SUPPORTING STUDENT WORKFLOW IN ONLINE LEARNING

Design considerations for UW Continuum College

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INTRODUCTION

This booklet contains design guidelines and suggestions for instructional designers at the University of Washington's Continuum College.

Our work is based on more than four months of research, analysis, and design activities, including: an extensive literature review; surveys of online instructors and students; interviews with online instructors, students, and instructional designers; contextual inquiry with online students; and design exercises with online instructors and students; culminating in two co-design sessions with online students. Documents related to and describing this work are located in the Appendix.

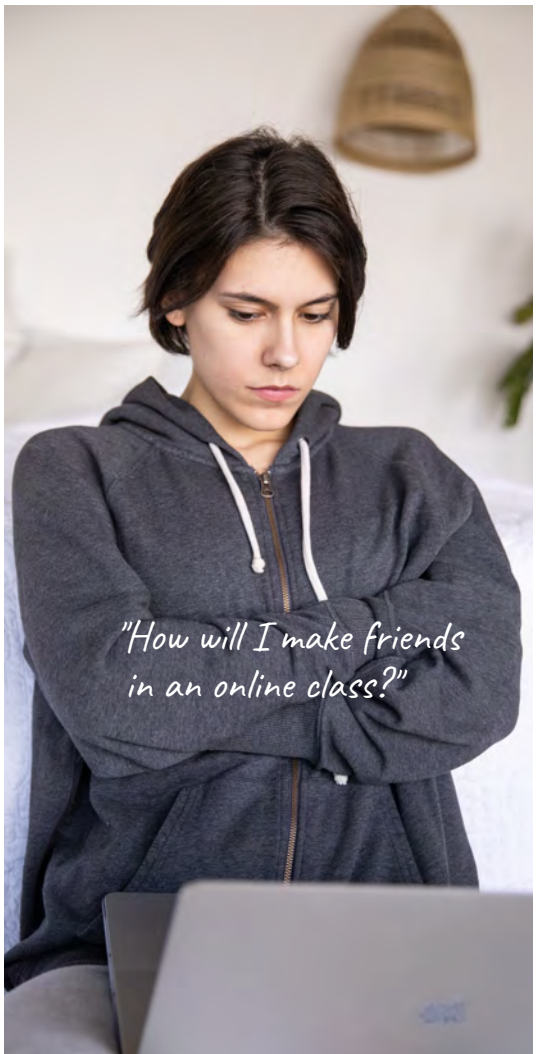
We present to you our key findings, solutions to high-priority pain points, an assessment of the instructional design process, and best practices guidelines. We have included images that highlight ideas and concepts that can be incorporated into future course designs.

Our hope is that this document can serve as a tool for course design that prioritizes student needs and input. The wireframes presented within are concepts only. To fully develop concepts and assure they align with user needs you will need to take the next step of conducting user testing before creating final designs.

SECTION 1: INSIGHTS TO SOLUTIONS

KEY INSIGHTS

- The Learning Management System (LMS) does not support student workflow
- Students are unprepared for the online learning environment



FINDINGS & RECOMMENDATIONS

FINDING

The most consistent theme throughout our work was students experience pain points when using the LMS and when learning new digital tools.

Across the board, students struggled with:

- Finding things.
- Course organization.
- Course content, assignments, and tools are nested in too many menus and pages.

RECOMMENDATION

Redesign LMS to support student needs, tasks, and workflow.

FINDING

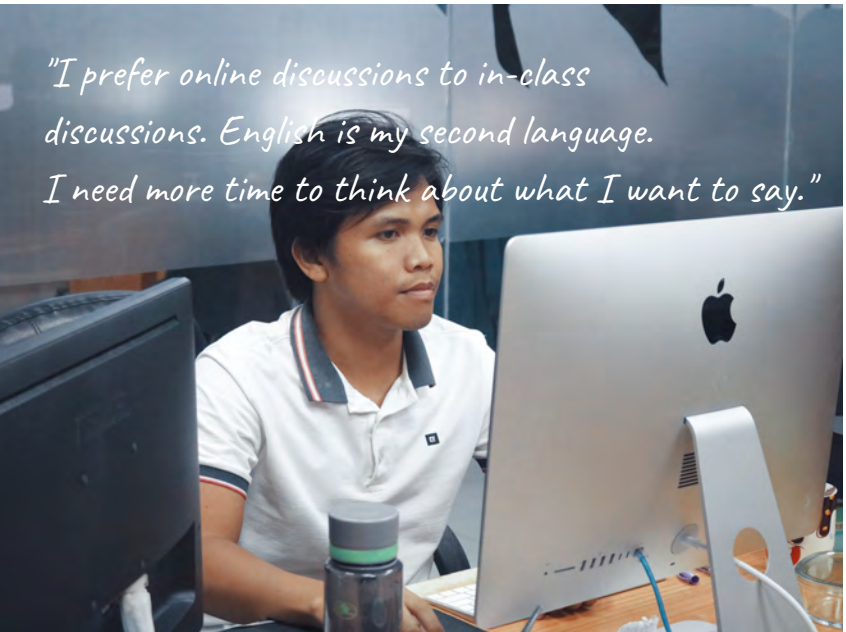
Another key challenge surfaced as we analyzed the data. It was a bit more nebulous than "I have to search for the reading on a different page than the assignment," and it was often couched in frustrations about various aspects of online learning.

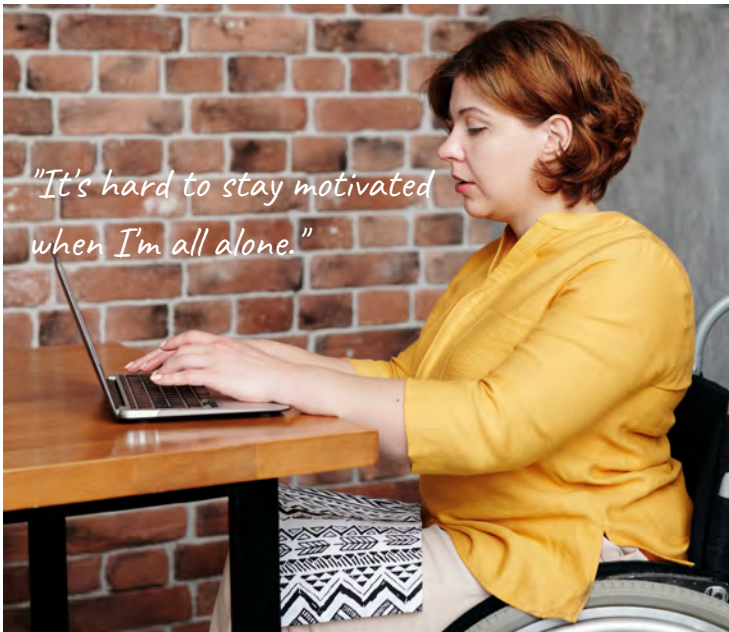
However, it was as strongly present as the physical, digital, and cognitive challenges students referred to in describing their pain points.

The insight: Students bring their expectations of their in-person student experiences to the online learning experience. This leaves them confused, unsure of themselves, unsure of course protocols, and feeling isolated.

RECOMMENDATION

Provide an engaging onboarding activity (or more) before beginning an online course so that they can adapt to the new paradigm, learn the protocols and practices in the digital classroom, understand how to manage their education, and form meaningful connections with classmates and instructors.





FINDING

Craving community was also a consistent theme in our work. However, students were unsure how to connect with classmates and instructors. Moving from in-person to online courses suddenly changes the student experience. Such small interactions as stopping to ask the professor a question after class or leaning over to ask a classmate about an assignment are not available to online learners.

- Students want to connect with classmates and instructors in meaningful ways.
- They are not sure how and when it is appropriate to contact professors with questions big and small.
- Some find it hard to participate in online discussions with classmates they don't know.
- Some find online discussions are better suited to their participation styles because they can take time to compose posts and responses.

RECOMMENDATION

In addition to onboarding, provide students with tools and opportunities to connect with others built into the LMS to promote communication and interaction with classmates and professors, both academically and socially.

FINDING

The online format puts more responsibilities on students to manage their academic lives.

- Students struggle with managing their schedules and staying on track with course work.
- They want more timely feedback from instructors.
- They want to know when their assignments will be graded.

RECOMMENDATION

Provide scheduling support and such tools as estimated time to complete assignments, check lists, and feedback and grade commitments from instructor.

SOLUTIONS

01

Provide onboarding instruction to help students understand the online learning experience and how to successfully manage it so that they can adjust their expectations to the new paradigm. (See page 10.)

- Include a short video (in a humorous style similar to the Virgin Airlines' pre-flight safety video, perhaps in collaboration with the UW Drama Department) to introduce students to the online learning experience and how they can navigate it physically, socially, and academically.
- Include onboarding exercise, such as a scavenger hunt that can be done in pairs.
- Onboarding activities can be a prerequisite to the online course.

02

Redesign elements of the LMS to support student workflow and building community. (See pages 12-20.)

- Refine module design and functions to optimize integration of course content and course-related tasks in one location.
- Revitalize and reimagine the dashboard as a menu-free space or hub where elements, tools, and communication are integrated.
- Utilize checklists, alerts, and notifications.
- Use social media and gaming techniques to provide opportunities for students to get to know each other and their professors.

03

Examine the instructional design process to highlight areas where there is time and space for collaboration and student input.

04

Follow guidelines and best practices, including human-centered design and inclusive design principles into the instructional design process. (See page 32.)

KEY NEEDS & TASKS

After matching user needs to key tasks, we created several context scenarios, which describe our two student personas' motivations, goals, and needs as they navigate the course interface. From those contexts we iterated on several key tasks, which you will see in Section 2. (Context scenarios are located in Appendix 4.)

The wireframes and accompanying descriptions in Section 2 demonstrate how students will benefit from the proposed design features. Our concept includes interactions possible with Canvas' existing digital tools, such as notifications, reminders, and use of color-coded elements. We have also added elements such as checklists and recommendations for automated features.

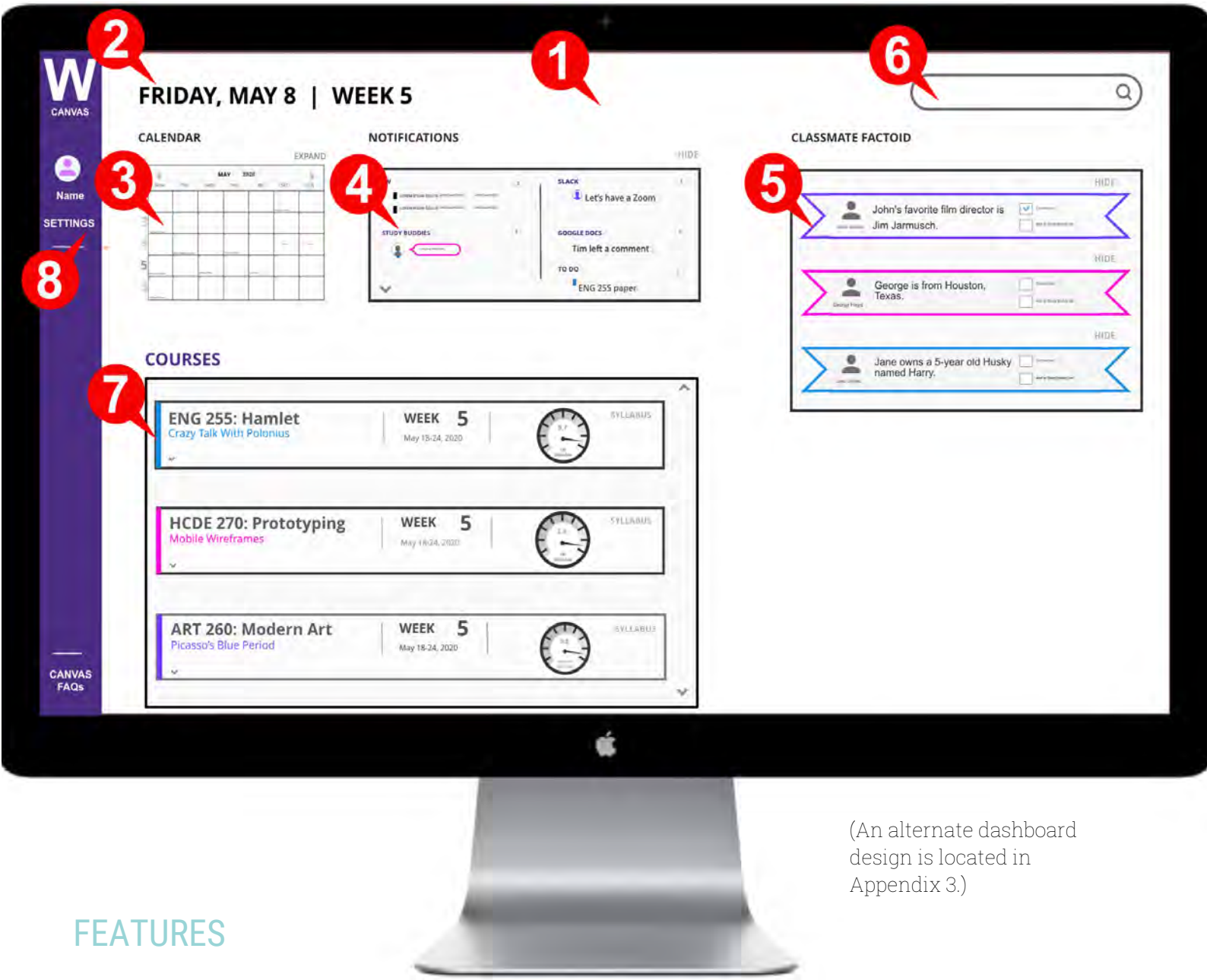
Our onboarding concept is designed to be supported by LMS features like classmate factoids and Study Buddy notifications to influence behavior change. These design strategies are based on the Health Belief Model for self-efficacy, cues to action, and providing support and reassurance to overcome barriers. (See Appendix 6.)

Finally, we have followed web and interaction design best practices to create an easy to navigate, highly scannable, above-the-fold experience, the Next Gen Dashboard.

INTRODUCING: THE NEXT GEN DASHBOARD

The Next Gen Dashboard replaces menus with key action areas, including: courses, messages, and a calendar to streamline student workflow.

The dashboard is designed to reduce cognitive load, create a module-based workspace that allows students to remain on a single page to navigate course materials, work on assignments, access course-related materials, and connect with classmates and instructors.



(An alternate dashboard design is located in Appendix 3.)

FEATURES

1. Dashboard appears on log-in.
2. Day, date, and week are prominent at top of page.
3. Calendar with due dates, suggested start dates. Can be synced with personal calendar.
4. Notifications area displays campus- and course-related messages. Can be synced with such external tools as Slack, Google Docs, anad GitHub.
5. Daily classmate factoids help students get to know each other.
6. Search allows students to retrieve current and past content and assignments.

