

Design project

Improving the Canvas Dashboard: A User-Centered Redesign Based on Student Needs at the University of Twente

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Introduction

As part of their learning journey, students use a learning management system to access course materials, submit assignments, receive feedback, and stay informed about course-related updates. Such a system plays an important role in supporting communication, organization, and the overall learning process. Within this context, our design project focuses on improving the dashboard of the University of Twente's (UT) learning management system, Canvas. Our goal is to investigate how students currently use this dashboard and to identify usability issues or missing functionality. The study focuses specifically on the Canvas dashboard interface and only considers students, as requested by the Centre for Education Support (CES), the client of this project, which is responsible for the management and support of Canvas at UT. Other user groups, such as teachers or educational developers, are therefore outside the scope of this project. Based on the findings of this user study, we develop an improved dashboard concept. To achieve this, we gathered feedback from students across different faculties at UT and used these insights to define user requirements and develop dashboard mock-ups. First, a user study was conducted through a survey among 95 students to identify key usability issues. Based on these findings, an initial set of requirements and mock-ups of an improved dashboard were developed. These designs were then evaluated through interviews with 10 students. After that, the results were used to refine both the requirements and the final design.

Methodology

This project follows a user-centered and iterative design methodology and combines quantitative and qualitative research methods. This mixed-method approach allows for both breadth and depth in understanding how students use and perceive the Canvas dashboard.

Throughout the whole project we follow an iterative design approach (see figure 1). This means that the design was not created in a single step, but continuously refined based on user feedback. Insights from the survey were first used to create an initial set of requirements and a mock-up design. This design was then evaluated through user interviews, after which the feedback was used to further improve both the design and the requirements.

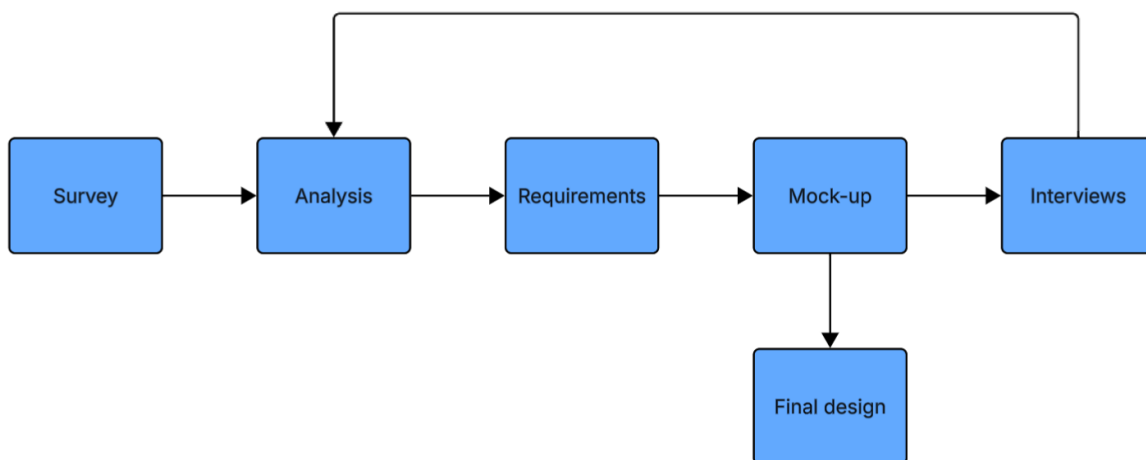


Figure 1. Iterative Design Phases

Data Collection - Survey

First, a survey was distributed across multiple faculties and cohorts at the UT to obtain input from students with different backgrounds and levels of experience with Canvas in order to collect a broad range of perspectives and to identify key usability issues and usage patterns. The survey was filled out by 95 students. It included both closed and open-ended questions. The closed questions were used to gather structured information about dashboard usage, satisfaction, awareness of features, preferred views, and perceived usefulness of different dashboard elements. The open-ended questions were included to capture motivations, frustrations, and suggestions in students' own words. This was important because usability issues are not always fully visible through numerical responses alone.

Data Analysis

The qualitative survey responses were analyzed using thematic analysis. Responses were reviewed and grouped into recurring themes. This helped us identify common user needs. The original responses remained important during analysis to make sure the themes did not oversimplify or misrepresent what students had expressed. In addition, a cross-analysis was performed to identify relationships between different variables and detect patterns across different user groups. Differences such as experience level, usage frequency, and feature awareness. This allowed for a deeper understanding of how different types of users interact with and perceive the Canvas dashboard.

Requirement formulation and Mock-up

Based on the survey results, an initial set of requirements was formulated. These requirements were derived from the identified themes and recurring user needs, translating the main usability issues into concrete design goals. The requirements were formulated following the INCOSE guidelines for requirement specification¹, as specified by the client. The requirements guided the design of a first version of the dashboard mock-up. While maintaining consistency with the existing Canvas interface, the mock-up focused on improving information visibility, prioritization, and overall usability.

Evaluation - Interviews

Next, the mock-up was evaluated through semi-structured interviews with 10 students. The mock-up was used to illustrate how the redesigned dashboard would function in practice and to support evaluation in the user interviews. Participants were selected to represent a range of study years and levels of experience with Canvas. During these sessions, participants performed task-based scenarios and provided feedback on usability, clarity, and usefulness of the proposed features. This allowed for a deeper understanding of user behavior and validation of the design decisions we made on the first redesign. Participants were observed and questioned while performing the tasks. The evaluation focused on whether interactions were intuitive, whether users hesitated during task completion, and how easily features could be discovered. Also, participants were asked to reflect on the usefulness of the features and suggest potential improvements.

¹ INCOSE Guide to Writing Requirements :
https://www.incose.org/wp-content/uploads/legacy/working-groups/requirements-wg/guidetowritingrequirements/incose_rwg_gtwr_v4_summary_sheet.pdf

Refinement

Based on the interview results, both the requirements and the mock-up were refined. Feedback from participants was used to identify usability issues, validate successful design choices, and guide improvements to the dashboard concept. This iterative process ensured that the final design was closely aligned with user needs and addressed the most important issues identified through the study.

Ethical considerations

This study has been reviewed and approved by the Computer and Information Science ethics board of the University of Twente (reference number: 260464), ensuring that data collection and storage comply with ethical guidelines.

Limitations and Constraints

A technical risk would be that the proposed dashboard improvements may not fully align with the technical limitations of the Canvas platform. Since we are only designing a mock-up rather than implementing a fully functional system, some of the ideas may not be directly feasible to integrate into Canvas. To minimize this risk, we maintained communication with the client to ensure that the proposed design is realistic to the existing system.

A potential risk in the interviews is that participants may provide socially desirable answers or focus on subjective opinions rather than actual usage behavior. To mitigate this, we used task-based scenarios and encouraged participants to think aloud during interaction with the mock-ups.

Coordination with Client

The group maintained regular communication with the client whenever it was necessary to ensure that we are working towards a goal that is aligned with their needs and expectations. The project manager at LISA served as the primary contact person for the client and was our main point of communication between us and the client. Although she is employed by the IT-department (LISA), she works for the client of this project, namely the Center of Educational Support (CES). Meetings were held periodically to discuss project progress, review insights from the user study, and obtain feedback on the proposed dashboard concepts.

Survey Results and Interpretation

Sample and Usage Context

In this section we present the findings of the study on the Canvas dashboard. A total of 95 students of the UT participated in the study, of which 81% reported actively using the Canvas dashboard. This indicates that the collected data is based on users who are familiar with the system. This supports the validity of our findings.

The respondents represent a broad distribution across all faculties at the UT. Most participants are from the faculty of EEMCS (32), followed by BMS (22), ET (21), TNW (17), and a small number from ITC (3). While EEMCS students are slightly overrepresented and ITC underrepresented, we need to take the relative sizes of these faculties into consideration. This distribution is more balanced when considering the relative sizes of the faculties. Also, this does not significantly affect the findings, as the goal of the study is to identify general usability issues rather than faculty-specific differences. Therefore, the sample can be considered sufficiently representative of the UT student population.

Although some groups, such as pre-master, PhD, and ITC students, are underrepresented (See Figure 2), this is not expected to significantly affect the results. Differences in dashboard usage are not likely to be strongly influenced by faculty or study level, as the Canvas interface is largely consistent across the university. The inclusion of multiple faculties therefore mainly ensures coverage, rather than enabling meaningful comparison between faculties or programs. More relevant distinctions are expected in terms of experience with Canvas and how frequently they use the platform, as these factors are more likely to influence familiarity with features, navigation behavior, and overall expectations of the dashboard.

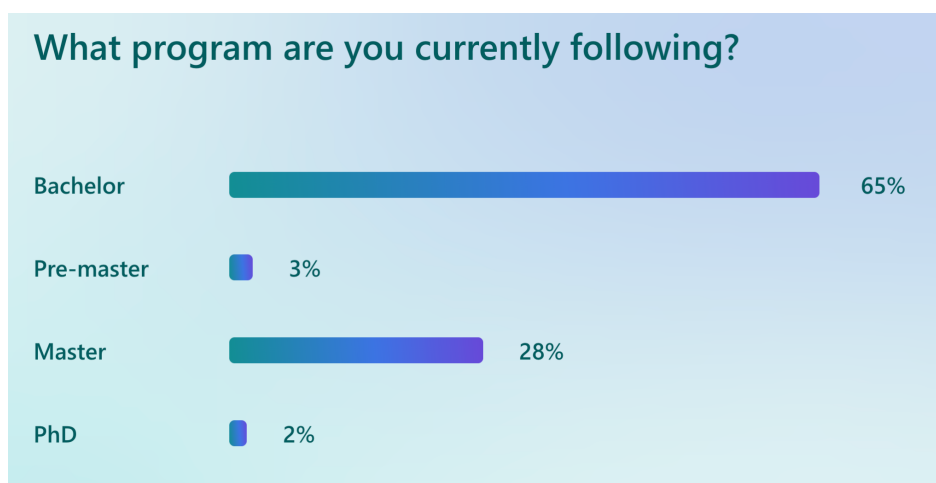


Figure 2: Faculty Respondents Distribution

Regarding experience with Canvas, most of the respondents have been using the platform for more than three years (35), followed by users for 1-2 years (25), 2-3 years (20), and less than one year (15). This indicates that we have big portions of both experienced and inexperienced

users to identify differences in user experience between them, making it possible to identify differences in understanding, feature awareness, and usage patterns.

