

NOVEMBER 2023

UX METHODS

EXERCISE FOUR

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PURPOSE

INTRODUCTION

DESIGN SPACE

Designing requires an understanding of UX heuristics, which offer a set of ideas and standards that assist designers in creating interfaces that are both user-friendly and efficient. In the realm of usability and user experience design, UX heuristics are simply a collection of best practices and general guidelines that have been discovered from study and experience. Similarly, a cognitive walkthrough facilitates the early detection of possible usability problems and helps designers develop empathy for stakeholders. As part of a usability assessment technique called a cognitive walkthrough, designers mimic users' mental processes as they engage with a system. They take participants step by step through a range of tasks and ask for feedback that directly relates to their experience.

GOAL

Analyze and suggest improvements on a website using two discount methods: cognitive walkthrough and heuristic evaluation

DELIVERABLE

This documentation will entail a full cognitive walkthrough of a specific 3-4 step task on the website Brightspace. As well as focus on Jakob Nielsen's 5 usability heuristics and a mix of 5 other heuristics from different published designers. It will end with a brief synthesis of information gained from both discount methods and display a few suggestions that would enhance the experience for Brightspace users.

COGNITIVE WALKTHROUGH

PROTOCOL

GOAL

Move through one set of steps a user has to take to evaluate the usability and experience for a user. This protocol will be followed when conducting a cognitive walkthrough of specific section on Brightspace.

PROTOCOL

1. Meet the participant
 - a. Confirm their age
 - b. Ask to record observation
2. Define task and goal
 - a. Explain the purpose of the cognitive walkthrough
 - i. "Cognitive walkthrough is a method to help designers understand the user perspective. Participants give insight into pain points and usability issues that can be later iterated on after the session ends."
 - b. Describe their role and the task they expected to perform
 - i. "You will be shown a website on the computer screen. I'll walk you through the steps, be as honest as possible, and share any thoughts you have regarding the screen."
3. Introduce Brightspace
 - a. Brief review of the website
 - i. "Brightspace is an online platform used by educational facilities to organize data from professors/teachers/advisors. The section we're going to be looking at is specifically navigating through three main pages. We're going to start at the Home page and end at the Task page."
 - b. Ask them if they have any prior experience with the website
4. Stage One: Passing Authentication
 - a.
5. Stage Two: Perform Independent Navigation
 - a. "We will begin the independent navigation portion of the session. We are currently on the Authentication/Login page of the website. Your task this round is to start here and get to the Task Page. As you're going through the site, share your thought process out loud."
6. Stage Three: Step-by-Step Analysis
 - a. Step One: Passing Authentication, Step Two: Home Page, Step Three: Calendar Page, Step Four: Task Page
 - i. Share your pain points or any issues you may have found for each step
7. Stage Four: Final Observations
 - a. Questions
 - i. Did the platform seem intuitive?
 - ii. Was navigating through the pages seamless or confusing?
 - iii. Do you have any suggestions for making the site more user-friendly?
 - iv. Were there any foreseeable errors that you could see a user hitting into?
 - v. Any more insights or thoughts you would like to share during your experience using Brightspace?"
 - vi. What is your overall impression of the site?
8. Conclusion
 - a. Thank the participant for attending the cognitive walkthrough session
 - b. Confirm that their findings are allowed to be used in the project