7. Modules contain color-coded course content and integrated tools that allow students to work on and view course material, contact instructors and other students, check grades, and view the syllabus--all without leaving the module. Module container is scrollable, allowing students to visit past and future weeks.

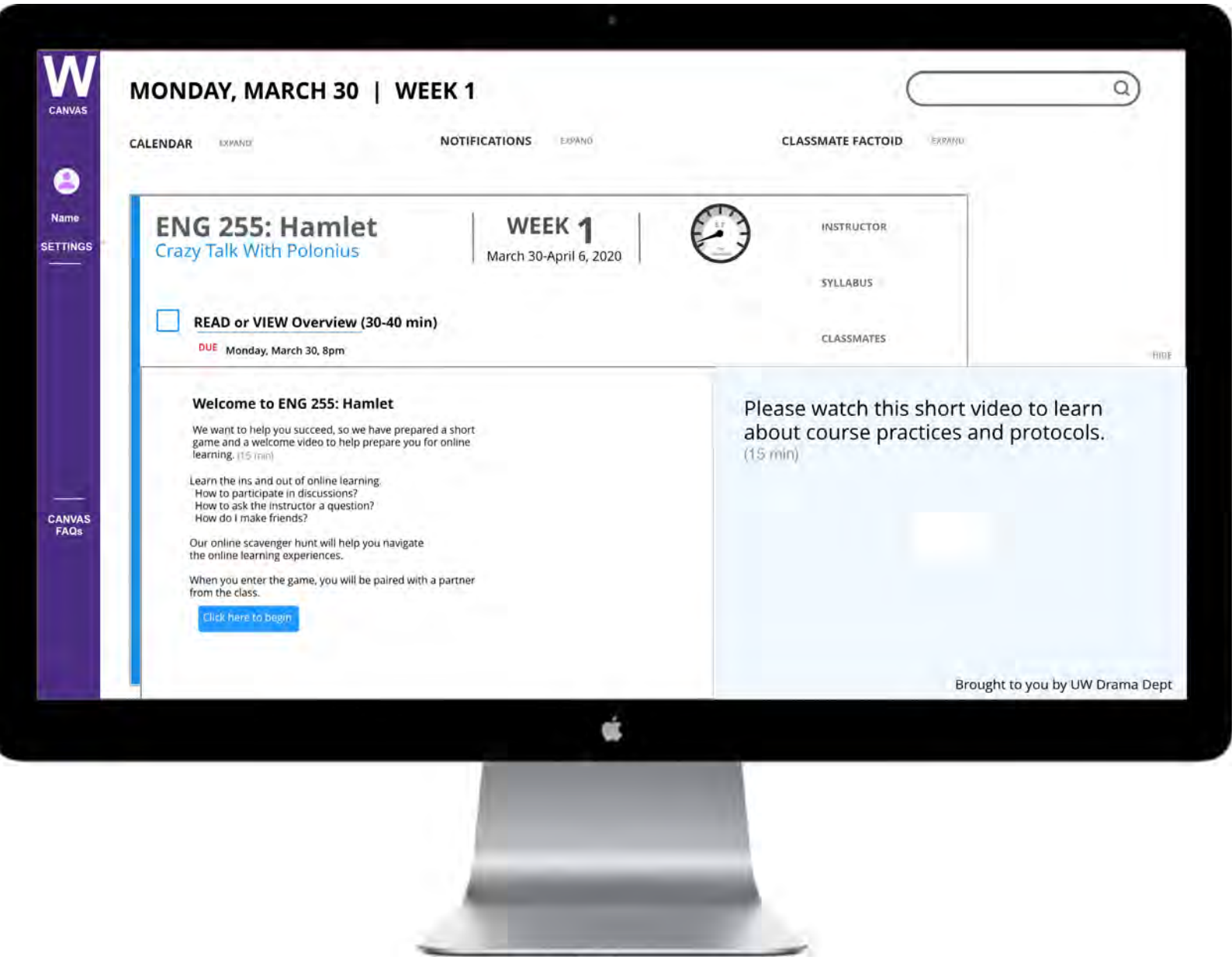
8. Settings allow students to set dash elements to open on hover or click, relocate or resize containers on the dashboard, dim areas of the module when they're not in use, and more.

SECTION 2: TASK WIREFRAMES

Getting Started: A New Paradigm

Adapting to the Online Learning Environment

The first course assignment, completing an onboarding activity, helps students adapt their expectations of what the course experience will be in the online learning environment.. The activity is required to access successive assignments and modules.

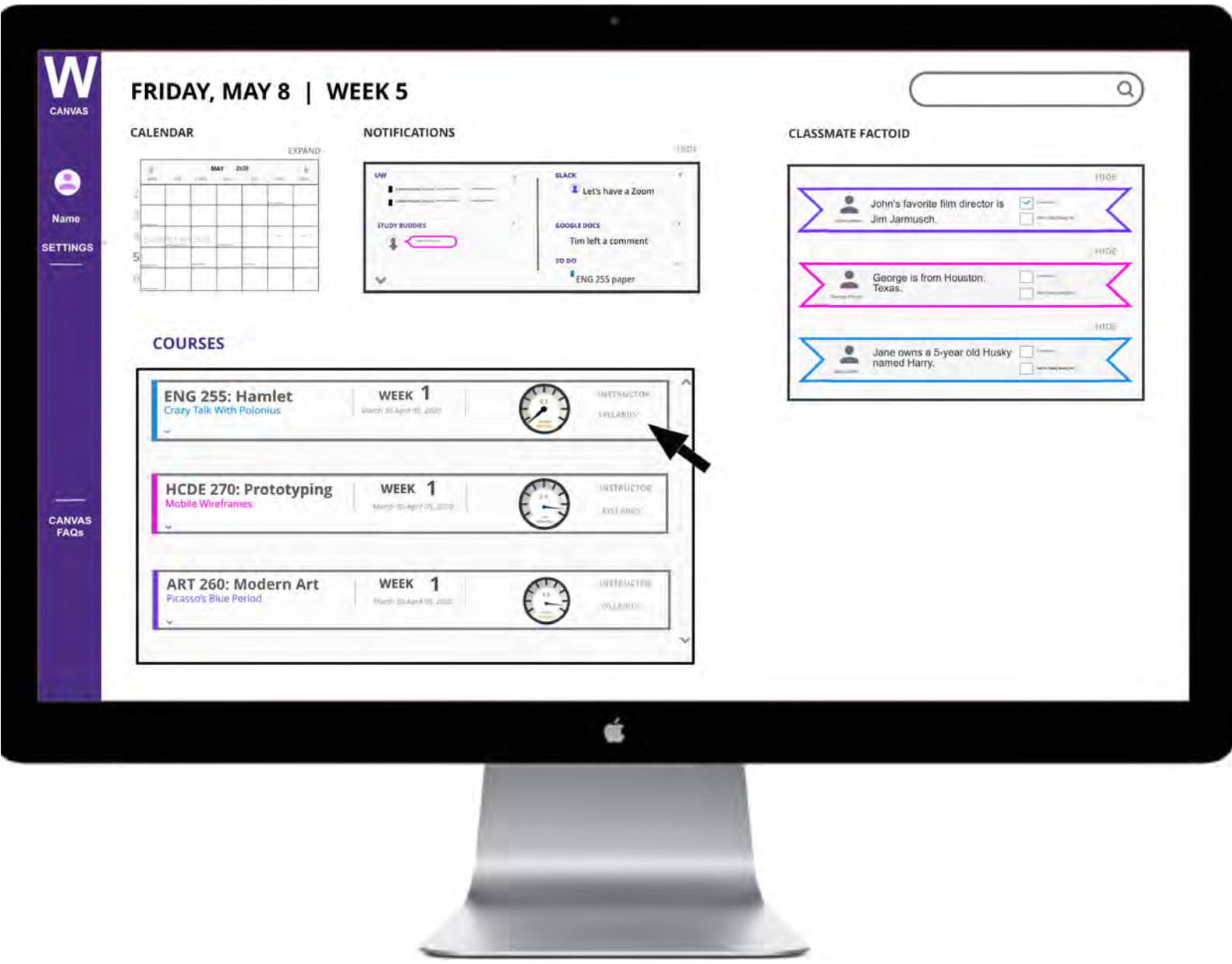


First, the student plays a 15-minute scavenger hunt game, in which she is paired with a partner, to learn how to navigate the online learning experience and manage her academic responsibilities. Then the student watches a 15-minute video. Both activities teach the student about online practices and protocols so that she understands how basic interactions from the typical classroom, such as asking the professor a question or participating in a group discussion, happen in an online environment.

BENEFITS

Understanding the protocols for communicating and interacting with classmates and the instructor will help the student feel more comfortable and confident initiating contact and using the module's social tools.

Finding and Navigating Course Content

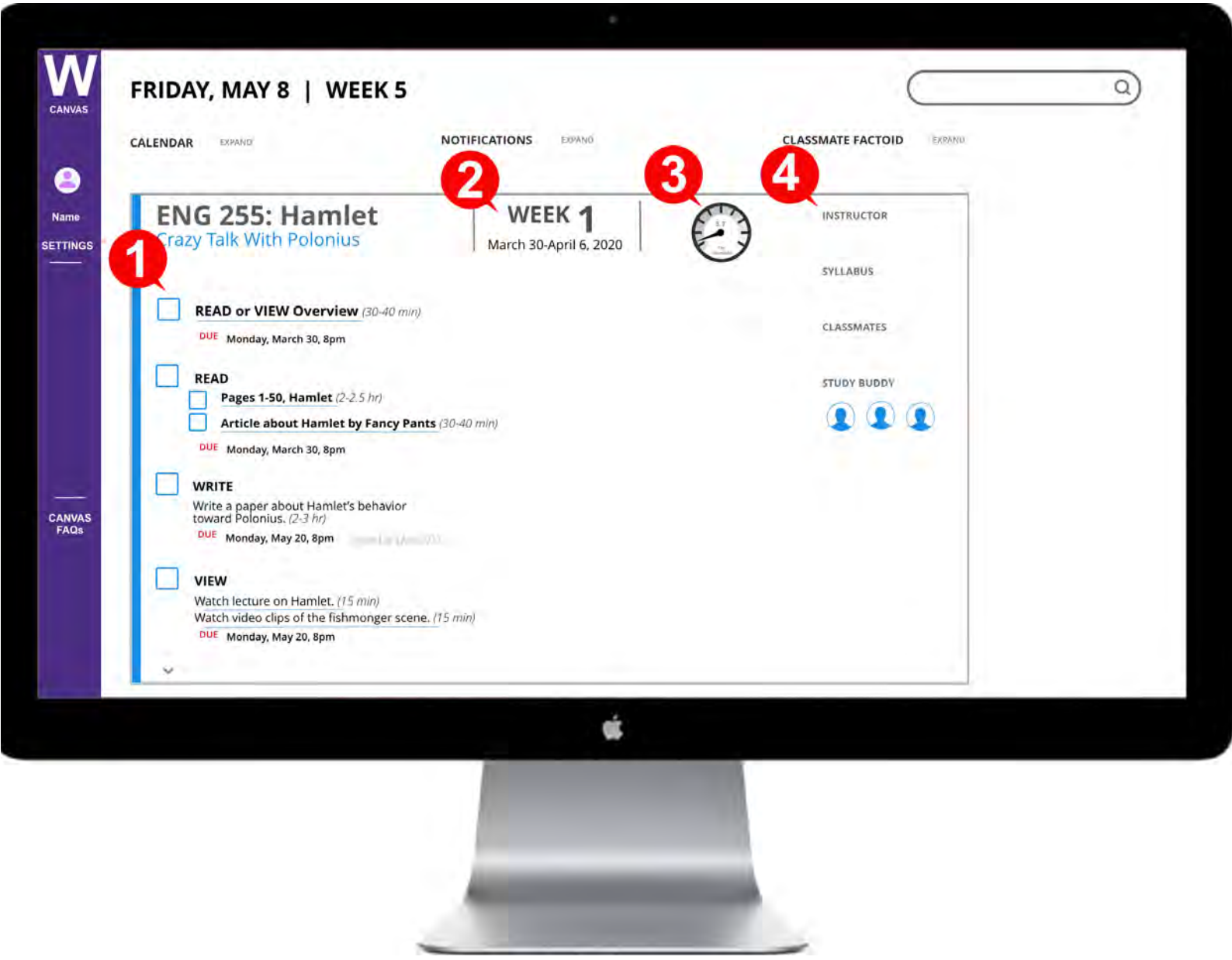


Everything the student needs is in one place. She clicks on the first course module to open it. Through her settings she can choose to have the module fill the screen, while the other dash elements are reduced.

She can also scroll through the modules to see past and future weeks.

BENEFITS

Quick access to course content. Low cognitive load. Personalization to suitelearning style.



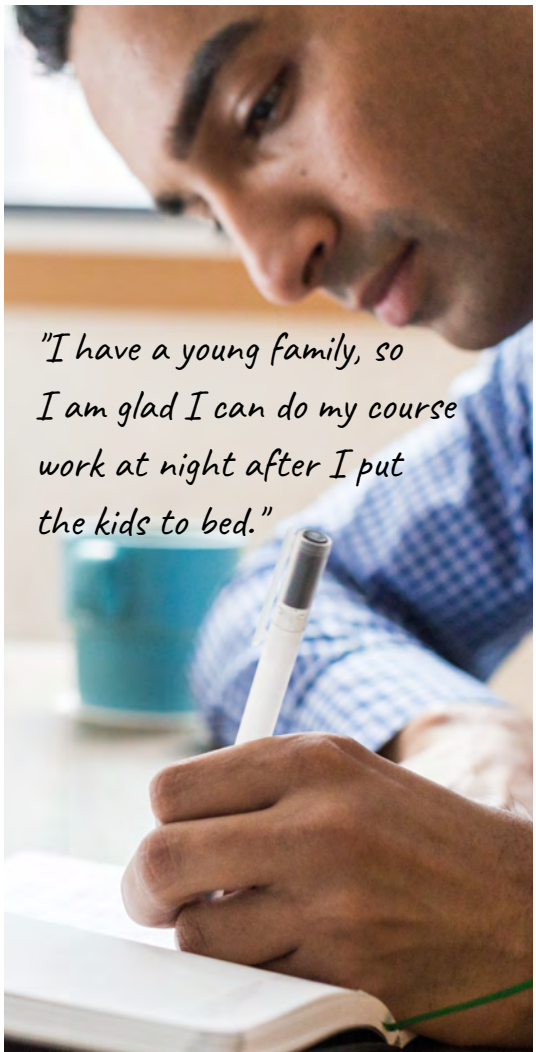
In the module, there is a list of assignments along the left side (1), all presented in simple, bold text for quick scanning. Each assignment is clickable, so when the student is ready to READ an assignment or WRITE a paper, the workspace for that assignment appears in the module. (See page 22.)

The week is always prominent so students know where they are in the quarter (2). The student can get their grades at a glance or click on the dial to see a detailed list of assignments and to see if they are on track (3). Since everything the student needs is visible in containers and modules, the only menu is a mini menu inside the class module. This menu has links to the instructor, the classmate list, the syllabus, and the Study Buddy portal.