Canvas is used very frequently. The majority of the respondents (74) use the platform multiple times per day. The rest of the respondents either use it once a day or a few times per week. This confirms that Canvas is a central tool in students' daily academic workflow. As a result, even small usability issues or improvements in the dashboard can have a significant cumulative impact. Additionally, differences between heavy and less frequent users may reveal important variations in expectations and efficiency needs.

Dashboard Usage and General Perception

The majority of the respondents reported using the Canvas dashboard (76 out of 95). This indicates that it plays a role in most students' workflows. However, a notable minority (19 students) actively avoids using it completely. These students primarily navigate directly via the Courses tab/pages (see figures 3 & 4). They perceive this path as faster and more efficient. Several responses describe the dashboard as an “extra step” that does not provide additional value.

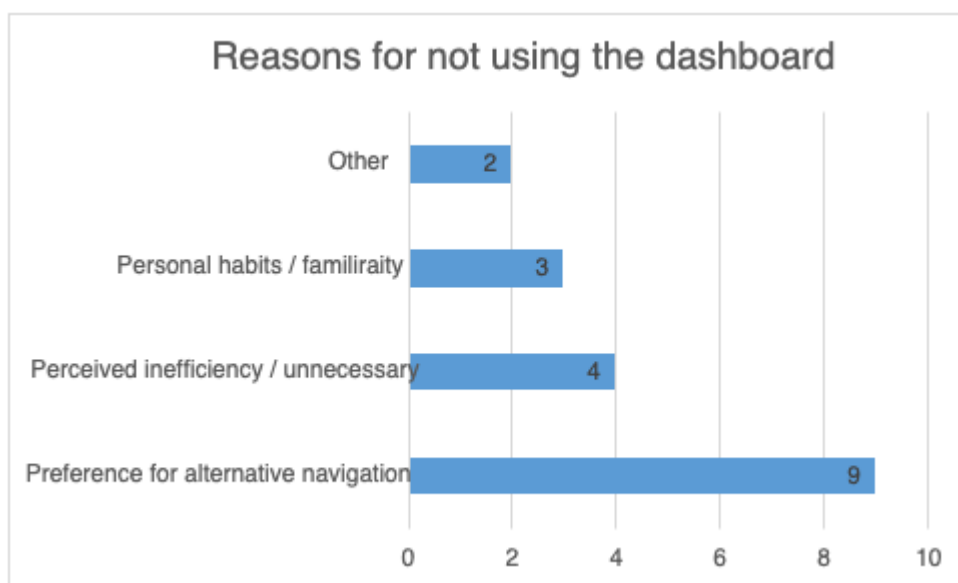


Figure 3: Reasons for not Using Dashboard

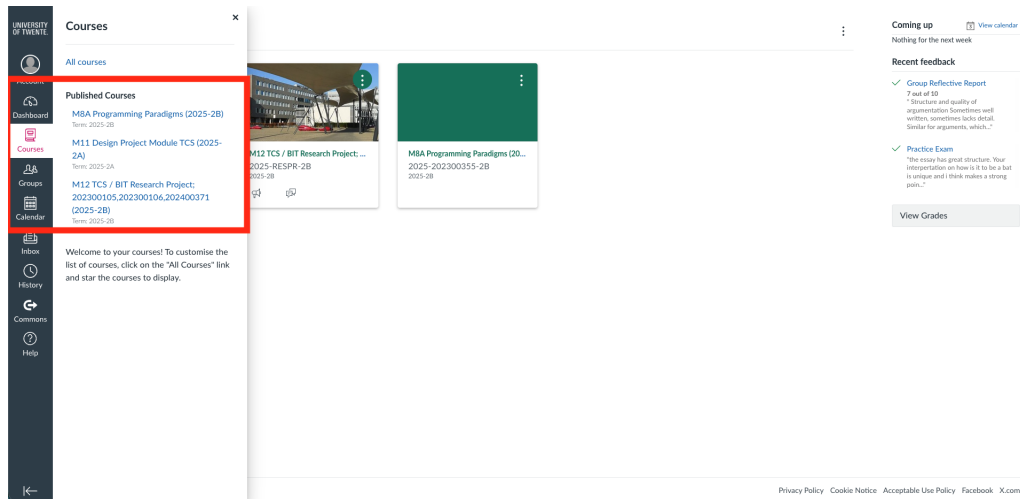


Figure 4: Current Canvas Dashboard, Courses tab

This indicates that the dashboard is not universally accepted as a central entry point, even while widely used. For a significant group of Canvas users, it is seen as redundant rather than useful.

In terms of functionality, the dashboard is primarily used as a navigation tool. The most common activity is opening courses (72 respondents), followed by checking announcements (37) and feedback or grades (33). Fewer respondents use the dashboard to check deadlines (23), and very few use it for planning (4). This indicates that the dashboard's role as an information and organization hub is limited, and that its current use is largely restricted only to quick access to courses.

User satisfaction with the dashboard is moderate (See Figure 5). Most respondents report being somewhat satisfied (33) or neutral (24), with fewer expressing dissatisfaction (12) or high satisfaction (6). This distribution supports the point that the dashboard meets basic expectations, but does not strongly support or improve the user experience. There is clear room for improvements to increase satisfaction.

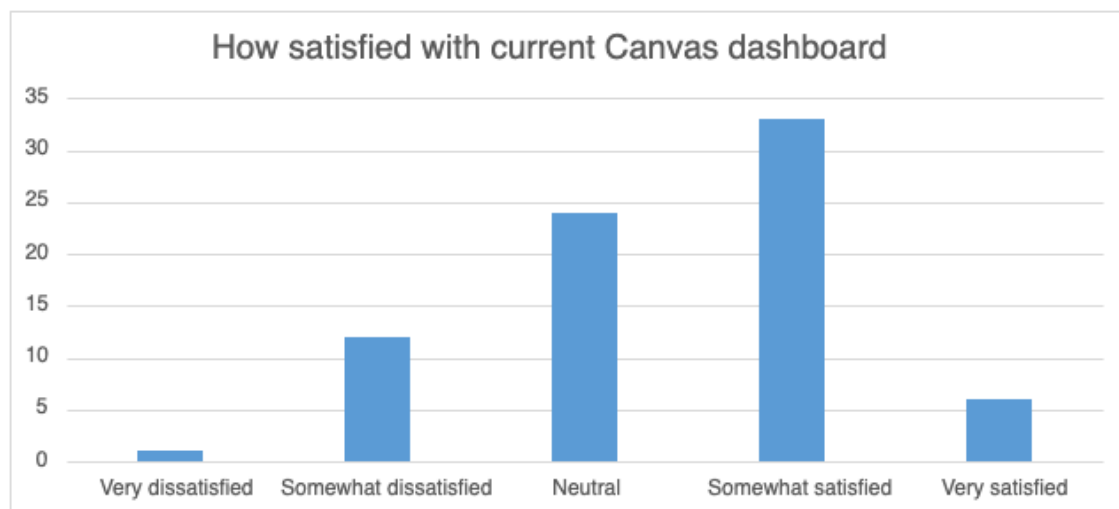


Figure 5: Students' Canvas Satisfaction Distribution

All in all, the findings show that the dashboard is widely used, but not fully trusted or relied on. It functions mainly as a navigation shortcut rather than a central overview of relevant information. Also, a portion of the students actively bypass it due to perceived inefficiency and lack of added value. This indicates a few key issues. The dashboard does not clearly differentiate itself from other navigation options. Also, it does not effectively support students in managing their tasks and information. As a result, its potential as a central hub within Canvas is not fully realized.

Feature Awareness and View Usage

The results show that awareness of features available on the dashboard is limited. A majority of the respondents (58) are not aware that the Canvas dashboard supports multiple views. Only 37 students report being aware of this functionality. This indicates that key features of the dashboard are not easily discoverable.

This lack of awareness is reflected in usage patterns. The vast majority of students rely on the default Card view (77). Significantly fewer students use the List view (16), and almost no one reported using the Recent Activity view (2). This suggests that most students do not actively explore alternative views and instead stick to the default interface.

Even among students who are aware of the ability to switch between views we can see that usage of alternative views remains limited. While some students switch to the List view to track deadlines, most still primarily use the Card view due to habit or preference. This indicates that awareness alone does not lead to adoption.

Overall, the findings show that usage patterns are strongly influenced by default settings rather than self-initiative. The problem is therefore not only limited discoverability of features, but also the lack of perceived added value of alternative views. As a result, the dashboard does not effectively support different user needs.

User Needs

To understand what students expect from the dashboard, they were asked which aspects they consider most important and which features they would like to see improved or added. The results show that students primarily value efficiency and clarity. The most important aspects are quick navigation (74 responses), clean layout (70), and clear deadlines (60). Customization is also considered important (33). An overview of recent activity is less of a priority (17).

Requests of the students for improvements strongly reinforce these priorities. The most frequently mentioned needs are an better overview of deadlines (74) and a cleaner

prioritization of tasks (56). Many students also request visual indicators such as urgency or progress (40), integration with calendar tools (39), and a less cluttered interface (39). Additional suggestions include more customization options (28) and improved navigation (18). Open-ended responses further emphasize the need for better information visibility and clearer structure. Many respondents express a desire for deadlines, announcements, and grades to be easier to find and more clearly presented. Recurring themes concern reducing clutter and improving the overall organization of information.

Overall, the results show that students are not necessarily asking for new functionality, but for better presentation and organization of existing information. The main need is a dashboard that provides a clear, structured, and prioritized overview of relevant information, while remaining simple and easy to use.

View-Specific Analysis

Respondents were given only questions about one view, based on which view they use or prefer most. This approach was chosen to ensure that feedback is based on actual experience, rather than assumptions about views that students do not actively use. Also, to keep the survey concise and focused.

In this section, we analyze the different dashboard views available in Canvas. Namely, the Card view, List view, and Recent Activity view (See Appendix, Views). Each view is evaluated based on how students use it, what they perceive as its strengths, and which usability issues they encounter. This provides insight into how well each view supports different user needs.

Card View

The Card view is by far the most used dashboard view (77 responses) and functions as the default interface for most students. It is mainly used to quickly open courses (71 responses). Other additional uses of this view are for organizing courses visually (23), viewing announcements (14), and checking assignment updates (9). This indicates that the Card view mainly serves as a navigation tool.

