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A study on the user experience of the ASReview software tool for
experienced and unexperienced users.

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Introduction

Systematic reviewing is a form of research that uses systematic methods to find, analyze and bring together the information of the existing literature about a subject (Harisson et al., 2020). The amount of published studies, and the rate they get published is increasing (Bastian et al., 2010). Because of this change the process of identifying relevant studies in an unbiased way gets more complicated and more time consuming. Reviewers have to screen trough thousands of irrelevant articles to identify the small part of the articles that are relevant (Lefebvre et al., 2011). Although automated technologies could reduce the amount of work that is put in a systematic review, there are few research teams that do systematic reviews that use automation technology to take over complex tasks (Belkin et al. 2020). Because of the increasing rate articles are getting published researchers are at risk of searching in a degree that is too limited or spending less resources and time than required for a proper review (O'Mara-Eves et al., 2015).

A tool that uses automated technologies in the screening process is the ASReview tool (van de Schoot, 2020). ASReview is an open source machine learning tool to assist researchers in systematic reviews. As stated by van de Schoot (2020) “The goal of ASReview is to help scholars and practitioners to get an overview of the most relevant papers for their work as efficiently as possible, while being transparent in the process”. One quality of the tool that could make the tool more efficient is the usability of the tool, according to Nielsen (2012) “usability is a quality attribute that assesses how easy user interfaces are to use”. Improving the usability will make the tool easier and more efficient to use. According to Patrick (1997) “a key factor for product success is attaching importance to users needs and emotions with the product”. To get information about how we can improve the usability of the ASReview tool a usability test will be conducted.

Various studies have been done about the usability of systematic review automation software (Ouzzanni et al., 2016; Harrison et al., 2020; Cleo et al., 2019; Gates et al., 2019). A study conducted by Clea et al. (2019) compared the usability and acceptability of four systematic review automation software packages (Rayyan, SRA-Helper, RobotAnalyst and Covidence). The report focused on the multiple advantages and disadvantages of the four automation software packages, the results were obtained via the use of a 12-question questionnaire. SRA-helper was the preferred software according to the three systematic reviewers that filled in the

questionnaire. A study conducted by Allison Gates et al. evaluated the usability of three machine learning tools to conduct systematic reviews (Abstrackr, DistillerSR and RobotAnalyst). In the study both the performance and the usability of the tools were tested, the usability was tested with a quantitative survey that measured the SUS score (system usability scale), qualitative data was also collected by asking the participants to elaborate on the experience they had with each tool. The developers of Rayyan tested the usability of their web screening tool in their article (Ouzzani, 2016). In this article the usability, accuracy against manual methods and the added value of the prediction feature were tested, the feedback from the users was collected via the web site and a survey. Feedback from the participants was used to improve the tool and add new features. The existing literature shows the relevance of testing the usability of screening tools, to keep up with the competition the ASReview team should test the user experience to improve the usability!

The first study that will be conducted is a structured interview with members of the ASReview team. The second study that will be conducted is a usability test. The goal of the first study is to get more information about who the potential users are and what information the ASReview team wants to know from the user. The purpose of the second study is to gain insight about the experience of the users of ASReview. This thesis describes the user experience of the ASReview tool, for the purpose of improving the usability of the tool based on the feedback from the users. The research question goes as follows:

- How do people that use the ASReview tool experience the tool?

Structured Interviews

Methods

Participants

Six team-members of the ASReview-project were interviewed in a structured interview, the topic list can be found in Appendix 1. The goal was to gain information about the ASReview tool, the users and what we need to know from the users. They were sampled from the population of all members of the ASReview project (N=20) using purposive sampling (Tongco, 2007). Purposive sampling is a sampling method where the participants are selected based on certain qualities the informant poses. In this study the qualities that are desired from the participant is knowledge about the tool from an interesting perspective, for example their work field, education and role in the project. The interviewees consisted of six ASReview team-members from five different backgrounds:

- Doing master's thesis at the ASReview team;
- Works at the IT department of Utrecht University specialized in security;
- Works at the IT department of Utrecht University specialized in user experience
- Two participants that work at the University library at Utrecht University, they help researchers and students with dealing with scientific information;
- Headhunter for high ranking employees;

Design

Before the actual interviews one face-to-face pilot-interview was conducted to test the topic list and make an estimation of how long the interviews will last (Appendix 1). Based on the face-to-face interview it was estimated that an interview would take 20 minutes. The other five interviews were done using video calling or phone due to the measures concerning COVID-19 (RIVM, 2020). Four participants were interviewed via video calling and one via phone. The interviews were not recorded because of privacy guidelines, but the interviewer made extensive notes during the interview. During and after the interview the participants were asked for feedback on the notes, the notes were processed after approval by the interviewee. The interview was approved by Ethics Committee of the Faculty of Social and Behavioural Sciences of Utrecht University (ID 20-176)

Analytic Strategy

The interview notes were put in Nvivo 12 (released in November 2019), and the notes were divided among five subjects:

- Background information
- Definition of end-user
- Information desired from the end-user
- Added value of ASReview
- Other feedback

Eventually the notes were put in one of the categories, in Nvivo 12 it is possible to see all the text that was coded for every subject. It makes it easier to have an overview of what the participants said about every subject.

Results

Based on a pilot-interview we estimated that an actual interview would last approximately 20 minutes. The results of the 6 interviews were analyzed in Nvivo 12. For every topic an overall conclusion was made based on what the participants said about the subject.

Definition of end-user

The participants were asked who people found to be the end users. During the interviews the participants mentioned both organizations and individual people that could be potential users. These answers were divided in two categories: (1) individual characteristics and (2) organizations, see Table 1.

Table 1: Individual and organizational end-users

Individual characteristics	Organizations
Researcher N=6	Utrecht University N=1
Anyone that wants to do a systematic review N=4	Journal N=1
Students N=2	Research institute N=1
Head of research team N=2	Commercial organizations N=1
People that want to check if their research hasn't been done before N=1	

The type of end user that was mentioned the most were researchers, all six participants mentioned researchers as a possible end-user. A definition of the end user that was mentioned the most after this was anyone who wants to do a systematic review.