BENEFITS

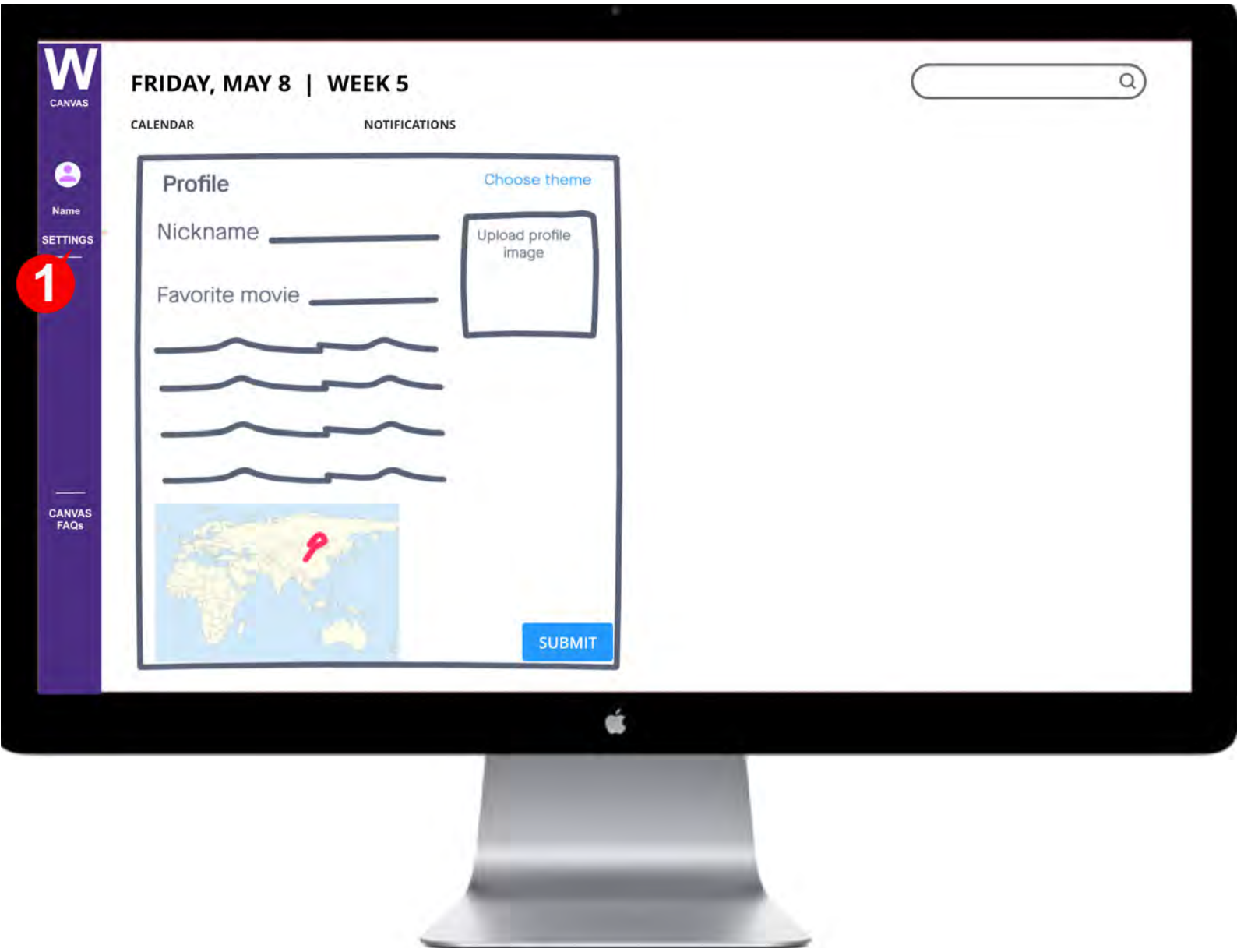
This simplified workspace allows students to stay on one page to access everything they need for a class. This design provides a more streamlined interface where distractions have been removed to allow students to focus on learning.

Additionally, being able to stay in the workspace while contacting an instructor allows students to have the material at hand.



Connection, Communication, Community

The Student Profile



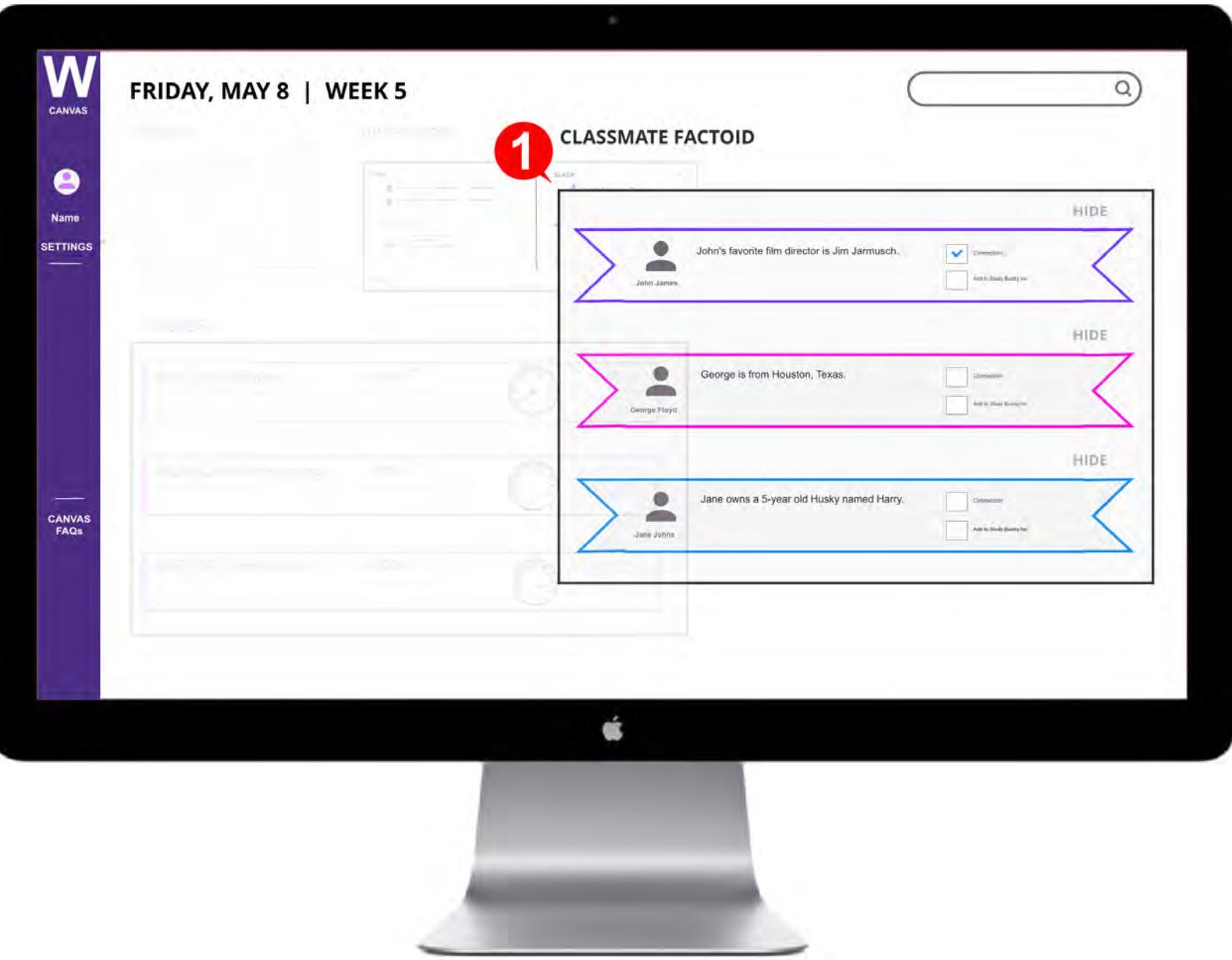
Part of preparing for the school year includes visiting the settings (1) to create a "where are you from" profile that contains the student's name, nickname, a photo, a map showing where she comes from, hobbies, interests, and other shareable information. Student can also select a theme for her profile.

The Next Gen Dashboard uses profile content to populate a classwide notification system that helps students learn more about each other and the instructor.

Getting to Know Classmates and Instructors

In our research, students said that they were not sure how to make friends, how to meet other students for study sessions, or how to connect with instructors.

The Next Gen's factoids system (1) displays interesting information about a different classmate or instructor every day (enlarged here for better viewing).



Each banner-shaped factoid contains a photo and enough information for a conversation starter. There are two selection boxes inside the factoid: one for bookmarking classmates with whom you might share common interests and another for bookmarking students with whom you might want to form a study group.

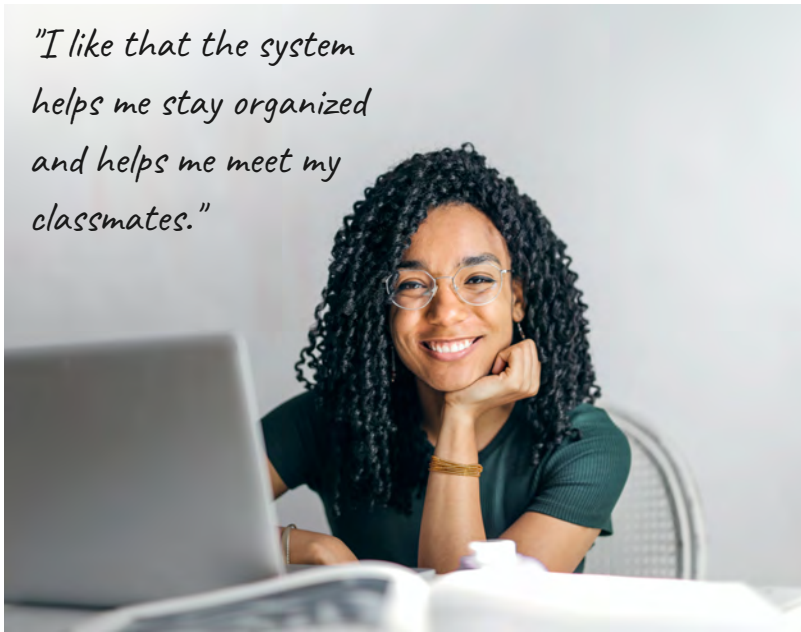
This dash shows three factoid banners because the student is enrolled in three classes. This system is private so nobody knows when others hide or bookmark a factoid.

Classmates can also contact each other through the classmates list by clicking on the "classmates" link in the right-hand side menu. Students can click on "instructor" in the menu to find out instructor's contact information and office hours, as well as send her/him a message.

Factoids will appear for each class throughout the student's program

BENEFITS

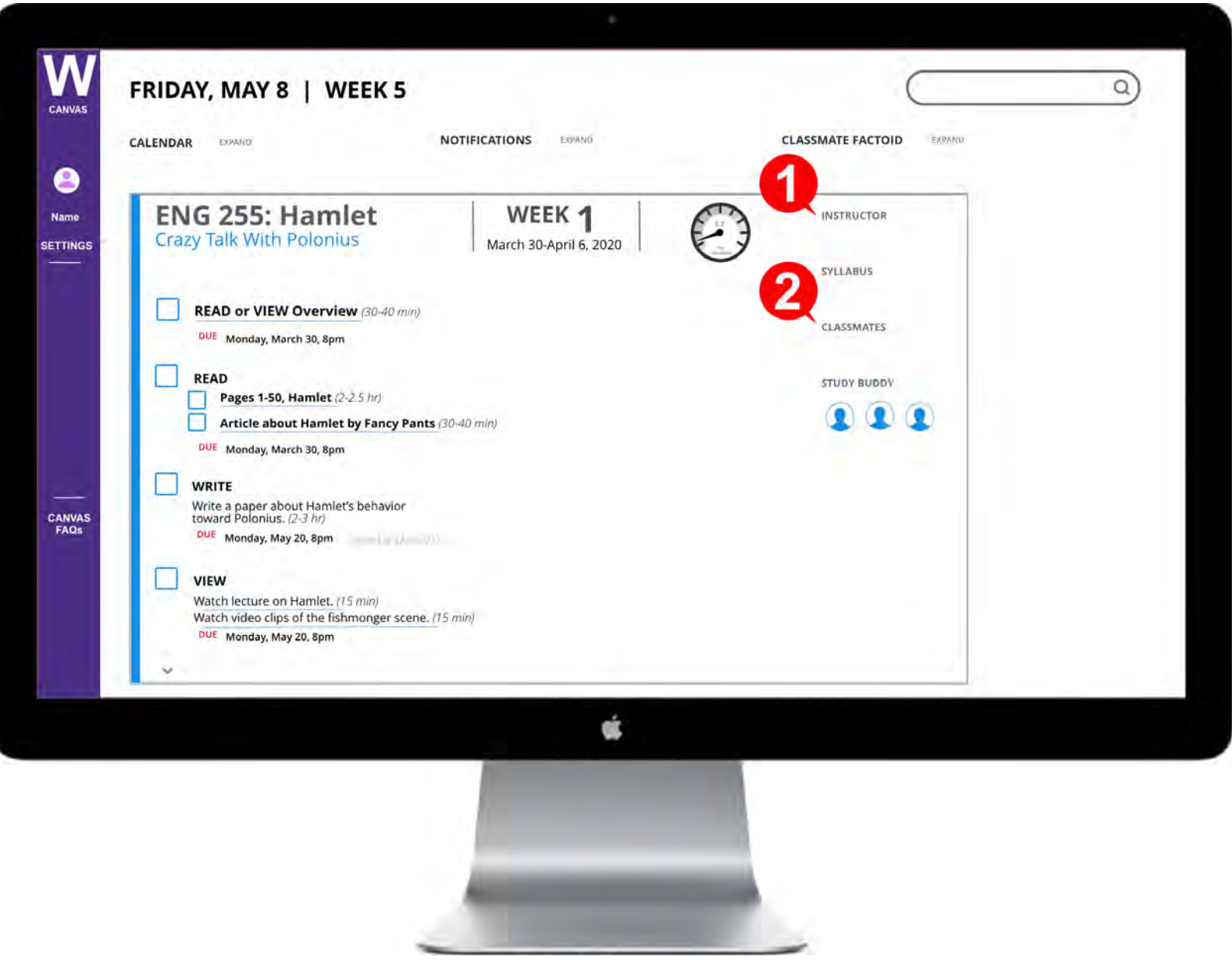
Reminders to interact, coupled with easy access to communicate with classmates and the instructor, can help motivate students to reach out to each other.