COGNITIVE WALKTHROUGH

PERFORMED

BACKGROUND INFORMATION

Participant Name: Sana Khambati

Device: 2020 Macbook Air

Date: 11/21/2023

Browser: Chrome

EVALUATION

Task	Actions Performed	Thoughts
Pass authentication section	<ol style="list-style-type: none">1. Logged in with Purdue University Career account2. Used Duo passcode to clear two-factor authentication	<ul style="list-style-type: none">• Autofill feature makes it easy• Simple process• Not very intuitive for first time users
Home Page to Calendar Page	<ol style="list-style-type: none">1. Looked at the navigation bar2. Clicked on Calendar Page	<ul style="list-style-type: none">• Calendar bar is good but it shouldn't be under the resources (Home Page)• Super accessible however, the "Month" tab should be the landing page after clicking on Calendar• A filter can be helpful to show specific assignments• A key to understand the color for each class is needed
Calendar Page to Task Page	<ol style="list-style-type: none">1. Clicked on an assignment2. Clicked "More"	<ul style="list-style-type: none">• To move from the month tab to the task page, the interface made it confusing to get there• "I've used Brightspace for 2 years and I didn't even know this was possible to see"• "Having to click on "More" is error prone, I didn't know what that meant"• A shortcut or button to get a user to the course page would be helpful

FINAL OBSERVATIONS

Navigating through Brightspace is generally intuitive and straightforward, but there are a few improvements that could further improve the user experience. Firstly, elevating the content bar higher on the screen would provide users with a more convenient view of their assigned tasks for the day. Secondly, setting the default calendar view to "month" would offer a clearer overview of daily commitments. Lastly, implementing a shortcut from the task page directly to the class page would streamline the user's journey, eliminating the need to navigate back to the home page.

COGNITIVE WALKTHROUGH

SCREENSHOTS

GOAL

This section will show a step-by-step flow of starting at the Brightspace home page and ending on a specific task from the calendar page. These are the exact screens the user will see when participating in this project's walkthrough.

STEP ONE: PASSING AUTHENTICATION

1

Enter Purdue University credentials

PURDUE UNIVERSITY

Purdue Login

Career Account Username

Password

[Need help?](#)

Log in

Purdue University, West Lafayette, IN 47907 USA, (765) 494-4600
© 2023 Purdue University. An equal access, equal opportunity university.

If you have trouble accessing this page because of a disability, please contact the Service Desk at it@purdue.edu or (765) 494-4000.

STEP ONE.FIVE: PASSING AUTHENTICATION

PURDUE UNIVERSITY

Enter your passcode

Verify it's you by entering a passcode from the Duo Mobile app.

Passcode

Verify

[Other options](#)

[Need help?](#)

Secured by Duo

1.5

Enter two-factor authentication passcode from the DUO app

COGNITIVE WALKTHROUGH

SCREENSHOTS

STEP TWO: BRIGHTSPACE HOME PAGE

2

Select the "Calendar" button to access the next page

The screenshot shows the Brightspace Home Page for Purdue West Lafayette. At the top, there is a navigation bar with the Purdue University logo, the text "Purdue West Lafayette", and a user profile for "Aashika Parekh". Below the navigation bar, there is a header with "Announcements", "Calendar", and "Help" links. The "Calendar" link is highlighted with an orange box and an arrow pointing to it from an orange callout box. The callout box contains the number "2" and the text "Select the 'Calendar' button to access the next page". The main content area features a grid of course cards for Fall 2023, including PSY 23500-004, SCLA 10100-132 LEC, ANTH 21000-004 DIS, CGT 27108-001 SD, ENTR 20000-001 LEC, and ExpStudio 272-372-572 - Merge. To the right, there are sections for "Announcements" (stating "There are no announcements to display."), "Technology Resources" (listing "Purdue IT Student Help", "Call 765-494-4000", and "Microsoft Office 365 (free for all students)"), "Academic Help" (listing "Academic Success Center", "Disability Resource Center", "Purdue Libraries", "Ask a Librarian", and "The Purdue Online Writing Lab (OWL)"), and "Campus Resources" (listing "Dean of Students", "Counseling and Psychological Services", "Schedule appointments with advising and other campus resources", "Center for Advocacy, Response & Education (CARE)", "Steps to Leaps", "Shovel: a time management tool (free for all students)", and "Center for Career Opportunities"). At the bottom, there is a "Purdue West Lafayette: My Surveys" section with a link to "Click here to access course evaluation information and results." and a "Calendar" section showing the date "Monday, November 13, 2023" and a list of "Upcoming events" including "Course Assignment DUE" and "Essential Career Skills Series - Collaboration".