The respondents generally evaluate the Card view positively (See Figure 6). The most frequently mentioned strengths are visual recognition (21), easy navigation (17), and a clear overview of courses (16). The use of images and colors allows students to quickly identify courses without needing to read course names. This supports fast and intuitive interaction. Additionally, some students appreciate the ability to customize course cards and the familiarity of the default layout.

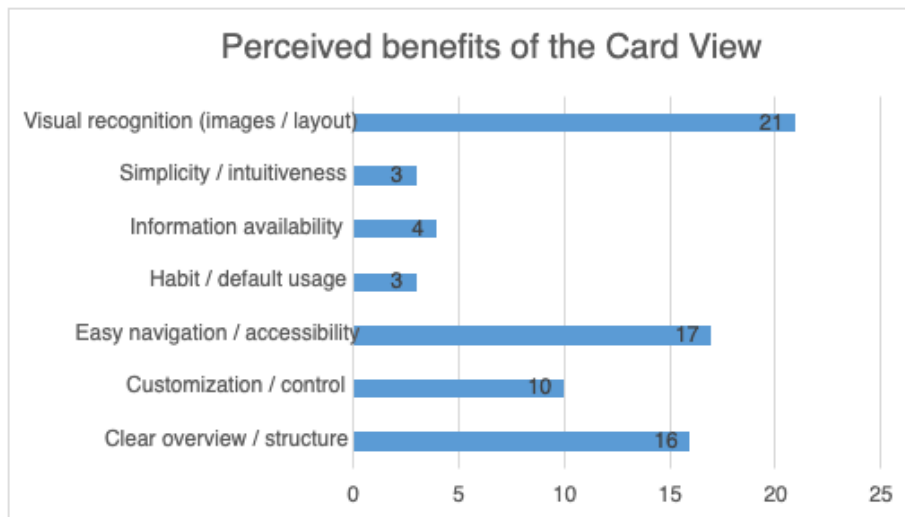


Figure 6: Benefits Card View

Despite the strengths, several issues are consistently reported. A major problem is the number of course cards that are being displayed (39 responses), which leads to clutter because they are currently not being automatically ordered on most recent courses or removed once a course has ended. Especially when old or inactive courses remain visible. Students also report difficulty finding specific courses (22) and limited or unclear customization options (25). Further, the students mentioned cards often lack useful information (20). This means that important details such as deadlines are not clearly visible within this view.

Qualitative responses reinforce these opinions (See figure 7). Students frequently mention problems related to course organization, ordering, and management. For example, new or relevant courses are not always prioritized, and users report having limited control over how courses are displayed. This reduces efficiency, especially for students with many courses (for example, respondents who manage multiple courses, such as teaching assistants (TA's), mentioned this issue in open-ended responses).

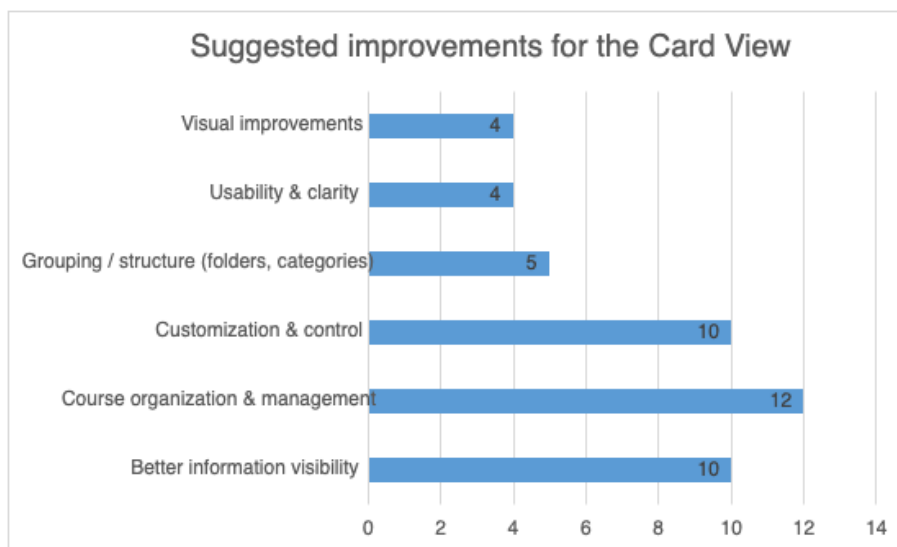


Figure 7: Thematic Analysis on Qualitative Feedback

Overall, the Card view is effective for navigation and visual recognition, which explains its dominant usage. However, it provides limited support for accessing important information and managing courses efficiently. As a result, it does not fully meet students' needs for a clear and informative dashboard.

List View

The List view is used significantly less than the default Card view (16 responses), and serves a different purpose. Respondents report primarily using this view to track upcoming deadlines (10 responses), followed by recent activity (7) and view announcements (5). This tells us that, unlike the Card view, the List view functions mainly as an information-oriented interface rather than a navigation tool.

Students who use the List view value its structured and chronological presentation of information (See figure 8). Responses highlight that it provides a clear overview of deadlines and updates. This allows them to quickly see what needs attention. This makes it particularly useful for tracking time-sensitive tasks.

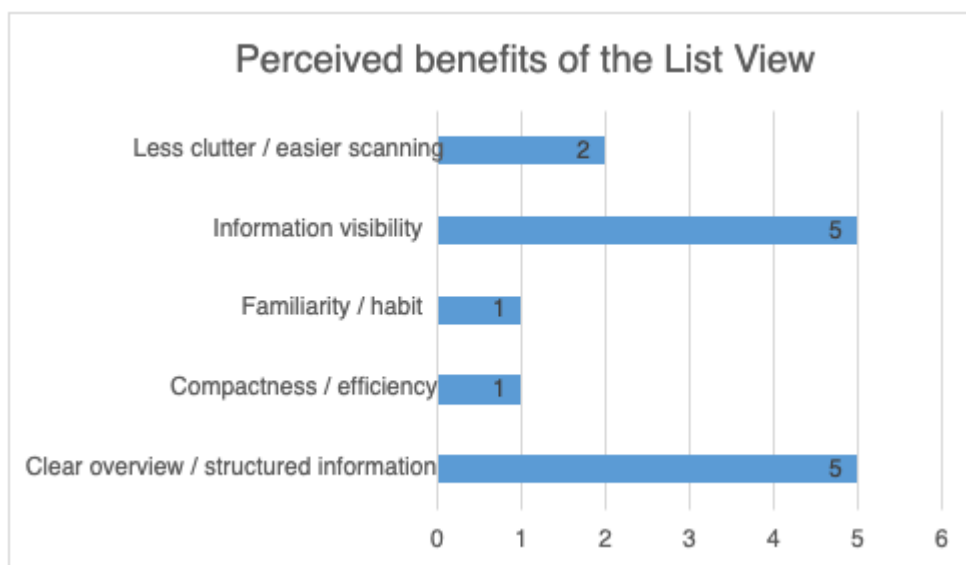


Figure 8: Benefits List View

However, several usability issues limit this views' effectiveness. Students report difficulty distinguishing between items (10 responses) and identifying important deadlines (9). Many also indicated that too many updates are shown at once (8). This results in a cluttered timeline that is difficult to scan (7 responses). These findings suggest that while the view contains relevant information, it lacks clear prioritization and visual hierarchy.

In addition, engagement with the list view is limited. Some students indicate that they are unsure of its purpose or do not actively use it, which also explains the relatively low number of reported issues in earlier responses.

Overall, the List view supports important informational needs, particularly around deadlines and updates. However, its effectiveness is reduced by clutter, limited clarity, and insufficient prioritization. As a result, it is not widely adopted despite offering functionality that aligns with key student needs.

Recent Activity View

The Recent Activity view is used by only a very small number of survey respondents (2). This suggests that it is the least used dashboard view among the respondents, although this finding should be interpreted with caution due to the limited sample size. Due to this extremely limited usage, there is not enough data to draw reliable conclusions about its strengths or usability. The few responses that were collected are inconsistent. One student evaluated the view positively and the other negatively. This further limits the ability to identify clear patterns or common issues.

The low usage among respondents is the most important finding. It suggests that the Recent Activity view is either not well known, not easily discoverable, or not perceived as useful by students. This aligns with earlier findings showing that many students are unaware of alternative dashboard views and tend to rely on the default view.

Additionally, given that students already report issues with information overload and difficulty scanning updates in the other views, it is likely that a view focused on recent activity may not align well with the needs of the users, even if made more discoverable. Students primarily value clear deadlines, prioritization, and quick navigation, rather than continuous stream of updates.

Overall, no strong conclusions can be drawn about the usability of the Recent Activity view itself. However, its extremely low adoption indicates that it currently might not play a meaningful role in students' use of the Canvas dashboard.

Sidebar Function

The intention of the dashboard sidebar is to function as a central overview of tasks, deadlines and recent feedback. However, the results show that it is one of the least effective components of the dashboard.

Usage of the sidebar is low. Most respondents report rarely using it (49 responses), while a smaller group uses it occasionally (22) or regularly (11). A notable number of respondents

(13) are not aware that the sidebar exists. This indicates both low engagement and limited discoverability.

The perceptions of the sidebar are divided, but overall lean towards negative (See figure 9). When asked about clarity, responses are spread evenly across categories. Numbers rate the sidebar as unclear (20), neutral (20), and clear (20), and a significant group finding it very unclear (16). Only a small number of students consider it very clear (5). These numbers suggest that the sidebar lacks an intuitive structure and does not clearly communicate its purpose.