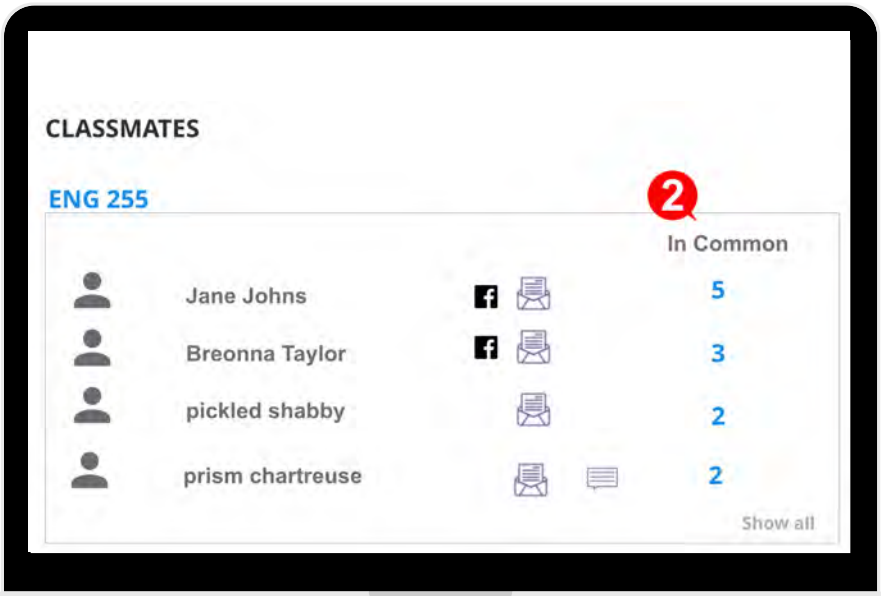
A Class List For Building Community

Students have three ways to contact people in the modem. The can click on the "instructor" link (1) to ask questions or view office hours and contact information.

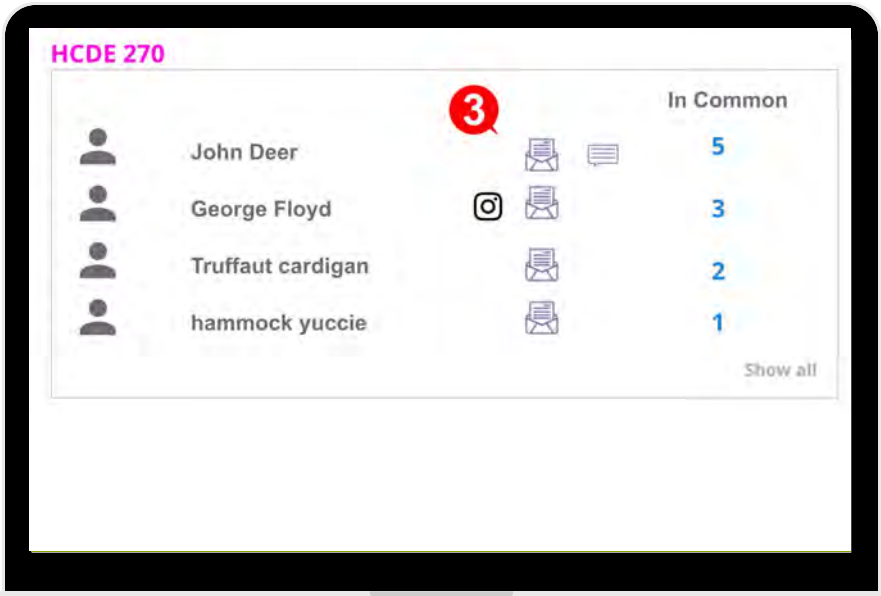
They can reach out to classmates via Study Buddy, which you will read about on page 19.



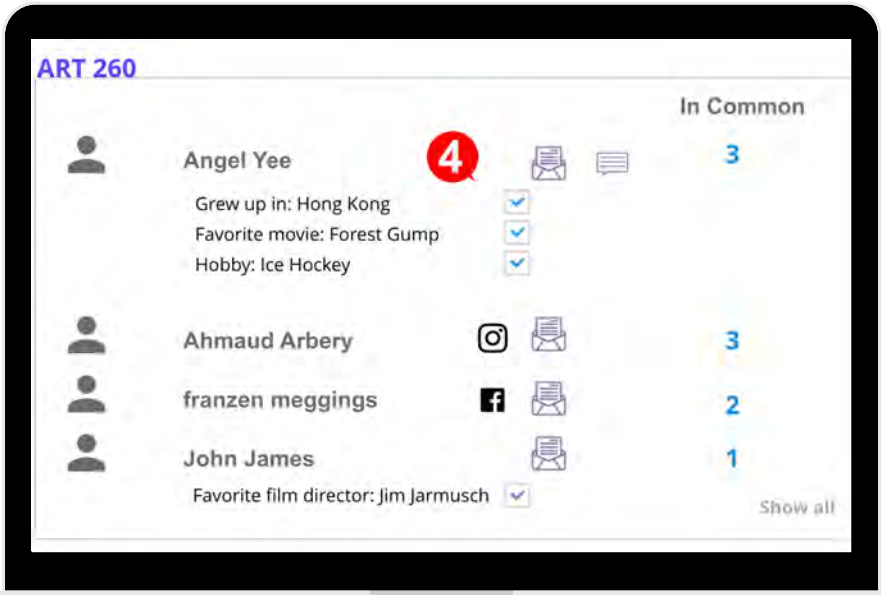
And they can click on "classmates" in the menu (2) to see a list of the other students in the class. Throughout the quarter, as students interact and get to know each other, their classmate contact lists grow, as you can see on the following page.



Student can quickly see that she has several things in common with people in one class (2).



When she checks her next list (3), she can see all the ways she is connected with classmates: social media, email, and messaging

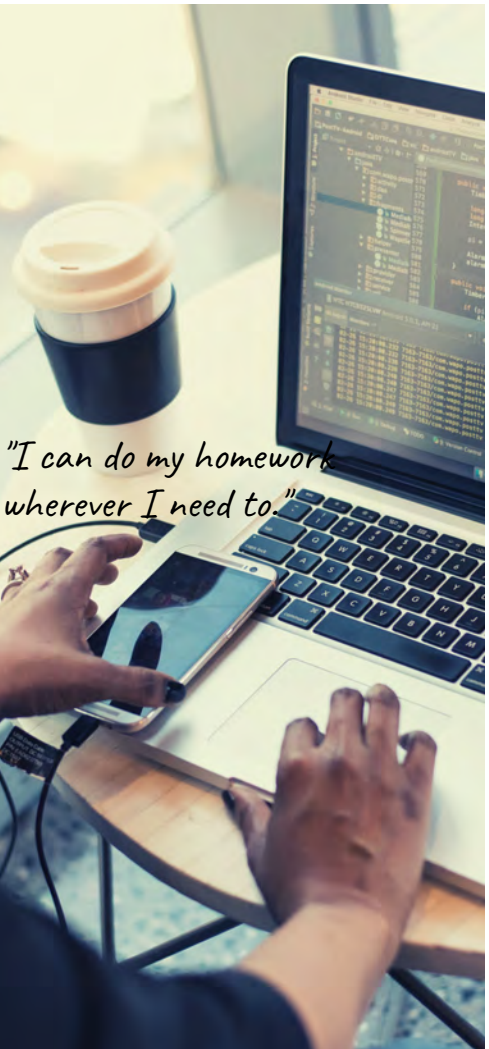


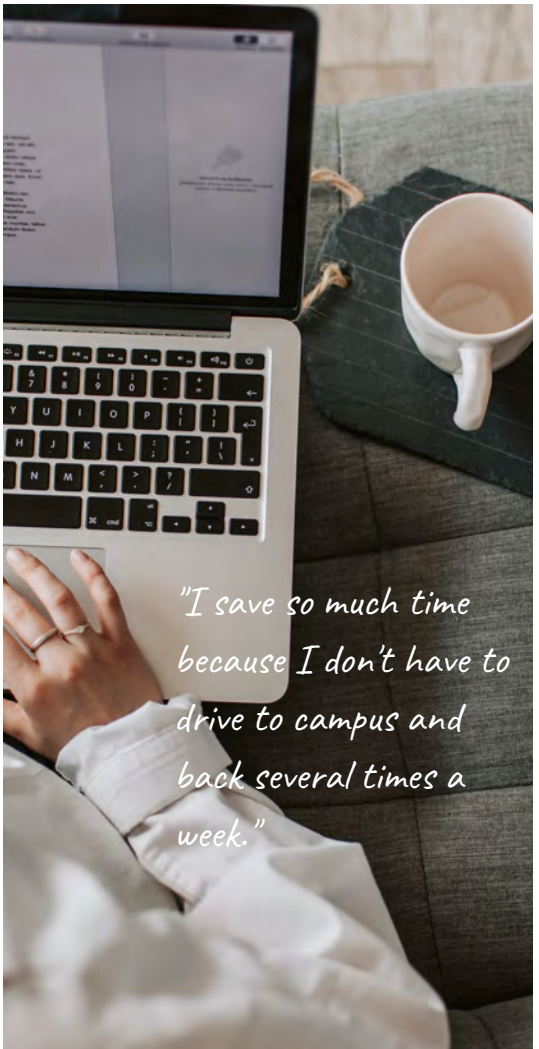
Finally, she can also keep track of interesting information about people she wants to be friends with (4).

BENEFITS

Factoids can be used as conversation starters when initiating contact with others. As students progress through the quarter they can check their class list to see how many people share their interests. Our research found that some students feel more comfortable interacting in class discussions with classmates they know or at least know something about.

Since faculty factoids are also in the notification system, it helps student feel more comfortable reaching out to instructors.





Studying with Classmates

Once students have a way to get to know more about each other, they can start reaching out to classmates for study sessions. Inside the module, on the right-hand side menu, there is a Study Buddy list that shows classmates who are currently studying and seeking a study buddy.

Clicking on the Study Buddy heading makes a modal appear (see next page). The Study Buddy modal shows classmates who are looking for a study buddy and study groups the student can join immediately, as well as opportunities to find study buddies for future dates.

Groups are limited to three students; our research found that students in both remote and online learning situations prefer working in a very small group or with a partner rather than in a larger group.

BENEFIT

Student can quickly see who is available in real time before even opening the modal.

To save space in this report, two interactions are shown in the screen above.

1. The student clicks on a study group, and her profile image and name appear, along with a message bubble she can use to contact the group.
2. They respond, inviting her to study with them and giving her their Zoom URL.

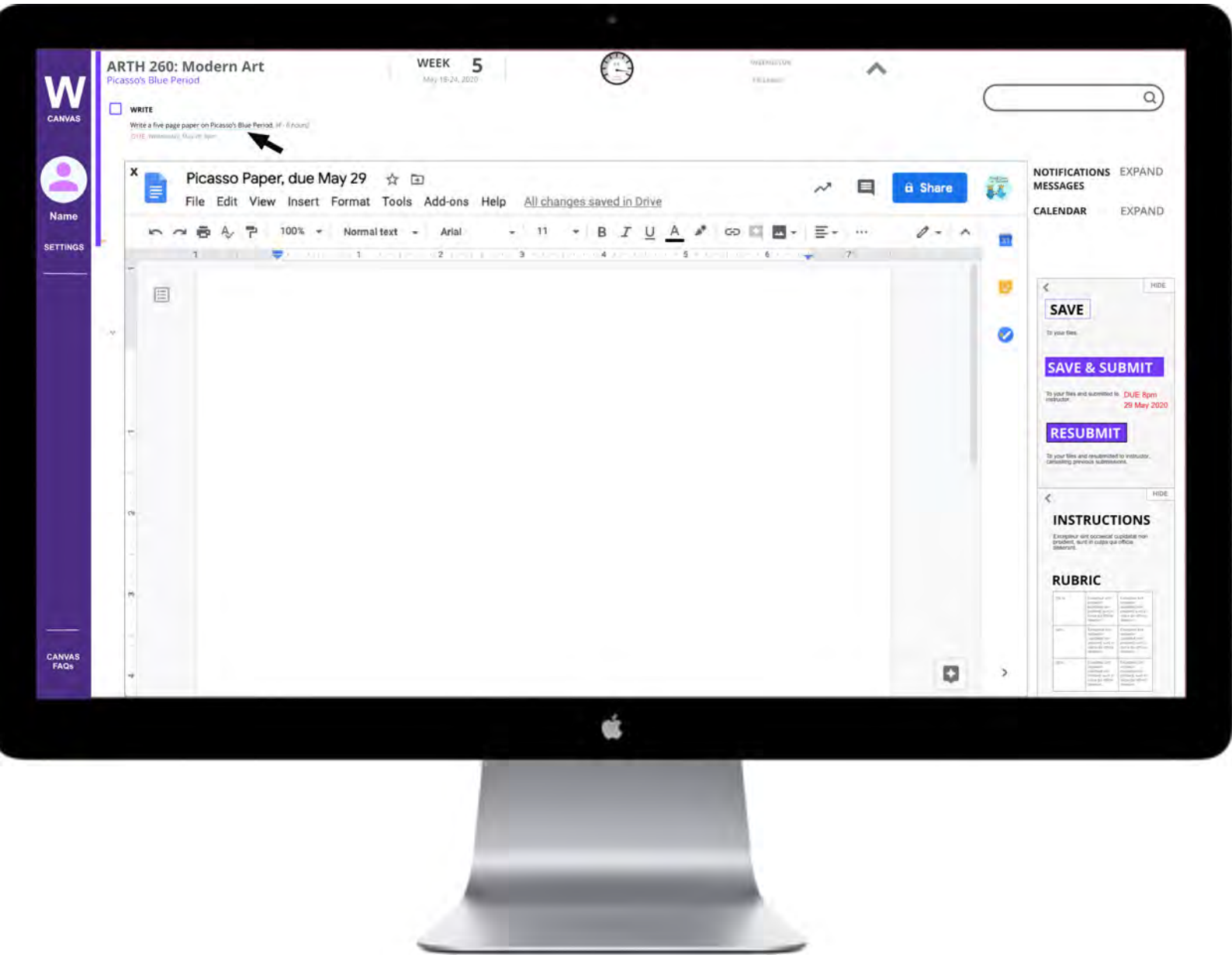
BENEFIT

Students can quickly connect with others without leaving the module. Staying in the module saves the student time and helps the student feel more comfortable reaching out to the instructor and classmates since contact is within the context of the course.