COGNITIVE WALKTHROUGH

SCREENSHOTS

STEP THREE: BRIGHTSPACE CALENDAR PAGE

3
Select a specific task

Announcements Calendar Help

Agenda Day Week Month List Print Settings Subscribe Search Events

November 2023

Tasks

Tech Tweet DUE
© Fall 2023 ANTH 21000-004 DIS
Nov 17, 2023

More...

STEP FOUR: BRIGHTSPACE TASK PAGE

4
View the task and due date

Announcements Calendar Help

November 2023 Tech Tweet DUE Print Settings

Tech Tweet DUE
© Fall 2023 ANTH 21000-004 DIS
Nov 17, 2023 - Nov 17, 2023

Tasks

Add a task...

NIELSEN HEURISTICS

BRIGHTSPACE

DEFINITIONS

Heuristics: loosely defined set of rules

Match between the system and the real world: “The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order” (Nielsen, 2).

Recognition rather than recall: “Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed” (Nielsen, 6).

Aesthetic and minimalist design: “Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility” (Nielsen, 8).

User control and freedom: “Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process” (Nielsen, 3).

Flexibility and efficiency of use: “Shortcuts — hidden from novice users — may speed up the interaction for the expert user so that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions” (Nielsen, 7).

GOAL

After showing a brief cognitive walkthrough of Brightspace, the documentation will provide five heuristics from Nielsen's list of 10 UX heuristics. The home page has three pain points for not showing a proper “Match between system and the real world” and “Recognition rather than recall”. The calendar page doesn't have a robust “Aesthetic and minimalist design”. The final page of displaying the desired task fails to show “User control and freedom” and “Flexibility and efficiency of use”. This section will highlight the heuristics by annotating each page and clarifying why Brightspace doesn't meet these specific requirements.

NIELSEN HEURISTICS

BRIGHTSPACE

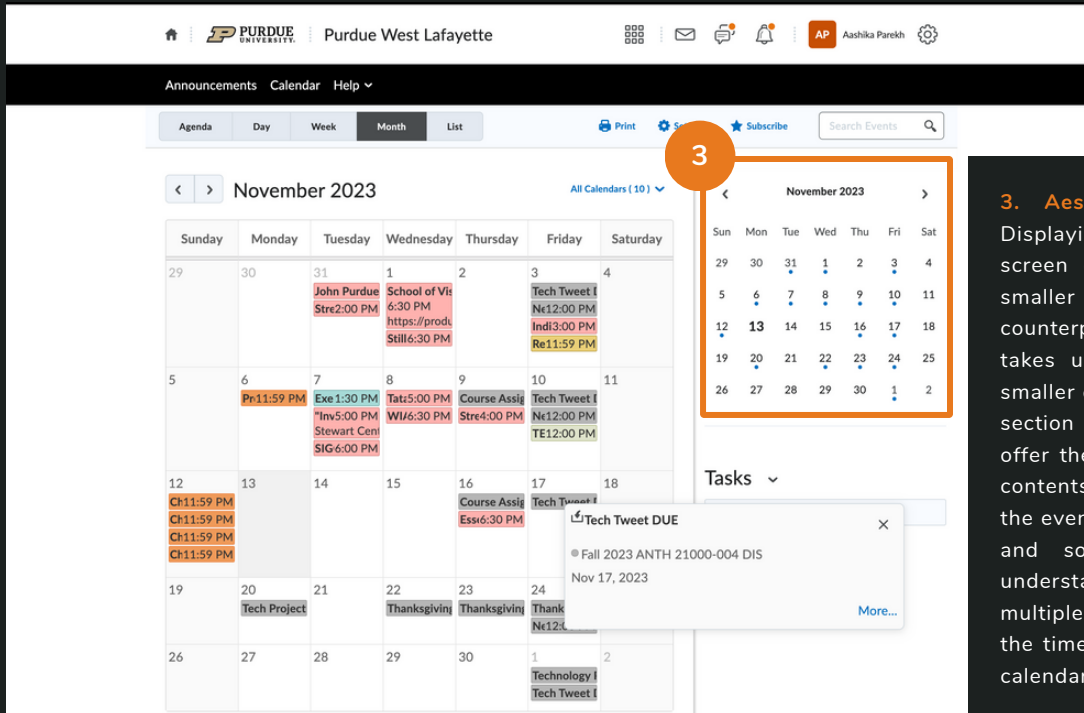
The screenshot shows the Brightspace interface for Purdue West Lafayette. At the top is a navigation bar with the university logo, name, and user profile (Aashika Parekh). Below this is a secondary navigation bar with links for Announcements, Calendar, and Help. The main content area features a large banner image of the Purdue University archway. Below the banner, the 'My Courses' section is visible, showing a list of courses for Fall 2023. To the right of the courses, there are three vertical panels: 'Announcements', 'Technology Resources', and 'Academic Help'. The 'Announcements' panel is highlighted with an orange box and a red circle containing the number '1'. The 'Technology Resources' panel lists links for IT Student Help, a phone number, and Microsoft Office 365. The 'Academic Help' panel lists various support centers and resources. Below these panels, the 'Calendar' section is visible, showing the date Monday, November 13, 2023. The 'Upcoming events' section is highlighted with an orange box and a red circle containing the number '2'. It shows a list of events, including a 'Course Assignment DUE' for Fall 2023 ANTH 21000-004 DIS and a '6:30 PM' event for Essential Career Skills.

