Design Report

CES: Improving the assignments & grades functionality for students

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Client:
Centre for Educational Support (CES)

UNIVERSITY OF TWENTE.

CANVAS

1. Introduction

Background Information

The University of Twente adopted its current Learning Management Systems (LMS), Canvas, in the 2018-2019 academic year. Hence, for around 7 years Canvas has been the primary learning management tool for students and teachers in the University of Twente. Through this platform, students can access student materials, form groups, view and submit assignments, and monitor their academic progress. This project focuses specifically on the grades and assignments pages' functionality.

Assignments and grades play a crucial role in the academic process for students. They provide a structured way for students to apply their theoretical knowledge in practice in assignments and show their theoretical knowledge in exams. Therefore, receiving grades shows the students how well they were able to comprehend a topic or a course. Overall, assignments and grades together can guide a student in the academic process, affect their motivation, time management and study success. Additionally, the LMS can be the tool used for providing structure, deadlines, and expectations. Hence, if the pages of the LMS are not intuitive for students to use, it may alter their motivation, completion time, and even hinder academic progress. This can lead to increased levels of stress and confusion in students. Conversely, well-organised and user-friendly pages may help students plan better and complete tasks efficiently.

It is important that these LMS functionalities are clear and intuitive for students to use. The best way to know whether they are clear is by having the students' perspective. To achieve this, surveys and interviews have been conducted with a diverse group of students from the University of Twente.

Objectives

The project focuses on improving the user experience of the Canvas grades and assignments pages for the University of Twente. It does so by gathering information about the state of the student user experience first, and then by redesigning certain aspects of it. The redesigning process will be done following some of the best practices of the field of Human-Computer Interaction.

The project seeks to:

- Analyze how students interact with the assignments and grades pages throughout their academic activities
- Identify inefficiencies, sources of confusion, and improvement points on assignments and grades pages and the interaction between those
- Understand students' needs and expectations regarding managing the assignments and tracking the grades on Canvas
- Translate the insights of students into design requirements
- Provide low-fidelity mockups following these requirements

After the collected feedback was analyzed and translated into requirements, low-fidelity mockups were developed. The mockups demonstrate potential solutions to inefficiencies and points of confusion on Canvas for grades and assignments pages. The changes were explained and compared to the current version of Canvas. Moreover, a requirement analysis report was developed alongside the translation of the collected feedback and sent to the client of this Design Project - Centre for Educational Support (CES)[1]. CES is a department of the University of Twente that supports and improves the quality of education, including the management of learning technologies, such as Canvas. CES is already preparing a tender for its LMS[2], and as part of this, they are seeking to get evidence from students' feedback on the strengths and weaknesses of the current platform, Canvas. The CES contribution to this project has been to establish the scope, priorities and the desired deliverables, namely, mockups with the changes implementing requirements developed from the results.

Research Questions

To achieve the project's objectives, the following research questions were formulated. These questions focus on understanding students' experiences with the grades and assignment functionality on Canvas. The questions help identify usability issues and areas for improvement in these two functionalities.

RQ1: How do students find the grades and assignments functionality on Canvas?
- **RQ1.1** How easily can students find and access the key features* of the UI?
- **RQ1.2** Which features are frequently used by students?
- **RQ1.3** Which features cause the most confusion for students and why?

RQ2: What needs, expectations, and preferences do students have regarding the grades and assignments functionality on Canvas?

* The key features of the UI are: being able to check both the pages and find specific grades/assignments, being able to check details of the grade and of the assignment, accessing feedback, submitting and resubmitting an assignment.

The answers to these research questions will be utilized to formulate the requirements which will be used to create the new mockup designs.

Meetings with supervisor and client

The meetings with the supervisor and the client were planned in advance and attended by all team members (in person or online). The first meeting with the client happened before the choice of methodology, in order to understand the exact requirements. During that meeting, there were multiple points of discussion, these included: stakeholders,

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[1] *Contact - Centre for Educational Support*
https://www.utwente.nl/en/service-portal/services/ces/contact/#about-ces

[2] *LMS Tender*
https://www.utwente.nl/en/service-portal/educational-support/educational-systems/lms-tender#why-an-lms-tender

organizational context and currently ongoing issues with the grades and assignments pages functionality on Canvas. It was also stated that the focus of the project is solely on the desktop web version of Canvas. The client explicitly mentioned that there was no need to implement a new (frontend and backend) online learning environment from scratch and that mockups based on the grades/assignments pages were sufficient. Additionally, they mentioned that the stakeholders are the students and they should be the main focus. During the first meeting any questions regarding the project could be resolved and agreements were made regarding communication to ensure a smooth process throughout later weeks. The subsequent meetings with the client were mainly to showcase the progress, receive feedback/input on the work and resolve any unclarities. The meetings with the supervisor were held weekly to discuss the current progress, receive feedback on the work and resolve any questions regarding methodology, the report or any other issue.

Task division

After meetings, the group planned and split tasks between the members, to ensure the project was completed in time. Most of the activities were conducted collaboratively, including the creation of interview and survey questions, conducting interviews, analyzing the results, and producing the report and mock-ups. These larger tasks were divided into smaller components, which were completed individually by group members. The outcomes of these individual contributions were then combined to form the final results.

Planned progress

This report will introduce the progress in the following order: first, the current state of the system is described. Next, the document will talk about the collection of user data and decisions made regarding that step. After that, the new requirements will be presented, along with an explanation of their formulation. Following that, the mock-ups will be shown and discussed, with details about which changes were made to the system and the reason behind them. Lastly, there will be a discussion on the outcomes of this Design Project and its limitations.

2. Description of the Current System

This section describes the current functionality of the grades and assignments pages on Canvas. The pages are shown only from the student perspective, as this study focuses on collecting feedback from students who use Canvas. Therefore, the perspectives of teachers and other staff members who may also use Canvas are not included.

Canvas

Canvas is the educational system used by students of the University of Twente. It is a Learning Management System (LMS) where students can access the content of the modules from their study program. Courses are organised per module so that it is easier to find learning materials such as lecture slides, readings, and recorded lectures.

Students can also submit assignments, take quizzes, and view their grades and feedback from teachers. Additionally, Canvas allows teachers to post announcements and send messages to students. Furthermore, students can communicate with teachers and other classmates through the inbox and discussion boards.[3]

This project focuses on two main functionalities of Canvas: the *Assignments* and *Grades* pages. To access these pages, students first navigate to the *Courses* section on the left side of the Canvas homepage using the navigation bar. After selecting a course, a course menu appears on the left side of the course homepage. In this menu, students can choose from several options, including *Assignments* and *Grades*.

Assignments

When students click on the *Assignments* option in the course menu, they are taken to a page that displays all the assignments for that specific module. These assignments can be filtered by date or by type of assignment.

In Figure 1, the assignments are organised by date. This view shows assignments without a deadline (In this case, the two exams that have been graded by the teacher) as well as past assignments that have already been graded. If students scroll further down the page, they can also see assignments that are still due if the deadline has not yet passed (not shown in the figure).

Figure 2 shows the assignments filtered by type. In this view, assignments are grouped based on their category, such as weekly projects and the final project. If students scroll further down, they can also see the exams and resits.

[3] *Canvas: Login and Documentation for Students*, https://www.utwente.nl/en/educational-systems/student-applications/canvas-student/

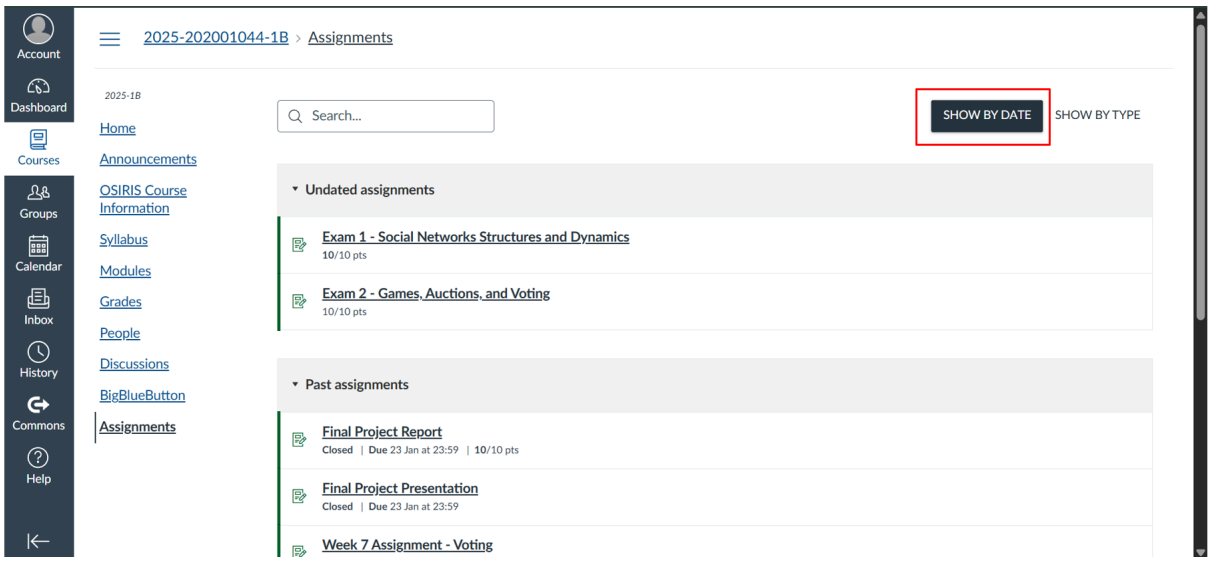

Figure 1. Assignment Page Sorted by Date. Highlighted the filter to sort the assignments by due date.

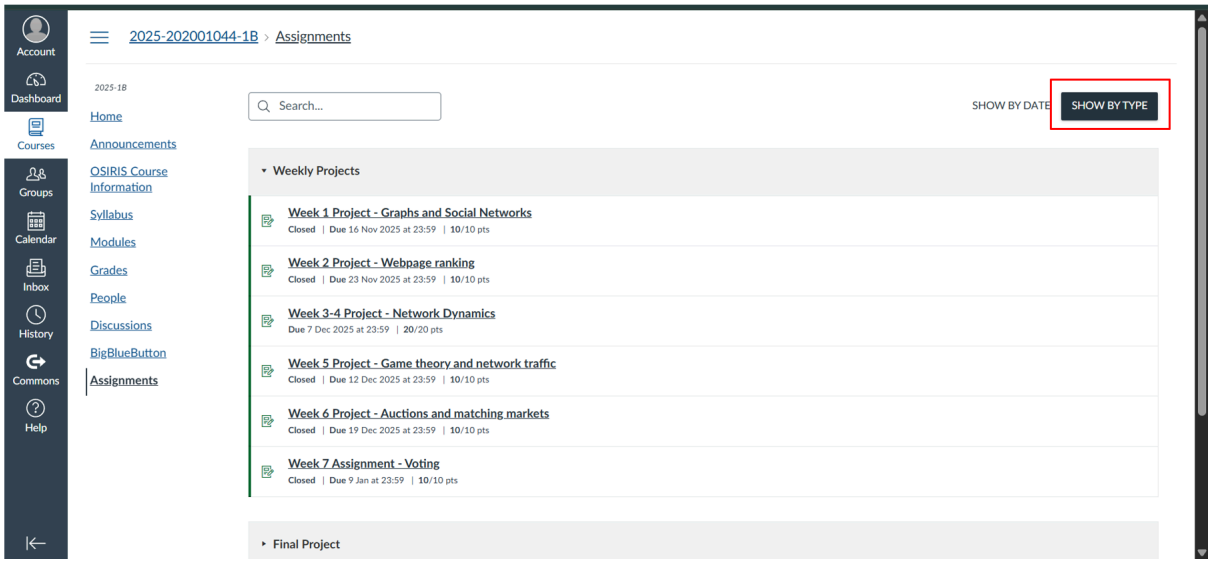

Figure 2. Assignment Page Sorted by Type. Highlighted the filter to sort the assignments by type.

Figure 3 shows the page that appears when students click on a graded assignment. In the center of the page, information about the submitted assignment is displayed. This includes the title of the assignment, the due date, the number of points that can be obtained, the expected file type, the availability period, and the assignment description.

On the right side of the page, the submission status is shown, indicating that the assignment has been submitted and on what date it was submitted. The students are also able to download the submitted assignment. The grade is displayed below this information, along with feedback provided by the teacher in the form of a comment.

In addition, there is a “Submission details” button (red arrow in Figure 3). When students click this button, they are taken to another page, shown in Figure 4. This page contains much of the same information as the page in Figure 3, but on this page students are able to leave comments and attach files related to the assignment. These comments can be seen by the teacher as well as by the student’s teammates (in case that the assignment

is a group assignment). In Figure 4, the green arrow points to the feedback the teacher left and the red arrow points to the comment section where a student can leave their comment.

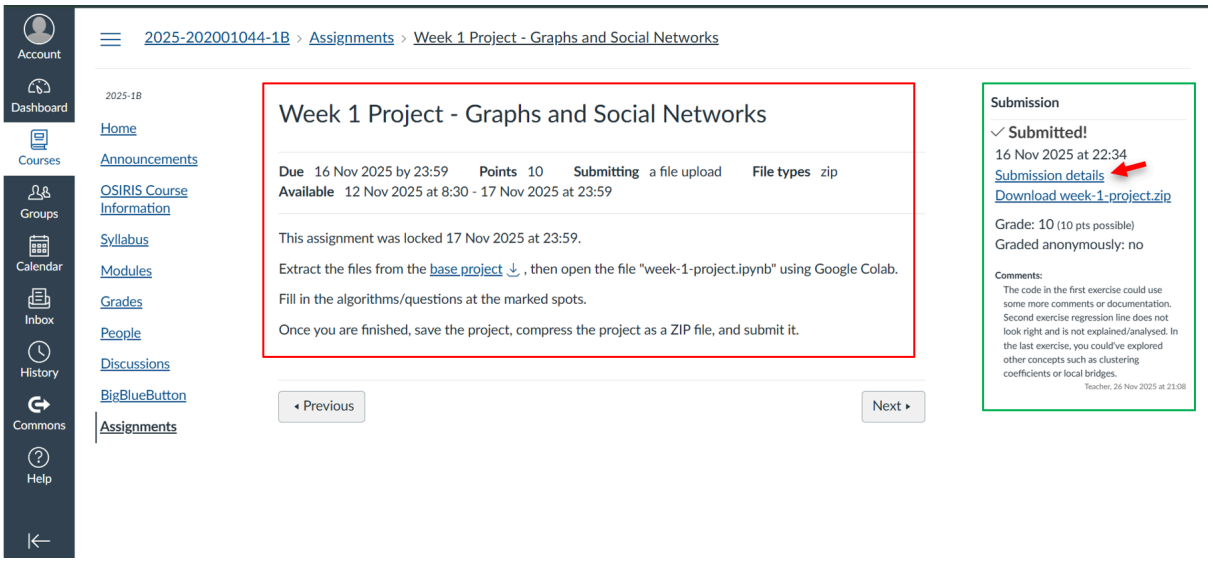

Figure 3. Graded Assignment. In the red rectangle the details of the assignment are shown. In the green rectangle submission details are highlighted. The red arrow points to submission details.

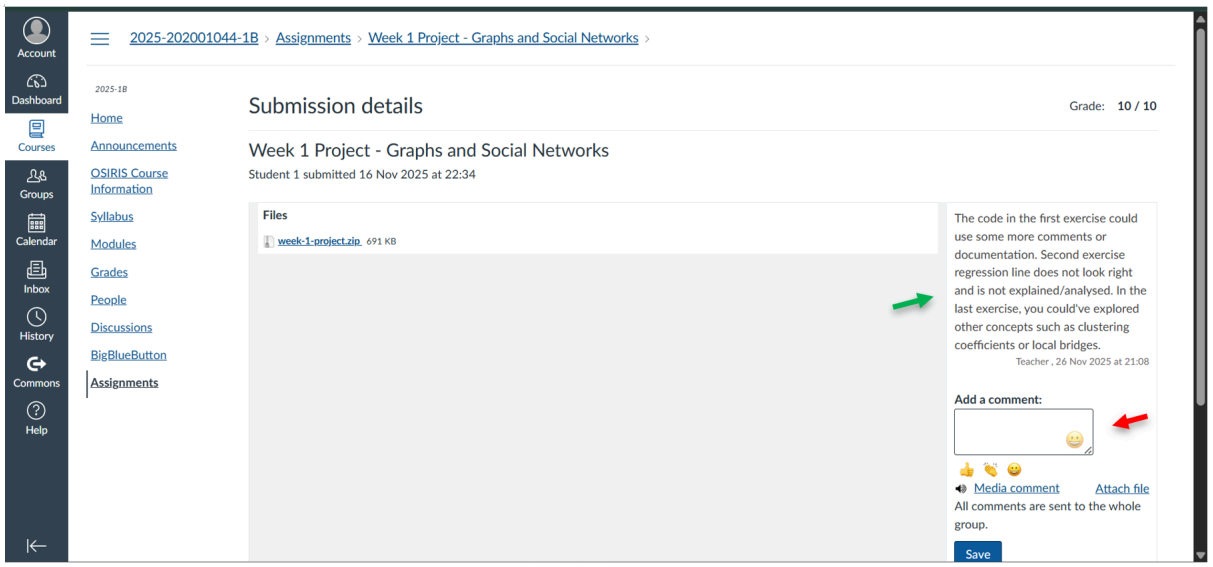

Figure 4. Submission Details Graded Assignment. The green arrow points to feedback comments. The red arrow points to adding your own comment box.