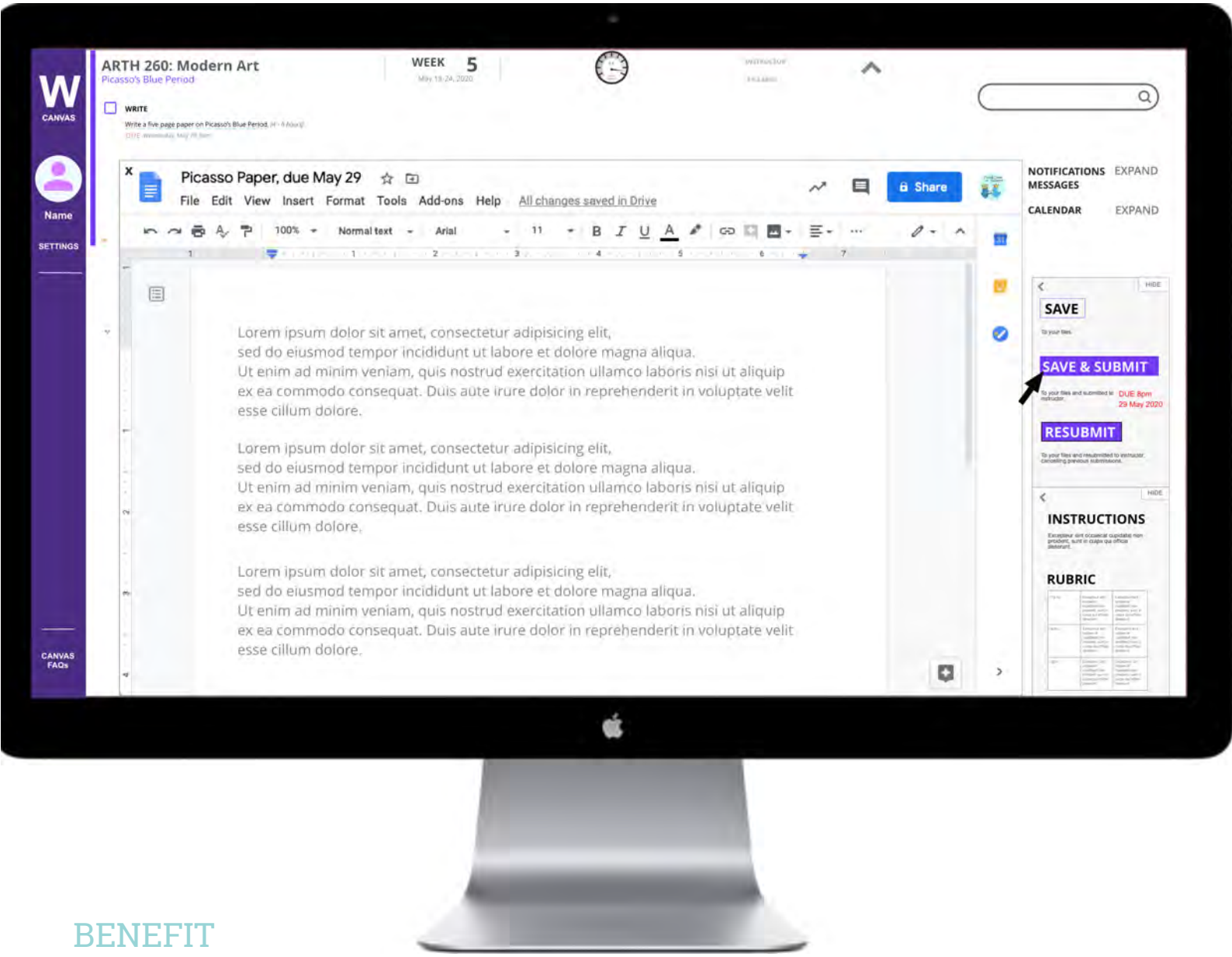
Working on Assignments

Writing a Paper

Google Docs opens from the assignment in the module, giving student complete access to all of Google Docs features, along with a sidebar containing instructions about what the assignment is about and a rubric.



The student has the option to save the document and work on it later, save the document and submit it, or resubmit it.

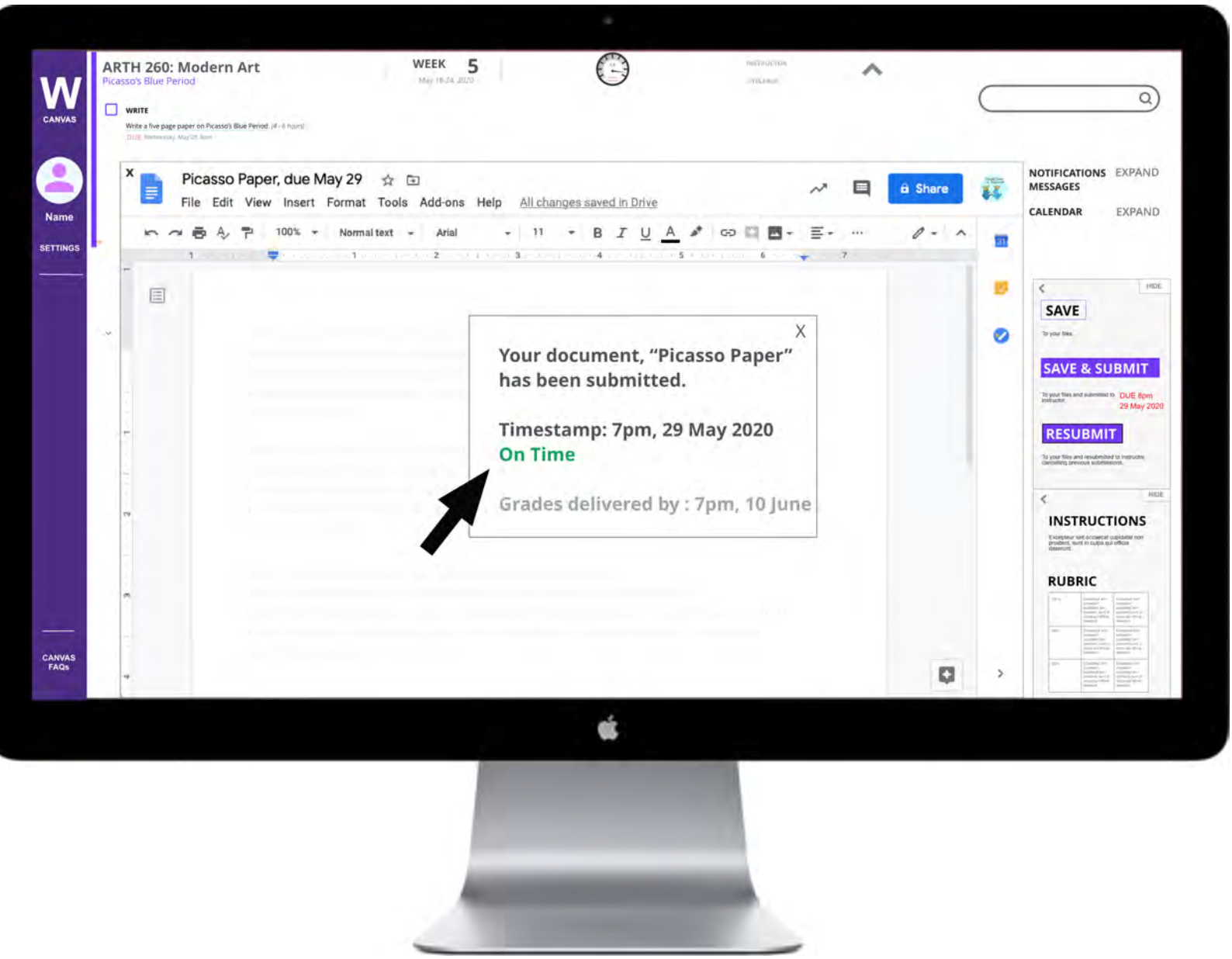


BENEFIT

The rubric is more noticeable and accessible displayed inside the work tool. Students can understand the assignment requirements without disrupting their work by switching between screens, helping them stay focused on their task. Similar to the instructor's speed grader tool, students can quickly validate they have met the requirements.

Submitting assignments is now simple because it can be done in the assignment. The student doesn't have to spend unnecessary time saving the document, opening a new webpage, uploading the document, and then submitting the work.

A feedback message on submission lets the student know that her paper has been submitted on time, and when she can expect to receive her grade.

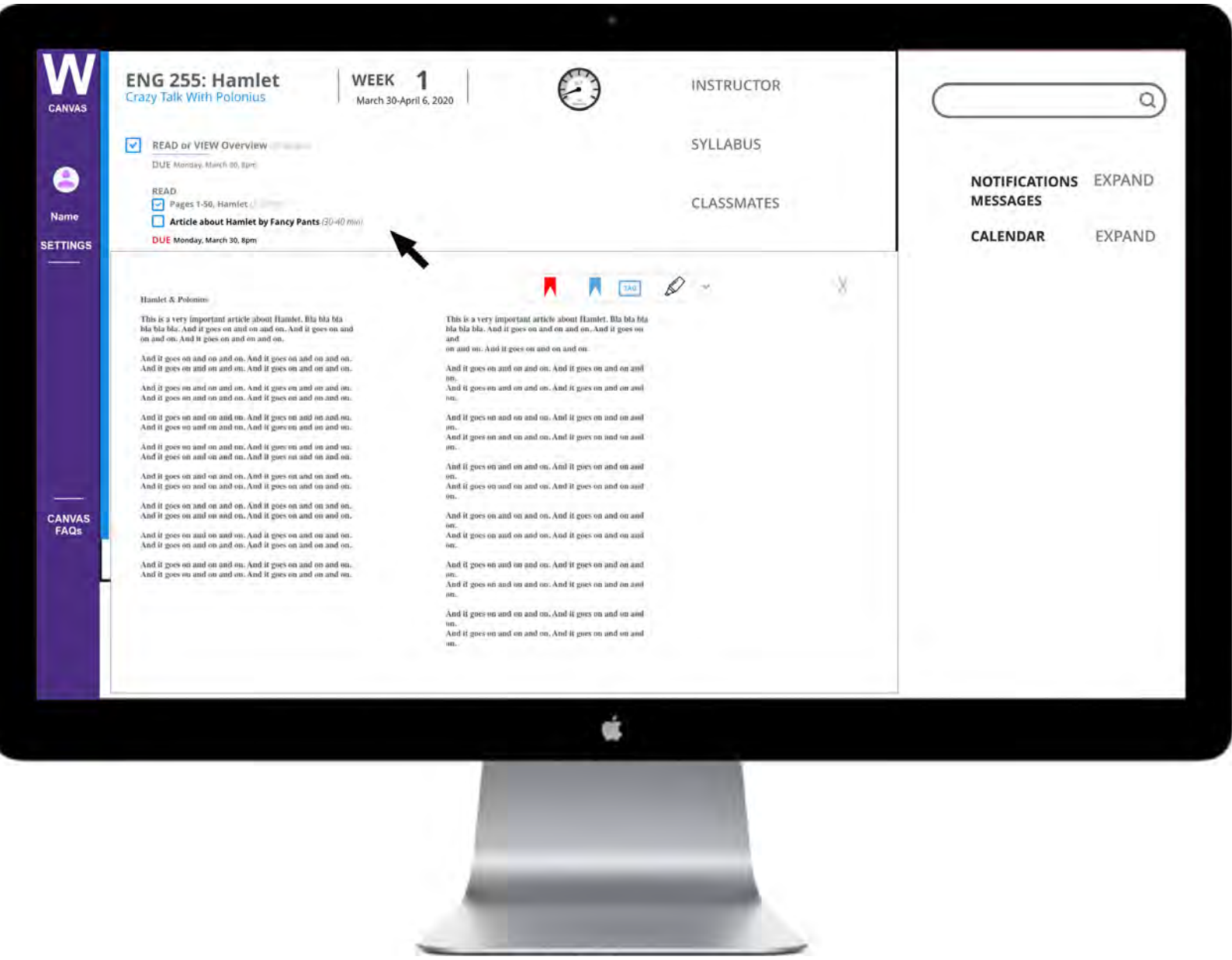


BENEFITS

Students now feel they have a contract with the instructor and don't feel left in the dark. Students will understand when to start asking the instructor about late feedback and assessments. The instructor now has to be accountable to fulfilling her/his end of the contract.

Reading an Assignment

Student can use tools located in the integrated toolbar to highlight passages of text, bookmark or tag places in the text, and use the red bookmark to hold her place on the page if she needs to finish the reading at a later time.



When the student finishes the assignment a check will appear in the check box.

Reading an Assignment

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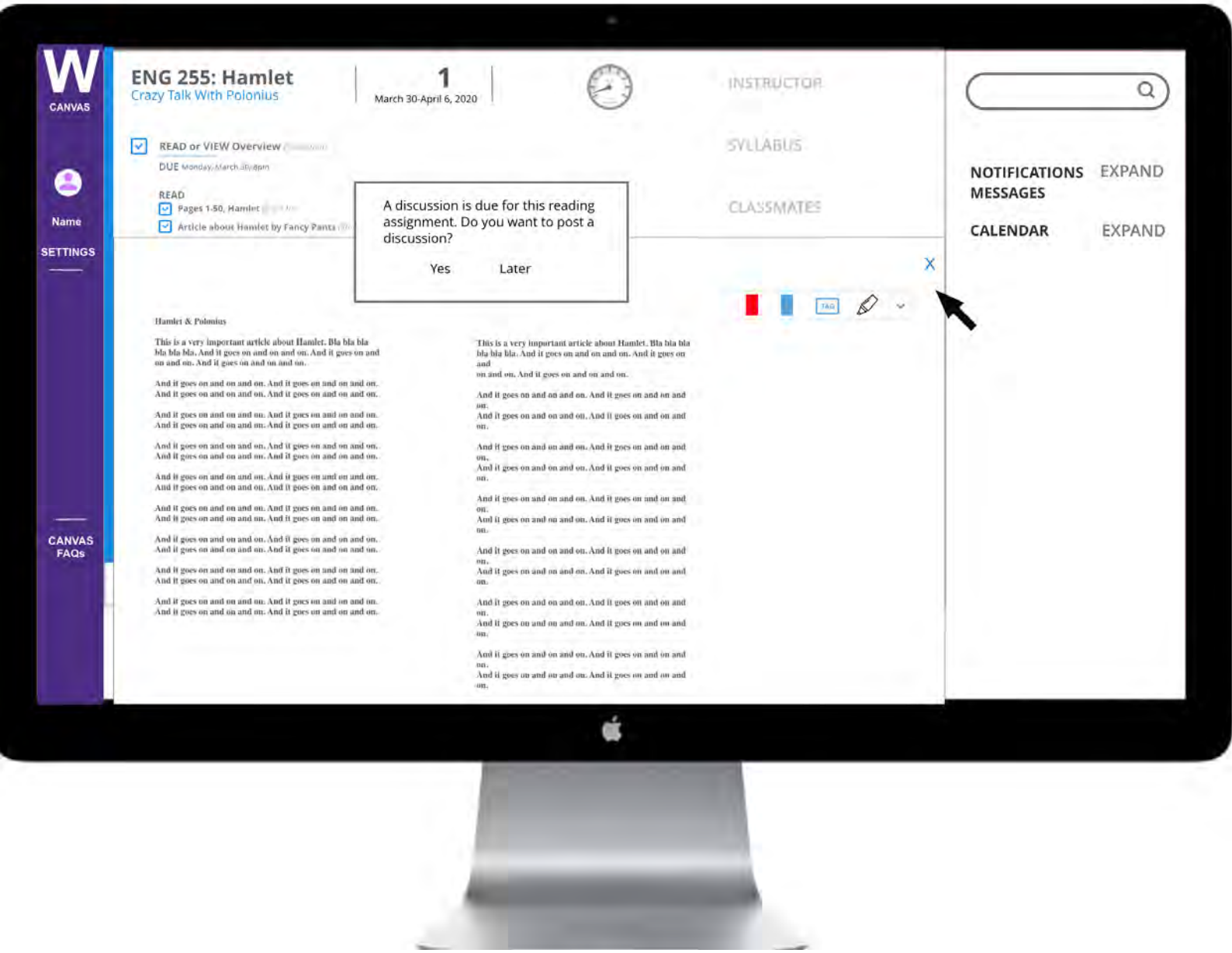