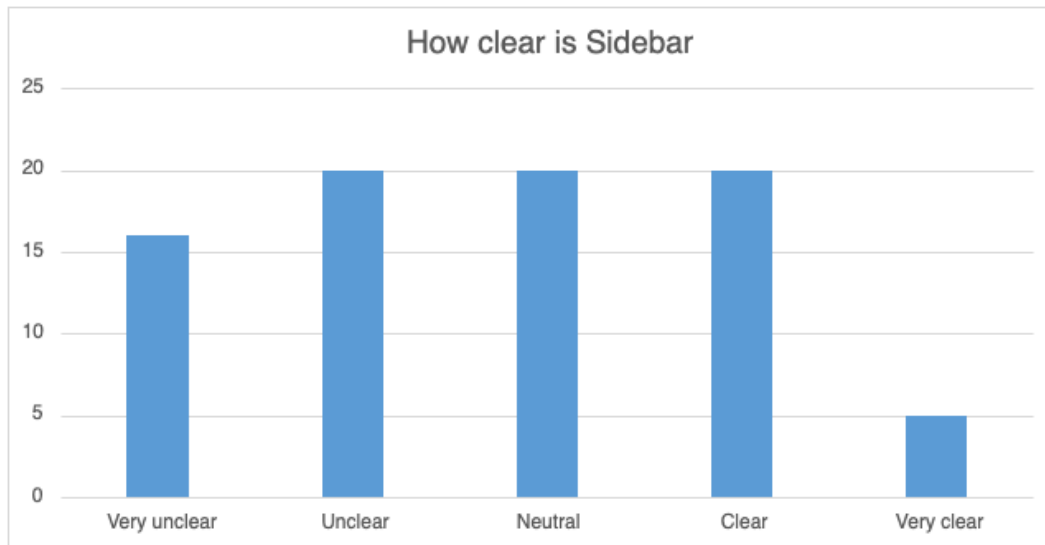


Figure 9: Sidebar Clarity Distribution

In terms of usefulness, the sidebar does not perform better (See figure 10). The majority of students rate it as not useful at all (31) or slightly not useful (17), with only a small group finding it useful. This indicates that students do not rely on the sidebar for managing tasks and deadlines, despite it being intended to provide an overview of this information.

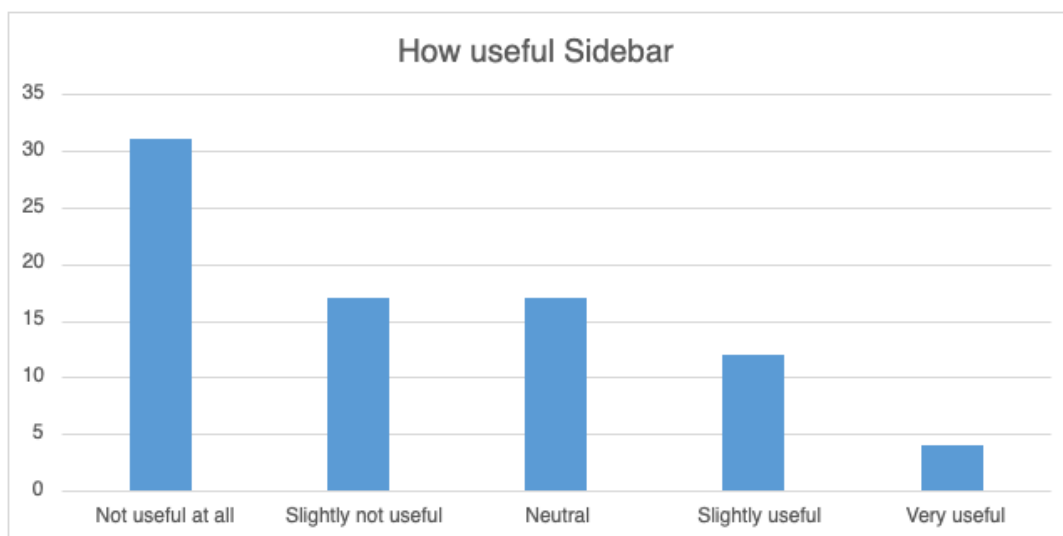


Figure 10: Sidebar Usefulness distribution

The reported issues further highlight the underlying problems. The significantly most common complaint is that too many items are shown at once (61 responses), leading to information overload. Students also report difficulty identifying important deadlines (57), distinguishing between courses (49), and quickly scanning the information (48). These issues point to a lack of prioritization, poor visual hierarchy, and insufficient structure.

Overall, the sidebar fails to fulfill its intended role as a central hub for tasks and deadlines. Instead of providing a clear and deficient overview, it creates confusion and information overload. As a result, students largely ignore it or are unaware of its existence, limiting its effectiveness within the dashboard.

Information Accessibility

To further evaluate how effectively the dashboard supports access to information, students were asked how easy it is to find different types of information on the dashboard. The results show a clear difference between navigation-related tasks and information-related tasks. Students generally find it easy to navigate to a course. Most responses indicate that this is easy or very easy. Similarly, finding recent announcements and recent activity is rated relatively positively.

In contrast, locating important information such as upcoming deadlines and tasks or assignments is said to be significantly more difficult. A notable portion of students report that these are hard to find. Finding feedback or grades also shows mixed results, with no clear agreement between students on ease of access.

These findings indicate that the dashboard performs well for simple navigation, but less effectively for accessing crucial information that is time sensitive. This is important, since deadlines and tasks are central to a student's academic workflow.

Overall, the dashboard does not provide a clear and efficient overview of important information. While users can easily access courses, they experience more difficulty when trying to locate deadlines, assignments, and other key elements. This suggests inconsistencies in how information is presented and prioritized

Cross-Analysis and Key Insights

In this section, the results from previous sections are combined to identify patterns, relationships, and key insights that inform the redesign of the dashboard.

Card vs List vs Sidebar

Component	Main use	Strength	Biggest problem
Card view	Navigation	Easy, visual	No useful info
List view	Deadlines/activities	Chronological view	Cluttered, hard to scan
Sidebar	Tasks/deadlines	Intended hub	Unclear, not useful

The dashboard is fragmented. Each component supports a separate function, but none combine navigation, information, and prioritization effectively. As a result, students do not get a clear overview and often rely on a single component or avoid others altogether.

Needs vs Performance Gap

Students consistently value a clear overview, easy access to deadlines, prioritization of tasks, and some level of customization. In practice, these needs are poorly supported. Deadlines are difficult to find. Information is cluttered. Prioritization is lacking. Customization options are limited.

This reveals a clear gap between what students need and what the dashboard currently provides. The most important features are the least effectively supported.

Feature Usage vs Usefulness

There is a clear mismatch between what students use and what they find valuable. Frequently used features, such as opening courses and visual recognition, support navigation but not task management. On the other hand, features related to deadlines and prioritization are considered important, yet are not effectively used for supported. The sidebar illustrates this particularly well. It is designed to provide an overview, but is perceived as unclear and not useful. Similarly, the Recent Activity view is almost unused, suggesting low relevance.

	High usefulness	Low usefulness
High usage	Opening courses (Card view), visual recognition (colors/images)	Sidebar elements (to-do / coming up)
Low usage	Deadlines overview, task prioritization	Recent Activity view

Awareness vs Usage

A large portion of students are not aware that they can switch between views on the dashboard or that the sidebar exists. However, even among students who are aware of these features, usage remains limited. Students tend to rely on the default Card view regardless of awareness. This indicates that low usage is not only caused by poor discoverability of these features, but also by the lack of perceived added value of the alternatives.

Deadlines Importance vs Findability

Throughout the survey responses, deadlines are consistently identified as one of the most important types of information for the students. At the same time, they report that deadlines are difficult to find and are not clearly presented. This contradiction highlights a core issue. Namely that the dashboard fails to support one of the most critical user needs.

User Behavior and Experience Patterns

Clear differences can be observed between types of users. Less frequent or less experienced users rely on the dashboard for basic navigation and overview, but still experience issues with clutter and unclear information. On the other hand, more experienced or heavy users often avoid the dashboard entirely and navigate directly via the Courses tab. They perceive this to be faster and more efficient.

Students who rely on the dashboard mainly use it as a quick way to open courses, rather than a central overview. Students who navigate via the Courses tab describe the dashboard as an unnecessary extra step that does not add value. This suggests that the dashboard does not scale well with user experience. Newer users struggle with understanding and awareness of features, while experienced users avoid it due to inefficiency and lack of added value.

Customization Demand

Many responders express a need for more control over how the dashboard is structured. Reordering courses, hiding or removing old courses, filtering content, grouping courses, and customizing what information is shown are common requests. Particularly by those managing many courses and frequent users.

Summary

Across all analyses, a consistent pattern emerges. The dashboard is primarily used for navigation, but fails to function as a central overview for managing tasks and information. Although deadlines and task prioritization are identified as the most important aspects of a dashboard, they are difficult to find and not clearly presented. Instead, information is fragmented across different components which do not work well together and often lead to clutter and confusion. User patterns further reinforce this issue. Most students rely on the default Card view, while alternative views are either underused or not known. More experienced users tend to avoid the dashboard entirely and navigate directly via the Courses tab, as they perceive this to be faster and more efficient. This indicates that the dashboard does not scale well with user experience and is not seen as an essential part of student's workflow.

Overall, the main issue of the current dashboard is not missing functionality, but ineffective presentation and organization of information. The system supports navigation well, but does not provide a clear, prioritized, and structured overview of relevant information.

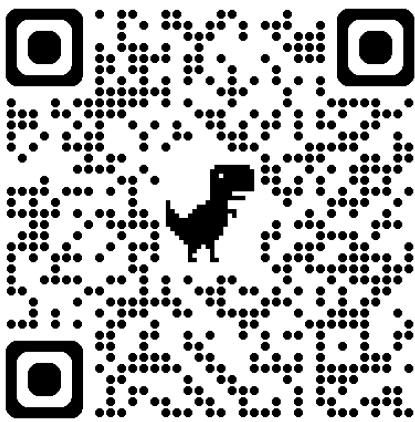
Mock-Up Design

Based on the findings from the survey analysis, several key issues were identified in the current Canvas dashboard. These include limited visibility of deadlines, lack of prioritization, fragmented information across different components, and insufficient user control over the interface. Students also expressed a strong need for a clear overview, efficient navigation, and better organization of information. Using these insights, an initial list of requirements was formulated and based on that we developed an initial dashboard concept.

To try out the final mock-up (so not the initial design we had), you can visit it using this link:

<https://canvasremake.vercel.app/>

Or scan the qr (Note that the mock-up is optimized for desktop use)



Sidebar

The sidebar displays upcoming deadlines and recent grades in a single overview. Deadlines include the due date and are ordered by urgency (See figure 11). Users can filter deadlines based on urgency, where the urgency threshold can be configured by the number of days before the deadline. Urgency is indicated using an icon in combination with a label. Additionally, each deadline includes a calendar icon, allowing users to directly add the deadline to their calendar. Each deadline can be removed from the list by manually clicking the “x”.

View Switching

Switching between Card view and List view is now made explicit and accessible through one-click buttons in the top bar (Figure 11). This replaces the previous hidden menu structure, improving visibility and ease of use.