Figure 5 shows the page when a new assignment is started. When clicking on the blue button that says “Start Assignment” the student gets taken to the page shown in Figure 6, which shows the file submission page. On this page the student is able to add/drag multiple files that need to be submitted for the assignment. If a student wants to resubmit an assignment the page shown to perform that action is in Figure 7. It is the same as in Figure 5, however the blue button now says “New Attempt”. The submission of a student's previous attempt is shown on the right side of the page. The student is also able to see any comments that were left on the previous submission.

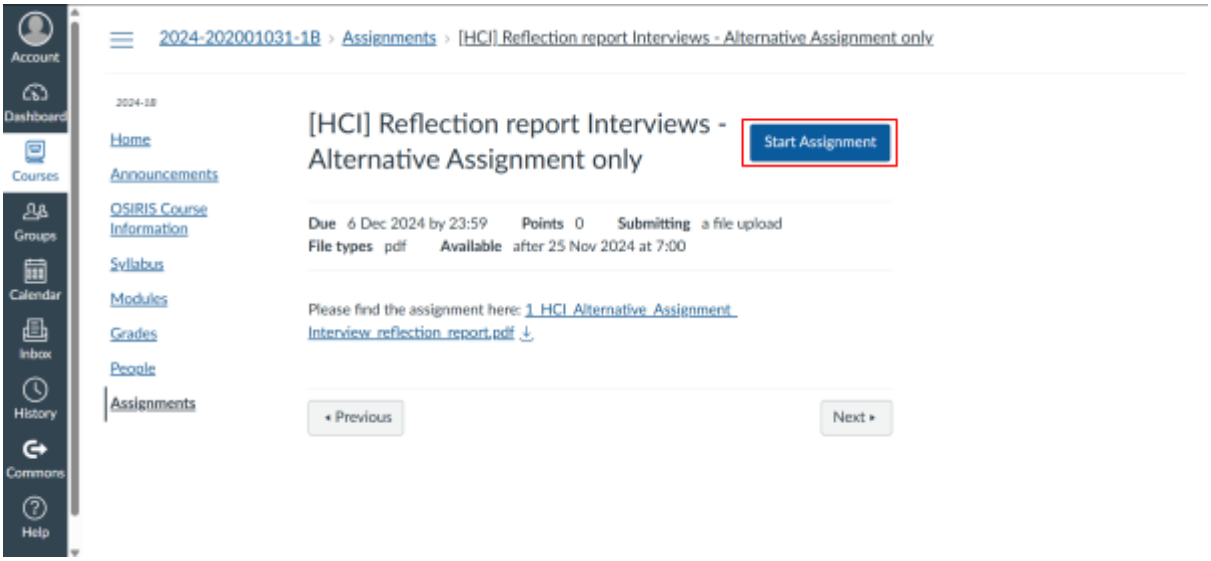

Figure 5. Start a New Assignment. In the red rectangle a button to start the submission of the assignment is shown.

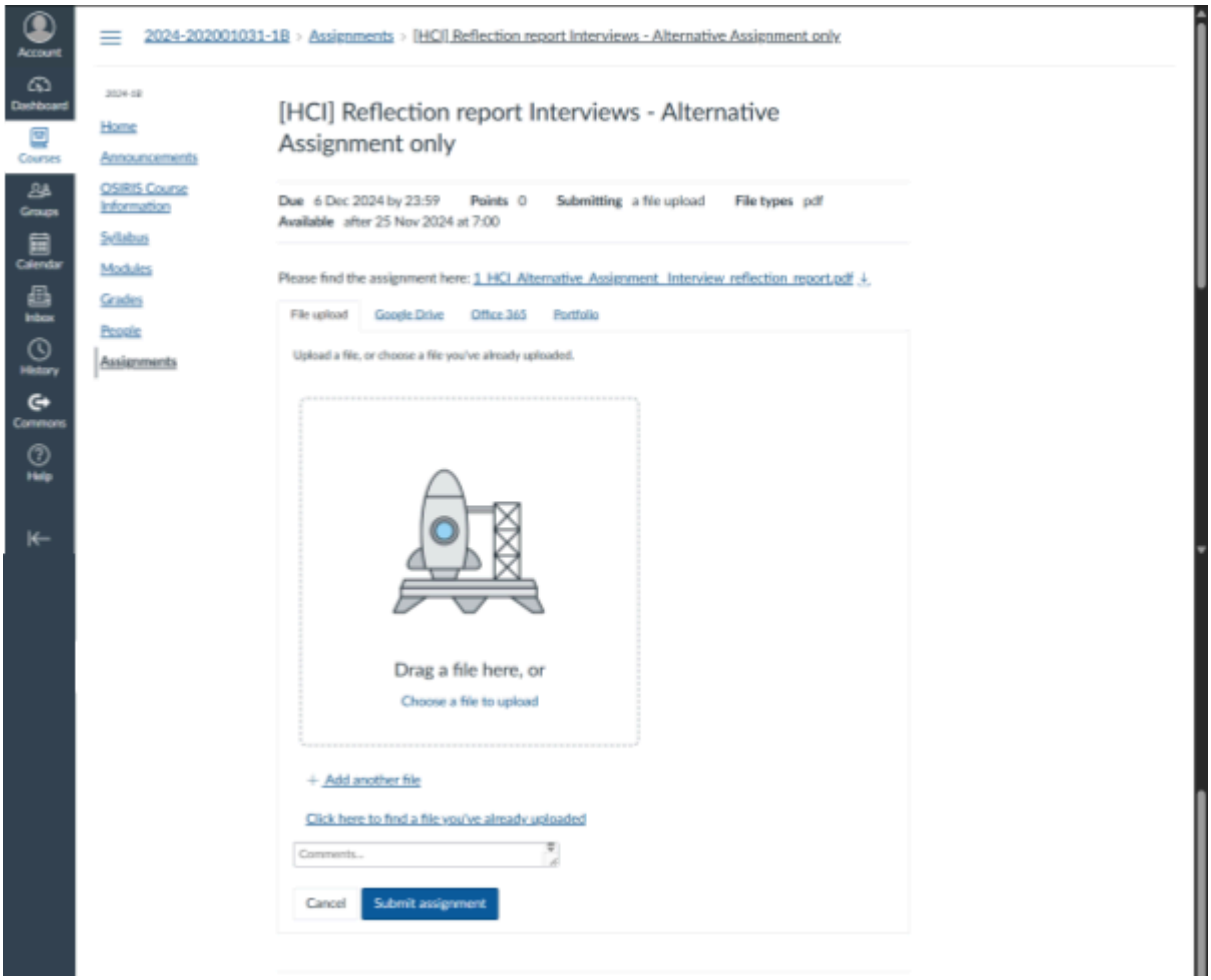

Figure 6. Submission Page.

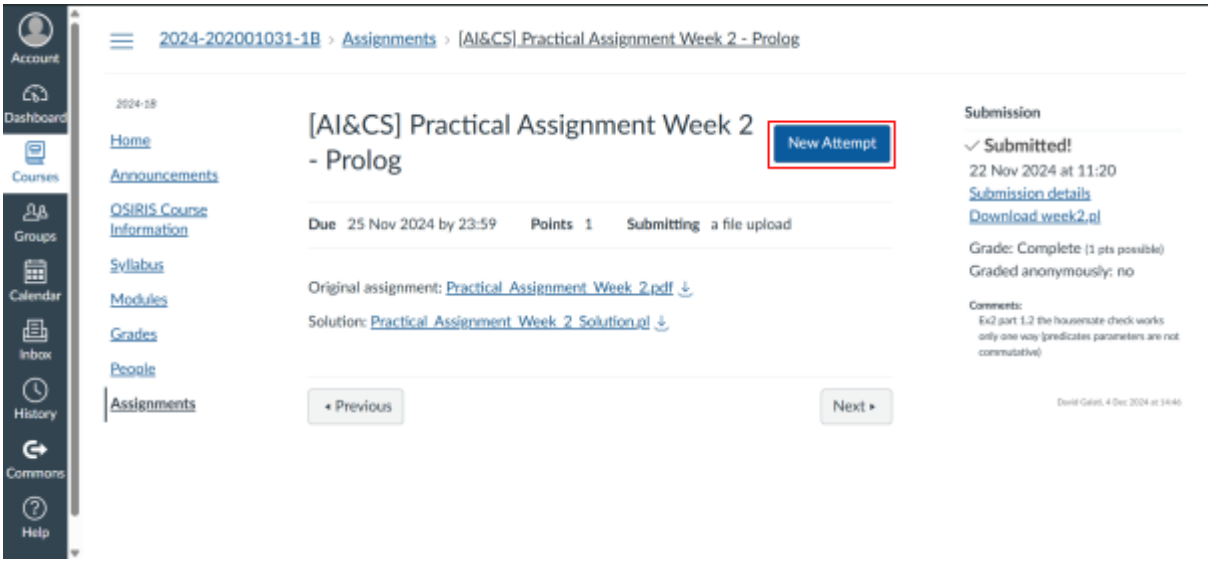

Figure 7. Resubmitting an Assignment. In the red rectangle highlighted a new attempt button for the assignment.

Grades

When students click on the *Grades* option, they are directed to the page shown in Figure 8. This page displays all published grades for the module sorted by due date. For each assignment, the page shows the name of the assignment, the due date, the submission date and time, the submission status (for example whether it is late or missing), the grade received, and a feedback icon indicating whether the teacher has provided comments.

If students click on one of the assignments on this page (Figure 8), they will be directed to the “Submission details” page shown in Figure 4.

Students can print all of their grades from the module and they are also able to organize the grades by name, assignment group, due date, or module. In addition, students are able to view grades from other courses directly from this page, without needing to navigate to each course separately.

On the right side of the page, the description of What-If Score feature is displayed. This feature allows students to simulate potential grades, by clicking on the grade and typing in a chosen score as shown in Figure 9. This helps the students understand how these scores could affect their overall grade. The overall grade is calculated by the Canvas system automatically and displayed on the bottom of the grades page, however it is usually disabled from the view as shown in Figure 10.

Figure 11 shows the view that appears when students click on one of the feedback icons. A sidebar opens on the right side of the page displaying the feedback for the assignment. This sidebar also shows the date on which the feedback was added and the teacher who provided it.

Figure 12 shows the view when students click the “Show all details” button on the right side of the page. This view displays the same information as shown in Figure 11, but the feedback is now displayed directly below each assignment. As a result, students can read the feedback without needing to click on the feedback icon first.

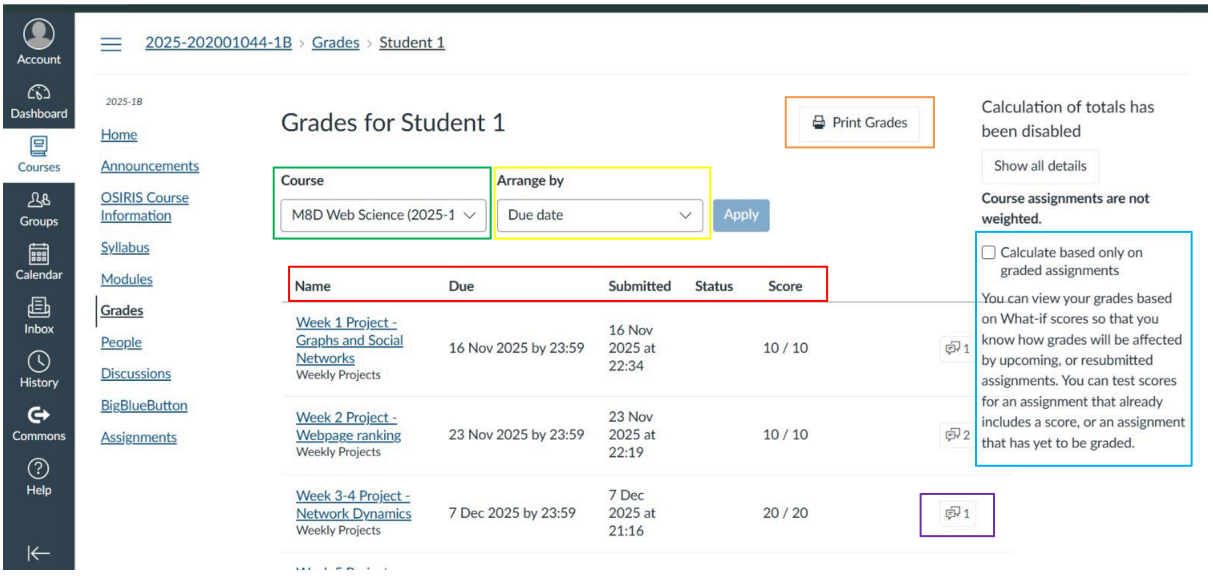

Figure 8. Grades Page Sorted by Due Date. The green rectangle highlights the dropdown that shows grades for different modules. The yellow indicates a dropdown that shows different ways to sort the page. The red indicates the information displayed for each assignment/exam, the blue indicates the

explanation for the what-if score, the orange indicates where to print grades, and the purple shows where to click to see feedback for an assignment/exam grade.

Name	Due	Submitted	Status	Score
Test 1 Assignments	14 Feb by 23:59		missing	- / 10
BOO Assignments	21 Mar by 23:59		missing	- / 10
Group assignment Assignments				- / 0
Quiz 1 Assignments		13 Feb at 14:23		4 / 4

Figure 9. What-If score feature, the what if grade is being put in at the bottom slot.

Name	Due	Submitted	Status	Score
Test 1 Assignments	14 Feb by 23:59		missing	0 / 10
BOO Assignments	21 Mar by 23:59		missing	- / 10
Group assignment Assignments				0 / 0
Quiz 1 Assignments		13 Feb at 14:23		4 / 4
Assignments				

Figure 10. The final grade using the What-If score is shown at the bottom in the red rectangle. In this Canvas course this grade is disabled from view and appears as the icon of an eye crossed out.

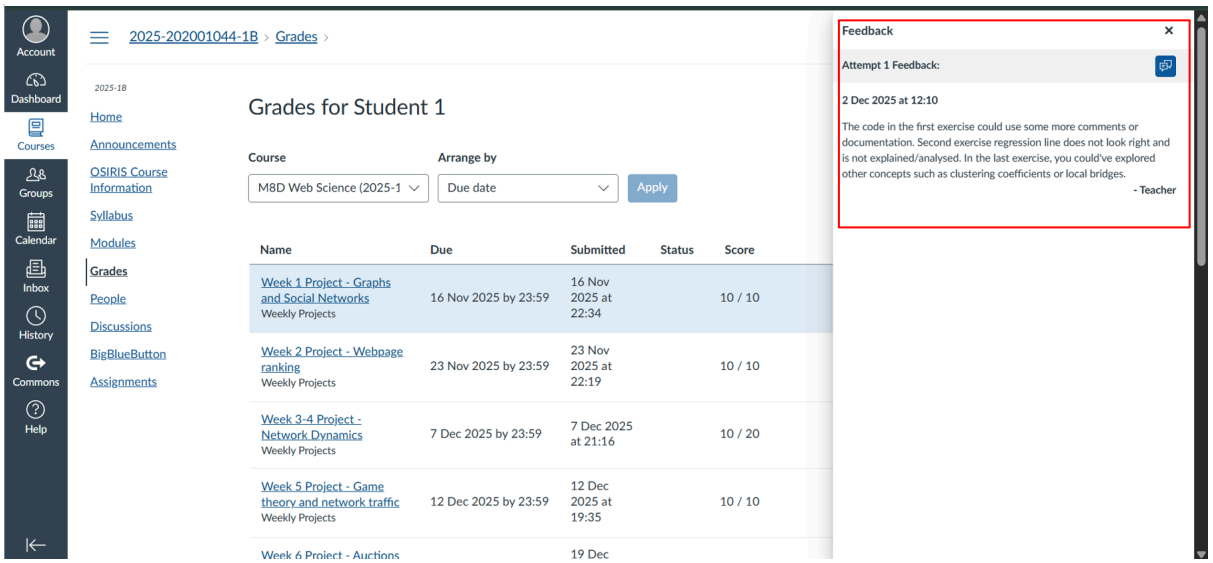

Figure 11. Feedback Graded Assignment. Red indicates the feedback that is shown in the sidebar.

