In this report, we will go over the user interface of the website Canvas from a student perspective and identify the student's objectives on Canvas, the most used features to achieve these objectives, and where breakdowns happen. We conducted 3 contextual inquiries on three students who we will be referring to as U1, U2, and U3 respectively. U1 is a third-year male university student studying Computer Science and minoring in game design and was observed working on their computer desk in their bedroom. U2 is a fourth-year male university student studying Computer Science and was observed in their bedroom. U3 is a third-year male university student studying computer science and was observed in their room. The students shared similar goals in using canvas being the following: 1) Finding upcoming assignments and details on them 2) Submitting assignments 3) taking online quizzes 4) finding course materials and readings necessary for success in class 5) Communicate, share, and organize group projects.

First and foremost, our group was successful at acquiring enough data points to understand major flaws nested within the user interface. For example, throughout U2's contextual inquiry, we've discovered redundancy was an issue. We've discovered this issue when the user was unsure about how to find a quiz that week. He searched and scrolled throughout the course's page and eventually figured out the quiz was in that week's module. However, when the user first opened Canvas, the dashboard is launched with all of the user's assignments, and quizzes with due dates listed. Nevertheless, the user chose to use the course button located on the left sidebar to open his quiz. We speculate the user choose the longer route and ignored clicking the quiz on the dashboard menu due to Canvas's overcomplicated user interface. It's evident the user had no knowledge of the card view of the dashboard which organized and displayed each course as a summarized card. The user instaead clicked on the course tab due to the lack of knowledge about the functionality and redundant features which limit their understanding of the site as a whole. Furthermore, we found users enjoy organization. The calendar was a favorite amongst our users where each reported to check the due days of assignments, quizzes, and upcoming exams. The calendar became a focus for the team, as we try and implement a better mechanism. Also we've found Canvas possess limited communication on its platform. Each user claimed they never used the inbox feature. Where inbox stores all the notifications and announcements from every course, the user tends to ignore this functionality. With more

questions asked, our team discover Canvas doesn't provide peer-to-peer communication. As a result, the user and the instructor choose to use Piazza to communicate with the class.

Additionally, we made 5 different types of models for this course. The flow model highlights how each aspect of the canvas communicates with the user. Each element of canvas assists users to organize course material, check assignments' due dates and communicate with professors and other classmates. The sequence model displays the sequence of events the user performs. Within this model, we discovered multiple redundant features canvas provides. Where the user could simply navigate to a discussion group using the group button on the left toolbar, the user nevertheless navigated to the course tab and finds the group in that class. This also applies to checking assignments. The list view of the dashboard provides a clear view of assignments and quizzes of each class but the user would go to the course to access what he needs. The sequence model allowed us to discover this flaw within the user interface. The artifact model highlights the user interface of the canvas. From this model, we discovered multiple buttons the user never used and redundancy within each main page of the course. The cultural model demonstrated that students and instructors regularly communicated via email, or piazza instead of the canvas even though canvas hosts a discussion board on their site. This allowed our team to brainstorm better mechanisms to keep users on the platform. Lastly, the physical model displayed the work environment, which is U2's case was their bedroom where the assignment was completed.

Throughout our contextual inquiries, we've discovered multiple issues with the current user interface. We first want to focus on design. By removing unnecessary buttons and limiting redundancy, the user interface will become more simplistic and easier to understand. We've discovered buttons that users never utilize such as history, inbox, and help buttons. Moreover, one of the most persistent issues we encountered in our contextual inquiries is the lack of communication, specifically with group project partners. Canvas offers email messaging functionality and discussion threads for communication and file sharing. However, users appear to not like to use these functionalities and preferred to set up third-party alternatives to communicate and share files. This is due to several reasons such as the formal nature of emails make short quick feedback and texts feel awkward and easily missed. Furthermore, the

