log in	7	5	5	10	6
Task: Log out	5	5	5	60	15
Task: Locate Salaby resource	60	5	5	60	5
Task: Go back to subject gallery	10	5	3	25	20