Information desired from the end user

During the interview the participants were asked what they wanted to know from the participants of the UX-test. The following answers were given:

- What do the end users need to start using the program?
- What do the end-users miss in the current version (functionality, time reduction)?
- Do they think the program can be trusted?
- Which guidelines are used by people that do systematic reviews?
- How easy do they think they can use the tool?
- Do they think the tool is suited for screening in teams?
- Are there besides time reduction other benefits of the program?
- What do the users prefer, that there are more irrelevant papers in the software but that the program learns more, or that the software comes up with less irrelevant articles and the program learns less?
- How much literature are they screening (1500 or 15000 articles)?
- Would people with experience change the research design because of the ASReview tool?
- What kind of things does the user do before, during and after using the ASReview tool?
- Which program do they use for making an input (for example pubmed)?

Added value of ASReview.

All participants in the interview mentioned that saving time in the research process was an added value of the ASReview tool. Participants also mentioned that due to the saved time people can spend more time on other aspects of the research for example one participant said “less time or screening more thoroughly”

Other feedback

Only one participant gave other feedback. The participant mentioned after the questions that when researching the way people work with the software, it is important to also test the software on participants that normally would not use the program because if you only know information from people that like the program you don't know why people that aren't interested in the program don't use it.

Usability test

Methods

Participants

Based on the interviews with members of the ASReview team two groups of users were distinguished an experienced and an unexperienced group. An experienced participant is a person that already installed and used ASReview. An unexperienced participant is a person that didn't install ASReview and never used the program before. From the unexperienced group seven people were tested and from the experienced group five people were tested. According to Landauer and Nielsen (1993) five users are enough to find 85 % of the usability problems. Due to the Covid19 lockdown the usability tests were conducted via video calling where one person would give instructions to the participant and one person would make notes, this way of doing usability tests is called human-moderated remote testing (Vasalou & Wiemer-Hastings, 2004). The usability tests were conducted via different videoconferencing platforms.

The test script

In cooperation with a user experience professional at the IT-department of Utrecht University the research design for a usability test was developed. Before conducting the usability test we made a test script for both experienced and unexperienced users (Appendix 2 and 3), this is a protocol with questions, tasks and other rules that should be followed during the usability test. The guide in GitHub¹ for the ASReview program was used to make the tasks for the participants (ASReview, 2020). To prevent possible shortcomings of the testscript the two testscripts were tested on one unexperienced and one experienced user.

¹ <https://asreview.readthedocs.io/en/latest/>

Analytic strategy

During the tests one person (Sybren Hindriks) asked the questions and helped the participant with the tasks, the other person observed and made notes, a user experience professional at the IT-department of Utrecht University. During three usability tests we had a guest observer; these guests were members of the ASReview team. To analyze the notes thematic analysis was used, thematic analyses is a method to analyze data due to dividing the information in subjects that all have a different meaning (Joffe, 2012). Based on the questions asked in the usability test and the raw data the notes were coded in multiple subjects in Nvivo 12. Eventually two layers of coding were made that overlap each other. The first part was coding per subject. The other layer coding focused more on the type of situation that occurred, the second layer of coding had 3 main categories. When something went wrong the text was coded as 'showstopper'. When something didn't go smooth the text was coded as 'doubtful'. When something went great the subject was coded as 'superb'. Within the three subjects of the second layer of coding sub categories were made. The coding can be found in Appendix 4. The features the participants requested for future versions of the ASReview tool were discussed with the lead engineer of the ASReview team, the requested features were marked with good idea, maybe and not a good idea.

Results

In this part of the thesis the results of the usability tests are described.

Rating of the ASReview tool and parts of the test

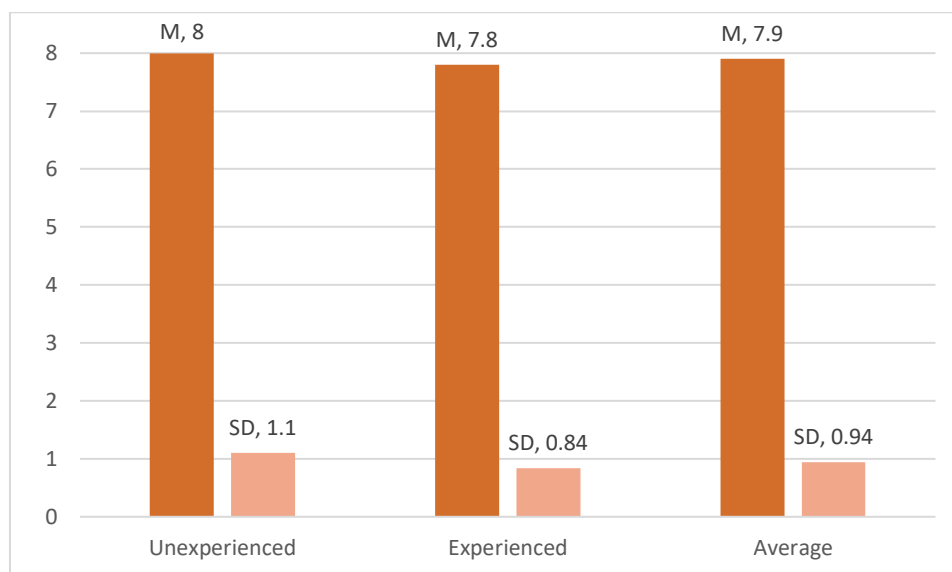
The participants were asked to rate several parts of the usability test and also give the tool an overall rating.

Overall rating ASReview

There were two different test scripts, see Appendix 2 and 3, one for the experienced user that already used ASReview and the unexperienced user who never used ASReview. Overall the participants (N=11) rated the tool with a grade of 7.9 (SD = .94) on a scale from one to ten (Table 2). The unexperienced users on average rated the tool with an 8 (SD= 1.1, N=6). The experienced user on average rated the tool with a 7.8 (SD= .94, N=5)(Table 2). An independent samples T-test was done on the difference between the unexperienced and the experienced group ($t(9) = 0.334$, $p = 0.75$, Cohens $d = 0.21$), a Cohens d of 0.2 means a small effect size, the difference between the two groups was not significant. This means that we can't confirm that the rating for the two groups are different.

Figure 1

Overall rating ASReview tool



Searching ASReview

During the usability test the unexperienced participants were give a scenario. The scenario was that they heard about the ASReview tool from a colleague and that they wanted to try the new tool, the participants were given the instruction to look for the tool, after looking up the ASReview tool on the internet they were asked what rating between one and ten they would give this task. On average they rated this task with an 8.2 (SD=1.63, N=7).

Installing the required software.