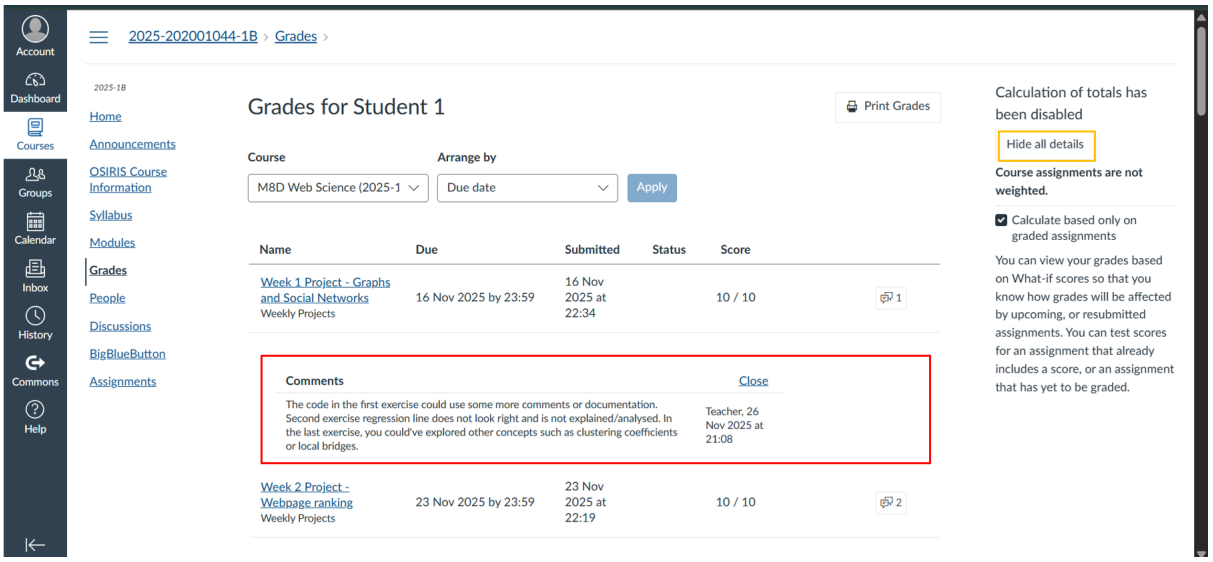

Figure 12. Feedback Shown Directly Under Assignment. Red indicates the feedback section under the assignment. Yellow shows the button that previously displayed 'Show all details', which now reads 'Hide all details'.

3. Methodology

This project followed a mixed-methodological approach to thoroughly answer research questions. Quantitative patterns were captured using a survey, and semi-structured interviews were used to offer qualitative information on why students experience certain things. Combining these two approaches enhanced the reliability of the results and made sure that the design requirements were based on a diverse set of student views.

Interview

To get a qualitative understanding of how students experience the assignments and grades functionality of Canvas, semi-structured interviews were conducted. This format was picked since it allows the participants to expound on their experiences freely without restricting their thoughts and experiences' explanations, while at the same time ensuring all of the important topics have been covered consistently across the sessions with every participant.

Each interview was broken down into three blocks of questions, starting with a short introduction of the participant's academic background, followed by questions about the grades page including questions about the what-if scores, and last, questions about the assignments page. A short introduction of the academic background ensures that the researcher can check for an even distribution of study programs and levels of study across interviewees. The order of the questions was chosen to help participants focus on specific features of each page, and to ensure that no confusion about the page being discussed occurs. Within each block, the questions were organized in a progressive order, with general usage questions in the beginning and more specific questions in the end.

In addition to asking questions about the experience of using the grades and assignments pages on Canvas, participants were also asked to identify their unmet needs related to the current system.

All questions were open-ended to allow the participants to tell about their experiences in their own words. When required, follow-up questions were asked to explore more about a specific answer. Each interview was conducted one-on-one to make a comfortable setting in which participants could speak freely. Responses were saved as written notes and later analyzed for final results. Appendix 1 contains the interview questions that were used, as well as the survey questions.

The participants for the interviews were chosen randomly by asking students met across campus to take part in the interview.

Survey

The purpose of the survey was to obtain quantitative data from students about the assignments and grades functionality on Canvas. This includes their experiences, frustrations, challenges they face, and their opinions on these pages. The (online) survey was picked since it is an efficient way to gather information from a large number of students. Additionally, the survey could be completed at any place and time as long as the participant had a device with internet access to fill it in. To achieve as much input as possible the survey was distributed and sent to as many students as possible. Furthermore, the survey was sent to students from various study backgrounds and academic years. This resulted in a wide and

representative sample of students. In the absence of this action, the sample size would mainly consist of Technical Computer Science students, which could result in a limited overview of the opinions on the pages. This was especially important because the Canvas pages are used by all students of University of Twente in different ways based on their studies, and any changes should be made with consideration of the needs and expectations of all affected students. In order to achieve this variety of students, a link to the survey was sent to acquaintances (students at the UT) of the researchers, small flyers with QR codes to the survey (shown in Figure 13) were spread throughout the campus and students on campus were randomly approached and encouraged to participate in the survey.

The survey contained both closed- and open-ended questions and consisted of 34 questions in total (list of questions in Appendix 1: Survey and interview questions). A combination of closed- and open-ended questions were chosen since the closed-ended questions can give an easy overview of the responses while the open-ended questions allow for a little more in-depth insight and opinions of the students. The closed-ended questions were designed using a Likert Scale with a scale ranging from one to five (Strongly Disagree to Strongly Agree) or, in case of questions about frequency of use, from one to four (Daily, Weekly, Monthly, Rarely). The Likert Scale was most appropriate for the closed-ended questions because it gives more insight into the opinions of the students than a binary answer. Furthermore, the open-ended questions in the survey were designed to be unbiased, unambiguous and interconnected.

To reduce the participant (recall) bias, the questions were designed to be unbiased and not include any hot button words or words that might influence the participant's thought process/experience. Visual memory aids (for instance showing the specific functionalities on the pages) were utilized to minimize the recall bias. To prevent data inconsistencies, the work of each researcher was cross-validated to ensure data accuracy and correctness.

The Crowdtech platform was utilized to host the survey, since it is the software that is supported by the University of Twente. That ensures that it follows any university guidelines regarding privacy and ethical matters that affect the participants.

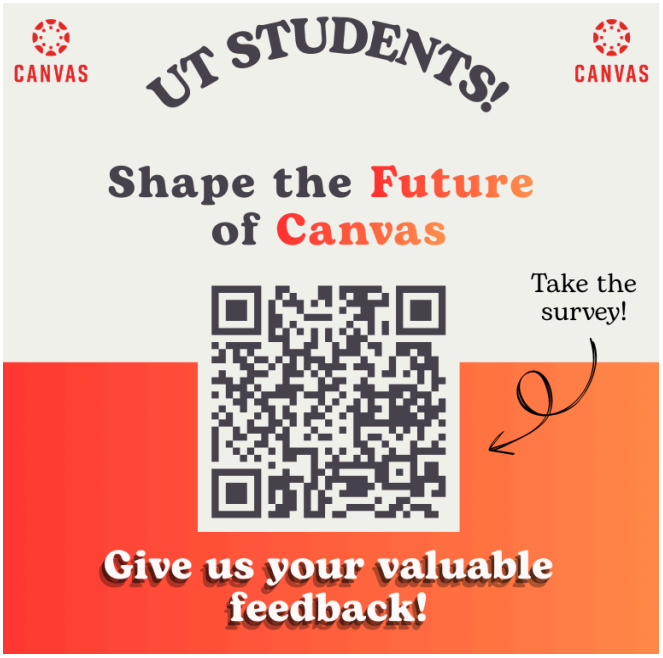

Figure 13. Flyer with QR to survey.

Analysis

For the analysis of all the obtained results, a distinction was made between the survey and interviews. The analysis of the quantitative survey data was done using descriptive statistics. Descriptive statistics can help with identifying recurring patterns and themes from the survey responses. Consequently, the mean can be calculated and it is possible to identify what the majority of the participants (dis)agree on. This helped with the decision making surrounding the prototypes/mockups, deciding what features should be kept, improved, revised and which of them were most crucial to the majority of participants.

Since the interviews resulted in qualitative data, the results of each interview were analyzed thoroughly. This was done as soon as possible since the interview was then still fresh in the mind of the interviewer, and important comments and nonverbal cues were easier to remember (Lazar et al., 2017).[4] The analysis of the interview (qualitative) data was done by performing thematic analysis according to the six-phase framework from Braun and Clarke (2006) which is a cornerstone for conducting robust thematic analysis.[5] For the qualitative data that was gathered from the survey via the open-ended questions, thematic analysis was also utilized. The themes that were obtained by performing the thematic analysis were then used to define the requirements which would later be utilized for the design of the mockups.

The responses to open-ended questions were divided amongst the team to manage all the data and then perform the thematic analysis.

Mockups

The mockups were made based on the requirements that were derived from the results and themes of all the interview and survey responses. The main objectives of these mockups are to capture the students' requirements and have designs that (the majority) of the students would see as an improvement from the previous iteration of the Canvas pages. In these mockups, existing features were improved accordingly and new recommended features were introduced. The mockups were also requested by the client, as they may be helpful with visualizing the students' needs, and proposing the changes to the Canvas developers.

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[4] Lazar, J., Feng, J. H., & Hochheiser, H. (2017). *Research methods in human-computer interaction* (Second edition). Morgan Kaufmann Publishers, an imprint of Elsevier. https://www.dawsonera.com/depp/reader/protected/external/AbstractView/S9780128093436

[5] *Using thematic analysis in qualitative research.* Ahmed, S. K., Mohammed, R. A., Nashwan, A. J., Ibrahim, R. H., Abdalla, A. Q., Ameen, B. M. M., & Khidhir, R. M. (2025). Using Thematic Analysis in Qualitative Research. Journal of Medicine, Surgery, and Public Health, 6(6), 100198. ScienceDirect. https://www.sciencedirect.com/science/article/pii/S2949916X25000222#bib1

Ethical Considerations and Personal Data Protection

The group has decided not to store any personal data about the participants while conducting the surveys and interviews. The only information gathered except for the answers of the participants are the study program and level of study (BSc, MSc). This was done to ensure an even distribution among participants.

Before taking part in an interview or survey, participants were asked to read the information sheet (Appendix 2) and fill in the informed consent form (Appendix 3), confirming that they agree to be a part of the anonymous interviews/survey, without any of their identifiable data being stored. They were also given the option to take away their consent at any point during the interview/survey.

The only data stored are the answers, that were later used to analyze the feedback given by all of the participants. To protect the privacy of students, the client was given an analysis of the overall results of the surveys rather than individual students' answers.

The answers from both the interviews and surveys will be stored until the end of the Design Project module, which is 17th April 2026. The survey answers are stored on the Crowdtech platform whereas the interview answers are stored on a shared drive that is only accessible by the researching group. Before the survey could be sent out, the questions and the consent form were approved by the Ethics committee of the university to ensure that the university rules for performing a survey involving human participants are followed. For the interview questions the same procedure was applied.

Other ethical considerations concern the outcome of the project. Though the group has analyzed majority requirements arising from the responses, there might be students negatively affected by the outcome of the project in the future. There might also be students that give contradicting requirements. For example, if a majority of students prefers high contrast, but a minority prefers low contrast views, the minority may be met with confusion if the high contrast view is implemented.

4. Results

In this section, the survey and interview results will be discussed. The likert scale questions of the survey were analyzed using descriptive statistics. The open-ended questions of the survey as well as the interview questions were analyzed using thematic analysis. The most important themes that were derived from both the survey and interviews will be explained in this section.

Survey findings

The survey was completed by 52 participants, out of which 44 were Bachelor's and 8 were Master's students.
There was plenty of diversity among respondents, with the following spread:

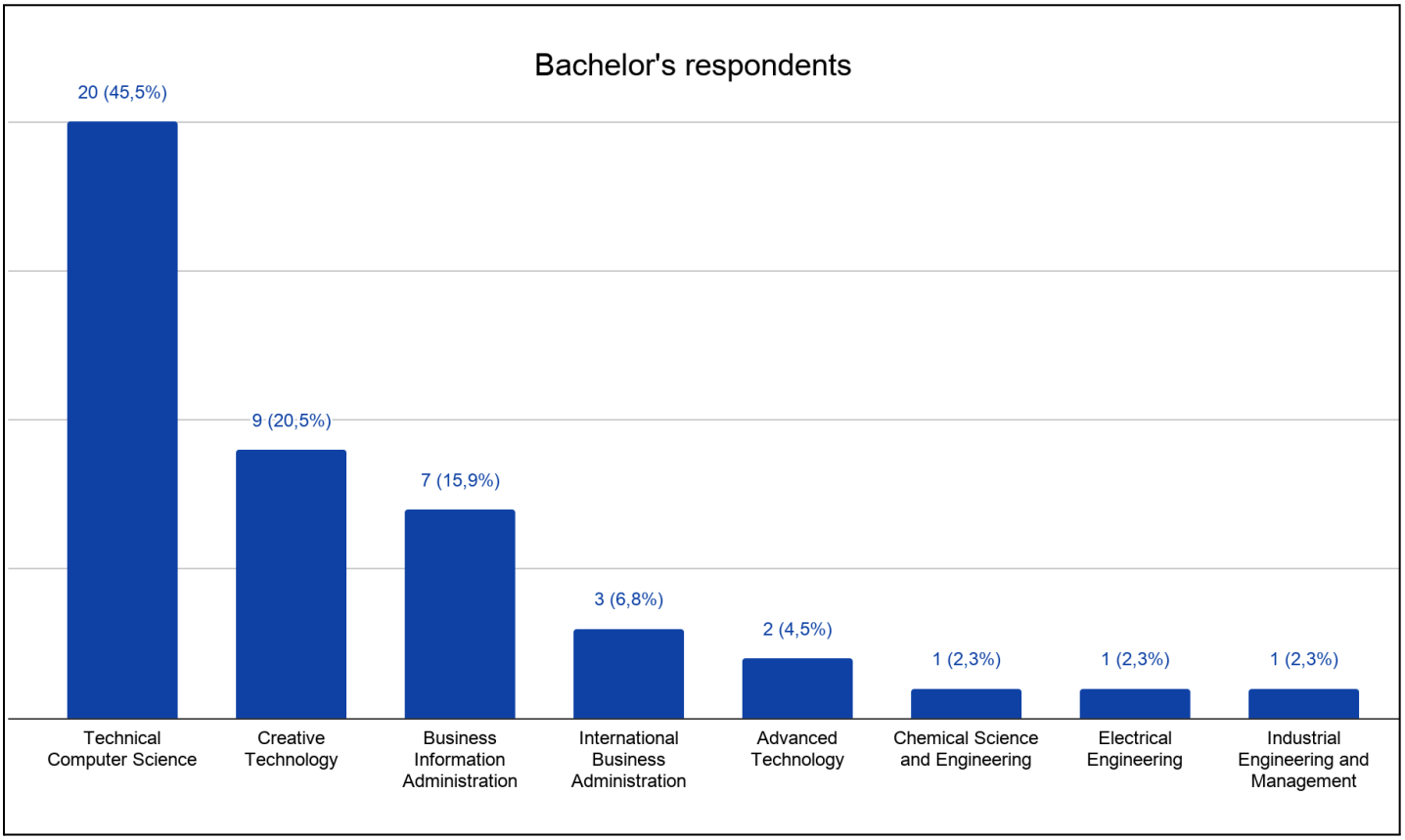

Figure 14. Bachelor's respondents spread for the survey.