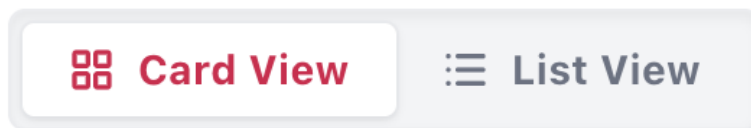


Figure 11: View Switching Feature

Course Search and Filtering

A search bar is introduced to allow users to quickly find specific courses. In addition, users can filter courses based on current courses, all courses, and favorite courses (Figure 12). The functionality of filtering on current courses needs to be considered by developers on how a course is defined as current. What if a person has resit courses from an earlier year? How does the dashboard know when courses start and finish? These are issues that can be answered only by knowing how the backend is structured, which we have no access to and thus is out of scope for now.

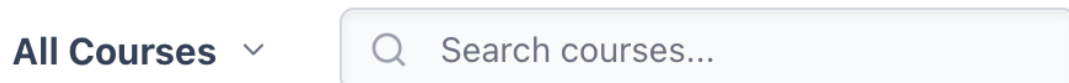


Figure 12: Filtering and Searching Features

First-Time User Guidance

Upon first use, the dashboard displays a tooltip banner explaining key functionalities such as filtering, course customization, and urgency indicators. This improves feature discoverability.

Announcements Section

The Recent Activity view has been removed and replaced with an "Announcements" section integrated into the main dashboard (Figure 13). This decision was based on user feedback indicating low usage of the original view. To prevent the dashboard from becoming cluttered, the announcements section displays only a limited number of items by default. Additional announcements can be accessed through a "Show all" option.

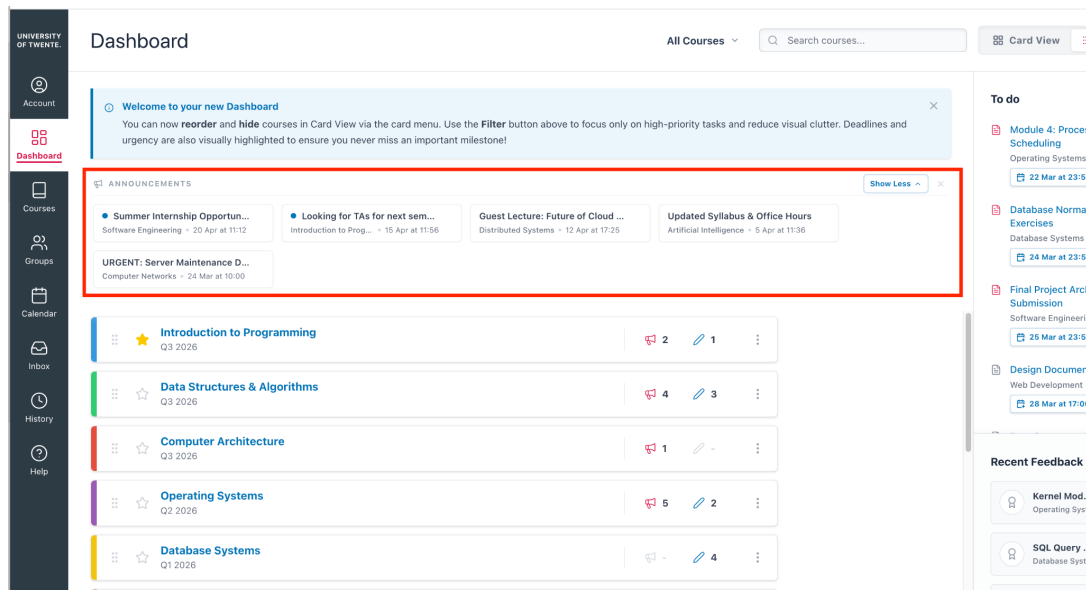


Figure 13: Announcements Section

Design Consistency

The Card view and List view are retained, but both now present the same underlying information in different visual formats. This ensures consistency while still allowing users to choose their preferred layout.

Customization and Control

Users have extensive control over course display. They can mark courses as favorites, hide and unhide courses, reorder courses via drag and drop, and change course card colors (Figure 14).

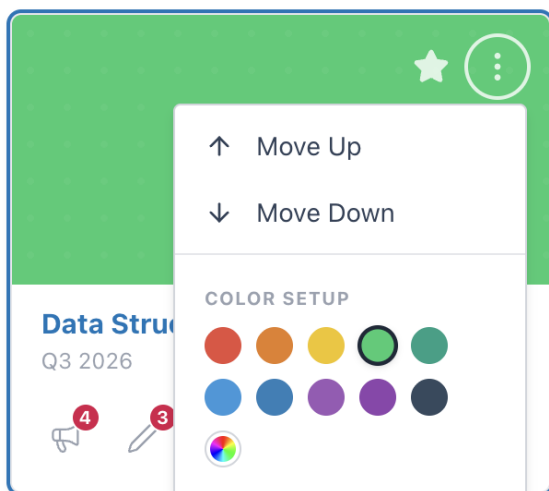


Figure 14: Customization Features

Navigation

Users can open a course by clicking its name and can navigate directly to specific sections (e.g., announcements, assignments) via icons on the course card (Figure 15).

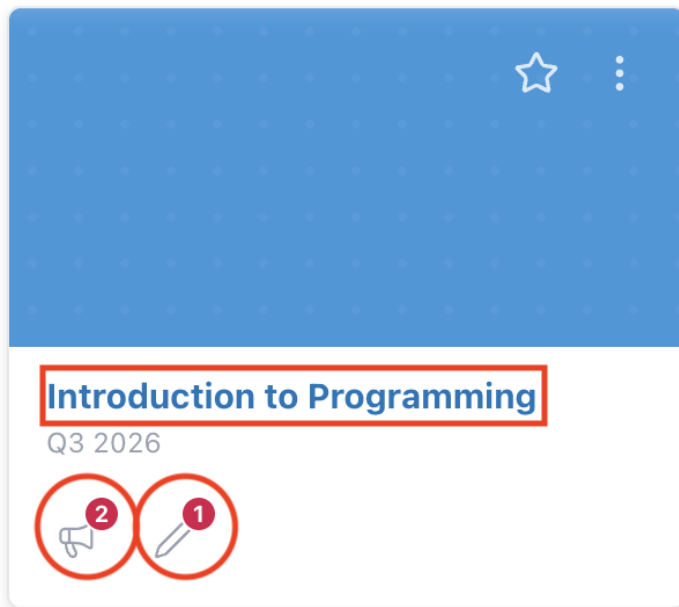


Figure 15: Navigation Features

User Evaluation Method

To evaluate the proposed dashboard design, qualitative user interviews were conducted with students. The interviews were semi-structured and focused on understanding how users interact with the redesigned dashboard compared to the current Canvas dashboard.

We interviewed 10 students: 2 first-year bachelor students, 4 second-year bachelor students, 2 third-year bachelor students, and 2 first year master students. One participant had experience as a teaching assistant. However, this was not treated as a separate user group within the analysis. This perspective was included as additional context, as earlier open-ended survey responses indicated that managing multiple courses can influence dashboard usage. The majority of the participants use the Canvas dashboard multiple times per day. We consciously chose participants who have experience from the dashboard, but made sure to include a few that do not really use the dashboard that much to collect both relative feedback compared to the existing Canvas and also unbiased feedback. Almost all participants use the dashboard primarily to navigate to courses, and none of them uses the sidebar.

Participants were first asked about their current use of Canvas to establish a baseline. This provided context on existing pain points, such as difficulties with finding deadlines, perceived clutter, and external tools used for task management. We did this to check whether these match well with our findings from the survey for consistency, and so they did.

After this, participants were shown the mock-up and asked to share their first impressions. This allowed us to capture immediate reactions and assess the clarity and intuitiveness of the layout without guidance.

Then we went on to the task-based interactions, where participants were asked to complete realistic tasks using the mock-up

Participants were also asked to reflect on specific design choices and features. The evaluation section focused on:

- Clarity and perceived clutter of the dashboard.
- Usefulness of the customization options like filtering, coloring and adding to favorites.
- Visibility and effectiveness of deadlines and urgency indicators.
- Understanding and usefulness of newly introduced components like the announcements section and sidebar structure.
- The concepts of configurable urgency threshold.

Participants compared the redesigned dashboard with the current Canvas dashboard. The purpose of this comparison was to identify aspects of the redesign which were perceived as improvements, which elements were considered less effective or unnecessary, and whether the redesigned dashboard better supports the daily workflow.

The goal of the interviews was to assess how users perceive the added features and design changes we made, and whether these align with their needs and expectations. More specifically, the evaluation aimed to determine whether the redesign improved usability and clarity. Whether newly introduced features such as filtering, urgency indicators, and calendar integration are understood and valued. Whether users would adopt this dashboard in practice, and what improvements or additional features users would suggest. We will use this information to further refine our requirements and mock-ups.

Evaluation Results

First Impressions

Most participants (9 out of 10) reported a positive first impression of the redesigned dashboard. Participants commonly described it as clearer, more organized/cleaner, easier to scan, and visually more appealing. The participants mentioned the redesigned version has a similar style as the current dashboard. This was perceived as positive. The redesign benefits from familiarity. This helps reduce confusion during first use. All participants were able to correctly identify the different sections and explain their purpose. This indicates that the layout is intuitive and easy to understand.

The to-do list stood out most and was frequently mentioned as the central and most useful part of the dashboard. The new position of the announcements was also noticed early and was generally received positively. Although a few were hesitant about it taking too much space. Several participants highlighted the separation between the to-do list, feedback, courses, and announcements sections. This clear separation contributes to a more structured and logical overview. Colors were also noticed immediately and were seen as helpful for distinguishing between courses and identifying urgency.

Task Performance

Deadlines

All participants were able to successfully complete the task of finding a deadline, identifying urgency, and using the calendar feature. The task was completely clear and intuitive. However, a small group (3 out of 10) showed slight hesitation when locating the calendar icon, mainly because it was not immediately visible or because the feature was new to them. A few more participants who did find the calendar feature still indicated that the calendar button was somewhat hidden or maybe not prominent enough.

All participants identified urgency correctly. This was primarily through the combination of the urgency label and the red color.

Most participants (8) indicated they would use the calendar feature. They believe it helps with planning and reduces manual work. A small group (2) however, preferred to continue using their own notes or agenda. This indicates that existing habits can outweigh new features.