During the usability test the unexperienced participants were given the instruction to install the required software for running ASReview, Anaconda (Anaconda, 2020). After installing the software, they were asked to give this part of the test a rating from 1 to 10. The average rating for this task was a 6.1 (SD=2.46, N=5).

Opening ASReview

Both the unexperienced and the experienced participants were given the instruction to open ASReview. On average the participants rated this task with a 7.6 (SD=1.30, N=8). The N differed for some parts of the test because we didn't always manage to get a rating from the participants, or the participant didn't manage to install the required software to run ASReview. The unexperienced participants rated this task on average with an 8 (SD= 2, N=3). The experienced participants rated this task on average with a 7.4 (SD=.89, N=5).

Starting a project

During the usability test the participants were given the instruction to open a screening project in the ASReview tool. On average the participants rated this part of the test with a 7.8 (SD=1.11 N=10). The unexperienced participants rated this part on average with a 7.4 (SD=1.13 N=5). The experienced participants rated this part of the test on average with an 8.2 (SD=.84 N=5).

Playing with the settings

The experienced users were instructed to try the dark mode and change the text size. On average this task was rated with an 8.3 (SD=.45, N=5).

Table 2

Average rating for the tasks in the usability test

	Unexperienced			Experienced			Average		
	Mean	N	SD	Mean	N	SD	Mean	N	SD
Search ASReview	8.2	7	1.63						
Software installation	6.1	5	2.46						
Install ASReview	6.2	3	3.01						
Opening ASReview	8.0	3	2.00	7.4	5	.89	7.6	8	1.30
Starting a project	7.4	5	1.13	8.2	5	.84	7.8	10	1.11
Playing with settings				8.3	5	.45			
Restart ASReview				6.8	5	.45			
The ASReview tool	8.0	6	1.10	7.8	5	.84	7.9	11	.94

Restarting ASReview

The experienced participants were asked to close and reopen the ASReview tool. On average this part of the test was rated with a 6.8 (SD=.45, N=5)

Words describing the usability test

After the participants performed multiple tasks on the computer the participants were asked to select words in a table that they thought were suitable for the tasks they did today, see Table 3. Words that got selected the most were helpful and accessible (N=6). Other words that were mentioned often were “fun”, “clear”, and “obvious” (N=5).

Table 3

Frequencies of the words selected by the participants

Can you click on the words you find most suitable for the tasks you did today?

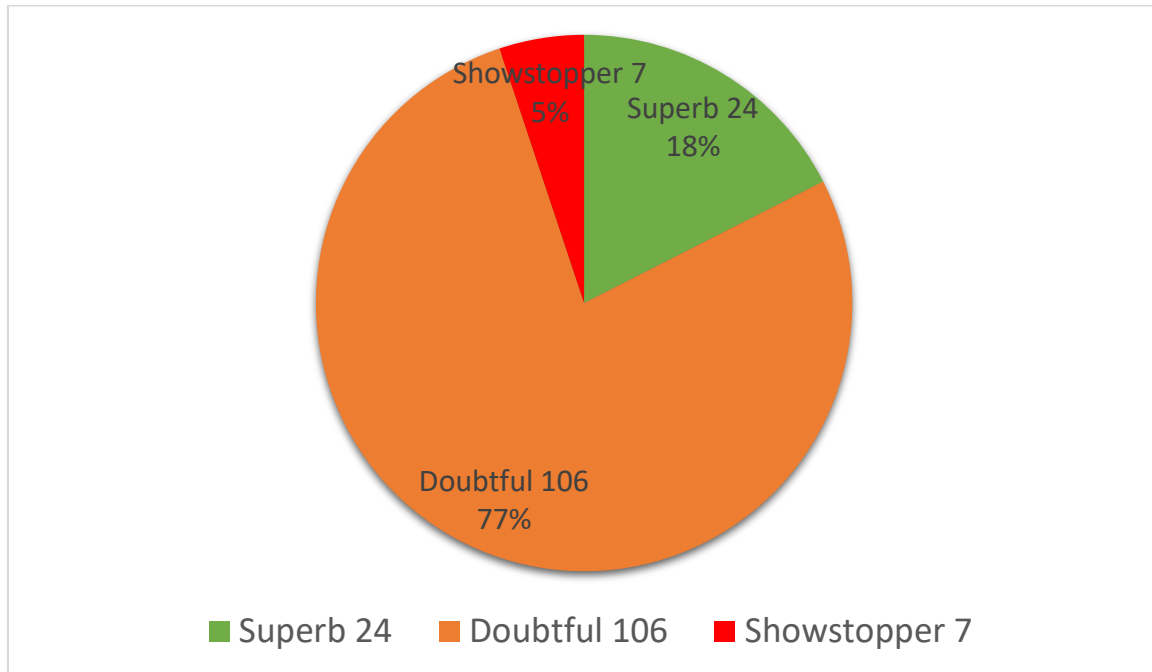
2	Recognizable	4	Fast	3	Easy
	Constrained	6	Helpful	1	Effective
4	Efficient	5	Fun	1	Confusing
	Not pretty		Frustrating	3	Pragmatic
	Busy		Chaotic		Profound
	Outdated	5	Clear	1	Fresh
6	Accessible	3	Peaceful		Advanced
	Boring	4	Innovative	1	Complicated
5	Obvious		Overwhelming		Trustable
4	Intuitive	3	Attractive	2	Welcoming
	Superficial	4	Relevant	3	Too technical
2	Unfinished		Devious	4	Usable
	Slow	3	Timesaving		Unimaginable
2	Professional		Personal		Commercially
	Intense	1	Accommodating	1	Difficult

Superb, doubtful and showstopper

During the test the participants encountered situations they were positive about, labelled a ‘superb’, parts of the tool that they didn’t like, labelled a ‘doubtful’, and problems they couldn’t figure out on themselves, labelled a ‘showstopper’. Out of the 137 pieces of transcript coded in this layer of coding 18 percent of the coding consisted of superb situations, 77 percent of the coding consisted of doubtful situations and five percent of the coding consisted of showstoppers (Figure 2).

Figure 2

Pie chart of the distribution of text coded as superb, doubtful and showstoppers



Superb

Positive aspects the participants mentioned were coded as superb, in total 24 pieces of transcript were coded as superb (Appendix 5)

Homepage

Two pieces of transcript about the homepage were coded as a superb. For example, one participant said the following “elas is cute”. Note *elas* is the mascot of ASReview and is short for Electronic Learning ASsistant.