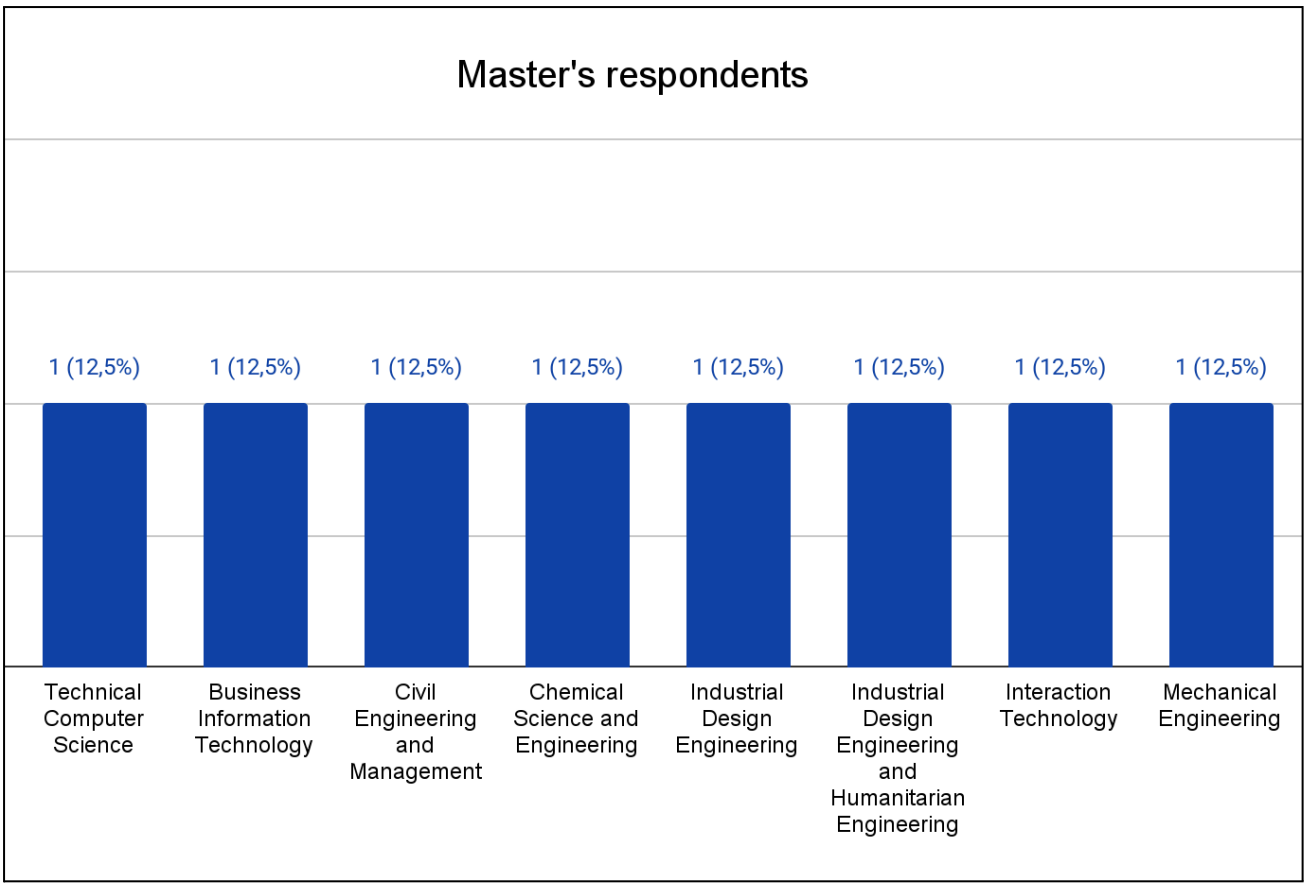

Figure 15. Master's respondents spread for the survey.

Likert scale questions

According to the survey, about half of the respondents use the Canvas grades page weekly. The majority of respondents agree that they can easily find their grades and scores, and 75% understand how to access feedback from the grades page. When it comes to the loading speed of the grades page, 67% stated that they are satisfied with it. Less well understood is the What-If scores feature, as only 10% understand it. About 60% do not use What-If scores at all.

The assignments page is used weekly by 54% of respondents. Most respondents (around 85%) know how to find their assignments, but fewer (46%) of the respondents claim that an assignment page contains all of the information needed. Deadlines are mostly clear, as 79% stated assignment deadlines are clearly visible to them.

Around 87% claimed that submitting an individual assignment is clear and 75% claimed that submitting a group assignment is clear to them. While resubmitting an assignment is clear to most users, only 66% clearly understand the status of an assignment. Roughly 79% claimed to know how to access feedback on the assignments page. Lastly, 75% of participants are satisfied with the loading speed of the assignments page.

The only correlation found in the dataset is that about half of respondents that access the grades page more frequently (daily or weekly) claimed to have issues with finding their grades on the grades page on Canvas.

All of the answers to the closed-ended questions in a form of bar charts are placed in Appendix 4: Survey bar charts for Likert-scale questions.

Survey Themes

The themes emerging from the survey answers have been placed in different groups: sorting and filtering, navigation and searching, visual hierarchy and lack of information. Sorting and filtering describes feedback received on the sorting and filtering options for the grades and the assignments pages. Navigation and searching explains issues with finding specific grades or assignments on the current pages. Visual hierarchy contains feedback on the design of the pages and lack of information highlights concerns regarding unclear or missing information on the pages.

Sorting and filtering

This theme concerns the ability to filter and sort grades and assignments based on specific metrics or criteria on both pages. Many participants gave feedback that undated or irrelevant assignments should not be shown on the assignments page. One of the participants said: “Do not allow undated assignments. They clutter the screen and are not often actually undated.”

Another idea regarding the solution of this issue is to have the option to hide redundant/not applicable assignments. Another thing that students requested was the option to sort based on the most recent grade that got released. One of the participants that suggested this said: “filter by course, and sort by most recently graded”.

Navigation and searching

This theme is about the navigation and searching of specific features on the pages for students. An issue that was frequently mentioned by participants is the blue dot indication for a new grade and the effort required to remove it. A participant mentioned this explicitly: “It’s also quite annoying that the grade pop-up (the little number on the side) stays as is until you opened the grade deliberately”. Another issue mentioned is that students have difficulties with finding feedback on assignments, since it can be put in different locations on the website (in the comments, in the files, in the rubric). Respondents also reported having issues with finding necessary information and details of assignments, since those can be placed in different places as well. Furthermore, a recurring issue for participants was finding a specific grade or assignment they were looking for. The organization on both pages was unclear to them. This was mentioned by a respondent regarding the issue: “It takes a while to find what I'm looking for because the assignments are all in a single list. And it's all types at once: assignments, resits, quizzes, exam grades, sometimes also just course grades”.

Visual hierarchy

This theme is about the visual aspects of the pages, this includes icons, logos, positioning of items and visibility issues. One of the key identified problems was about course pages differing in terms of layout, e.g. where specific assignments are placed, depending on the course and teacher. Many participants also complained about the visibility of specific features, for instance that both the filter and the due date of assignments were not visible enough for them, with one student saying that they were “seeing now for the first time,

even though there is a show by date/type feature, I've never used it". The due date was another element that students wanted improvement on, with one participant saying that "the due writing is pretty small, and sometimes I can miss it, so I have to click on the assignment to double-check it". Some recommendations regarding the visual hierarchy included adding indicators like logos and colors depending on the assignment themes or status (of assignments). The students proposed adding a "color or icon next to the assignments to indicate their statues so the eyes do not have to dart from the name field to the submitted/status/score fields" and also "add logos and colors depending on the assignment theme".

Lack of information

This theme is about information on the pages that are confusing, ambiguous and unclear, which therefore result in a lack of understanding on the student's side. Some examples of issues that were classified into this theme include: the difference between the due date and available until date since they are usually not the same date, as one survey respondent explained, "the 'due date' for assignments for some reason is placed after the 'available till date' and the confusion adds up when you have some assignment without any 'available till date', and then the 'due date' is placed first". Whether an assignment is individual or a group one was also a recurring concern, with one respondent noting "there is currently no visual indication that an assignment is individual or group submission, it only indicates us with a popup when you are going to upload and submit the assignment". The lack of notification when a group member hands in a group assignment was also highlighted, as one student wrote that "unless that person communicates it with the group, the group doesn't know for sure if it has been uploaded". Lastly, there is no clear comparison of the combined grades to the passing grade from the course. One participant wanted the system to show "at a glance whether the grade is pass or fail", while another suggested that "if it's not a passing grade, maybe show it with red".

Interview themes

There were 16 interviews conducted, with 13 Bachelor's students and 3 Master's students. Appendix 5 includes one of the interviews that were conducted. The diversity of the study programs that were interviewed was as follows:

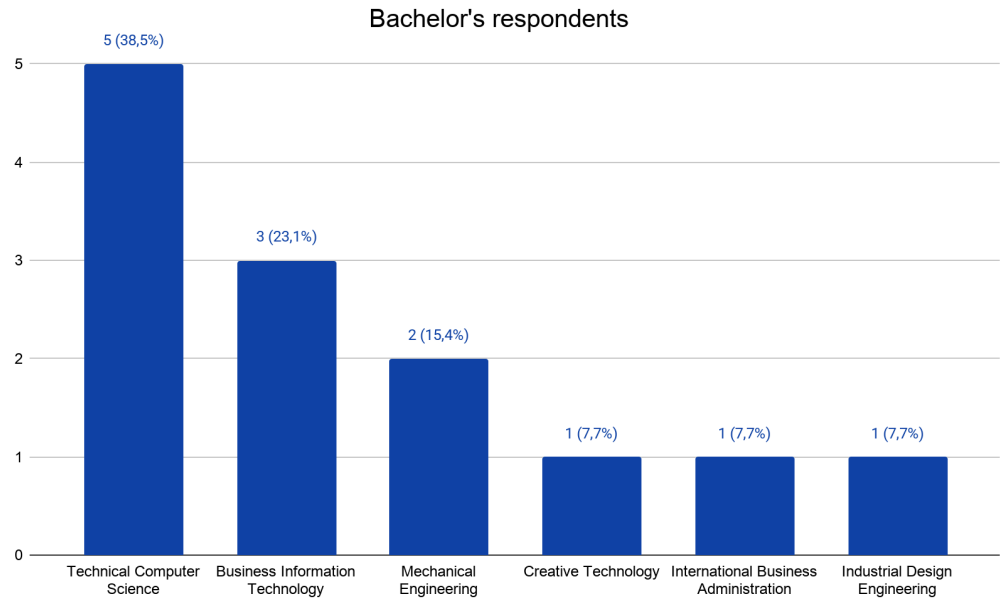

Figure 16. Bachelor's respondents spread for interviews.

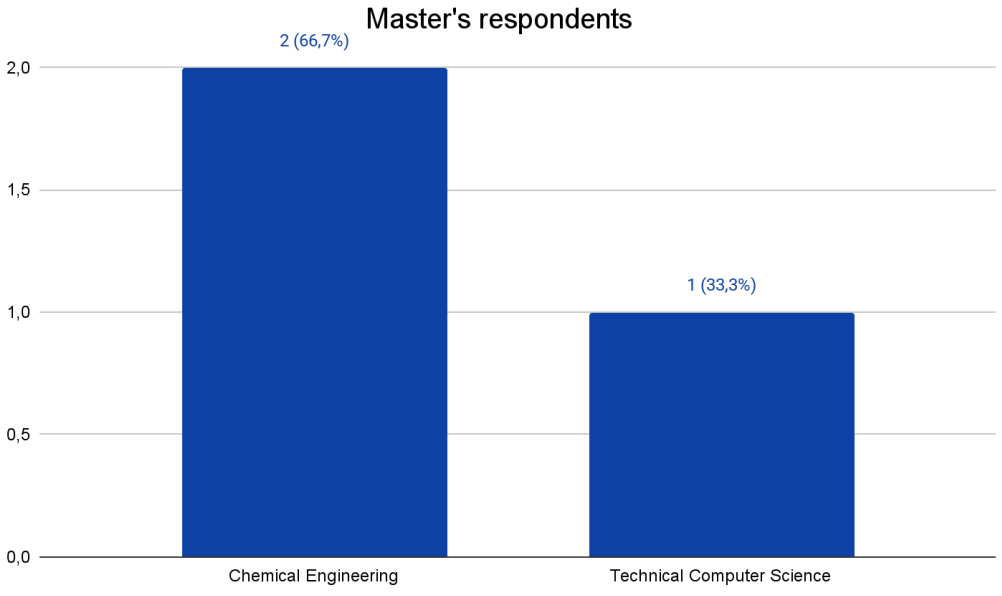

Figure 17. Master's respondents spread for interviews.

The recurring themes that were identified from the interviews are the same as those from the survey. Since feedback from both the survey and interviews have major overlap and hence did not differ on a lot of issues, it was possible to utilize the same themes. The interview themes have been split into: sorting and filtering, navigation and searching, visual hierarchy and lack of information.

Sorting and filtering

In this theme the answers of the interviews identified similar issues as ones mentioned in the survey. Interviewees reported lack of options for filtering and grouping. One student said “filter is lacking everything, it only has the modules and due date and assignment groups”. A suggested sorting option is showing the newest grade on top of the grades page, instead of having to scroll through the whole website. This was after one of the participants said “on Canvas you do not get the new grade at the top, you have to search for it. If I receive a grade, I want it to be at the top”. The ability to filter the grades and assignments by the course components, as well as due date and name was mentioned as something that could make the user experience better. Another request from the participants was the possibility to hide irrelevant assignments. One of the participants said that there were “too many irrelevant assignments cluttering up the page, sometimes also from previous years.” This feature was requested due to resit assignments being visible, even though they might not apply to the student.

Navigation and searching

This theme recognises issues that are similar to ones mentioned in the survey. Finding feedback on assignments is difficult due to its inconsistent placement by teachers. Similar issues were reported with grades, since some teachers put them on Osiris only. The interviewees reported struggling to find details of the assignments, since they can be placed in different places. As one student said, “It depends on the course and the teacher. I assume there is a description of the assignment itself about what to do. Sometimes I have to look at the modules page or introduction to see it. I usually expect everything to be on assignments, but I usually assume the worst”. Some also mentioned that getting to the feedback or the rubric is more complex than they expected, as one participant said that it was a challenge to use the assignment page as “it may be too cluttered, and the feedback may be hard to access”. Overall experience was that the grades and assignments pages felt cluttered and the students had to scroll a lot to find what they were looking for. One student said “one is sometimes unclear in that all the grades and assignments are one after another and you have to really focus on what it is for (exam, project, assignment). You have to scroll through the whole page to find what you are looking for”. An observation that was also made is that the participants only checked the pages if there was a notification either by email, on the application, or by peers. One student said they check the grades page “only if I get a notification that I have a new grade”.

Visual hierarchy

This theme concerns the visual aspects of the pages which overlap with the one from the survey. A recurring issue for the students was the blue dot notification that is shown when a new grade is released. It makes the grades page look cluttered because it requires manual removal, as one interviewee said “the blue dots don’t go away so all grades have a blue dot and it makes it confusing, you don’t know what is new or not”. Furthermore, the submission status and the due date should be more visible for assignments, with one participant noting that “the grey blends in with the white, so it should be darker and bolder looking.” Something that was recommended by some of the interviewees was a more visible to-do list, like a calendar that properly showcases all the deadlines of assignments, since the current calendar does not always show these deadlines. One student wished for “a calendar

of an entire month that shows all the deadlines; make the current one more visual". Additionally, the respondents pointed to the fact that the feedback feels difficult to access, since they have to go through multiple steps to view it in better size, with one interviewee stating that "if the feedback given is long, you have to scroll a lot to read it, so it would be better if you could expand it more so it is easier to read". Lastly, the filter options, especially on the assignments page, were difficult to spot. A request from the participants was to make them more visible, as one interviewee said: "it would have been useful to notice them before this interview. I was struggling to find the assignments I wanted for a while".

Lack of information

This theme contains similar issues as in the survey. One of the bigger issues reported was the confusion of what the difference between the due date and the available until date is for the assignments. As one interviewee stated, "available until is not crucial information, the due date should stand out a little bit more." Participants mentioned not understanding the purpose of the What-If score, with one student recalling that "when you click on a grade, it seems like you can change it, but you cannot and it shows a 0; that is very confusing", while another simply said "I tried, but it did not work, so I never used it again". Participants mentioned wanting to see if a certain score is a pass/fail, since that might differ per teacher. One interviewee requested to "include if a grade is a pass or not, after getting the grade." Additionally, students did not always know what the weight of an assignment/exam grade is and how that influences the final course grade, with one person adding that "finding the weight that each assignment has on the overall grade is confusing". Respondents also pointed out that sometimes, with group assignments, if a teammate submitted the assignment, it does not show it on the page for all team members, which causes confusion and stress. A student describes it as "when a teammate uploads an assignment, I get 'missing' on the assignment instead of seeing the uploaded assignment after the due date passes". Furthermore, something that was explicitly mentioned in the interviews is that resubmission of an assignment seems to discard the previous attempt, but it is not clear to the interviewees.

5. Requirement Analysis

Before the requirement(s) analysis could be performed, the most important stakeholders affected by the project were identified. Since this project focuses on capturing the needs, expectations, and experiences of the students from the grades and assignments pages, the main stakeholders are the students. Other (indirect) stakeholders are the teachers, because they also interact with both the grades and assignments pages and have influence on what information is shown on them, as well as how they are set up.

After performing the interviews, gathering responses from the survey and identifying themes and patterns, the requirements engineering process could ensue. These requirements were defined by analyzing the themes and patterns that emerged from the information gathered from the students.

During the process of requirements engineering, each of the requirements was placed into the category of functional or nonfunctional. This was based on whether the frustration or need of the student required a feature or was related to usability and visibility of certain features on the pages. Additionally, for defining the requirements, the SMART framework was utilized to ensure that the requirements are of 'good' quality, namely specific, measurable, achievable, relevant and timely.

The requirements were then prioritized with the help of the MoSCoW method to showcase which requirements should be the top priority and which are less urgent. Furthermore, some design guidelines are recommended as well, based on student's feedback.