1. Match between the system and the real world: The system on the right does not follow a logical order. This column should be relative to what information has been recently viewed by a user or should structure the content from most important to least important. The current layout forces the user to take an extra couple of seconds to scroll down to view the calendar section. This is probably of the highest importance when a user checks the Brightspace homepage because it displays their coursework due dates. To make this page design-friendly the “Announcements” drop-down can be placed horizontally on top of the “My Courses” section. This offers the next two columns to be pushed up. Additionally, the resource link section is not commonly used every day. So, Brightspace should switch the order and have the Calendar section show up first.

2. Recognition rather than recall: The calendar doesn't clarify if an assignment has been submitted. When taking multiple classes a semester it's hard to keep track if a task has been completed or not. Therefore giving the user some type of identification would be helpful. For example, if a task has been submitted a light green highlight can be shown under the text. If an assignment's due date is arriving in a day, the time can be shown in red. This way students don't have to memorize due dates and finished work, the interface will provide the information for them.

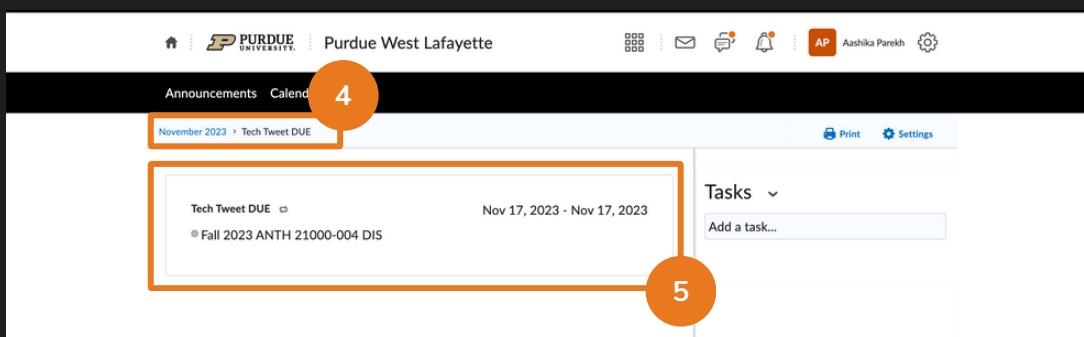
NIELSEN HEURISTICS

BRIGHTSPACE



3. Aesthetic and minimalist design:

Displaying two calendars on the same screen clutters the content. Having the smaller calendar next to the larger one is counterproductive, due to the space it takes up on the screen. Removing the smaller calendar and dropping the "Tasks" section below the main calendar, it can offer the user an even larger view of the contents within the calendar. As of now the events and tasks are not differentiable and some of the titles are barely understandable. Additionally, having multiple colors without a legend increases the time the user has to engage with the calendar negatively.