Guide

Four pieces of transcript were coded about the guide were coded as superb where the users can find information on how to install ASReview, how to open ASReview and what to do in case an error occurs. One participant said the following about the guide “The guide is very useful”.

Opening a new project

Seven pieces of transcript that were coded were about the task were participants had to open a new project and started screening. One participant mentioned the following about this task “It looks good. The hearts are intuitive.”

Darkmode

Seven pieces of transcript were coded as a positive comment about the darkmode function. For example, one participant said “dark mode is a cool feature”

Function to change text size

Four pieces of transcript were coded as a positive comment about the function to change the text size. Two participants mentioned that they preferred the large size, one participant mentioned that she preferred the largest text size the most.

Doubtful

During the usability tests participants mentioned aspects of the program that were not necessarily a problem that made the ASReview tool unusable but did influence the experience in a negative way, this was coded as doubtful. In total there were 106 pieces of transcript coded as doubtful.

The homepage

For the homepage 9 pieces of transcript were coded as doubtful, for example one unexperienced user said “very functional, but not pretty, the color brown ... it is a weird color”.

Installing the software and the guide

For the process of installing the required software 24 pieces of transcript were coded as doubtful. One example of this is the following statement “cmd.exe is something I never used before. Is there extra information about this? It looks like something for people that know a lot about computers. I can imagine that there could be a more intuitive way of installing the program”. Cmd.exe or command prompt is the command line interface of Windows, using this interface is required to install and open the ASReview tool.

Opening a new project

For the process of starting a new project 69 pieces of transcript were coded as doubtful, this included screening of the articles. One participant mentioned the following during screening “You can’t see a summary of what you already marked as relevant or irrelevant, I would like to see what I already screened.”

Showstoppers

A showstopper happens when someone has a problem with one of the tasks and couldn't figure out the problem on his/her own or they couldn't continue the test. During some interviews we had to help the participant to get back on track. In two tests with unexperienced users we couldn't finish the test because we couldn't install anaconda. In total there were 5 participants that encountered a showstopper, 7 pieces of transcript were coded as showstopper.

Installing the software

The hardest problems occurred when installing the software. Five of the seven unexperienced users asked for help during the test. In two cases the test couldn't be finished because the participant did not manage to install the software (Anaconda) required for running ASReview. The following problems occurred:

- Didn't manage to install Anaconda properly
- Installed another environment for python that didn't work
- Couldn't install anaconda on UU computer because of restrictions
- Computer was too slow for installing anaconda

Guide

In one test with an unexperienced user the participant didn't manage to find the command to open ASReview in Python.

New features requested

The features requested that involved the front end were discussed with the lead engineer of the front-end of ASReview. We divided the requested features in 3 categories: This is a good idea, maybe and this is not a good idea. Good ideas were mostly features that were easy to implement and didn't have any downsides. Ideas that were put in the category maybe needed some more consideration on the question if the feature should be implemented and how the feature should be implemented. The feature that was marked as not a good idea "A tool that processes data, for example from medline to csv" will not be implemented because software to convert this already existed and it is hard to implement in the ASReview tool. In total 17 requested features were marked as a good idea, 7 were marked as maybe and 1 idea was marked as not a good idea

Good idea

The following requests were marked as a good idea:

- Being able to change a decision in the screening process N=4
- Possibility to go one step back during the screening of the articles N=3
- Better contrast of the text with the background N=2
- Possibility to go one step back when starting a new project N=2
- Possibility to go one step back when starting a new project N=2
- Possibility to see when a project was opened N=2
- More information in the tool N=2
- Loading gif when the program is training the model N=1
- Stop making the short description of the project mandatory N=1
- Option to mark an article as uncertain N=1
- Possibility to see when a project started N=1
- Possibility to see when the last inclusion was made N=1
- Change the return button in step 3 in an accept button N=1
- The ability of ASReview to remember the settings (dark mode and text size) after restarting the program N=1
- Being able to click to the full text N=1
- A button to stop screening and export the decisions N=1
- Information when the abstract is missing N=1
- A function to add more articles to the project after the start N=1

Maybe

The following requests were marked as maybe

- Possibility to see the names of the author N=2
- Indication when you could stop screening N=2
- An option to share the project with others N=2
- Possibility to see the date an article was published N=1
- Option to mark an article as superrelevant N=1
- Step 2, a more logic layout N=1
- A button to open ASReview N=1

This is not a good idea

- A tool that processes data, for example from medline to csv N=1

Summary results

Overall the participants were positive about the ASReview tool, on average the participants rated the tool with a 7.9. The unexperienced participants rated the tool slightly higher than the experienced participants, the difference between the groups was not statistically significant according to the t-test that was conducted. In general the participants gave a positive rating for the different parts of the test, the installation of the tool received the lowest rating of 6.1. The participants described the usability test with words as helpful, accessible, fun, clear and obvious. The participants experienced many minor issues/annoyances with the ASReview tool about the homepage, starting a new project and installing the software. Moreover, many unexperienced users encountered problems during the installation process. The installation process was too complicated for many unexperienced users. Two out of the seven unexperienced participants didn't succeed the installation process during the usability test.

Discussion

The purpose of this thesis was to describe the user experience of the users of ASReview. The usability tests discovered many aspect of this experience. In general the participants had a positive opinion of the tool. Although the participants were positive in general many minor issues were discovered during the test. The most serious problems occurred during the installation process of the tool, the installation process was too complicated for the unexperienced users.

Limitations

The presence of the usability tester and the observer and the interaction with the participant could have influenced how the participants behaved. Efforts were made to minimize this via the use of a protocol for the test, the usability tester also tried to be react neutral on comments and statement the participants made. The interaction with the person that was tested differed per participant.

The usability test was conducted by me a Sociology bachelor student and a user experience professional at the IT-department of Utrecht University. Because of the involvement in the ASReview team a certain bias could have played a role in the usability tests and the analysis of the results. The members of the ASReview team are very enthusiastic about the tool, this could have resulted in more positive answers from the participants.

The sample consisted of a convenience sample, participants were approached via the social network of Rens van de Schoot and contacts of the participants themselves. The sample was not representative for all possible users of ASReview.

The interviews and the usability tests were conducted during the COVID-19 lockdown in the Netherlands (RIVM, 2020), this may have impacted the behavior and mood of the participants. Isolation can increase mental distress (Torales et al, 2020). According to a study conducted by Jurgen Sauer and Andreas Sonderegger (2011) the mental state of the user is an influencing factor in usability testing.