MoSCoW Prioritization

Must-have

Functional requirements

1. The system must sort grades based on the release date in descending order.
2. The system must allow users to find a specific grade within 3 user actions from the grades page.
3. The system must allow users to find a specific assignment within 3 user actions from the assignment page.
4. The system must group grades and assignments by course component.
5. The system must display exam and assignment feedback in a standardized format (e.g. as comments, or in the rubric, or in a file).
6. The system must sort the assignments by due date in descending order.
7. The system must allow users to access assignment feedback within one user action from the assignments page.
8. The system must allow users to access the grading rubric for exams and assignments within one user action from the assignment page.
9. The system must display for each assignment whether it is an individual or group assignment.
10. The system must make submitted group assignments visible for all team members within 1 minute of a submission by one of the team members.
11. The system must notify all team members of a group within 1 minute of a group assignment submission.

12. The system must display a ‘submitted’ label for each assignment on the assignments page.
13. The system must display all previous submission attempts for an assignment.
14. The system must display the due date as the primary deadline of an assignment.
15. The system must provide a file preview both before and after submitting an assignment.

Non-functional requirements

16. The system must remove the new grade notification 5 seconds after it is displayed on the user’s screen.

Should-have

Functional requirements

17. The system should make the assignment description mandatory when creating a new assignment.
18. The system should display all assignment details (due date, allowed attempts, current attempt count, countdown to due date, and description) for each assignment in the assignment page.
19. The system should allow users to filter and group assignments and grades by at least five criteria, including course component, due date, assignment type (individual or group), name of assignment, and grade release date.

Non-functional requirements

20. The system should have icons and colors to distinguish different assignment groupings and assignment statuses.
21. The system should display feedback using a font size between 16 px and 20 px.

Could-have

Functional requirements

22. The system could allow users to customize the placement of each assignment/grade (so both individual and group) on the assignments and grades pages.
23. The system could display a countdown timer showing the remaining time before the due date for each assignment.
24. The system could display the feedback in a pop-up window.
25. The system could allow the user to hide assignments on the assignments page based on user criteria.
26. The system could calculate and display the weighted average grade of a course.
27. The system could display a pass/fail indication for each grade.
28. The system could have a visual calendar that displays all the upcoming assignments and their deadlines.

Non-functional requirements

29. The system could display filter options in a visible and accessible location on each page.

Design guidelines

1. The system shall have icons and colors to distinguish different assignment groupings and statuses.
2. The system shall group grades and assignments in different folders (that belong together for better organization).
3. The system shall display deadlines, grades and submission status in a larger bolded (colored) font size.

Research questions

After gathering all of the results and the requirements that emerged from the interviews and survey, it is now possible to answer the research questions before moving onto the proposed improvements for the current design of grades and assignments pages of Canvas.

RQ1: How do students find the grades and assignments functionality on Canvas?

RQ1.1 How easily can students find and access the key features of the UI?

RQ1.2 Which features are frequently used by students?

RQ1.3 Which features cause the most confusion for students and why?

RQ2: What needs, expectations, and preferences do students have regarding the grades and assignments functionality on Canvas?

Grades and assignments functionality on Canvas

Overall, students are able to find the key features of the User Interface with some difficulties. This implies that the User Interface of the grades and assignments pages of Canvas could be slightly improved to help with faster and more intuitive navigation. The biggest difficulties are in finding: the details of assignments, feedback of assignments, as well as specific assignments and grades.

The features that are the most frequently used on the grades page are: looking for a new grade and checking the feedback or rubric. The features most often used on the assignments page are: looking for a specific assignment, looking at the assignment submission details (including the description, due date, score) and checking feedback or rubric.

One of the most confusing features is the What-If score, since the calculated final grade is disabled, the students do not know how this function works. Another confusing feature is connected to group assignment submissions, where sometimes when the team member submits such an assignment, other team members can not see the submission. Additionally, exam grades being posted as assignments cause confusion amongst students, due to them thinking that it is an additional assignment to be completed by them.

Needs, expectations and preferences regarding grades and assignments pages

When it comes to the grades page, the main expectation is to check new grades, see if a score is a pass or fail, look at feedback and calculate the final grade for the course. Currently, the system requires opening the new grade to remove new grade dot implication, which was reported as redundant. According to the participants, the grades page feels

cluttered due to it having a big list of grades, not divided into course components and not sorted in descending order of grade release date. A filter allowing to filter by grade release date, name, and assignment group (course component) was expected, yet it was missing.

Overall, on the assignments page there are many expectations and needs from students that are not met with the current design. The main issue is the invisibility of the filter and lack of options to filter by more criteria - course component, due date, assignment type (individual/group) and name of assignment. Additionally, students do not seem to notice that the current sorting of the assignments is by the closest due date first - this should be made more visible for the user in the design. Furthermore, the need for consistency in receiving feedback in one place on the website rather than in 3 different places was mentioned. Being able to access the rubric and the feedback in less user interactions, compared to the current design, was also highly requested. The assignments page currently displays all of the assignments of a course, which makes it feel cluttered. This introduced a need to be able to hide some of the assignments, if they are not applicable to the student. To help students keep track of all of the deadlines, the need for a visual calendar emerged for a better overview of assignments to complete.

Plenty of important information is also missing in the current design of the assignment page. The interface does not include individual/group assignment labels, nor does it provide indication for a submitted assignment. One of the particularly highlighted issues is the lack of indication that a team member submitted the assignment both on the assignment page and with a notification. Students reported the need to see previous submissions, in case there is feedback for the previous attempts, since the current design shows only the most recent submission. Additionally, there was a recurring need for making the due date stand out more, since it was confused with available until date. Another missing feature mentioned was the ability to see file preview before submitting an assignment to ensure that the chosen file is the correct one. Furthermore, to ensure that the assignments are handed in on time, a countdown to the deadline was requested, since usually the deadline is set at 23:59, but sometimes it is earlier in the day. Lastly, there is no standardized way to put the description of an assignment, which results in it being either in the assignment page, in the lecture slides, or in the module manual. This brings a lot of difficulty to keep track of assignments, therefore there is a need to ensure that the assignment description is only in the assignment page and that a description is mandatory for each assignment.

6. Proposed Improvements

This chapter shows the mockups made of the new improved Canvas assignments and grades pages. The mockups will be explained in depth and they will be compared to the current design of Canvas. There will be a detailed explanation on why the design choices were made, based on the requirements that were derived from the results of the survey and interviews. These mockups try to capture the students' needs as well as tackle the main pain points based on the requirements. For the proposed improvements, all 'must have' requirements and most 'should have' requirements have been implemented. Some of the 'could have' requirements were also implemented in the mockups.

Assignments Pages

Figure 18 shows the new main assignments page. The new assignment page has more filters than the previous design. Students can now group their assignments by assignment type, module / course, and whether it's an individual or group assignment, using the 'Arrange by' dropdown, as shown in Figure 19. The page can further be sorted by due date and name.

The assignments on this page now have an individual/group assignment indicator. This was implemented after many students complained about not knowing whether an assignment was individual or a group one. To make the distinction more visible, different colors have been used for group assignments, which are indicated with yellow, and individual assignments, which are indicated with purple.

Another feature that was implemented was the due date countdown. Some students had problems with keeping track of deadlines, especially when a deadline is earlier than normal. This feature is not enabled unless you tick the 'show countdown due date' box on the top right of the page. This way students that feel pressured and stressed by seeing a countdown, won't have to engage with it.

Next is the 'Submitted' assignment indicator that shows whether an assignment is handed in, without having to click on the assignment and go to the submission page, like with the old design. The old assignment main page did not show if an assignment received feedback, so as an improvement the 'view feedback' button was added, that takes you directly to the feedback page of an assignment.

The last but important feature on this page is the 'show only relevant assessments' box on the top right of the page. Many students have mentioned that they see irrelevant assignments that they do not have to hand in, for example resit students retaking part of the course. Using this feature, students can now choose what assignments to hide so that they have a less cluttered view of their assignments.

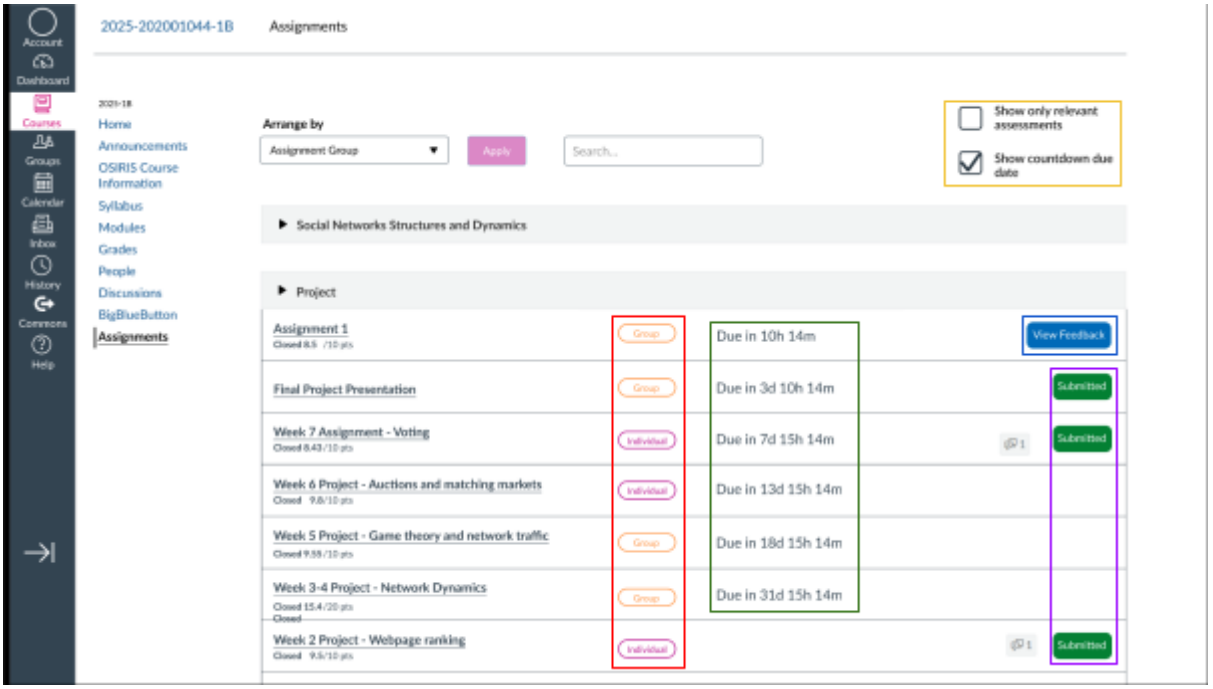

Figure 18. Main assignment page (mockup). The red rectangle shows the group/individual assignment labels. The green rectangle shows the countdown until the due date. The blue rectangle shows the 'View Feedback' button that sends the user directly to the feedback page. The purple rectangle shows the 'Submitted' assignment label. The yellow rectangle shows 'Show only relevant assignments' and 'countdown to due date' filters.

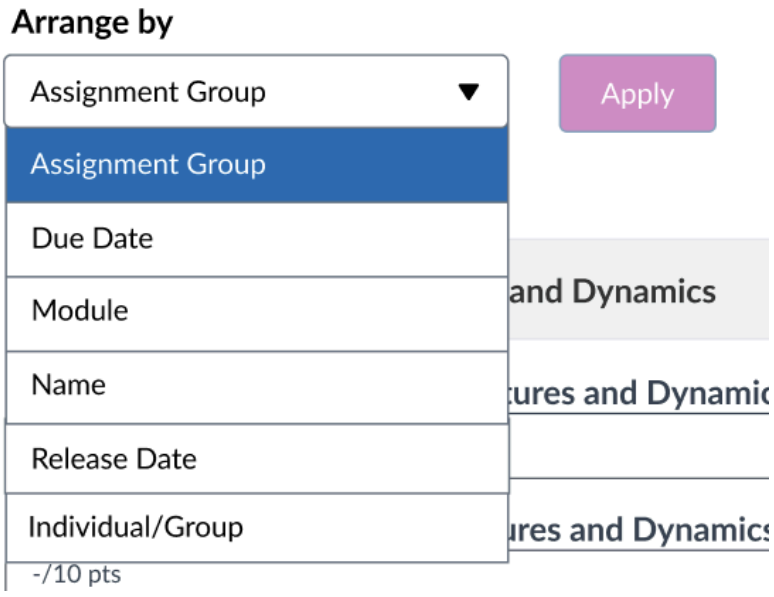

Figure 19. The filter options for the assignments page.

Figure 20 displays the submission of a new assignment. This page now shows less unnecessary information. The 'available until' date, which was very confusing for many students, has been removed. It was mostly useful for teachers, as they could see until when an assignment was open for submission, but students mainly focus on the due date and only want to know if they still have time to submit. If, for some reason, they do not meet their

deadline, they will do it as soon as possible and would not necessarily look at the ‘available until’ date.

The due date countdown is also displayed here, but in this case in red, as it is less than a day until the deadline. All assignments now also show how many attempts are possible, and how many attempts have been made so far.

When an attempt to submit an assignment is made, before submitting it, the student can now see the file preview to ensure that the uploaded file is the one meant for the assignment, as seen in Figure 21. In Figure 22 the preview of the uploaded file is shown. This feature was requested by the students, since sometimes they may have multiple copies of the same file with minor changes.

Figure 20. Assignment that needs to be submitted. The red rectangle shows time until the due date. The blue rectangle shows attempts made so far and allowed attempts.

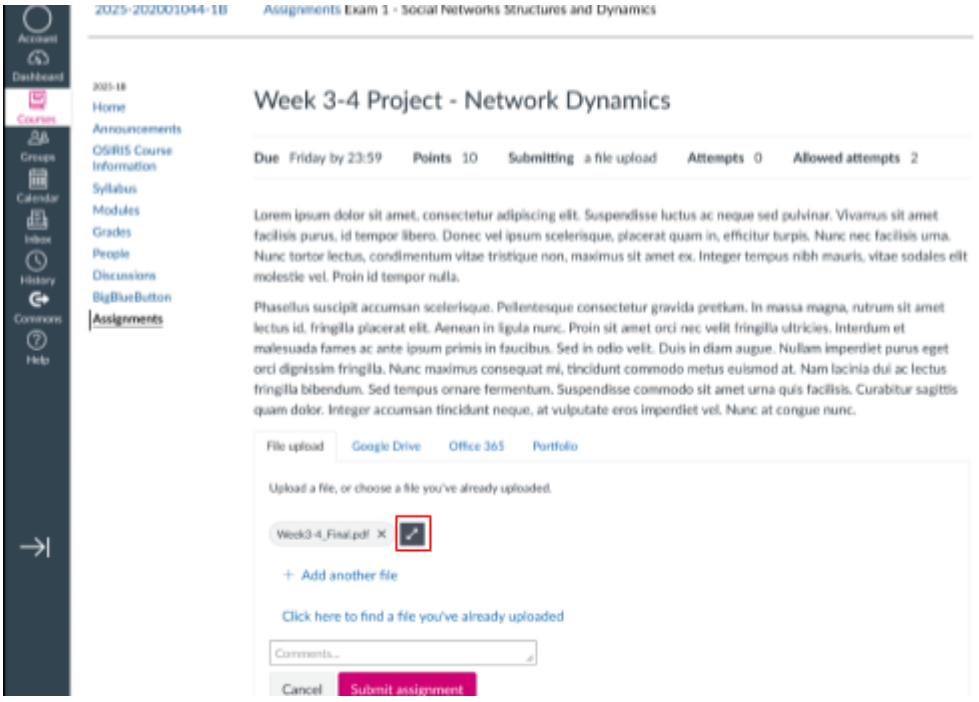

Figure 21. Assignment submission page. The red rectangle highlights the show preview button of the file to be submitted.

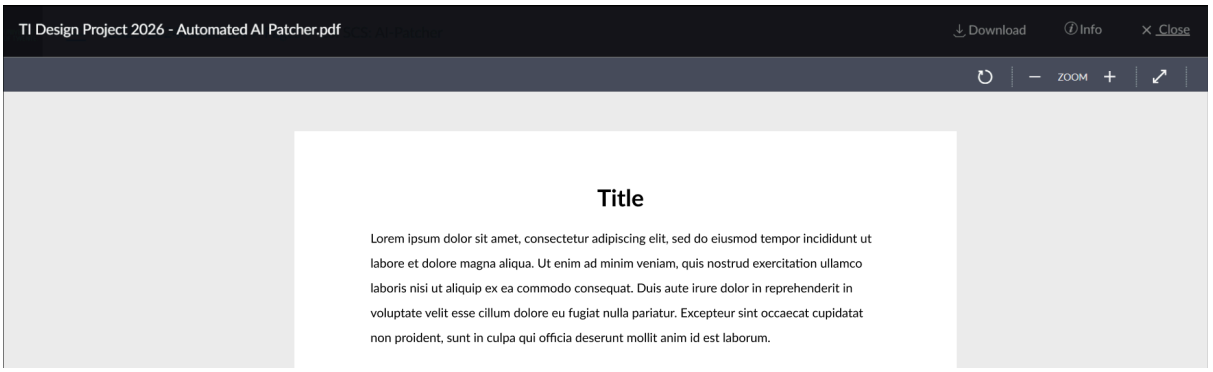

Figure 22. Submission file preview.