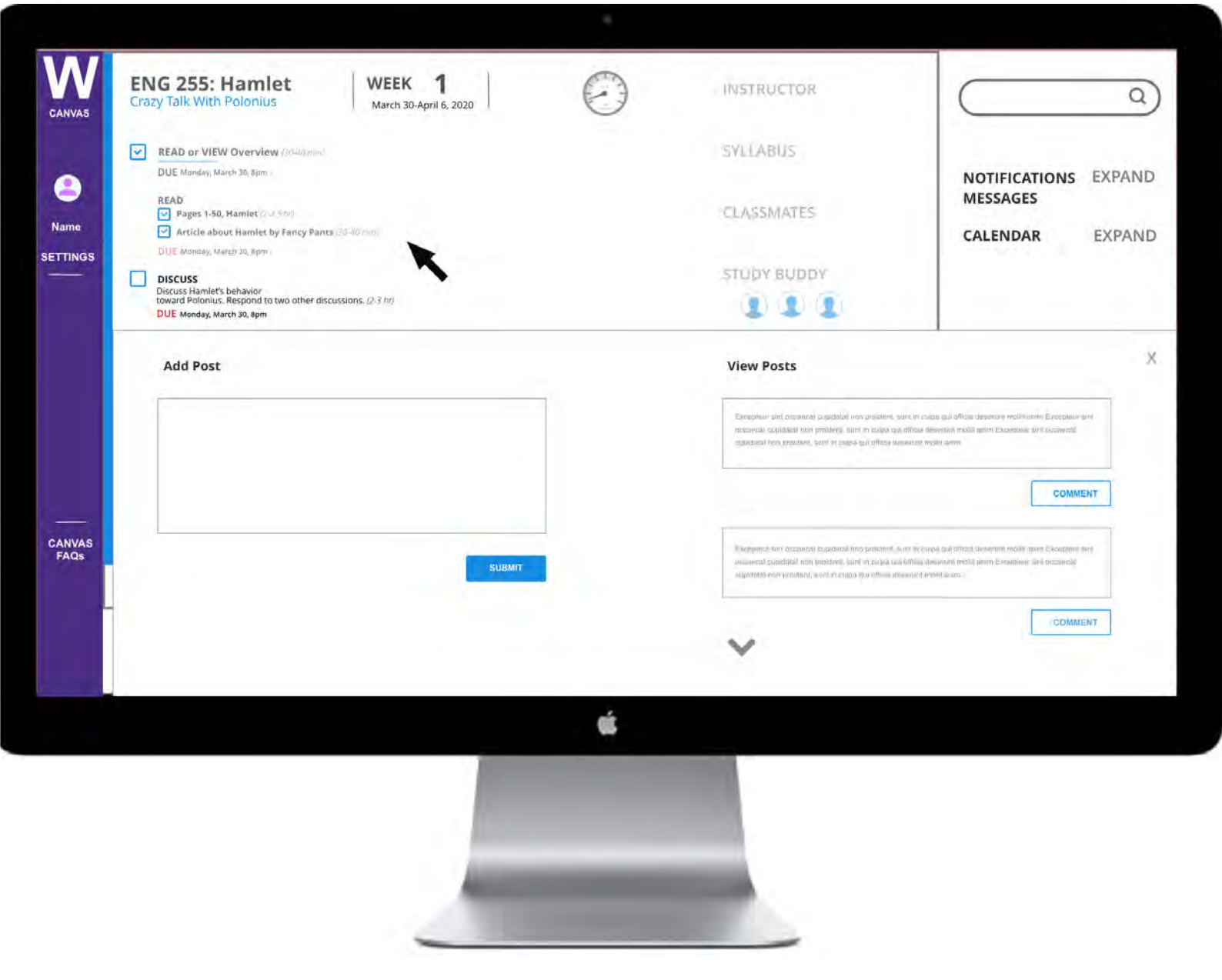
When the student finishes the assignment a check will appear in the check box. Also, a message will appear, asking if she wants to move ahead to the next assignment, the discussion.

BENEFIT

The in-page assignments allow students to stay in the modal and have all the tools they need. The reading modal tools help students complete tasks they would typically do while ready a paper document, including, highlighting or bookmarking important sections of the text. Tags can work like a shorthand for taking notes in the margins. With everything at hand, students are free to focus on the work. Additionally, the instructor contact is in the same location as the workspace, allowing students to have the course material at hand when contacting the instructor with questions.

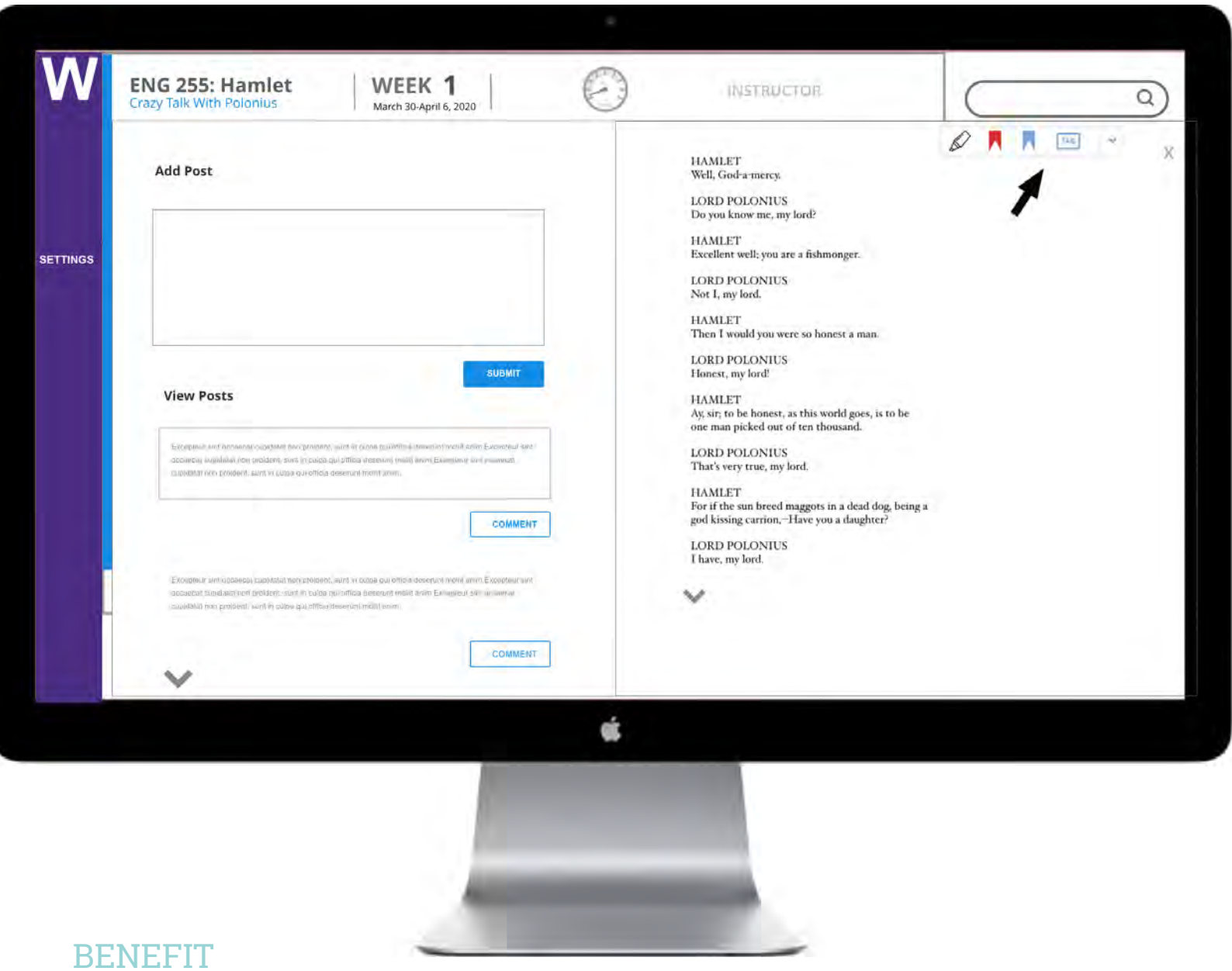
Participating in Class Discussion

As with writing and reading assignments, students can access the discussion board from the module for a smooth transition to work mode.



The post area is opposite the area where classmate comments are viewed, making it easier for the student to scroll through the posts without having to scroll anywhere to write her own post.

We propose a function that shows a split screen so that students can have their annotated text visible while they participates in class discussions.



BENEFIT

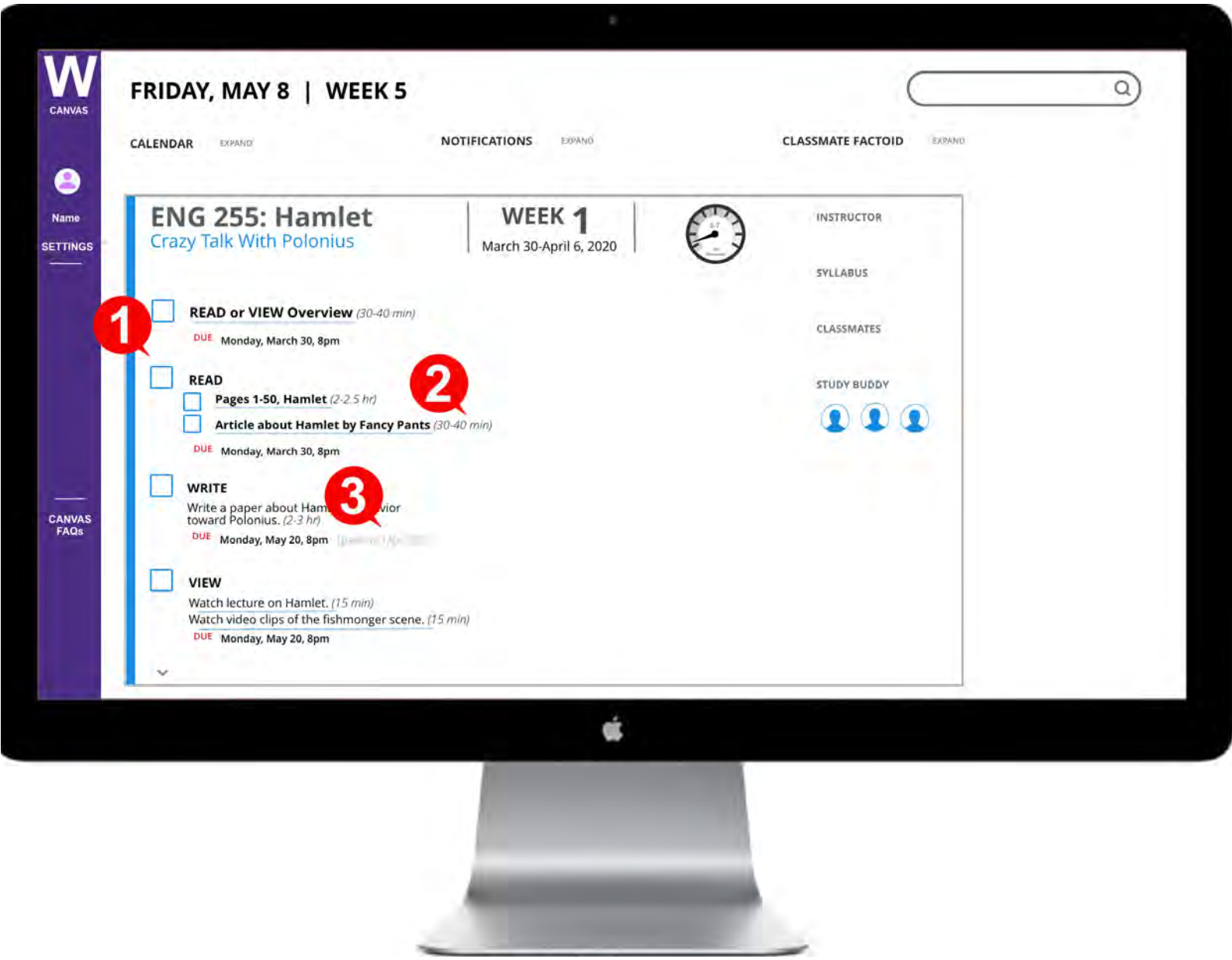
Our design suggestions reduce the steps a student needs to take to initiate and complete assigned tasks, streamlining student workflow. By providing tools and task in one place, the dashboard and module function more like a student's desk, keeping activities in context. Students in our research mentioned a strong need to have organized online workspaces

MANAGING ACADEMIC LIFE

Time for Tasks: Due Dates and Start Dates

Students in our research explained not knowing how much time assignments will take to complete.

The assignment checklist in the module (1) includes a due date for each item, the length of time the assignment takes most students (2), and the date the instructor will provide a grade(3). Students can check off activities as they complete them or set up the module to automatically check off assignments when students submit an assignment in the module.