Implications of the study

The results of the usability tests were presented to the ASReview team. In the presentation the opinion of the users about the tool and many issues the participants encountered were presented and discussed with the team. The participants also requested many features for future updates of the ASReview tool. These requested features were discussed with the lead engineer of the ASReview team. A majority of these requested features will be implemented in future versions of the ASReview tool or will be taken into consideration. The usability showed that there is definitely room for improvement of the ASReview tool in the future! The ASReview team has the intention to continue doing usability tests for future versions of the tool. To minimize the bias of the usability tests it could be beneficial to hire a third party to conduct usability tests in the future. The ASReview team should consider if the benefits are worth the extra costs.

Final conclusion

The opinion of the users about the tool and the experience with the tasks they had to do during the test were positive in general. The usability test highlighted many minor issues and some more serious issues as well. The installation process of the tool was too complicated for many unexperienced participants. Although there were limitations of the research the overall conclusion is that the tool is perceived positively by the users in general but the users definitely experienced difficulties with some parts of the ASReview tool.

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Appendix 1

Interview medewerkers ASR review project

Inleiding interview (3 minuten)

- Bedanken voor de medewerking
- Wat doe je in het dagelijks leven?
 - Werkachtergrond of educatie achtergrond
- Wat voor rol speelt u precies in het Elias project?
 - Doorvragen (programmeren programma, vormgeving, commerciële kant)
 - Tijd beperken

Afbakening eindgebruiker (5 minuten)

- Wie is voor jou de eindgebruiker?
 - Specifiek doorvragen (ervaren ASR gebruikers, alleen bij universiteit Utrecht, welke deel van het programma er wordt gebruikt)
- Wat voor onderscheid tussen eindgebruikers is er denk je?
- Wat is de meerwaarde van dit programma voor de eindgebruiker denk je?

Gewenste informatie interview (10 minuten)

- Wat wil jij binnen jouw rol in het project weten van de eindgebruiker?
 - Welke informatie zou kunnen helpen?
 - Hoe haalbaar denk je dat het is om dit te weten te komen?
- Kun je 3 vragen bedenken die je graag zou willen weten?
 - Specifieker doorvragen
 - Voor welke eindgebruiker

Afronding (1 minuut)

- Bereiken voor vragen of verdere opmerkingen
- Contactgegevens

Appendix 2

Gebruiksvriendelijkheid onderzoek Onervaren gebruiker Martijn Huijts & Sybren Hindriks

DOCUMENT	Usability Testscript
VERSIE	0.2
DATUM	Mei 2020
AUTEUR	Martijn Huijts & Sybren Hindriks

Agenda

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<i>Pre-test interview</i>	27
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<i>Introductie</i>	34
1.15. Introductie participant	34
1.16. Opdrachten en observatie	34
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<i>Pre-test interview</i>	35
1.18. Persoonlijke informatie	35
1.19. Handigheid technologie	35
1.20. Testing "the matter" knowledge	35
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1.21. "Openen ASReview"	36
1.22. "starten van een nieuw project"	37
1.23. "Rommelen met het programma"	37
1.24. "Verder gaan"	38
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1.25.	Observatie vragen	39
1.26.	Debrief vragen	39
1.27.	Bedankt voor het deelnemen aan de test.	39

Introductie

1.1. Introductie participant

Document: Introductie participant, participants overeenkomst tekenen

- Wij testen het systeem, product of dienst, niet jouw.
- We horen graag wat jij denkt tijdens de gebruikerstest

1.2. Opdrachten en observatie

De participant maakt een aantal opdrachten. Deze opdrachten zijn door het team gemaakt.

De usability specialisten observeren the participant op de volgende onderdelen;

- Kan de participant de opdracht volbrengen.
- Begrijpt de gebruiker de onderdelen (navigatie, content, communicatie, errors, etc.)
- Verwachtgingen, aannamens, verbizing, bevestiging en of de waardering van de participant.

1.3. Debrief (test evaluatie)

In dit onderdeel, wordt de participant gevraagd om een reactie te geven op de usability test. Dit is het moment waarop de observeerders hun vragen kunnen doorgeven aan de vragensteller.

In de tussentijd kan de participant, als dat aanwezig is, een evaluatie of andere individuele test uitvoeren (of het Debrief document).

Pre-test interview

1.4. *Persoonlijke informatie*

Stel de participant op zijn gemak

En wat je zo al doet in het dagelijks leven? (werk, vakgebied, studies, hobbies, passies).

1.5. *Software gebruik*

Voorbeeld vragen:

Maak je veel gebruik van software?

Wat voor software gebruik je veel?

Gebruik je ook social media? Welke?

1.6. *Testing "the matter" knowledge*

Heb je wel eens met python gewerkt?

Ben je bekend met automated systematic reviews?

Tasks and observation

Tijdens de taken zullen we letten op:

- Navigatie
- Functionaliteiten
- Communicatie
- Actie & reactie

1.7. "Het vinden van ASReview"

Laten we zeggen dat je al een tijdje interesse hebt in het reviewen van je artikelen met het gebruik van digitale tooling. Een collega had het over ASReview en je gaat dat proberen.

Q 1 – Kun je ons laten zien hoe je dit zou zoeken als je het voor de eerste keer wil gaan gebruiken? Wil je hardop denken als je deze taak uitvoert.

Q2 – Je hebt gevonden waar je moet zijn. Waar had je nog meer een ingang verwacht? Denk aan websites of omgevingen.

Q3 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.8. "Benodigde software installeren adhv de handleiding"

Je gaat voor de eerste keer ASReview gebruiken. Belangrijk is dat je daarvoor de benodigde programma's installeert. In github is een handleiding te vinden voor het installeren van de benodigde programma's om ASReview te kunnen runnen.

Stuur de link in de chat: <https://asreview.readthedocs.io/>

Q 1 – Je bent nu op de handleidingensite van ASReview. Je bent voortvarend en wilt het gelijk installeren. Laat ons zien hoe je dit kunt doen.

Kun je hardop zeggen wat je denkt bij het doen van deze taak?

Q 2 – Wat vind je van de stappen in de handleiding?

Q3 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.9. "Installeren ASReview"

Q 1 – Nadat de benodigde software is geïnstalleerd kun je verder gaan met het installeren van de tool. Ga naar het kopje Install ASReview en installeer de benodigde programma's.