discussions require navigating through many "general" tabs that are not customizable and thus cannot be tailored for a specific project setup. The communication problem can potentially be solved by adding a group/direct messaging feature formatted as casual texts and text apps rather than the intimidating format of the email-like system currently implemented on Canvas. Also allowing group members to customize their Canvas groups for their specific needs can possibly help to have this feature utilized more by users. Another difficulty students face on Canvas is when professors do not utilize canvas's features effectively. Canvas does not require the professor to set up any modules, quizzes, assignments, etc. This results in some Canvas class pages that have minimal information that is hard to find and forget about upcoming assignments that were not put in on the Canvas page. This is a complicated problem to address. We came up with several potential solutions to help. One of which is requiring professors with a Canvas page to upload all their materials to Canvas and organize the page. Another option is to allow the students to create modules and assignments on the Canvas page that is only viewable to them. For example, a student can create an assignment with the proper due date and details that will show up on their to-do list and no one else. This way students who are relying on Canvas to keep track of upcoming assignments can have all their upcoming assignments organized in one place rather than using a separate app/service to keep track of some classes while others are on Canvas. Additionally, some of the Canvas assignments might also require access to other Canvas materials. U1, for example, had an open book quiz where they were meant to use lecture slides and past homework assignments as help. However, the only way to do that on Canvas right now is to open a separate Canvas tab with the material needed which requires significantly more screen real estate. A picture-in-picture functionality similar to the iPhone and iPad can help optimize screen real estate used. For example, the quiz would be in an adjustable size square floating above the normal Canvas page where the user can access other the files they need while also having access to the quiz.

As we recall the experiences and memories from our contextual inquiries, we can identify a few key errors within the specification that provoked difficulties and confusion while completing the assignment. From the start, the specification was unclear, not specific, and incomplete. Nowhere within the document could our group find specifics about how we should format our final report, the required number of models, and affinity diagrams. Multiple times,

our group believed we completed a section of the assignment just to later discover a Piazza post or class announcement with additional steps to follow. This ultimately forced our team to retrace our steps on multiple occasions due to the visible lack of transparency within the specification. When our team hurdled this obstacle, we found great success throughout each process of the contextual inquiry. During the interview stage, we hypothesized the data collection would be extremely difficult and more so the hardest step of the assignment. However, we were impressed by how comfortable the interviewee participated within our contextual inquiry, and the amount of data we collected throughout each session. When I asked open-ended questions, backtracked to important principles, and behaved oblivious to the interface, I received an excess of feedback, data points, and ultimately a new user perspective for the web-based application. Together as a group, we made certain our interviews would follow the master-apprentice model. As a result, our interview experience was enhanced, and was provided the opportunity to extract large slices of data. To note, each question asked within the interviews contained a purpose. We avoided questions that provoked redundancy within the current interview and only allowed for new mechanisms to be explored. During the group interpretation and affinity diagram stage, we had a fantastic time meeting at the Terrace to discuss the next steps of the project. The group virtually met on Miro.com and constructed a whiteboard with detailed sticky notes which represented each of our interviews. Then, we organized the sticky notes into groups that represented universal themes. Once the smoke cleared, we constructed a hierarchy using the sticky notes from the set of groups. We ranked each sticky note from least to greatest importance and placed it accordingly. After each note was ranked, we plotted a tree-based data structure and completed our affinity diagram. This stage was not difficult whatsoever. Our group enjoyed ourselves and bonded throughout this step. However, we were surprised and rather disappointed when a group member discovered a comment buried within a piazza post that mandated three separate affinity diagrams. As a team, we were confused and perplexed by the instructor's comment especially when we couldn't find this instruction within the specification. This thwarted our opportunity to converse conflicts, new mechanisms, and growth opportunities as a team. As a result, the instruction destroyed our group work environment and forced individuals to complete their affinity diagram depending on their interview experience. After this hurdle, our group advanced to the modeling stage when we created 5 models each. This stage took a few hours longer than expected, however, our team received a full panoramic focus of Canvas's user experience and the

design flaws nested within the user interface. After the models, our group once more came together and discussed our findings. We brainstormed, found solutions, and now are trying to find ways to implement the new mechanisms into a new interface for a greater user experience.