Figure 23 shows the assignment page after submitting the assignment. A new feature is the ability to see previous attempts, since that was not possible to see in the current system. From this page, the user is able to go directly to the feedback page by clicking ‘View Feedback’ on the right side of the most recent file submitted, which is positioned at the top of the grey box.

The feedback page has a new layout, as seen in Figure 24. On the left side of the page, a file preview of the most recent attempt is shown. On the right side of it at the top, the rubric is placed, and underneath it are the additional comments from the grading person that they might want to leave. The user has an option to look at the rubric and the additional comments in a pop up by clicking the button on the left of the titles ‘Rubric’ and ‘Additional Comments’. Additionally, as shown in Figure 25, in the rubric pop-up, there is a button to move the user directly to the ‘Additional Comments’ section pop-up.

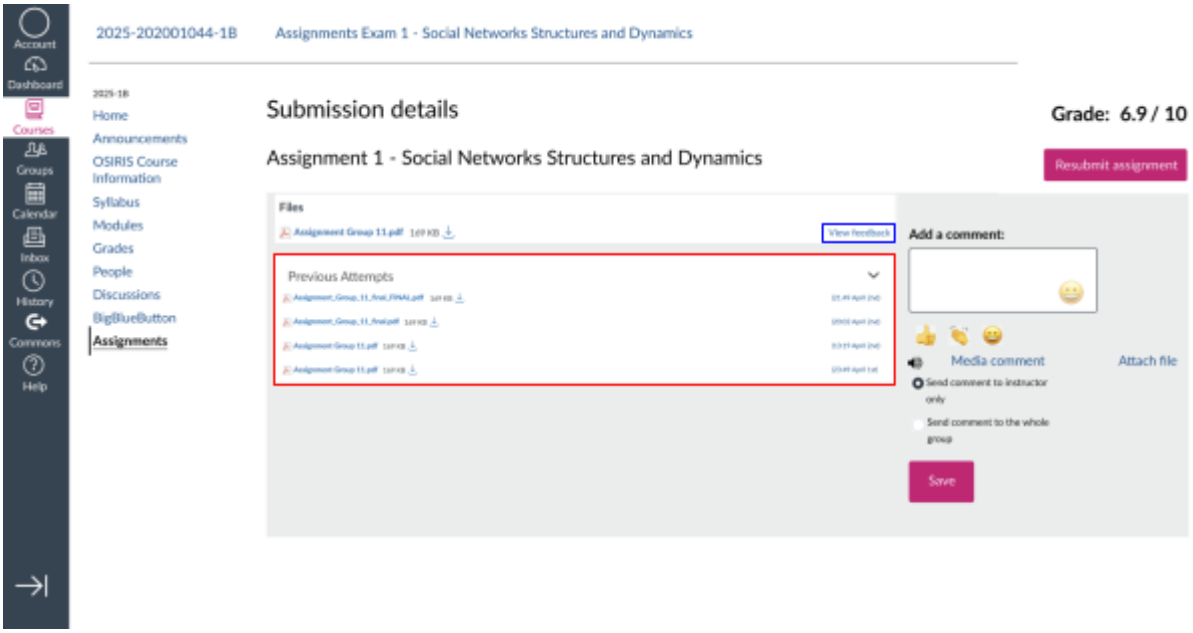

Figure 23. Assignment page after submission. In the red rectangle the previous attempts are seen. The blue rectangle shows a 'View Feedback’ button that sends directly to the feedback page.

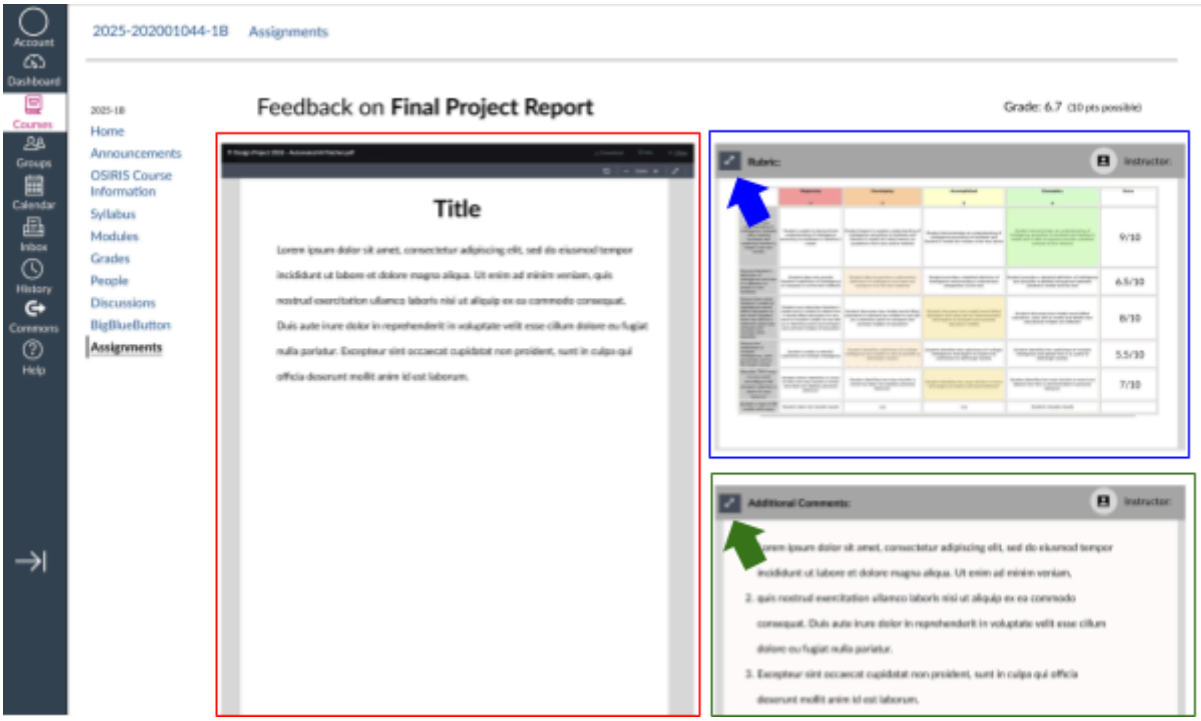

Figure 24. Feedback page for the assignment. In the red rectangle is the submitted file. The blue rectangle shows the rubric and the blue arrow points to the button to view it in a pop-up. The green rectangle highlights the additional comments and the green arrow points to the button to view it in a pop-up.

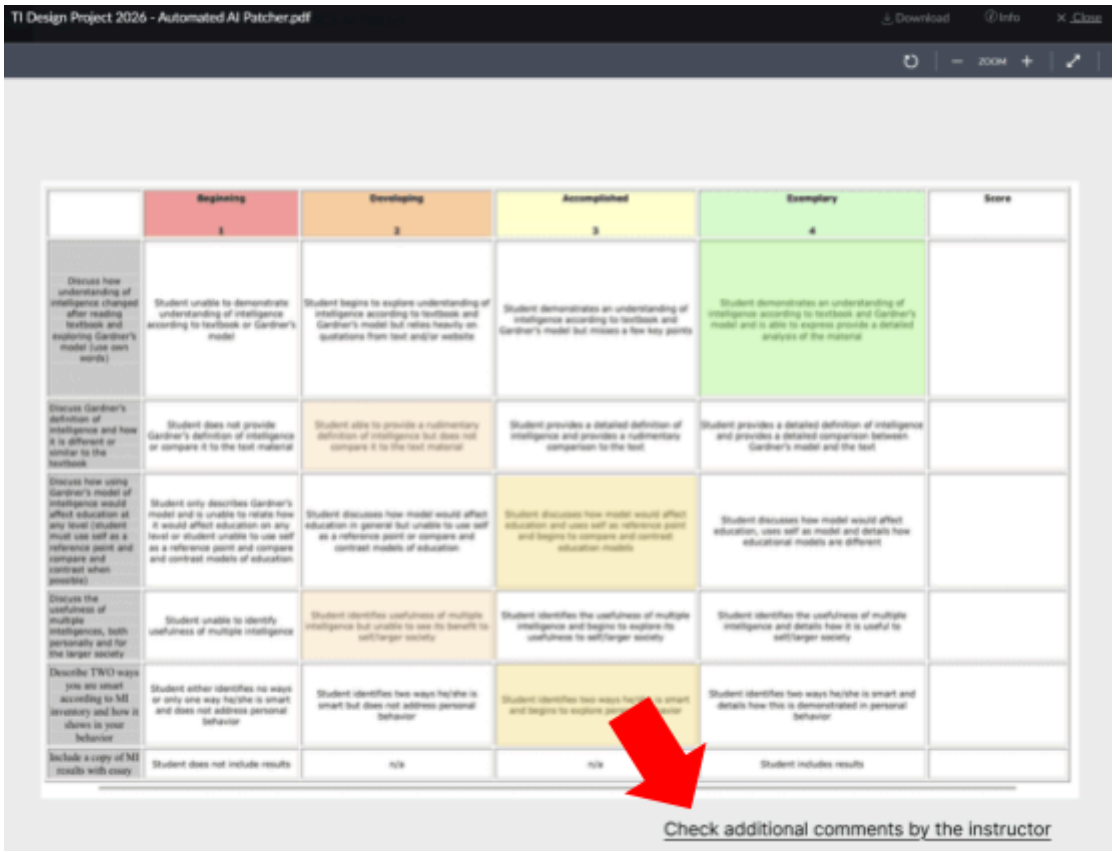

Figure 25. The rubric pop-up. The red arrow points to the button that allows the user to see the 'Additional Comments' section pop-up.

Grades pages

The new grades page has more filters and is now grouped based on the course by default. Now, when a new grade gets released, the blue dot notification will automatically disappear the moment the student hovers the mouse pointer over that grade, as seen in Figure 28. Figure 26 provides the default grades page overview, where it is shown that the grades can be filtered by a new option, namely, release date, on top of the current filters including module, assignment group, due date and name. These features were implemented since many students had issues with the cluttering of the grades page and the fact that it was hard for them to find a specific grade.

Additionally, in Figure 27 it is shown that a filtering option in the form of a checkbox was added to the top right side of the page for grades of relevant assignments. This was designed to accommodate students who are taking only some parts of the modules or combining them. Moreover, improved design allows a student to collapse each assignment group. Together, the relevant assignments filter and possibility to collapse assignment groups are the solution to the excessive scrolling issue that was addressed in the feedback from students.

On top of that, for each grade, it will be shown clearly, as a separate column, whether it is a pass or a fail, and whether the grade was for an individual or a group assignment. The clear indication of a pass or a fail is an additional feature requested by the students, since for some assignments/projects/exams it was unclear. The individual/group assignment indication is a commonly requested feature by the students, that helps with keeping a clear overview of what should be done individually, or in a group, as shown in Figure 26 in the purple box.

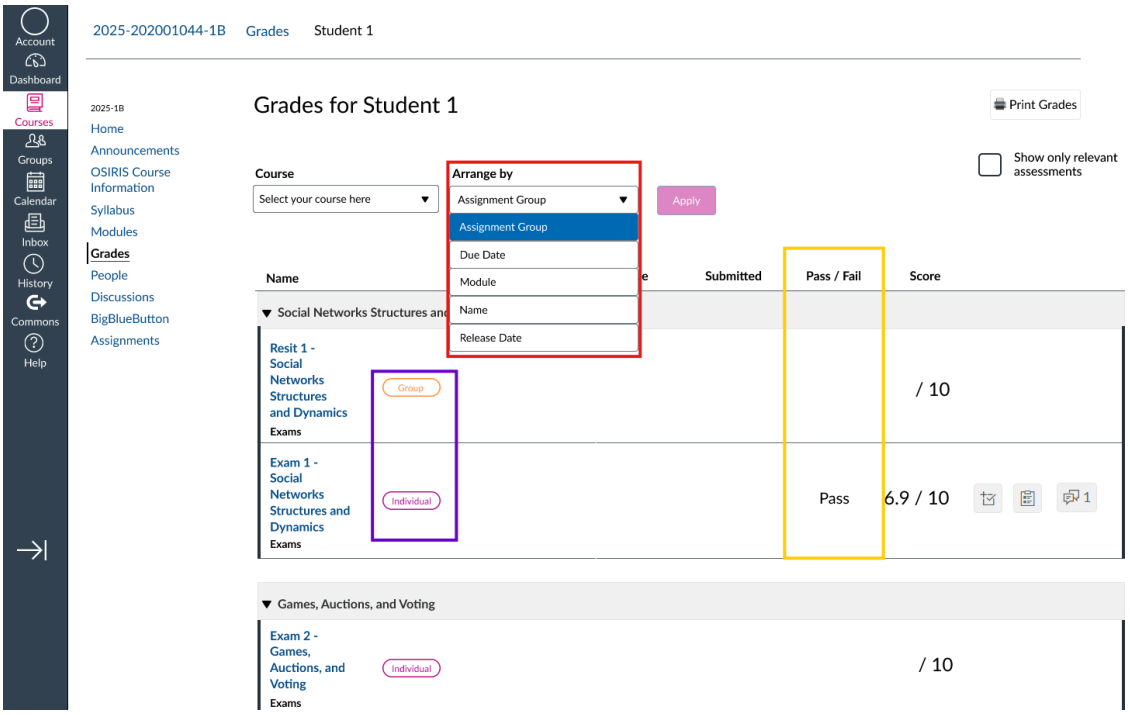

Figure 26. The default Grades page. The red rectangle shows filtering options. The yellow rectangle contains pass/fail. In the purple rectangle there is an indication of group/individual assignment.

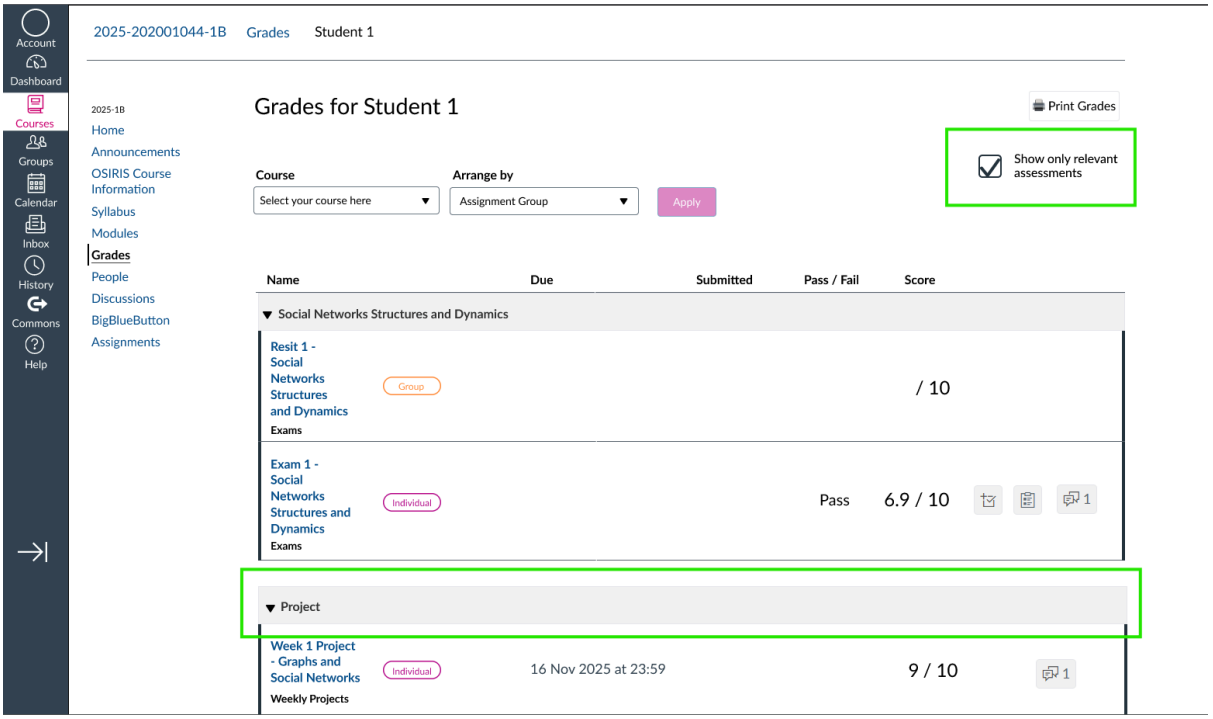

Figure 27. The green box shows an applied filter of only relevant assignments.

Figure 28. Showcases the blue dot grade indication in the upper image, when hovering over the grade it disappears automatically as shown in the lower image.