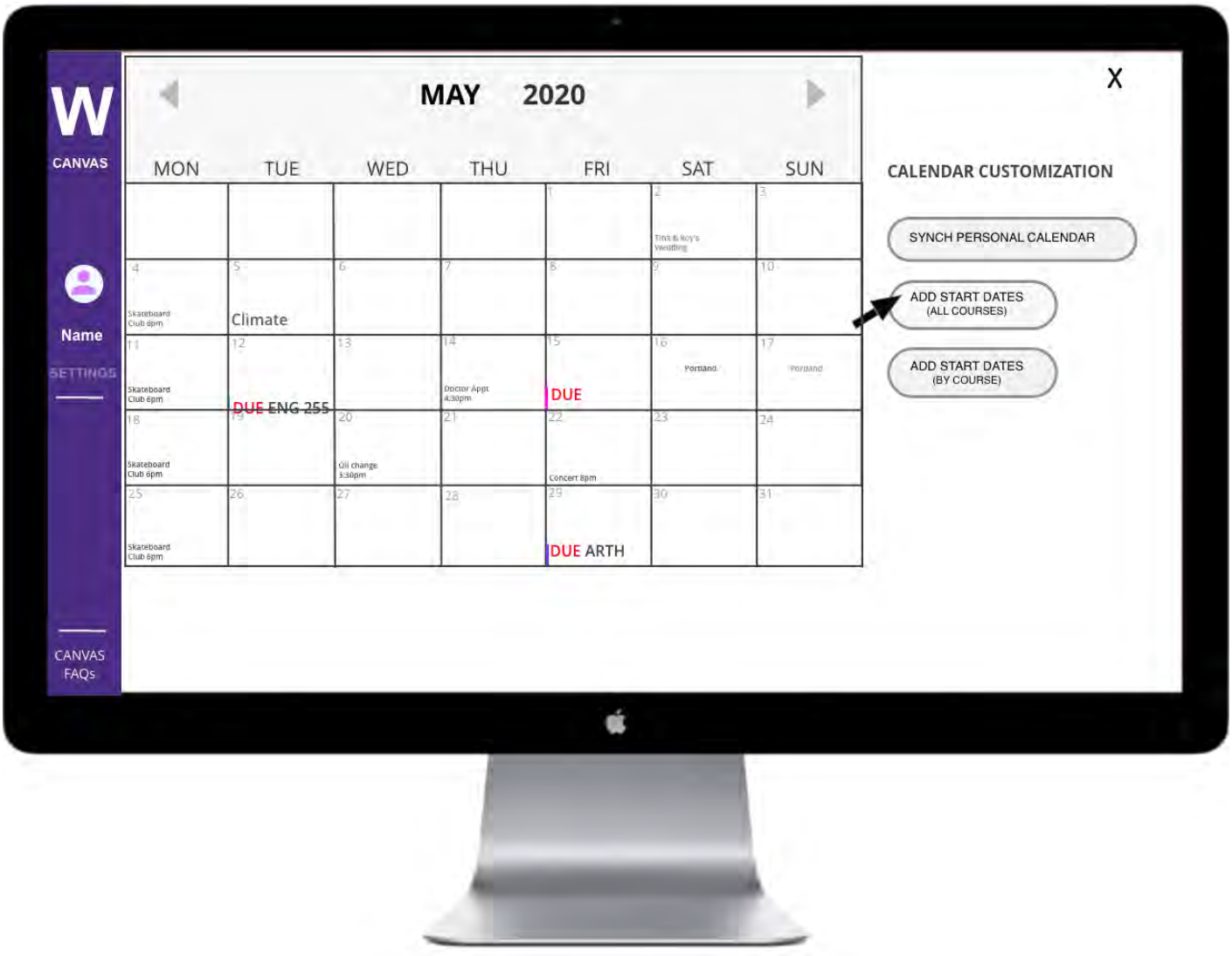
BENEFIT

Knowing how long an assignment will take to complete helps students plan more appropriately, reducing the likelihood of turning assignments in late and falling behind in the course. Including feedback dates in the work checklist makes the instructors have more accountability around feedback and assessments.

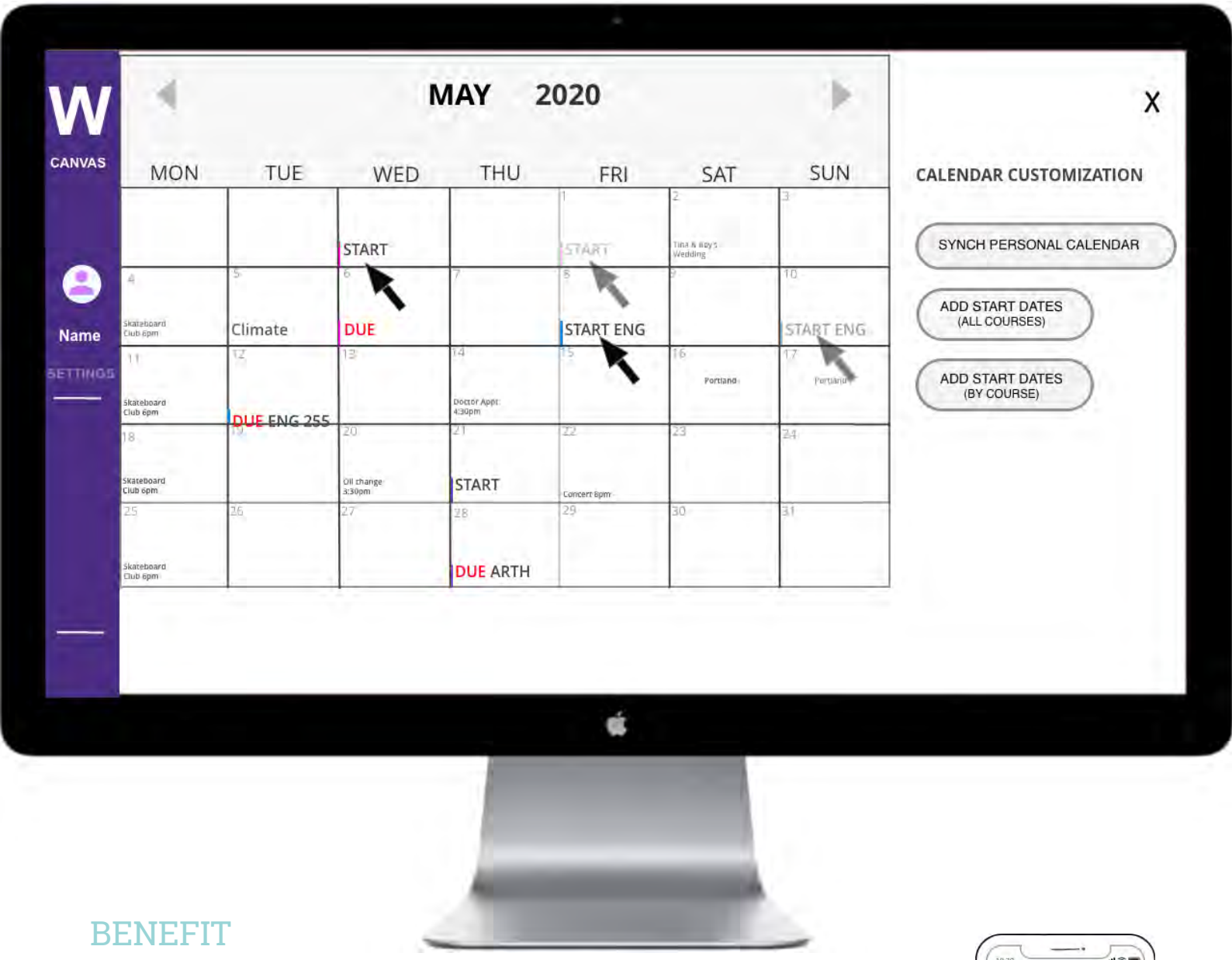
Managing Schedules

Students have a hard time managing the many dues dates for all of their courses. The new dashboard allows students to sync their personal calendar with their school calendar.

Notification systems and automated calendars help students manage due dates and start dates. Below, the student has already synced her personal calendar. Now she clicks on the "add start dates" button to have recommended start dates added to the calendar. The recommended start dates are added based on an algorithm that considers the existing available times in the students schedule and the estimated time needed to complete an assignment.



She decides she needs more time on two assignments. She adjusts the recommended start dates by dragging and dropping the text to new days.



BENEFIT

Calendar features help students see all of their scheduled activities so they can get a sense of when they might want to schedule (or reschedule) school work.

Students receive the scaffolding of knowing when to start assignments (and how long they will take, which is provided with each assignment) and the flexibility of arranging their schedules to allow time for coursework. This system also has notifications that appear on the dashboard (and on student's cell phone, at right) to remind student about start and due dates.

SECTION 3: NEXT STEPS

We have a few recommendations about the next steps UW Continuum College can take if you want to move forward with our work.

As we mentioned at the beginning of this document, our design concepts can be used as they are to start user testing that would help you confirm user insights and refine the design to address the key student needs.

We also think it would be beneficial for the instructional designers to set aside time for a meeting, during which they can discuss our recommendations, take a critical look at (and possibly revise) the instructional design process workflow, and arrive at a shared understanding of what the instructional design process is (which steps need to happen and when) for all the stakeholders so that the team can find better alignment when talking about the process and its requirements.

We've assembled our understanding of the existing instructional design process workflow, located in Appendix 5. It includes some of our own ideas and student ideas created during the co-design sessions. These are included to help jumpstart discussions about iteration and how changes can be implemented into the different tasks and actions that exist in the process.

Additionally, the following section will serve as a guide to help you reflect on decisions throughout the instructional design process.

CHECKLIST OVERVIEW

The purpose of this section is to help instructional designers ensure that all the information necessary to move on to the next stage in the learning design process has been captured or addressed prior to moving forward. This checklist should be used in conjunction with the process workflow to better understand the decisions that are being made at each step in the process. Things that would be particularly beneficial to start including have been marked with an asterisk (*).

We've also included a list of user/human-centered design resources in Appendix 6, which provides more detailed instructions and guidelines around using human-centered design methods and tools.

Instructional Designer's Best Practices Checklist

Analysis/Planning Phase

Business Considerations

- [ ] What are the business requirements for this project?
- [ ] What is the motivation for this project? The goal?
- [ ] How will we measure our success? What about the quality of the products?
  - [ ] Do these measurements reflect our organizational values?
- [ ] What are universities/organizations/MOOCs with similar programs doing/offering?
  - [ ] How does our program compare? What makes our program unique?
- [ ] What is our heuristic standard for what we produce?
  - [ ] Who is in charge of making sure we meet the standard?
- [ ] What are we learning about the project domain?
  - [ ] The content?
  - [ ] Where are we documenting this learnings for future use and consultation?
- [ ] What is the scope of this project?
  - [ ] Is it appropriate for our business needs?
  - [ ] What is the project timeline?

- [ ] Have we allowed time for an iterative process, for sketching and wireframing?
- [ ] How much time is allotted for these exercises?

- [ ] Are we using the same terminology and framework for the instructional design process?
  - [ ] How will we document the process?
  - [ ] Who is responsible for ensuring that stakeholders share and understand the goals/project and use shared terminology?

Content Considerations

- [ ] Is there existing content?
- [ ] Who will supply the course content for this project?
- [ ] How will the content be produced?
- [ ] Are we following universal design principles?
  - [ ] What options are there for how students interact with the material. For example: watch a video, read, or search online around a topic)
  - [ ] What methods will be used to analyze content?
  - [ ] What types of content are included for this project?
    - [ ] Are there readings? Videos? Discussions?

- [ ] What criteria are we using to make decisions/choices?
  - [ ] What tools can we use if we need help making decisions?

Learner Considerations

- [ ] Who are the users/learners of this product (course/program)?
  - [ ] What are their needs, goals, motivations, and circumstances?
    - [ ] How can we work with Continuum College's marketing arm to find data that will help us better understand user needs?
  - [ ] How will we get that input? What will it look like?
    - [ ] Do existing surveys capture data that will helps us better understand user needs?
  - [ ] Where in the process can we include input form current or past students?
  - [ ] Where in the process can we implement HCD methods such as surveys, interviews, and co-design activities in order tolearn key insights that will drive our design

Additional Considerations

- [ ] Developer/Instructor-related
  - [ ] How do past courses the influences current/future projects?
  - [ ] Do we have student and instructor feedback on past courses?
    - [ ] What changes/additions can/need to be made?
    - [ ] Are we designing the feedback mechanisms so that we ask the right questions?
    - [ ] What are the right questions?

- [ ] Technologist-related
    - [ ] Design requirements
        - [ ] *Responsive design, including designing for mobile/tablet
            - [ ] Primary content should be visible “above the fold”.
        - [ ] Universal Design
            - [ ] How does our design improve equity and inclusiveness?
        - [ ] Accessibility Requirements

Design/Development Phase

Questions to start

- [ ] How much content/how many elements/ how much time will the student spend for each lesson/week/module?
- [ ] Is the online experience equitable and inclusive?
    - [ ] What’s our criteria?
    - [ ] How is it measured?
- [ ] *How can we incorporate iterative practices into the design process?
- [ ] What types of tasks/interactions will users need in the interface?
    - [ ] What other functionality is required?
- [ ] What is the style guide? (typography/font, logo placements, layout, colors, etc.)
- [ ] How can indigenous context be incorporated?

Implementation Phase

Questions to start

- [ ] *Does the course/program have an onboarding experience (to help students learn the practices and protocols of the online learning environment)?
    - [ ] Are the capabilities within the system explained to students?
        - [ ] Customizations/modifications to the course that they can make?
    - [ ] What else can be included to help adapt expectations to the new online learning paradigm?
    - [ ] Motivation?
    - [ ] Understand navigating the technology?
    - [ ] Communicating with peers/instructors?
- [ ] How are we going to trial run this course/program?
- [ ] Have we evaluated the usability (beyond a content evaluation) of the course/program?
    - [ ] How do we gain additional insights into how students use and navigate technologies to amplify their learning?

Guidelines

- [ ] Cognitive walkthroughs and heuristic evaluations can help to identify usability issues earlier in the process.

Questions to end

- [ ] Have we included student input in this phase?

.

Guidelines

- [ ] Ask questions about addressing student pain points in the "How might we …" format that addresses student needs, motivations, etc. For example, how might we help students feel more confident about participating in online discussions?
- [ ] *Include user testing during sketching and prototyping.
  - [ ] "Four or five users are enough.
  - [ ] "One is better than none."
- [ ] Cognitive walkthroughs and heuristic evaluations can help to identify usability issues that are missed on first pass/interactions taken for granted.

Questions to end (if we're not satisfied with our answers to these, go back and revise/iterate again)

- [ ] Have we met standards for inclusiveness?
  - [ ] Have we defined slang terms or idioms? (non-native English speakers)
  - [ ] How can the technologies we employ help all students succeed, without hindering others?
- [ ] Have we designed with consideration of accommodations for students with disabilities?
- [ ] Are rubrics clear and aligned with the assignments and intended learning outcomes?
- [ ] Have we incorporated real-world experience?
- [ ] *Have we included students in this phase?

Launch/Evaluation Phase

Questions to start

- [ ] *How do we evaluate that if we are not able to do user testing?
- [ ] *Did we teach instructors about online pedagogy?

Questions to start

- [ ] Ask questions on mid-course and end-of-course surveys that provide information on user needs and pain points. If this can't be done in those surveys, create your own.

Questions to end

- [ ] Were we successful according to the initial goals that we set?
    - [ ] How so?
    - [ ] In what ways were we not successful, and why?
- [ ] Are we including time in the schedule for reflection?

    How are we reflecting on this project?

    - [ ] Did we learn everything we wanted to from the surveys?
        - [ ] What can we change?
        - [ ] What is the feedback mechanism so students feel like their suggestions/comments are heard and being acted upon?
    - [ ] Have we reflected on the lessons learned through this project, so that they can be applied to future projects?
        - [ ] What needs to change in our current work process?

- [ ] *Did we provide onboarding experiences for instructors that will teach these courses/programs about how to be an online teacher?
    - [ ] Awareness of their responsibilities to engage students beyond just teaching the material?
- [ ] What can we do to help instructors better understand these responsibilities?
- [ ] How transparent is the design process to the end-users?
    - [ ] What else can be done to make it visible (within reason)?