Several improvement points were mentioned. Half the participants mentioned the deadlines in the to-do list were not shown in chronological order, with the closest deadline first. This was an overlooked issue during the design phase. Also, some participants suggested that the

deadline date should still be more visually prominent. They prefer a simpler display of the assignment including only its due date and the title.

Suggestions we received for this part of the design will be taken into consideration. For example, replacing the “x” of a deadline that removes it from the list with a checkmark feature to mark tasks as completed could be more useful and clearer for personal organization. An alternative would be to keep the “x” button but be able to filter on those hidden deadlines. Most participants also liked the idea of manually selecting a deadline as urgent. Other minor features mentioned are dynamic resizing of the sidebar (adjusting the border between the feedback and to-do sections) and adding info icons to each section to explain features such as calendar integration. Even though an informational banner is shown to first time users, including all smaller features in it would reduce clarity. Also, adding the info icons, users can still discover these features over time, which supports the overall goal of improving feature discoverability.

Filtering

All participants were able to successfully complete the filtering tasks. These included searching for courses, hiding courses, and marking favorite courses. The functionalities were perceived as intuitive and useful. Most participants (7) found the features in expected locations. However, several participants mentioned issues related to the “unhide” functionality which returns the hidden courses. They found the “unhide” button difficult to locate or confusing to use. Half of the participants found it frustrating and not logical that the system only allows all courses to be unhidden at once.

Filtering courses was widely seen as valuable. All participants agreed that it helps reduce clutter, especially when many courses are present. Favorite courses emerged as the primary filtering mechanism. Many participants (6) mentioned that the “hide” feature felt redundant, since the ‘favorite’ feature already serves a similar purpose and is more intuitive to use. Additionally, none of the participants actively used the “current courses” filter. This suggests that the feature may be redundant. Defining which courses are “current” automatically is also difficult and dependent on context per user. Participants preferred manually controlling this through the favorites feature. The search functionality and being able to drag and drop courses to sort them manually worked well and were also perceived as intuitive and useful.

One specific suggestion we got that was interesting was from the TA participant. They mentioned they would like to filter on courses they are a TA in. Another point made was to position the favorite (heart) icon closer to the course name in the list view where it feels more intuitive.

Navigation

Also in this section all participants were able to successfully complete the navigation task. It was immediately clear where to click for most users (7). This was due to familiarity with the current Canvas structure and the facts that navigation is their primary use of the dashboard. A small group (3) showed slight hesitation after opening the list view for the first time and had to take a quick scan of the layout first. The hesitation disappeared quickly once they noticed the structure is identical to the card view.

All participants indicated that navigation feels faster than in the current dashboard. They liked the ability to switch between the views in one click. Several participants (6) highlighted the efficiency of the list view. They noted that it allows for faster scanning and provides a better overview. Some even mentioned that they would prefer the list view over the card view after using it.

Takeaways regarding this part of the design were to maintain familiarity with current Canvas navigation to avoid confusion as users are already satisfied and familiar with how it works now.

Evaluation of Key Design Elements

Overview

Most participants (8) perceived the redesign of the dashboard as less cluttered and easier to quickly scan compared to the current Canvas dashboard. This is the case in both views, but it was especially noticeable in the List view. Even though the redesign contains more information than the current dashboard, it was described as more organized, better structured, and clearer. The remaining (2) did not necessarily view the dashboard as less cluttered, but still indicated that the improved structure made it feel clearer, more intuitive, and easier to navigate through. An important observation is that the redesign does not reduce the amount of information to reduce clutter. We increased the amount of information per view, since we wanted to show the same information in both views but in different styles. Our goal was to allow users to access all relevant information in one view without experiencing it as overwhelming or cluttered. The feedback we got from the participants indicates we have done so successfully.

Sidebar Function

All participants indicated that deadlines stand out clearly in the redesigned dashboard. The combination of the urgency label and the red color was consistently effective in identifying

priority tasks. The sidebar is therefore highly valued, with most participants (8) describing it as the most important part of the dashboard. It provides a clear and centralized overview of tasks and feedback. This aligns well with the user's primary needs. Improvements mentioned were to make the deadline dates more visually prominent and to ensure deadlines are always chronologically sorted. Participants also appreciated the ability to configure urgency. Either automatically based on the deadline date or manually by marking specific tasks as urgent.

Urgency Configuration

The concept of urgency configuration and how it works within the sidebar was understood by all participants. The idea was clear and intuitive. Most participants (8) even indicated that they would use this feature beyond the default threshold by setting a personal threshold. A smaller group (2) indicated it is a nice feature but not essential for them. Besides the automatic threshold, many participants (7) expressed interest in having manual control to allow them to mark specific deadlines as urgent. There was also a suggestion to introduce multiple urgency levels (medium and high), although this raises concerns about potentially increasing complexity.

Announcements

Most participants (6) understood how the announcements section works and considered it useful. They liked the clear separation from the to-do list and found the placement at the top logical. A smaller group (2) described the section as useful, but not very essential. Also, some participants (4) raised concerns about the relevance of the announcements regarding older or irrelevant messages. Questions were raised about how many announcements should be shown and whether filtering options should be available. A few (4) felt that the section takes up too much space and liked the idea of making it collapsible or even allowing users to hide it entirely.

Customization

Colors were found to help distinguish between courses by most participants (8). Colors support quick recognition and align with how users are already used to identifying courses in the current dashboard. Participants showed less interest in more advanced customization options. The participants mentioned that the current dashboard includes images in the card of a course and that it was perceived as useful by them. However, this is a teacher's side functionality and the participants did not like the idea of being able to edit images themselves. This was perceived as too much effort. The simplicity of the customization feature was praised and we were advised not to complicate it.

Overall Evaluation

The redesigned dashboard was rated significantly higher than the current one by the participants. The current dashboard received ratings ranging from 4 to 7, with an average of 6. The redesigned dashboard was rated between 7,5 and 9, with an average of 8,5. This is an average improvement of about 3 points per participant. All participants indicated that they would switch to the redesigned dashboard if it were available. The main reasons for this improvement were the clearer structure and organization of the dashboard. Particularly the separation between the to-do list, feedback, and announcements. Improved visibility of deadlines was another key factor. Also, a more efficient navigation and the ability to access more information directly from the main view. Participants also appreciated the filtering options and configuration possibilities. Using these insights, we will further refine our mock-up in the next section to better align with the needs and expectations of the students.

Final Requirements

Based on the feedback from the user evaluation interviews, the initial requirements were refined to better reflect the user needs and observed behavior of students. This included clarifying existing requirements, removing less relevant features, and adding new ones where needed. The following section presents these final sets of requirements.

Overview and Information

- The dashboard shall display deadlines, tasks, announcements, and feedback in a centralized overview.
- The dashboard shall present consistent information across different dashboard views.
- The dashboard shall display all upcoming deadlines within the main dashboard view without requiring navigation to another page.
- The dashboard shall display recent feedback and grades with clear identification of the associated course and assignment.
- The dashboard shall display the due date prominently for each deadline.

Prioritization

- The dashboard shall order deadlines based on due dates, with the earliest due date displayed first.
- The dashboard shall distinguish urgent items from non-urgent items using at least one visual indicator (e.g., icon, label, position).
- The dashboard shall display deadlines in a way that allows users to identify due dates without navigating to another page.
- The dashboard shall mark deadlines as urgent when the remaining time is less than or equal to the user-defined urgency threshold.
- The dashboard shall allow users to configure the urgency threshold by specifying a time range before a deadline.
- The dashboard shall allow users to manually mark individual deadlines as urgent.

Integration of Functionality

- The dashboard shall display navigation and information elements within the same interface.
- The dashboard shall provide access to the corresponding course page when an information item is selected.
- The dashboard shall allow users to add assignments or deadlines to their personal calendar.

Navigation Efficiency

- The dashboard shall allow users to access a course page with one click from the dashboard.

- The dashboard shall allow users to switch between different dashboard views with a single interaction.

Customization and Control

- The dashboard shall allow users to reorder courses.
- The dashboard shall allow users to mark a course as a favorite.
- The dashboard shall allow users to remove a course from favorites.
- The dashboard shall display a visual indicator for courses marked as favorite.
- The dashboard shall provide functionality to filter courses based on favorite status.
- The dashboard shall provide functionality to search for a course using a search bar.
- The dashboard shall apply course filters consistently across related information, including announcements.
- The dashboard shall provide functionality to filter information by urgency.
- The dashboard shall allow users to mark deadlines as completed.
- The dashboard shall allow users to restore completed deadlines to the overview.
- The dashboard shall allow users to filter deadlines based on completion status.
- The dashboard shall filter announcements based on the selected course filters.

Layout

- The dashboard shall display deadlines and feedback within a sidebar.
- The dashboard shall allow users to adjust the size of the sidebar.
- The dashboard shall display announcements in a dedicated section separated from deadlines and tasks.
- The dashboard shall allow users to expand the announcements section to view additional items.
- The dashboard shall allow users to hide the announcements section completely.

Discoverability

- The dashboard shall display all primary features within the main dashboard view without requiring hidden menus or additional navigation.
- The dashboard shall provide contextual help through a help function or information icons.
- The dashboard shall provide visual guidance for first-time users by displaying tooltips or onboarding instructions upon first use.

Accessibility

- The dashboard shall follow basic WCAG accessibility guidelines for sufficient color contrast and readability.
- The dashboard shall use at least one non-color visual indicator in addition to color to convey information such as urgency or status.
- The dashboard shall support a dark mode.

Design Refinements

Based on the findings from the user interviews, we refined our mock-up to better align with user needs and expectations. The evaluation highlighted both strengths and areas for improvements. These were translated into targeted design changes. This section outlines the most important adjustments made, focusing on improving usability.

Reminder: To view the interactive mockup, visit:

<https://canvasremake.vercel.app/>

Filtering

Filtering was already perceived as intuitive and valuable, but several redundancies and usability issues were identified. The “hide” feature was removed, as participants consistently described it as redundant compared to the favorites functionality. Favorites were seen as the primary and more intuitive way to manage visible courses. Similarly, the “current courses” filter was removed (Figure 16). Participants did not use this filter and found it unclear how courses are categorized as “current” (this could also be an issue from a developer’s side). Since manually configuring such a filter by the student would effectively duplicate the purpose of “favorites”, the added complexity was not considered justified. The suggested feature to dedicate a filter to TA courses was not implemented for the same reason as why the “current courses” was removed.