Q2 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.10. "Openen ASReview"

Voor je kunt beginnen met een project moet je het programma eerst openen dit kan door-middel van het comando asreview oracle in te voeren in de terminal of cmd.exe

Q 1 – Open nu asreview, als het goed is verschijnt asreview nu in je browser, als dit niet gebeurt wat doe je dan?

Q 2 – Je ziet nu de beginpagina van ASReview. Kun je in het kort vertellen wat je ziet, en aan ons uitleggen wat elk onderdeel betekend of doet, zonder erop de klikken.

Q3 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.11. "starten van een project"

Je bent een onderzoeker en je wilt een automated systematic review doen over het post traumatisch stress syndroom. Om te beginnen met het onderzoek open je een nieuw project.

Q1 – Je kunt nu een project openen en de verschillende stappen doornemen. Laat maar zien hoe je een nieuw project zou openen. Notitie: vraag bij elke stap wat de participant denkt dat alles betekend.

- Stap 1 spreekt voor zich lijkt me, bedenk daarom zelf wat je handig lijkt om op te schrijven.
- Je bent bij stap 2, kun je vertellen wat je hier ziet. Ga bij stap 2 naar example datasets en kies "PTSD - Schoot" en ga naar de volgende pagina.
- Je bent bij stap 3, kun je vertellen wat je hier ziet. Bij stap 3 kun je artikelen aangeven waarvan je weet dat ze relevant zijn. Kies daarom de volgende 2 passende artikelen bij stap 3 en ga je door naar de volgende pagina.
 - Latent trajectories of trauma symptoms and resilience: the 3-year longitudinal prospective USPER study of Danish veterans deployed in Afghanistan
 - A Latent Growth Mixture Modeling Approach to PTSD Symptoms in Rape Victims
- Je bent nu bij stap 4 kun je vertellen wat je hiet ziet? Hier worden 5 artikelen voorgesteld die relevant kunnen zijn, omdat ze allemaal lijken te passen bij je onderzoeksonderwerp markeer je ze alle 5 als relevant.
- Bij stap 5 begin je met screenen kies als machine learning model Naïve Bayes. Je kunt nu beginnen met screenen van de artikelen, de artikelen die een rood lettertype hebben zijn relevant.

Q2 - Zou je kunnen uitleggen zonder te klikken wat je denkt dat de verschillende knoppen in het programma betekenen?

Q3 - Als je nu wilt weten hoeveel artikelen je al gescreend hebt waar zou je dat dan zoeken?

Q4 - Wat vond je makkelijk gaan?

Q5- Wat vond je moeilijk gaan?

Q6 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

Debrief

Graag zouden we je nog iets willen vragen;

1.12. Observatie vragen

Ik stuur je zo een link waarbij je een lijst met woorden krijgt en waarbij je de tool een cijfer kunt geven. Zou je de woorden die je van toepassing vindt op de tutorial kunnen omcirkelen? In de tussentijd neem ik even contact op met de observator, of er nog vragen zijn.

Stuur de volgende link in de chat:

https://survey.uu.nl/jfe/form/SV_cA99tQeOCiXXOFn

1.13. Debrief vragen

Als afsluiting hebben we nog wat vragen

- Hoe zou je de tool omschrijven?
- In welke mate vind je de tool makkelijk in gebruik?
- Wat mis je in het programma nog aan functionaliteiten?
- Denk je dat andere onervaren gebruikers deze test kunnen afleggen?
- Waren er onderdelen die je wat moeilijker vond?
- Wat vond je van de test in het algemeen

1.14. Bedankt voor het deelnemen aan de test.

Heb je nog vragen nu we klaar zijn?

- Stop recording
- Bedank voor de tijd

Appendix 3

Gebruiksvriendelijkheid onderzoek Onervaren gebruiker Martijn Huijts & Sybren Hindriks

DOCUMENT	Usability Testscript
VERSIE	0.2
DATUM	Mei 2020
AUTEUR	Martijn Huijts & Sybren Hindriks

Agenda

Introductie 34

- 1.1. Introductie participant 34**
- 1.2. Opdrachten en observatie 34**
- 1.3. Debrief (test evaluatie) 34**

Pre-test interview 35

- 1.4. Persoonlijke informatie 35**
- 1.5. Software gebruik 4**
- 1.6. Testing "the matter" knowledge 35**

Tasks and observation 36

- 1.7. "Openen ASReview" 29**
- 1.8. "Rommelen met het programma" 5**
- 1.9. "starten van een project" 29**

Debrief 39

- 1.10. Observatie vragen 39**
- 1.11. Debrief vragen 39**
- 1.12. Bedankt voor het deelnemen aan de test. 39**

Introductie

1.15. Introductie participant

Document: Introductie participant, participants overeenkomst tekenen

- Wij testen het systeem, product of dienst, niet jou.
- We horen graag wat jij denkt tijdens de gebruikerstest

1.16. Opdrachten en observatie

De participant maakt een aantal opdrachten. Deze opdrachten zijn door het team gemaakt.

De usability specialisten observeren the participant op de volgende onderdelen;

- Kan de participant de opdracht volbrengen.
- Begrijpt de gebruiker de onderdelen (navigatie, content, communicatie, errors, etc.)
- Gebruikt de participant de tool op de manier die we verwachten
- Verwachtgingen, aannamens, verbizing, bevestiging en of de waardering van de participant.

1.17. Debrief (test evaluatie)

In dit onderdeel, wordt de participant gevraagd om een reactie te geven op de usability test. Dit is het moment waarop de observeerders hun vragen kunnen doorgeven aan de vragensteller.

In de tussentijd kan de participant, als dat aanwezig is, een evaluatie of andere individuele test uitvoeren (of het Debrief document).

Pre-test interview

1.18. Persoonlijke informatie

Stel de participant op zijn gemak

En wat je zo al doet in je vrijetijd? (werk, vakgebied, studies, hobbies, passies).

1.19. Handigheid technologie

Wat voor software gebruik je vaak?

Maak je veel gebruik van software?

1.20. Testing "the matter" knowledge

Wat voor review software heb je al gebruikt?

Waarvoor gebruik je review software?

Hoeveel literatuur screen je dan?

Werk je met meerdere mensen aan het screenen?

Heb je wel eens ASReview gebruikt?

Ben je bekend met Python?