4. User control and freedom: Utilizing breadcrumb navigation is not effective if it isn't clearly labeled, this hinders the user's ability to traverse throughout the website. A more intuitive design would be starting by labeling "Home" before "November 2023". This should give the user the right indication of where they navigated. Next, removing the calendar month and switching it to "Calendar", will offer a more accurate representation of the previous page they were at. Lastly, since this page isn't as full with content as some of the others, increasing the font size, will help the breadcrumbs be noticed faster.

5. Flexibility and efficiency of use: This section doesn't offer any next steps for the user to take to complete the desired task. Offering opportunities like sending them to the course page or the submission page to view the appropriate details needed to be successful on the assignment would be beneficial. As well as offering them the small calendar above the "Tasks" section would be helpful. This would allow the user to notice their task's deadline and compare it to other events/tasks in the calendar. This feature can be easily added since the new desired layout is displayed in the screenshot above.

MIXED HEURISTICS

BRIGHTSPACE

DEFINITIONS

Reduce Users' Minimum Steps: "Reduced-step sequences might also be offered for experienced users, such as a keyboard or toolbar shortcuts to familiar selection sequences, or user-defined macros." (Connell).

Make the UI Aesthetically Appropriate: "The interface will have a tractive, appropriate, simple design free from errors. The interface will provide a satisfying user experience with the highest possible fidelity." (Weinschenk).

Users Should Know Where They Are: "It should be as easy as possible for the user to move (in steps or stages) between system Explanation states and between functional components. There should be no unnecessary retraction of steps already made." (Connell).

Strive for Consistency: "Standardizing the way information is conveyed ensures users are able to apply knowledge from one click to another; without the need to learn new representations for the same actions. Consistency plays an important role by helping users become familiar with the digital landscape of your product so they can achieve their goals more easily." (Wong).

Present New Information with Meaningful Aids to Interpretation: "This means employing metaphor where possible (although avoid being too esoteric) and familiar frameworks. Metaphors can be used to make the unfamiliar, familiar. Take desktop folders that hold your files – they are not really folders, but they have visually represented this way for users to understand concepts, systems, and frameworks more easily." (Mortensen).

GOAL

These next five heuristics have been collected from various sources. The first discusses the need to "Reduce Users' Minimum Steps" which can be shown on any course home page. The second heuristic shows the importance of "Making the UI Aesthetically Appropriate" mainly on the Home page due to the irregular spacing. The next source displays the requirement of having "Users know where they are" on the website, specifically targeting the navigation bar. The fourth rule is to always "Strive for consistency", which seems to be lacking throughout the site. Lastly, changing the icons will help "Present New Information with Meaningful Aids to Interpretation" and reduce speculation.

MIXED HEURISTICS

BRIGHTSPACE

This screenshot shows a Brightspace course page. The top navigation bar includes the Purdue University logo, the course title 'Fall 2023 CGT 27108-001 SD', and user information 'Aashika Parekh'. Below this, a secondary navigation bar contains links for 'Course Home', 'Content', 'Classlist', 'Grades', 'Class Progress', 'Course Tools', and 'Help'. A red banner at the top of the main content area reads 'UXD2 FALL 2023'. Below the banner, an 'Announcements' section displays a welcome message: 'Welcome to UXD Studio 2!' posted on Aug 22, 2023. To the right, a 'Calendar' section shows 'Saturday, November 5' and 'Upcoming events'. An orange box with the number '6' highlights the 'Help' link in the top navigation bar.

6. **Reduce Users' Minimum Steps:** Having a navigation bar and good organization is pointless if it doesn't increase efficiency and user experience. On the course page, there is no option to pin recent paths or specific files that a user accesses a lot. Just like most web browsers, adding a "Shortcuts" or "Bookmarks" drop-down to the navigation bar would allow users to click on items that they launch frequently. This can significantly cut down on clicks and seconds that the user was previously wasting by just moving through screens.