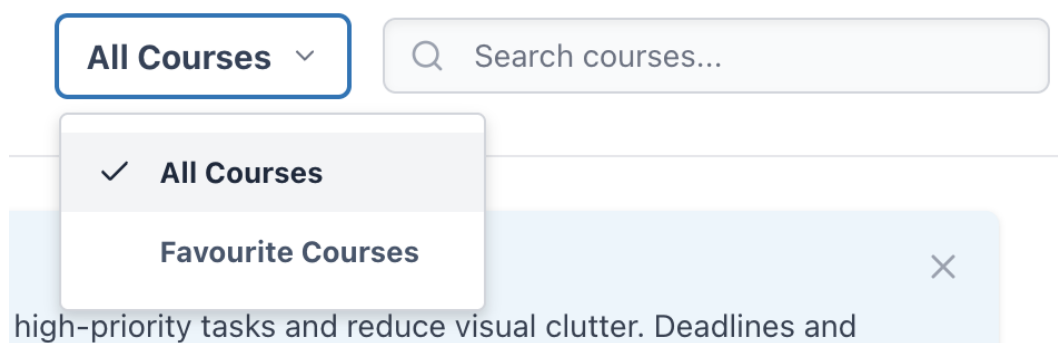


Figure 16: Filter Options

To further improve usability, the position of the favorite button was adjusted in the list view (Figure 17). The icon is now placed directly next to the course name, making it more visible.

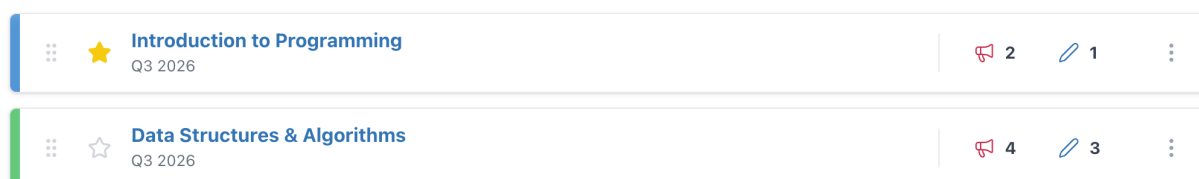


Figure 17: Favorite Button in List View

Additionally, the filtering functionality was extended to announcements by linking it directly to the course filters. This means that announcements are automatically filtered based on the selected courses. This ensures consistency across the dashboard without introducing additional filtering controls.

Sidebar

The sidebar was identified as the most important part of the dashboard. While it was already effective, several improvements were made to enhance clarity and control.

Deadlines are now displayed more prominently by emphasizing the due date and removing less relevant information per item (Figure 18). To improve task management, the removal (“x” button) functionality was retrained but extended. Instead of permanently removing items, a user can now filter and restore hidden tasks. This preserves flexibility while preventing accidental loss of information. We also believe it to be more organized.

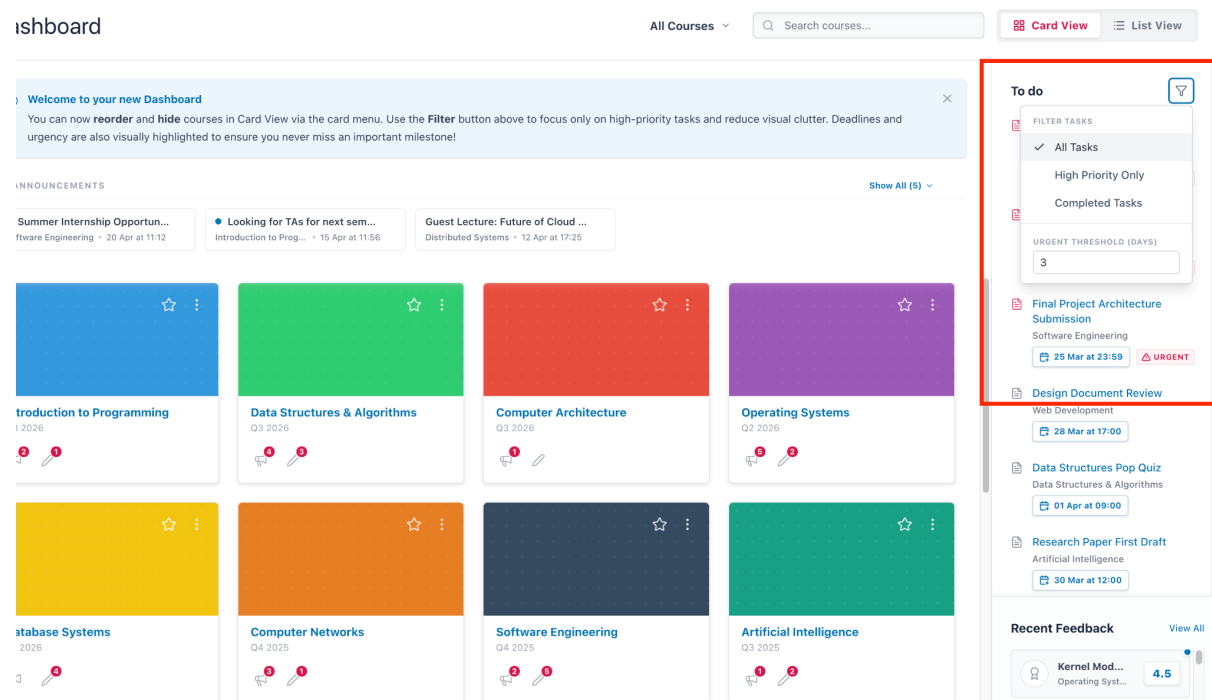


Figure 18: Redesigned Sidebar

Participants also expressed a desire for more control over urgency. Users can now manually mark individual assignments as urgent, complementing the existing automatic urgency indication. The sidebar was also made dynamically resizable. Users are now allowed to adjust the balance between the to-do list and the feedback sections. Potential features such as multiple urgency levels were considered but not implemented. We expected these to introduce unnecessary complexity and make individual to-do items too packed with information.

Announcements

The announcements section received mixed feedback. Particularly regarding space usage and relevance. Users are now able to fully hide the announcements section if they do not consider it useful. Also, to address concerns about outdated announcements cluttering up, this section only shows the incoming announcements of a certain time range (e.g. 10 weeks).

Navigation

Navigation was perceived as efficient and familiar, so changes focused on small usability improvements rather than structural redesign. The visibility of the calendar button was increased, as some participants initially struggled to locate it.

Also, To prevent the tip dialog from overloading first-time users with a large paragraph, the dialog will contain general tips. However, a complementing help button was added to provide contextual information about dashboard features (Figure 19 & 20). This approach supports gradual feature discovery over time.

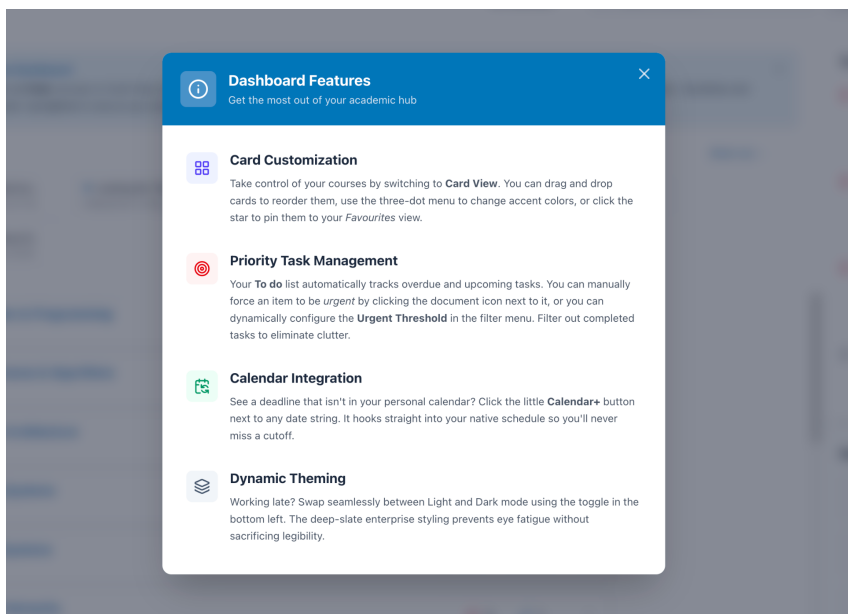


Figure 19: Contextual Information Dialog

A dark mode was introduced to improve visual comfort and align with common user preferences (Figure 20).

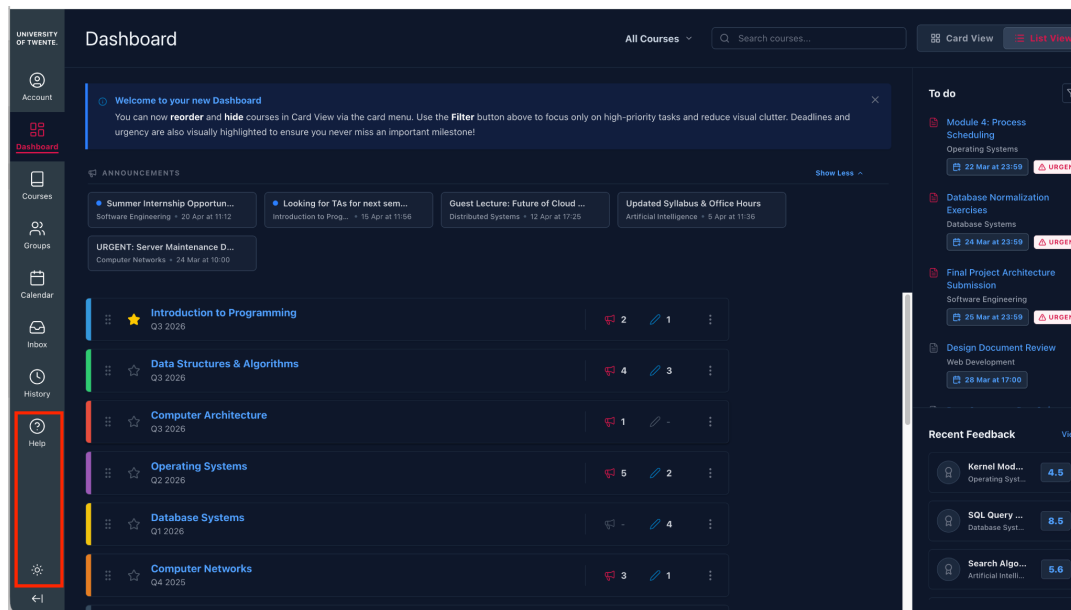


Figure 20: Dark Mode. Highlighted the “Help” and “Dark Mode” Button.