7. Discussion

The purpose of this project was to improve and evaluate the assignments and grades pages for the students on the desktop version. In order to achieve this, a survey and interviews were conducted to gain insight into the frustrations, expectations, needs and experiences from the students of the University of Twente. After gathering the responses with the aforementioned research methods, the results were examined, analyzed, and later used to perform requirements engineering, followed by the design of the mockups. The most frequently used features that students mentioned were: looking for a (new) grade or an assignment, checking assignment details, and checking feedback or the rubric. Some of the encountered issues that many students faced included: finding details of assignments, finding feedback on assignments and finding specific grades and assignments. These issues can limit the functionality and viability of the pages for the students. This showcases that the key features could be accessed on both pages, albeit with some difficulty. Consequently, requirements were defined such that they concretely described what improvements and modifications could be made to both of the pages in order to tackle these issues. The mockups showcase what functionality could be added/modified and how to make the overall student experience smoother with the Canvas pages.

However, there are some issues that cannot be captured in the mockups and involve the teachers. Since there is no standardized way of structuring the Canvas pages for teachers, they design their own course page. In consequence, the layout of the grades and assignments pages can differ per teacher. This includes: grades being posted on Osiris only (therefore missing on the Canvas page), naming schemes of the assignments that are inconsistent, the description of the assignments being in various places, creating undated assignments, the feedback for the assignments given in different ways, and grouping the assignments by the course component. Those are the issues mentioned that do not depend on the design of the Canvas grades and assignments pages, but rather on the teachers, so it is crucial that this is taken into consideration. This highlights the need to make a course for teachers of the university to standardize the placement of the aforementioned features for each study program.

There is one feature on the grades page of Canvas that requires more attention and it is the What-If score. In general the feature was deemed redundant, but at the same time was mentioned indirectly as something helpful. As for the current state of the system, the calculation of the final score is disabled, so even if a student uses the What-If score, nothing changes on the page. According to the teachers, the functionality has specific rules to calculate the final grade, which in most of the cases differs from the actual final grade calculation assumed by the teachers. The inability to change those rules results in the What-If score functionality being disabled, to prevent misinforming the students about their actual final grade. Therefore, this feature does not appear in the mock-ups created, but rather is a feature that should be added to the system, once the setup of the grade calculation becomes manual.

8. Limitations

One of the highlighted issues from the teacher side of the Canvas grades page is the fact that to post a grade for an exam that was held outside of Canvas page, one needs to create an assignment. This should be considered as a great limitation of the system that concerns the teachers, and in the end the result affects the students, since this shows up as yet another assignment that might be mistaken for an overdue assignment.

Additionally, a major limitation of this project is the fact that the mock-ups presented were not tested with users. This is due to the constricted timeline for completing the project. Therefore, it is advised to the client that they do usability testing to check whether the proposed changes created in this project would be upheld.

9. Conclusion

In conclusion, this project's focus was on improving the assignments and grades pages' functionality for the students. In order to achieve this, student feedback had to be gathered, which was done by conducting interviews and a survey. The collected data was analyzed and categorised into (mutually exclusive) themes, grouping together the most relevant issues. Afterwards, the themes were used for engineering the requirements that were defined with the SMART framework, formatted in INCOSE style and prioritized with the help of MoSCoW. These requirements guided the creation and design of the mockups. Furthermore, some of the student feedback was not implemented in the mockups, since it was concerning issues not connected with the design but rather outside factors. Instead, they were mentioned as recommendations that should be taken into consideration.

Appendix 1: Survey and interview questions

Survey

Initial questions:

1. What is your current level of study?
    - Bachelor's student
    - Master's student
    - PhD / Doctoral student
    - Other (please specify):
2. What study program are you currently enrolled in?

Likert scale questions:

Questions on the grades functionality:

1. How often do you check the grades page? Daily, Weekly, Monthly, Rarely
2. I can easily find my grades on Canvas.
3. The grades page clearly shows my score for each assignment/exam.
4. I know how to access feedback on graded assignments from the grades page.
5. I can understand the What-If scores.
6. I use the What-If scores often. (The What-If scores let you simulate potential scores.)
7. I am satisfied with the loading speed of the grades page.

Questions on the assignment functionality:

8. How often do you check the assignments page? Daily, Weekly, Monthly, Rarely
9. I know how to find my assignments on Canvas.
10. The assignment page contains all the information required to complete each assignment.
11. Assignment deadlines are clearly visible.
12. Submitting an individual assignment is clear to me.
13. Submitting a group assignment is clear to me.
14. I understand the difference between an individual assignment and a group assignment.
15. Resubmitting assignments is straightforward and intuitive.
16. I can clearly see the status of my submitted assignments.
17. I know how to access feedback on assignments on the assignments page.
18. I am satisfied with the loading speed of the assignment page.

Likert scale:

1 = Strongly disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly agree

Open ended questions:

Questions on the grades functionality:

1. How would you describe your current experience with the grades page?
2. What challenges did you face?
3. What technical changes would you make in order to tackle these challenges?
4. What would you modify on the grades page in order to improve your experience?
5. When viewing your grades, what criteria/information would you want to be able to filter or sort by?

Questions on the assignment functionality:

6. How would you describe your current experience with the assignments page?
7. What challenges did you face?
8. What technical changes would you make in order to tackle these challenges?
9. What would you modify on the assignment page in order to improve your experience?
10. When viewing your assignments, what criteria/information would you want to be able to filter or sort by?

Interview

Initial questions:

1. What is your current level of study? (Bachelor's, Master's, PhD / Doctoral student, or other)
2. What study program are you currently enrolled in?

Questions on the grades functionality:

3. Can you walk me through how you usually check and keep track of your grades for assignments and exams?

4. How often do you check the grades page during a course?

5. What usually motivates you to check the grades page?

6. How do you interpret and use the information on the grade page? Is anything confusing or unclear?

7. Have you ever accessed feedback on graded assignments through the grades page? If so, how was that experience?

8. Have you ever used the What-If score feature? If yes, what was your experience?

> Info: The What-If scores let you simulate potential scores for grades that you already received and want to resit or grades that are not published yet.

9. How would you describe your current experience with the grades page?

10. What challenges have you experienced when checking your grades on Canvas?

10. Is there anything you expected the grades page to do but it currently does not?

11. Which information on the grades page is most important to you?

12. What information or features would you like to see more clearly or be easier to access on the grades page?

13. If you could change anything about the grades page, what would it be?

Questions on the assignment functionality:

14. Can you walk me through how you usually keep track of your assignments and deadlines?
15. How often do you check the assignment page during a course?
16. In what situations do you usually check the assignment page?
17. How easy is it to find your assignments on Canvas? How intuitive is the navigation?
18. When you view an assignment, do you have all the information you need to complete it? Are there any details missing?

    Suggestion: Anything that should be modified on the Canvas page?

19. Can you describe your experience with submitting and resubmitting an assignment? *As a follow up, since the interviewee might not mention that:* Was anything confusing or difficult?
20. Can you walk me through how you handle individual assignments versus group assignments on the assignment page?
21. How easy is it to find the status of your submitted assignments (graded, feedback, missing, late)? Do you experience any difficulty locating this information?
22. Can you walk us through how you usually access feedback on your assignments?
23. Have you ever had trouble finding or understanding the feedback on the assignment page, and why?
24. How would you describe your current experience with the assignments page?
25. What challenges have you experienced when using the assignment page?
26. Is there anything you expected the assignment page to do but it currently does not?
27. Which information on the assignment page is most important to you?
28. What information or features would you like to see more clearly on the assignment page?
29. If you could change anything on the assignments page, what would it be?

Appendix 2: Information Sheet Consent Form

Informed Consent Information Sheet

Purpose of the Research
The purpose of this research is to collect student feedback on the grades and assignments functionality of Canvas through participation in either a survey or an interview. We want to understand how students experience these functionalities and identify possible improvements. This research is being conducted as part of the Design Project module at the University of Twente.

To participate in this research you have to be 16 years or older and a student at University of Twente.

Benefits and Risks of Participating
There are no risks involved in participating in this research. Participating involves only giving your feedback on the grades and assignment features of Canvas. By receiving your feedback we can make potential improvements to these features.

Personal Data and Retention Period Data
No personally identifiable information will be collected or processed during this research. The participants remain completely anonymous. The only information that will be collected is your feedback on the Canvas features as well as the degree and the study program. That information will be collected by the interviewer taking notes of the answers provided. No recordings will be done.

The anonymous data of all participants will be stored and processed by the researchers for the duration of the Design Project module, namely 17-04-2026. The information will be shared with the CES team of the University of Twente and will be retained only for documentation and evaluation purposes in connection with this project.

Participant Rights
As a participant you have right to:

- Refuse to answer any question
- Withdraw from the study by closing the survey and / or stopping the interview without any reason at any moment.

Contact Details Researcher and Ethics Committee
Magdalena Kaim (m.kaim@student.utwente.nl)
Ethics Committee (ethicscommittee-cis@utwente.nl)

Appendix 3: Informed Consent Form

Consent Form for Study on improving Grades and Assignment Functionality on Canvas (LISA)

Please tick the appropriate boxes	*Yes*	No
Taking part in the study		
I have read and understood the study information dated [20/02/2026]. I have been able to ask questions about the study and my questions have been answered to my satisfaction. (or for the survey) I have read and understood the study information dated [20/02/2026]. I was given information about the contact person in case of any questions I might have.	☐	☐
I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	☐	☐
I understand that taking part in the study involves answering several questions about the grades and assignment functionality on Canvas.	☐	☐
Use of the information in the study		
I understand that the information I provide will be used for a Design Project report and that the information will be shared with the CES team of the University of Twente.	☐	☐

Study contact details for further information
Magdalena Kaim (m.kaim@student.utwente.nl)