Tasks and observation

Tijdens de taken zullen we letten op:

- Navigatie
- Functionaliteiten
- Communicatie
- Actie & reactie

1.21. "Openen ASReview"

Voor je kunt beginnen met een project moet je het programma eerst openen dit kan door-middel van het commando `asreview oracle` in te voeren in de terminal of `cmd.exe`

Q1 – Heb je een recente versie van ASReview? Als je hier niet zeker van bent kun je het commando `"pip install --upgrade asreview"` gebruiken

Q2 - Voor je kunt beginnen met een project moet je het programma openen dit kan door-middel van het commando `asreview oracle` in te voeren in de terminal of `cmd.exe`

Q3– Open nu asreview, als het goed is verschijnt asreview nu in je browser, als dit niet gebeurt wat doe je dan?

Q4 – Je ziet nu de beginpagina van ASReview. Kun je in het kort vertellen wat je ziet, en aan ons uitleggen wat elk onderdeel betekend of doet, zonder erop de klikken.

Q5 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.22. "starten van een nieuw project"

Je bent een onderzoeker en je wilt een automated systematic review doen over het post traumatisch stress syndroom. Om te beginnen met het onderzoek open je een nieuw project, hierbij moet je verschillende stappen afleggen voordat je kan gaan screenen en kan aangeven welke artikelen je relevant vindt. "

Q1 – Je kunt nu een project openen en de verschillende stappen doornemen. Laat maar zien hoe je een nieuw project zou openen. Notitie: vraag bij elke stap wat de participant denkt dat alles betekend.

- Stap 1 spreekt voor zich lijkt me, bedenk daarom zelf wat je handig lijkt om op te schrijven.
- Ga bij stap 2 naar example datasets en kies "PTSD - Schoot" en ga naar de volgende pagina.
- Bij stap 3 kun je artikelen aangeven waarvan je weet dat ze relevant zijn. Kies daarom de volgende 2 passende artikelen bij stap 3 en ga je door naar de volgende pagina.
 - Latent trajectories of trauma symptoms and resilience: the 3-year longitudinal prospective USPER study of Danish veterans deployed in Afghanistan
 - A Latent Growth Mixture Modeling Approach to PTSD Symptoms in Rape Victims
- Je bent nu bij stap 4, hier worden 5 artikelen voorgesteld die relevant kunnen zijn, omdat ze allemaal lijken te passen bij je onderzoeksonderwerp markeer je ze alle 5 als relevant.
- Bij stap 5 begin je met screenen kies als machine learning model Naïve Bayes. Je kunt nu beginnen met screenen van de artikelen, de artikelen die een rood lettertype hebben zijn relevant.

Q2 – Je bent al een tijdje aan het screenen en je wilt tussendoor weten hoeveel artikelen je al gedaan hebt. Kun je ons vertellen hoeveel je er al gedaan hebt, en waar je dit terugvinden?

Q3 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.23. "Rommelen met het programma"

Q1 - Zonder erop de klikken, kun je in het kort vertellen wat je ziet, en aan ons uitleggen wat elk onderdeel betekend of doet?

Q2 – Het begint donkerder te worden en daardoor begint het licht van je scherm te fel te worden, wat zou je nu doen? (wacht af of ze zelf bij de donkere modus komen)

- Zou je deze functie gebruiken?

Q3 – Je wilt natuurlijk dat de abstracts zo makkelijk mogelijk te lezen zijn, speel daarom even met de lettergrootte, wat vind je van de verschillende lettergroottes?

Q4 - Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

1.24. "Verder gaan"

Stel je voor je sluit het project vandaag af omdat je andere afspraak hebt. Morgen ga je er mee verder.

Q1. Hoe zou je de tool afsluiten?

Q2. Hoe zou je de tool weer beginnen?

Q2. Kun je dit laten zien?

Q3. Geef een cijfer voor dit onderdeel, in een schaal van 1 tot 10.

Debrief

Graag zouden we je nog iets willen vragen;

1.25. Observatie vragen

Ik stuur je zo een link waarbij je een lijst met woorden krijgt en waarbij je de tool een cijfer kunt geven. Zou je de woorden die je van toepassing vindt op de tutorial kunnen omcirkelen? In de tussentijd neem ik even contact op met de observator, of er nog vragen zijn.

Stuur de volgende link in de chat:

https://survey.uu.nl/jfe/form/SV_cA99tQeOCiXXOFn

1.26. Debrief vragen

- Hoe zou je de tool omschrijven?
- In welke mate vind je de tool makkelijk in gebruik?
- Wat mis je in het programma nog aan functionaliteiten?
- Wat voor programma's gebruik je voor dat je aan de slag gaat met een AS review tool?
- Wat voor programma's gebruik je nadat je aan de slag gaat met een AS review?
- Wat mis je in je huidige review proces wat je in ASR terug zou willen zien?
- In welke mate vind je de tool makkelijk in gebruik?
- Zou je liever willen dat het programma sneller relevante artikelen laat zien maar minder zelflerend is of dat het programma meer leert maar vaker irrelevante artikelen laat zien?
- Zou je deze tool ook op je mobiel gebruiken voor je werk?

1.27. Bedankt voor het deelnemen aan de test.

Heb je nog vragen nu we klaar zijn?

- Stop recording
- Bedank voor de tijd

Appendix 4

The coding for the subjects:

- Categories of the behavior of the participant
 - Opening ASReview
 - Darkmode
 - Textsize
 - Restarting ASReview
 - Screening
 - Github guide
 - Installing ASReview
 - Statistics
 - Searching for ASReview
 - Making a project
 - Step 1
 - Step 2
 - Step 3
 - Step 4
 - Step 5
 - Other
- Grades given for each part of the test
 - Searching ASReview
 - Installing software needed
 - Installing ASReview
 - Opening ASReview
 - Start a new project
 - Trying different settings
 - Restarting ASReview
- The debrief subjects
 - How would you describe the ASReview tool
 - Possible new functionalities
 - Difficulty of the tool
 - Can other unexperienced users use ASReview
 - Activities before working in ASReview

- Activities during working in ASReview
- Activities after working in ASReview
- What do the users prefer, that there are more irrelevant papers in the software but that the program learns more, or that the software comes up with less irrelevant articles and the program learns less

Coding for the situation:

- Showstopper
 - Homepage
 - Guide and installation
 - Opening ASReview
 - Starting a project
- Doubtful
 - Homepage
 - Guide and installation
 - Opening ASReview
 - Starting a project
- Superb
 - Homepage
 - Guide and installation
 - Starting a project
 - Darkmode
 - Textsize