This screenshot shows the Brightspace home page for 'Purdue West Lafayette'. The top navigation bar includes the Purdue University logo, the institution name 'Purdue West Lafayette', and user information 'Aashika Parekh'. Below this, a secondary navigation bar contains links for 'Announcements', 'Calendar', and 'Help'. The main content area features a large banner image of the Purdue University archway with the text 'Purdue West Lafayette'. Below the banner, a 'My Courses' section displays a list of courses: 'Fall 2023 PSY 23500-004 LEC', 'Fall 2023 SCLA 10100-132 LEC', and 'Fall 2023 ANTH 21000-004 DIS'. To the right, an 'Announcements' section states 'There are no announcements to display.' Below this, a 'Technology Resources' section lists links for 'Purdue IT Student Help', 'Call 765-494-4000', and 'Microsoft Office 365 (free)'. An orange box with the number '7' highlights the 'Help' link in the top navigation bar.

7. **Make the UI Aesthetically Appropriate:** The Brightspace Home page and course pages are arranged well, however, there is a sizable padding on both the left and right side, that effect the overall look of the site. Since the content has been shrunk down to the middle, the font size has to be smaller, making it more difficult for the user to see. The design also has the header and navigation bar taking up the full length of the webpage, however, the real content that's accessed and used is smushed together. This website doesn't seem to have a proper balance with its functionality and follow UI design fundamentals.

MIXED HEURISTICS

BRIGHTSPACE

The screenshot shows the Brightspace interface for a course titled "Fall 2023 CGT 27108-001 SD". The navigation bar at the top includes links for "Course Home", "Content", "Classlist", "Grades", "Class Progress", "Course Tools", and "Help". A user profile for "Parekh, Aashika" is visible in the top right. The main content area displays a "Progress Summary" section with "Grades Received: 3" and "Objectives" showing "Learning Objectives Passed: 0% (0/0)". A sidebar on the left lists various course components: Summary, Grades, Objectives, Content, Discussions, Assignments, Quizzes, Checklist, and Surveys. An orange circle with the number 8 is placed over the navigation bar, and another orange circle with the number 9 is placed over the sidebar.

8. **Users Should Know Where They Are:** Indication is vital when it comes to displaying where the user is on the website. The navigation bar gives no feedback to the user after a page is clicked. This can often make it very confusing to a student when trying to get to what they want. This issue can simply be fixed by adding a hover or underline under the page that's selected. A quick and easy fix that will eliminate the confusion of where a user is located on the website.

9. **Strive for Consistency:** Compared to every other page on the Brightspace website, the "Class Progress" section is the most inconsistent. Firstly, the font size is much larger than the rest of the pages. Second, the sidebar on the left is designed significantly differently from the sidebars on the "Course Home" and "Content" tabs. As well as the random repetition of including a profile holder picture with the user's name on the top left. The user already knows that the "Class Progress" pertains to them since they are the ones signed into the account, which is also shown on the top right heading bar.

The screenshot shows the Brightspace interface for a course titled "Fall 2023 CGT 27108-001 SD". The navigation bar at the top includes links for "Class Progress", "Course Tools", and "Help". A user profile for "Aashika Parekh" is visible in the top right. The main content area displays a "Progress Summary" section with "Grades Received: 3". A dropdown menu is open, showing options: Profile, My Portfolio, Notifications, Account Settings, Progress, English (United States), and Log Out. An orange circle with the number 10 is placed over the dropdown menu. Below the main content area, there is a section titled "Organization Related" with a link for "Media Library". Another orange circle with the number 10 is placed over this section.