Limitations

Although this project provides useful insights into student needs and possible improvements for the Canvas dashboard, several limitations should be considered.

First, the project focused only on students and did not include other user groups such as teachers or administrative staff. This was in line with the client’s request. However, this means that the resulting design recommendations are only validated from the student perspective. Some features may interact with teacher content or course settings, which are outside the scope of this project.

Second, the redesigned dashboard was evaluated through mock-ups rather than through a functioning implementation. Hereby, participants responded to a realistic prototype, but not to a fully interactive system integrated into Canvas. This means that some aspects of the experience such as long-term use, performance, actual backend logic, and integration with real student data, could not be tested.

A related limitation to this is that some design ideas depend on technical details of the Canvas backend that were not accessible to us. For example, features such as filtering on current courses, identifying TA roles, or determining which courses should automatically be shown may require backend data structures that were outside the scope of this project.

The user evaluation consisted of ten semi-structured interviews. This provided us with rich qualitative feedback. However, the results should not be interpreted as statistically generalizable. The purpose of the interviews was to evaluate clarity, usefulness, and usability

in depth, rather than to measure adoption or preference at scale. Additionally, participants were already familiar with the current Canvas interface. This may have positively influenced their perception of the redesigned dashboard. Therefore, new users might experience the design differently.

Despite these limitations, both the survey and interview findings consistently point toward the same central usability problems and improvement directions. Therefore, the project still provides a strong foundation for further design and development.

Conclusions

This project examined how students at the University of Twente use the current Canvas dashboard and which improvements could make it more effective in supporting their daily academic workflow. The results show that the current dashboard is used primarily for navigation, but does not sufficiently support students in accessing, prioritizing, and managing important information such as deadlines, tasks, announcements, and feedback. Information is fragmented across multiple components, deadlines are difficult to identify, and several dashboard elements are either underused or not perceived as useful.

Based on the survey findings and the user evaluation interviews, a redesigned dashboard concept was developed and iteratively refined. The redesigned version was consistently perceived by participants as clearer, better structured, and more useful than the current dashboard. Students valued the improved visibility and prioritization of deadlines, the more organized sidebar, the clearer separation of information, the added filtering options, and the possibility to access more relevant information directly from the main dashboard view. Therefore, the findings indicate that the main issue with the current Canvas dashboard is not primarily a lack of functionality, but rather the way in which information is presented, organized, and prioritized. By focusing on clarity, integration, prioritization, and user control, the redesigned concept responds more effectively to the needs and expectations expressed by students.

Overall, this project provides both a validated set of user-centered requirements and a realistic dashboard concept that can serve as a strong basis for further development by CES and the university of Twente. It offers practical and evidence-based guidance for improving the Canvas dashboard in a way that better supports students in managing their academic tasks and information.

Appendix

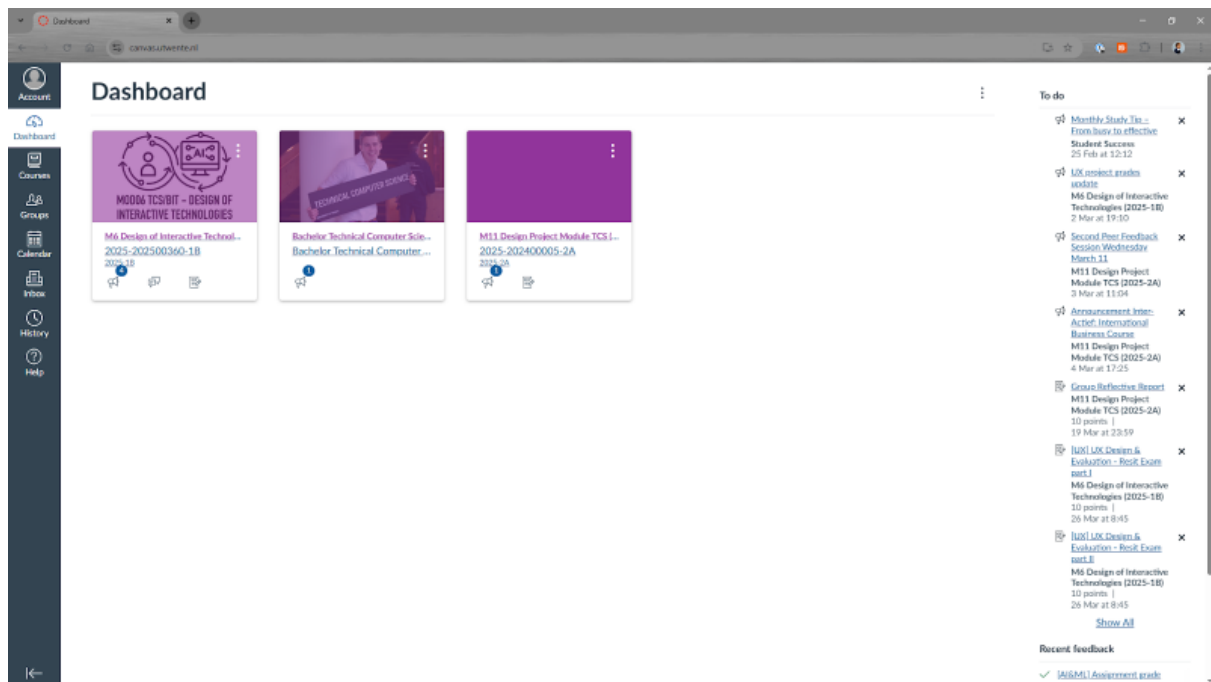
Planning

Week 1	Week 2	Week 3	Week 4	Week 5
Introduction to project group Selecting project	Initial meeting with Client Discussion of project scope and objectives	Peer-review meeting Preparation of survey	Finalizing survey Sending out survey	Supervisor meeting Client meeting Peer-review meeting Still collecting survey data

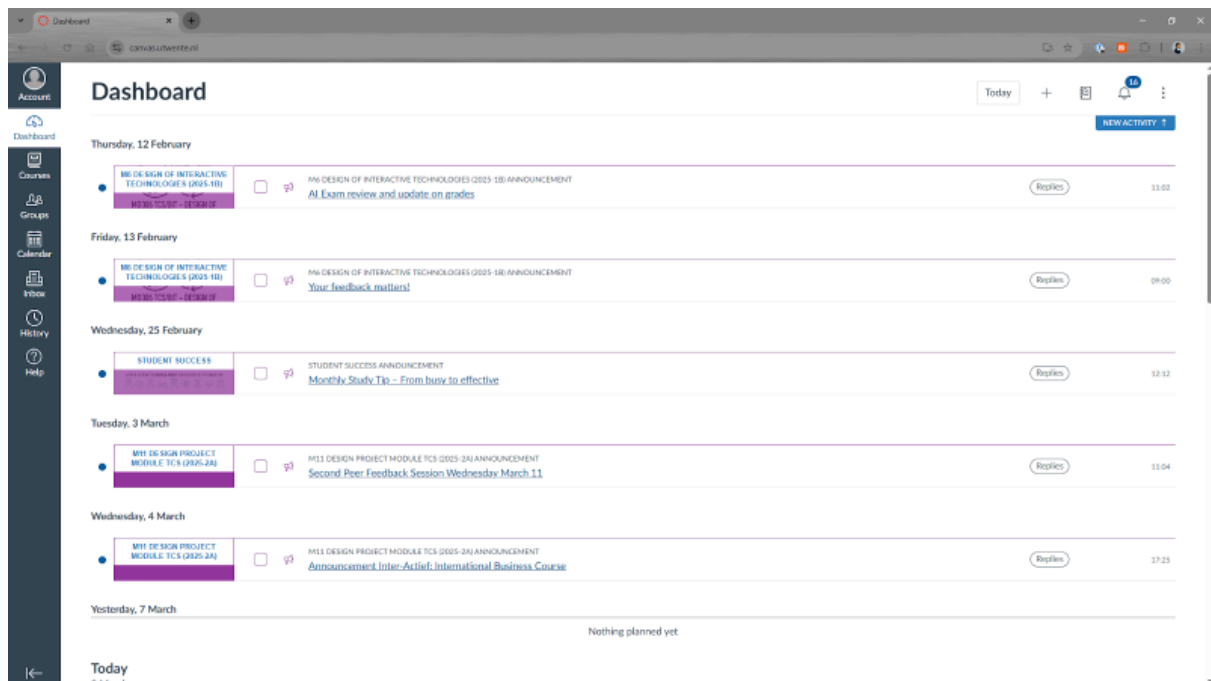
Week 6	Week 7	Week 8	Week 9	Week 10
Analysing of survey results Designing dashboard concept	Client meeting Creating visual mock-up Usability testing: Conducting interviews	Usability testing: Conducting interviews Analysing interview results	Mock-up and requirements refinement Making poster	Final presentation Poster presentation Final design report

Current Canvas Views

Card view:



List view



Recent activity view:

The screenshot displays a Canvas LMS dashboard. On the left is a dark sidebar with navigation icons for Account, Dashboard, Courses, Groups, Calendar, Inbox, History, and Help. The main content area is titled 'Dashboard' and features a 'Recent activity' section. This section contains two lists: '9 announcements' and '7 assignment notifications'. The announcements list includes items like '2025-202400005-2A Announcement Inter-Active: International Business Course' and '2025-202500360-1B UX project grades update'. The assignment notifications list includes items like '2025-202500360-1B Assignment created - [AIGML] Assignment grade, M6 Design of Interactive Technologies (2025-18)' and '2025-202500360-1B Assignment due date changed: [AIGML] Resit Practical Exam, M6 Design of Interactive Technologies (2025-18)'. On the right side of the dashboard, there is a 'To do' section with a list of tasks such as 'Monthly Study Tip: From busy to effective', 'UX project grades update', and 'Second Peer Feedback Session Wednesday March 11'. Below the 'To do' section is a 'Recent feedback' section showing a notification for '[AIGML] Assignment grade'.

Use of AI tools:

During this project, AI tools were used in a limited capacity. In the early stages of the project, they were primarily used for brainstorming purposes, such as generating initial ideas and structuring thoughts. The core research activities, including data collection, analysis, requirement formulation, and design decisions, were carried out by the project team