Appendix 5

Name	Files	Referen...	Created On	Created...	Modified On	Modified By	Color
▼ Categorieën gedrag	14	287	24 May 2020 at 18:...	SJ	12 Jun 2020 at 16:46	SJ	
Darkmodus	7	9	26 May 2020 at 14:...	SJ	6 Jun 2020 at 15:10	SJ	
Handleiding	5	12	24 May 2020 at 18:...	SJ	7 Jun 2020 at 13:12	SJ	
Installeren	7	35	24 May 2020 at 18:...	SJ	14 Jun 2020 at 13:24	SJ	
Lettertype	8	11	26 May 2020 at 14:...	SJ	6 Jun 2020 at 14:21	SJ	
Openen asreview	13	39	24 May 2020 at 18:...	SJ	6 Jun 2020 at 15:10	SJ	
Opnieuw opstarten	7	20	26 May 2020 at 14:...	SJ	6 Jun 2020 at 14:29	SJ	
▶ Project maken	13	102	24 May 2020 at 18:...	SJ	Today, 00:13	SJ	
Screenen	13	34	27 May 2020 at 14:...	M	7 Jun 2020 at 14:02	SJ	
Statistieken	8	12	27 May 2020 at 14:...	M	7 Jun 2020 at 14:03	SJ	
Vinden asreview	8	13	24 May 2020 at 18:...	SJ	14 Jun 2020 at 13:23	SJ	
▼ Cijfer	0	0	24 May 2020 at 18:...	SJ	25 May 2020 at 14:...	SJ	
Benodigde software in...	5	5	24 May 2020 at 18:...	SJ	6 Jun 2020 at 15:06	SJ	
Het vinden van ASRevi...	7	7	24 May 2020 at 18:...	SJ	14 Jun 2020 at 13:24	SJ	
Installeren ASReview	3	7	24 May 2020 at 18:...	SJ	6 Jun 2020 at 15:07	SJ	
Openen ASReview	7	7	24 May 2020 at 18:...	SJ	6 Jun 2020 at 14:06	SJ	
Rommelen met het pro...	6	6	24 May 2020 at 18:...	SJ	17 Jun 2020 at 11:52	SJ	
Starten van een nieu...	11	11	24 May 2020 at 18:...	SJ	6 Jun 2020 at 15:15	SJ	
Verder gaan	5	5	24 May 2020 at 18:...	SJ	6 Jun 2020 at 14:26	SJ	
▼ Debrief	0	0	24 May 2020 at 23:...	SJ	24 May 2020 at 23:...	SJ	
Gebruiken mobiel ASR...	6	6	24 May 2020 at 23:...	SJ	6 Jun 2020 at 14:31	SJ	
Gewenste functionaliteit	12	40	24 May 2020 at 23:...	SJ	12 Jun 2020 at 15:51	SJ	
Makkelijkheid of moeilij...	9	11	24 May 2020 at 23:...	SJ	6 Jun 2020 at 15:18	SJ	
Meer relevante artikele...	6	6	26 May 2020 at 14:...	SJ	6 Jun 2020 at 14:30	SJ	
Moeilijk andere onervar...	5	5	26 May 2020 at 15:...	SJ	6 Jun 2020 at 15:17	SJ	
Omschrijving tool	10	12	24 May 2020 at 23:...	SJ	6 Jun 2020 at 15:16	SJ	
Programma gebruik na...	1	1	24 May 2020 at 23:...	SJ	26 May 2020 at 14:...	SJ	
programma gebruikt Ti...	2	2	2 Jun 2020 at 12:51	SJ	7 Jun 2020 at 12:41	SJ	
Programma gebruikt v...	3	4	24 May 2020 at 23:...	SJ	5 Jun 2020 at 14:06	SJ	
Test algemeen	3	3	2 Jun 2020 at 13:33	SJ	6 Jun 2020 at 15:19	SJ	

Name	Files	Referen...	Created On	Created...	Modified On	Modified By	Color
▼ doubtfull	13	123	22 May 2020 at 12:23	SJ	7 June 2020 at 16:11	SJ	●
Beginpagina	9	12	7 June 2020 at 17:09	SJ	7 June 2020 at 18:06	SJ	
Handleiding en installa...	9	24	7 June 2020 at 16:22	SJ	14 June 2020 at 13:38	SJ	
▼ Project	12	69	7 June 2020 at 17:04	SJ	11 June 2020 at 14:30	SJ	
Screenen	10	27	7 June 2020 at 17:06	SJ	7 June 2020 at 18:09	SJ	
step 1	9	10	7 June 2020 at 17:05	SJ	7 June 2020 at 18:08	SJ	
step 2	3	4	7 June 2020 at 17:05	SJ	7 June 2020 at 17:58	SJ	
step 3	5	10	7 June 2020 at 17:05	SJ	7 June 2020 at 17:58	SJ	
step 4	4	6	7 June 2020 at 17:06	SJ	7 June 2020 at 18:07	SJ	
step 5	9	12	7 June 2020 at 17:06	SJ	7 June 2020 at 18:09	SJ	
▼ Showstopper	6	10	24 May 2020 at 18:06	SJ	7 June 2020 at 13:49	SJ	●
Beginpagina	0	0	14 June 2020 at 13:20	SJ	14 June 2020 at 13:20	SJ	
Handleiding en installa...	4	5	14 June 2020 at 13:19	SJ	15 June 2020 at 20:39	SJ	
Openen	2	2	15 June 2020 at 20:37	SJ	15 June 2020 at 20:38	SJ	
Project	0	0	14 June 2020 at 13:20	SJ	15 June 2020 at 20:39	SJ	
Spelling	2	3	7 June 2020 at 12:32	SJ	8 June 2020 at 11:37	SJ	
▼ Superb	11	24	24 May 2020 at 18:07	SJ	7 June 2020 at 16:02	SJ	●
Beginpagina	2	2	14 June 2020 at 13:29	SJ	14 June 2020 at 13:36	SJ	
Darkmode	6	7	14 June 2020 at 13:30	SJ	14 June 2020 at 13:37	SJ	
Handleiding en installa...	3	4	14 June 2020 at 13:29	SJ	14 June 2020 at 13:37	SJ	
lettergrootte	4	4	14 June 2020 at 13:30	SJ	14 June 2020 at 13:34	SJ	
Project	6	7	14 June 2020 at 13:29	SJ	14 June 2020 at 13:37	SJ	