10. **Present New Information with Meaningful Aids to Interpretation:** Brightspace does an inadequate job presenting information using common icons that users are widely familiar with. For example, the heading bar on the top right has 2 buttons: a profile and a settings icon. When the profile section is clicked, the user can see "Account Settings" pop up on the menu. However, when the settings icon is clicked, "Organization Related" content is shown. This can disorient a user's understanding on the meanings of familiar aids. Either the settings icon should switch to an icon that represents "media library" content, or the "Account Settings" option should be switched under the settings icon.

ANALYSIS

SYNTHESIS

RESULTS

After performing a cognitive walkthrough and UX heuristic review of Brightspace a number of important results surfaced, illuminating both the positive and the negative. The website showed a considerable commitment to following usability guidelines, especially with regard to system visibility and error avoidance. Broadly speaking the uniformity of the visual design and layout was maintained throughout the different pages, which enhanced the user experience.

The cognitive walkthrough did, however, highlight several possible pain points with user flow and navigation. During the tasks, these suggestions were made. Users would have a more convenient view of their daily duties if the content bar was raised higher on the screen. Second, using "month" as the default calendar view would provide a more lucid summary of daily obligations. Last but not least, creating a shortcut that goes straight from the task page to the class page would simplify the user's experience by removing the need to return to the main page.

Evaluating the website through 10 UX principles, resulting in a new range of feedback circulating the lines of consistency, efficiency, flexibility, and minimalism. The user interface across many of the pages seemed disconnected and disrupted the flow of the site. There's a need to create more methodical features that will lessen the clicks and time needed for users to get from point A to point B on the Brightspace. The rigid structure of content formulated on the screen caused the aesthetic of the design to be displeasing. Additionally, there were times when the terminology used in instructions and prompts did not match users' mental models, which could lead to misunderstanding. Specific aids were used incorrectly which furthered confusion on basic functions.

Overall, the cognitive tour and UX heuristic assessment revealed a combination of strong points and room for development. Although the website showed a great commitment to accessibility and usability principles, improving user feedback systems and resolving navigational issues could further improve the overall user experience.

ANALYSIS

SUGGESTIONS

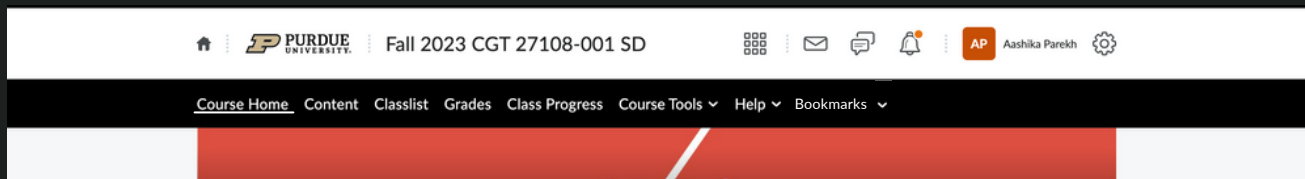
NAVIGATION

The non-course page navigation bar will fuse into the top header. Instead of only having 3 tabs, it will display the “Home”, “Calendar”, “Course”, “Mail”, “Comments”, “Alerts”, “Profile”, and “Extra”.



EFFICIENCY

Including a bookmarks tab on the course page navigation bar and including indication to help the user know where they are.



CONSISTENCY

All sidebars will follow the same layout and aesthetic. The font size will be uniformed throughout the website, and aids like icons and images will be used according to its common global interpretation.

MINIMALISM

Once the calendar tab is pressed the page will display the “Month” view calendar. There will be no smaller calendar on this page, and the Task section can be accessed using a sliding side panel on the right side. This will ensure that the content on this page is easily digestible.

CONTROL

Redesigning the breadcrumbs on the “Task” page to be more accurate in demonstrating the path that the user has taken will offer flexibility and ease to the user.

RECOGNITION

Revealing the submitted assignments on the vertical calendar bar can facilitate stronger work ethic and reduce the need for the user to recall prior information.

RESOURCES

EXERCISE 4

Connell, Dr. Iain. Full Principles Set.

<http://www0.cs.ucl.ac.uk/staff/i.connell/DocsPDF/PrinciplesSet.pdf>.

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