Appendix 4: Survey bar charts for Likert-scale questions

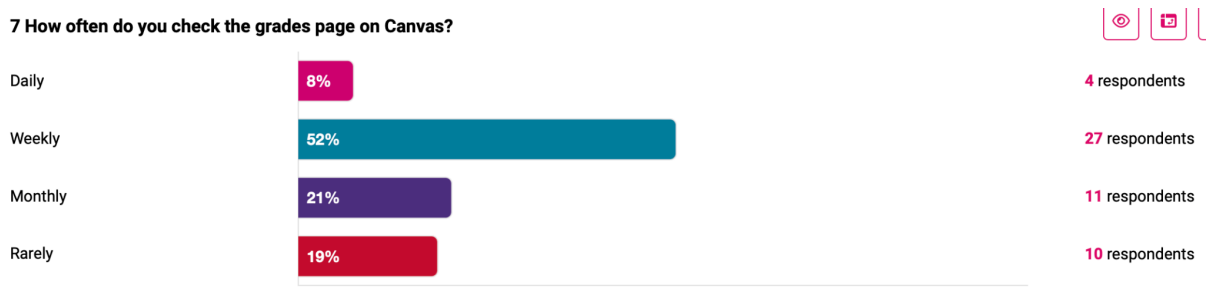

Figure 28. Responses to question 7 of the survey

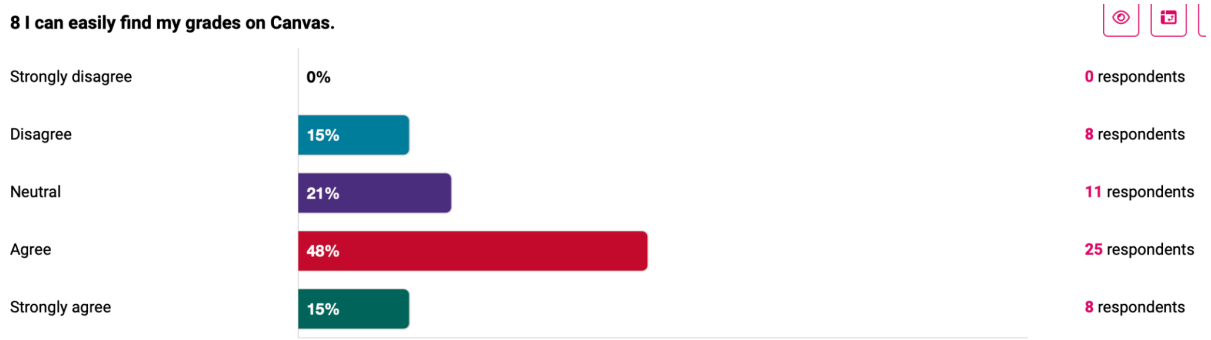

Figure 29. Responses to question 8 of the survey

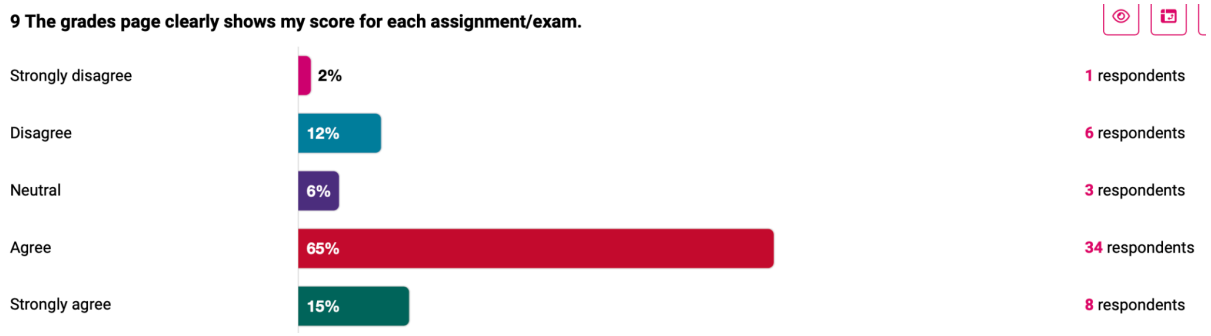

Figure 30. Responses to question 9 of the survey

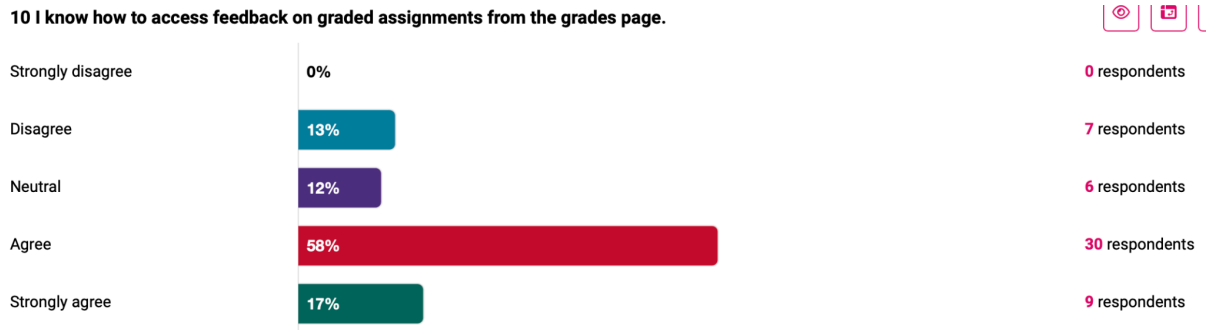

Figure 31. Responses to question 10 of the survey

Figure 32. Responses to question 11 of the survey

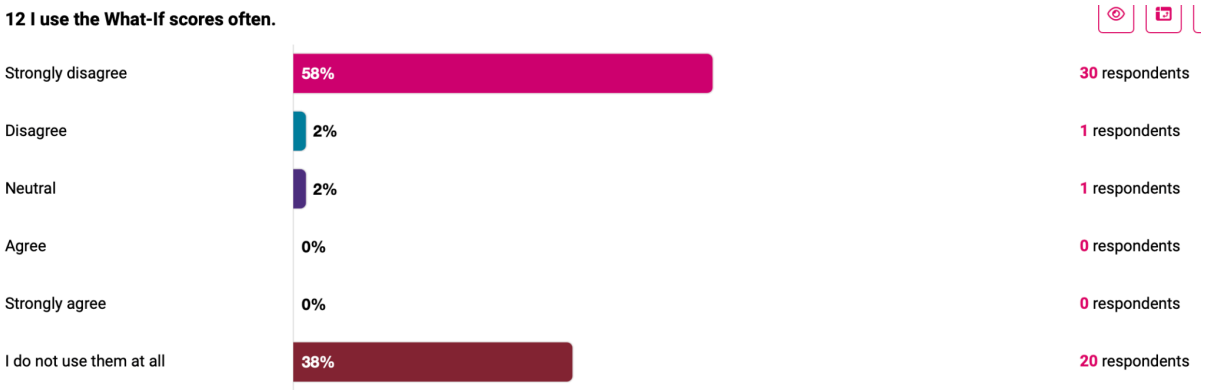

Figure 33. Responses to question 12 of the survey

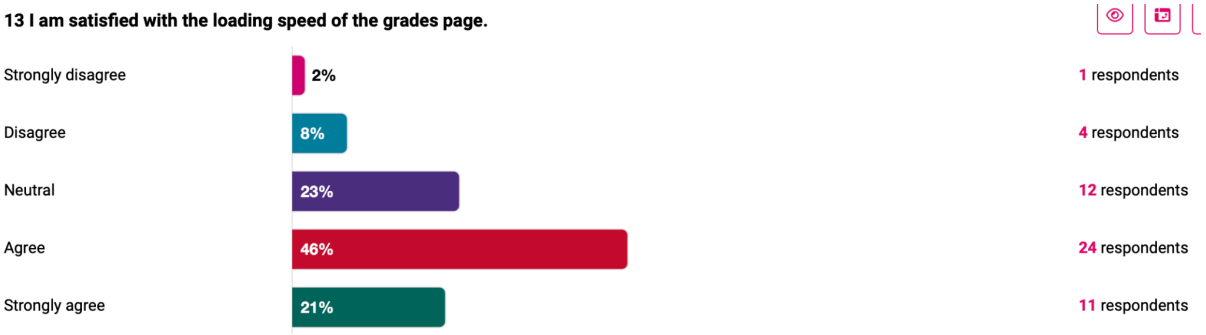

Figure 34. Responses to question 13 of the survey

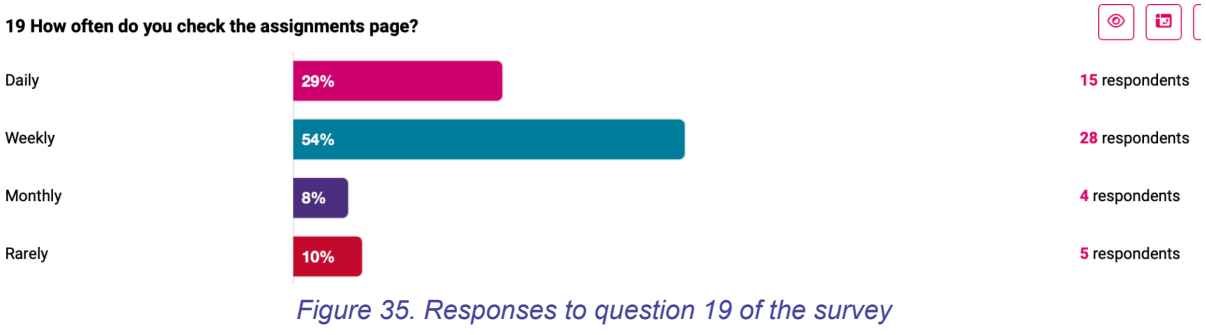

Figure 35. Responses to question 19 of the survey

Figure 36. Responses to question 20 of the survey

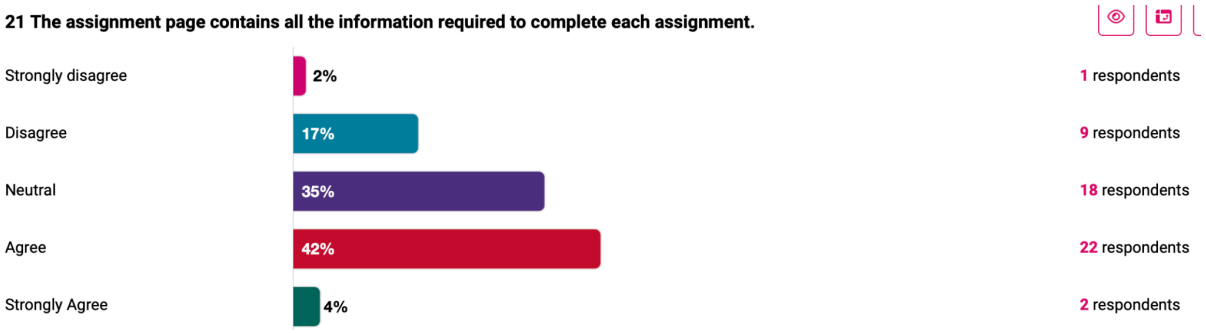

Figure 37. Responses to question 21 of the survey

Figure 38. Responses to question 22 of the survey

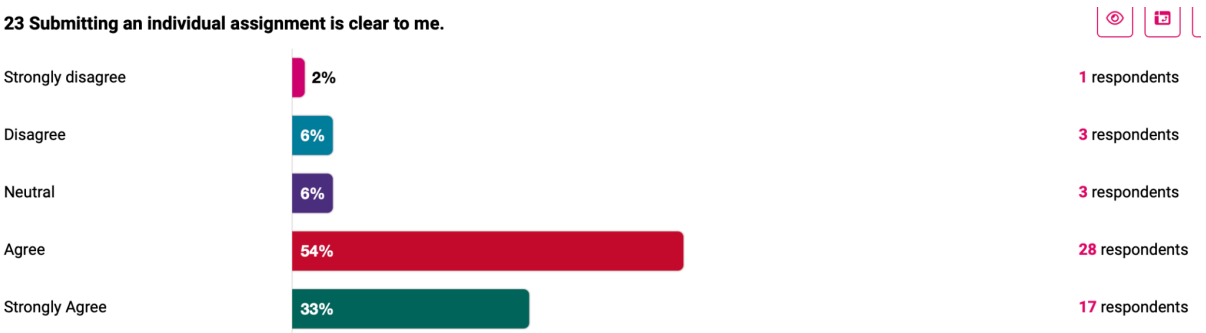

Figure 39. Responses to question 23 of the survey

Figure 40. Responses to question 24 of the survey

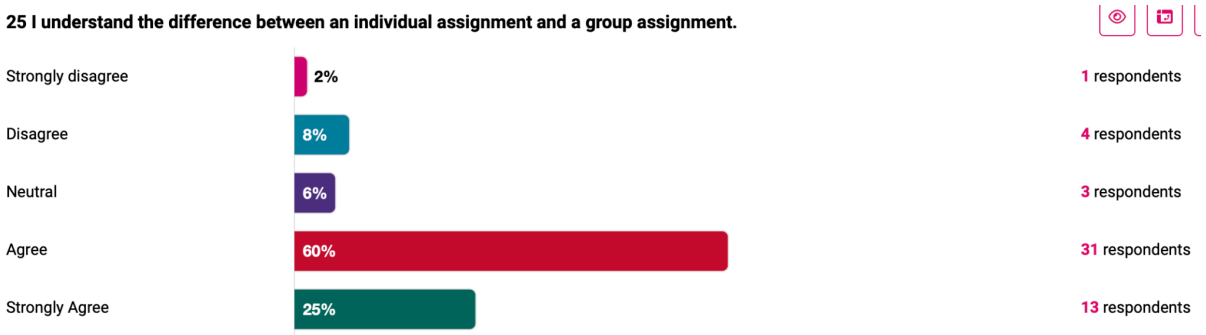

Figure 41. Responses to question 25 of the survey

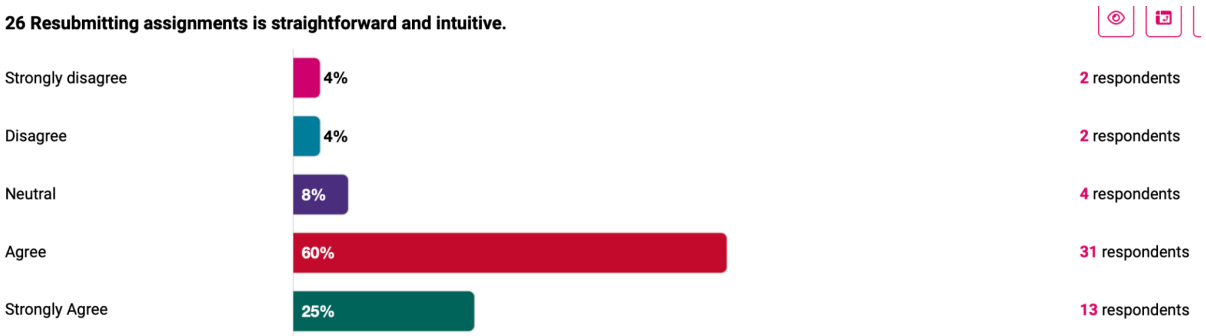

Figure 42. Responses to question 26 of the survey

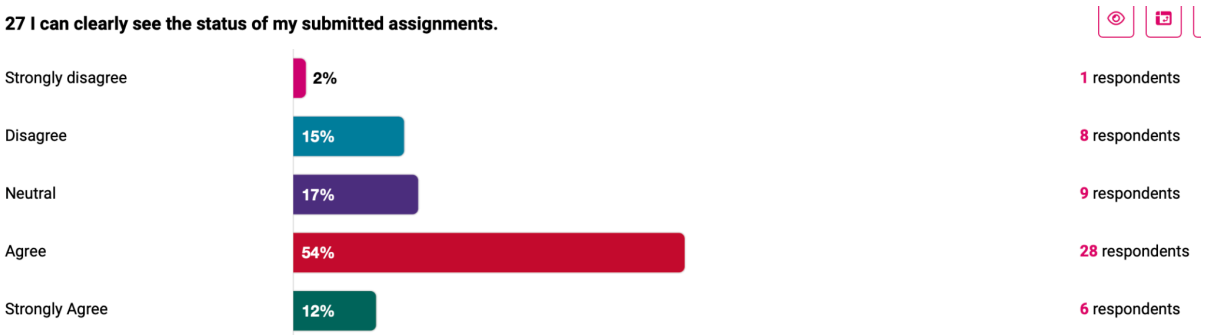

Figure 43. Responses to question 27 of the survey

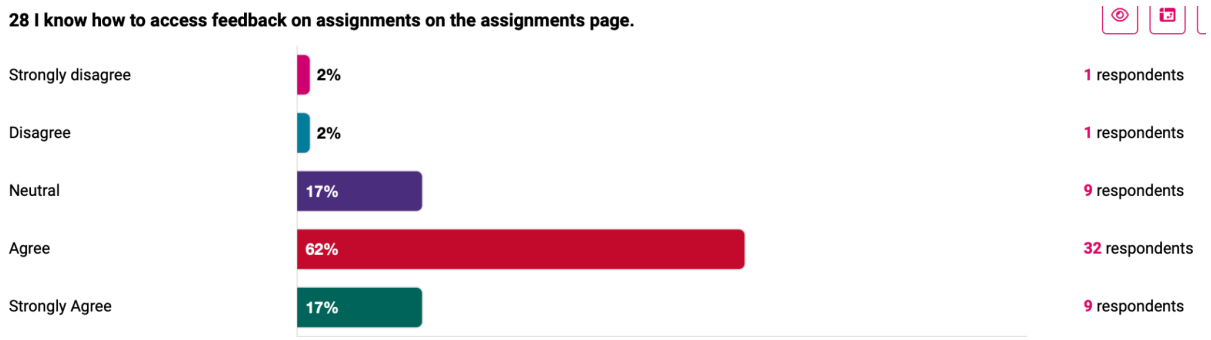

Figure 44. Responses to question 28 of the survey

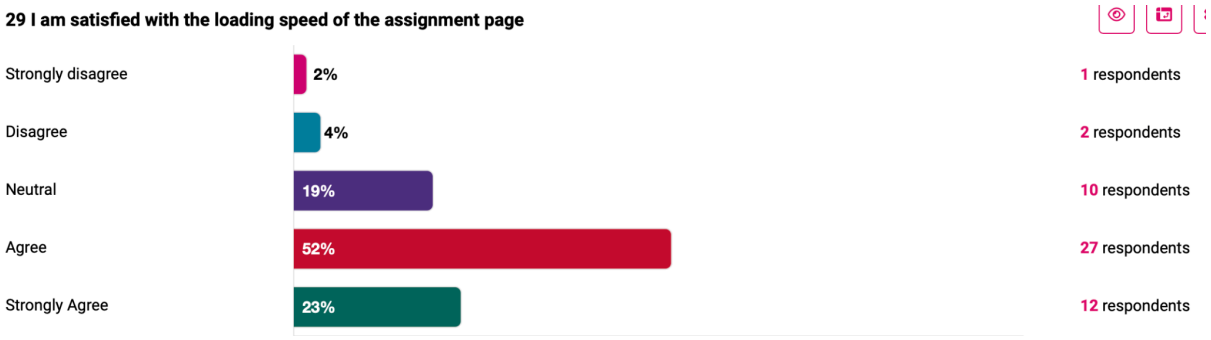

Figure 45. Responses to question 29 of the survey

Appendix 5: Interview answers (sample)

Initial questions:

1. **What is your current level of study? (Bachelor's, Master's, PhD / Doctoral student, or other)**

   Bachelor's

2. **What study program are you currently enrolled in?**

   Industrial Design Engineering (IDE)

Questions on the grades functionality:

3. **Can you walk me through how you usually check and keep track of your grades for assignments and exams?**

   I first check Osiris for my grade and if it's not there, I check on canvas. I only check my grades if I get an announcement (via email) that says that there is a new grade or that the grade has been changed. First, I go to the module and then the grades page and then I scroll down the page until I see the name of the assignment or test. "The blue dots don't go away so all grades have a blue dot and it makes it confusing; you don't know what is new or not."

4. **How often do you check the grades page during a course?**

   "Only if I get a notification that I have a new grade."

5. **What usually motivates you to check the grades page?**

   The notifications. I don't check if I have a new grade, so I only go to that page if I get a notification.

6. **How do you interpret and use the information on the grade page? Is anything confusing or unclear?**

   I only use the grade name, score, and the feedback / comments. I don't care about the submission date, or the other information on that page.

   It's not confusing, the only thing unclear is the What-If score. Most things shown are unnecessary. The things at the bottom of the grades page that have no grade. Those things that show the name of the maps the assignments are organised, they have no grade and are unnecessary.

7. **Have you ever accessed feedback on graded assignments through the grades page? If so, how was that experience?**

   Yes, I always check feedback through the grades page. I like to check

feedback out from the grades page, because then you can immediately see it.

8. **Have you ever used the What-If score feature? If yes, what was your experience?**

   I tried, but it did not work, so I never used it again.

9. **How would you describe your current experience with the grades page?**

   It works fine, I never had any negative feelings about it, I never really thought about it in the first place. It works and does what it needs to do, so I never really give more thought to it.

10. **What challenges have you experienced when checking your grades on Canvas?**

    I have not faced any challenges, it always worked.

11. **Is there anything you expected the grades page to do but it currently does not?**

    I wish it showed the averages of the grades; it does not always do so.

12. **Which information on the grades page is most important to you?**

    The grade itself.

13. **What information or features would you like to see more clearly or be easier to access on the grades page?**

    All the assignments grades are shuffled, and I wish it was more organised, maybe in maps of each course.

14. **If you could change anything about the grades page, what would it be?**

    What I said in the previous question.

Questions on the assignment functionality:

15. **Can you walk me through how you usually keep track of your assignments and deadlines?**

    I first go to the assignment page, I see the due dates of the assignment right next to it, so I don't click on the assignment itself. But I do click on it if I need to read the assignment description.

16. **How often do you check the assignment page during a course?**

    I check weekly, because I do remember the deadlines.

17. **In what situations do you usually check the assignment page?**

Every time I need to know when I have a deadline and when I need to do the assignment.

18. **How easy is it to find your assignments on Canvas? How intuitive is the navigation?**

    It is intuitive, I have no problems navigating through the assignment page.

19. **When you view an assignment, do you have all the information you need to complete it? Are there any details missing?**

    Everything is there, the deadline is there, sometimes the teachers make a vague description, but the page itself is fine.

    Suggestion: Anything that should be modified on the Canvas page?

    No, it is fine.

20. **Can you describe your experience with submitting and resubmitting an assignment? *As a follow up, since the interviewee might not mention that:* Was anything confusing or difficult?**

    Google drive, office … etc in the submission page is a bit unnecessary / I never use it.

    The ‘add another file’ if you click on it, it does nothing and you should first click on the ‘drag a file here’ button. It is a bit unnecessary to show it if it does not work, maybe only show it if you already submitted the first assignment.

21. **Can you walk me through how you handle individual assignments versus group assignments on the assignment page?**

    It's the same for me.

22. **How easy is it to find the status of your submitted assignments (graded, feedback, missing, late)? Do you experience any difficulty locating this information?**

    It is easy to locate this information.

23. **Can you walk us through how you usually access feedback on your assignments?**

    I never check feedback through the assignments page, only the grade page because it shows it in a row. In the assignment page you first have to click on the assignment and then see the small feedback on the side with a lot of other information.

24. **Have you ever had trouble finding or understanding the feedback on the assignment page, and why?**

Via the grades page is easier, only clicking the icon once. Via the assignment page it looks ugly and the information is the same font, and you cannot distinguish them easily, also the submission details and download button look like the same link, because they are both blue and right under each other. Looks like a block of text instead of a list. Grades should be made bold.

25. How would you describe your current experience with the assignments page?

It can be better. More consistent layout, because every module and every course is different. Only show assignments by course, and under course it shows assignments sorted by due dates. The way that you can only sort by due dates and types does not make sense, as it still has courses shuffled.

26. What challenges have you experienced when using the assignment page?

What I mentioned above, the assignment is not easy to find.

27. Is there anything you expected the assignment page to do but it currently does not?

Check question 25.

28. Which information on the assignment page is most important to you?

The assignment description and the due date.

29. What information or features would you like to see more clearly on the assignment page?

What I said in question 24 and 25.

30. If you could change anything on the assignments page, what would it be?

Make it much clearer; currently, it isn't.