Additional Considerations

- [ ] Instructor-related
    - [ ] *Did we provide instructors with a process for documenting accommodations and help that students have needed for this course? Shortcomings?
        - [ ] How much have we thought about instructor needs during this project?
            - [ ] What more should we be doing?
- [ ] Technology-related
    - [ ] What is the process for students/instructors to report technological problems with our learning tools?
- [ ] Student-related
    - [ ] How can we facilitate instructor/student interaction/communication?
    - [ ] How can we facilitate and encourage student-to-student interaction in the class for academic and social purposes?

APPENDIX 1: NEEDS AND TASKS

Table 1-1. Navigating course

Need	Task
Locate and use course materials	Find course
	Find lectures
	Find videos
	Find readings
	Find other course materials
	Watch recorded lecture
	Read an assignment online
	Submit an assignment or paper
	Work on paper
	Search

Table 1-2: Scaffolding, onboarding, and help

Needs	Tasks
Understand online format, understand what the course is about	Learn about online learning and the course in particular
Understand and adapt to protocols and practices of an online class	Learn how to adapt to new experience and new ways of communicating and connecting
Need help learning how to use various tools while also starting new class	Learn LMS, course organization, and course-specific tools

Table 1-3: Communicating, participating, and interacting

Needs	Tasks
Communicate with others, participate in class discussions, build community, interact with classmates and instructors, make friends	Participate in discussion
	Work with small group on team project
	Find others to study with
	Chat with a classmate or instructor
	Ask instructor a small question
	Ask instructor a more involved question
	Check messages/notifications
	Send a message

Table 1-4: Scheduling and time management

Needs	Tasks
Manage schedule, manage time	Look for due dates
	Look for start dates
	Look to see how long an assignment takes to do

Table 1-5: Feedback and assessment

Needs	Tasks
Has my assignment been graded? What are my grades? What does the professor expect from me on this assignment?	Look for feedback (graded) on assignment
	Check grades
	Check rubric

APPENDIX 2: PERSONAS

Figure 2-1. Inexperienced online learner

Inexperienced Online Learner

Motivated Meiling

Age: 19

Work status: Part-time

Education: Pursuing BS

BIO

Meiling is a freshman taking an online course and a remote learning course because of COVID-19. This is her first experience with digital learning. English is her second language.

"Being able to slow or pause lectures lets me look up words I don't understand."

GOALS

Complete assignments on time

Become a physician's assistant

MOTIVATIONS

Structured course helps her stay on schedule

Sharing progress and getting feedback from classmates

CORE NEEDS

Understand the course and LMS format

Understand expectations

Interact with professor

PAIN POINTS

Struggles to understand lectures without supporting text

Inconsistencies in the way courses are presented

Figure 2-2. Returning online learner

Returning Online Learner

Can-Do Cathy

Age: 45

Student status: Full-time

Work status: Full-time

Education: Pursuing MS

BIO

Cathy has previously taken an online certificate program and several MOOCs. She considers herself as someone who needs more time to think.

"Online learning creates an equal and safe space for me to participate in class."

GOALS

Change careers

Graduate

Gain competency

MOTIVATIONS

Learning with and from classmates keeps her engaged

Innovative ways her professor provides course content

CORE NEEDS

Flexibility

Review content multiple times until she understands it

PAIN POINTS

Job makes it hard to keep up with course schedule

Struggles with learning tech tools and finding what she needs on Canvas

Figure 2-3. Online instructor

Online Instructor

Passionate Peter

Age: 50

Years teaching online: 4

Education: MFA Writing

BIO

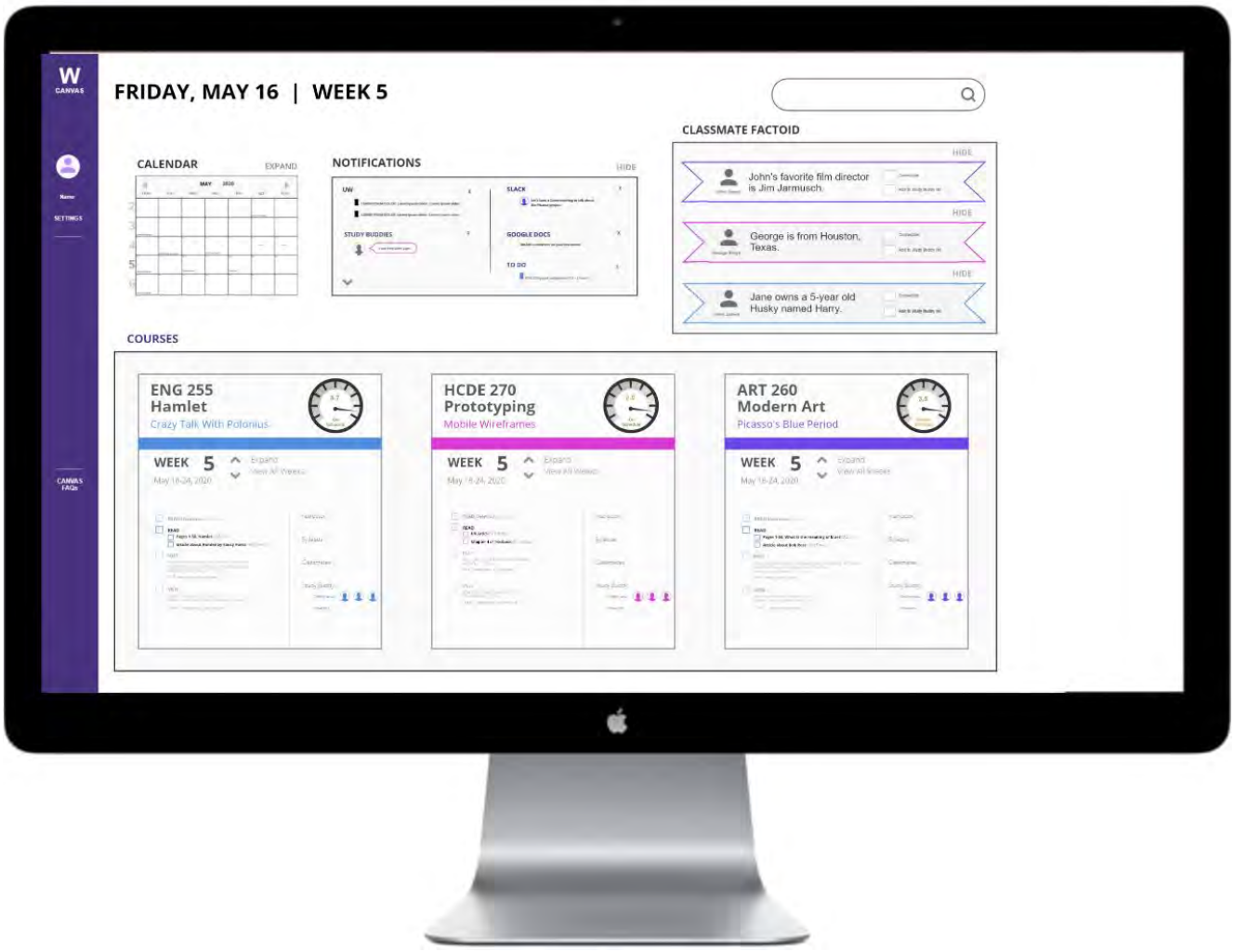
Initially taught in-person and was skeptical about teaching online. Now he thinks it's better than in-person. First in his department to teach online and was drawn to the opportunity to dream big.

"The course is dialed in, and the students love the course design."

GOALS	MOTIVATIONS	CORE NEEDS	PAIN POINTS
Student success	Passion for course subject matter	Understanding student needs and how to accommodate them	Providing timely feedback and assessment
Innovating methods and strategies for improving online teaching	When students are engaged	Mastering tech tools	When students don't understand an assignment

APPENDIX 3: ALTERNATE DASHBOARD WIREFRAME

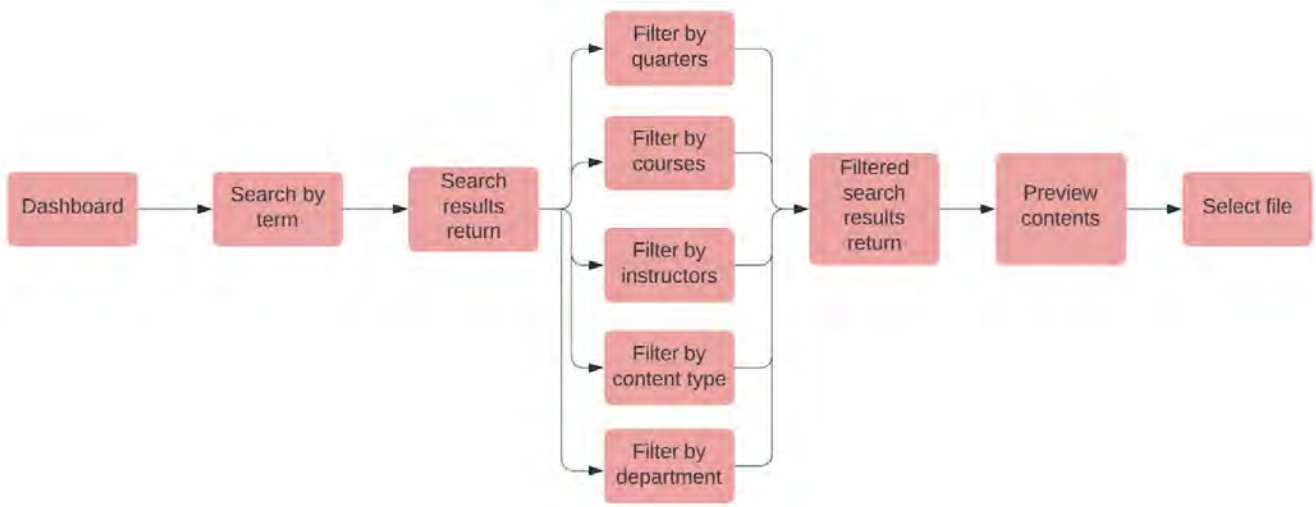
Figure 3-1. Module Tiles Concept



This concept, in which each course module is in a tile, allows for persistent visibility to the current week's assignments without clicking into modules.

APPENDIX 4: CONTEXT SCENARIOS

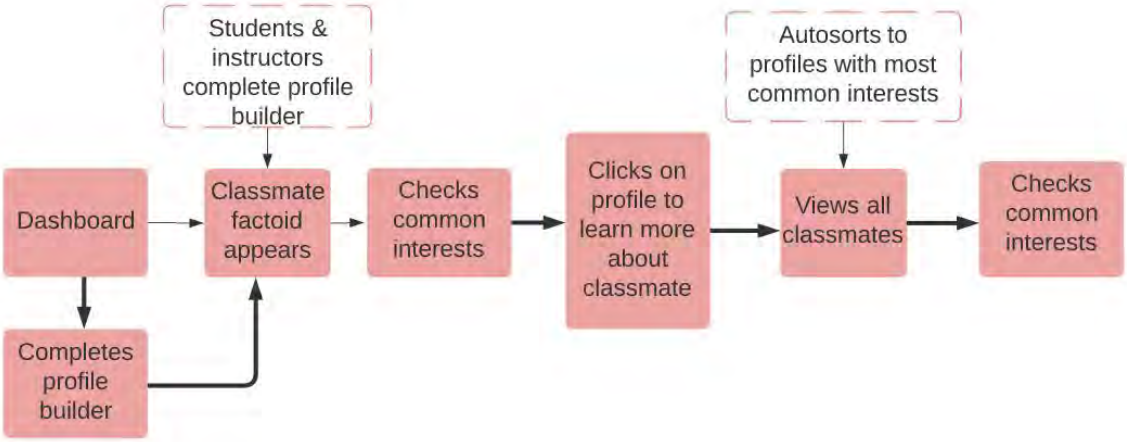
4-1. Finding Content/Search



CONTEXT: Cathy is in the final quarter of her program and needs to refer back to previous course work for her final assignment. She needs to find items such as papers she submitted, reading assignments, and discussions.

- Cathy looks in the file repository to find a reading from the first quarter, but can't remember the title. She enters a wildcard in the search and filters by Autumn quarter 2016 and Content type of Files.
- She sees a few papers that might have the content she's looking for and hovers over them to see a preview of the file. Cathy finds the file she needs.
- She also needs to find a paper she wrote, but doesn't remember which quarter. She enters some search terms and filters by assignment content type of Assignment.

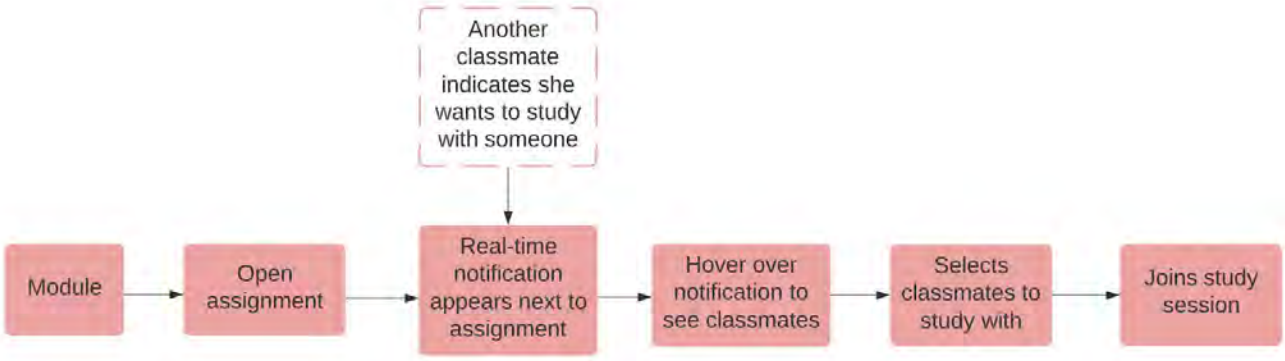
4-2. Getting to Know Classmates and Instructors



Meiling is an inexperienced online learner who doesn't know anyone in her course. She finds the *discussions to be intimidating because she has no context about the people she has discussions with*. She also feels like an outsider because she is an international student. She is interested in finding a mentor who can help her navigate college and online learning. Meiling has a love-hate relationship with social media---she likes to see what others are doing, but feels depressed when only a few friends like her posts.

- Meiling opens her dashboard for the first time and is greeted with a profile builder.
- Meiling spends about 5 minutes answering the questions that are most interesting to her and uploads a photo herself on her favorite vacation.
- After she completes the profile, she notices a fact of the day about one of her fellow classmates.
- The classmate likes similar movies as Meiling so she gives the factoid a thumbs up.
- Meiling sees that she can view all profiles of students in her program. When she views all the profiles, she finds another international student and gives the international student factoid a thumbs up. She spends some time getting to know her classmates and thumbs up more
- At a glance, Meiling can see which factoids she liked on classmate and instructor profiles and the classmates she has the most in common with appear at the top. She feels like she's is already getting to know people.
- Meiling says, "Hi," to the international student to let her know she's an international student too.

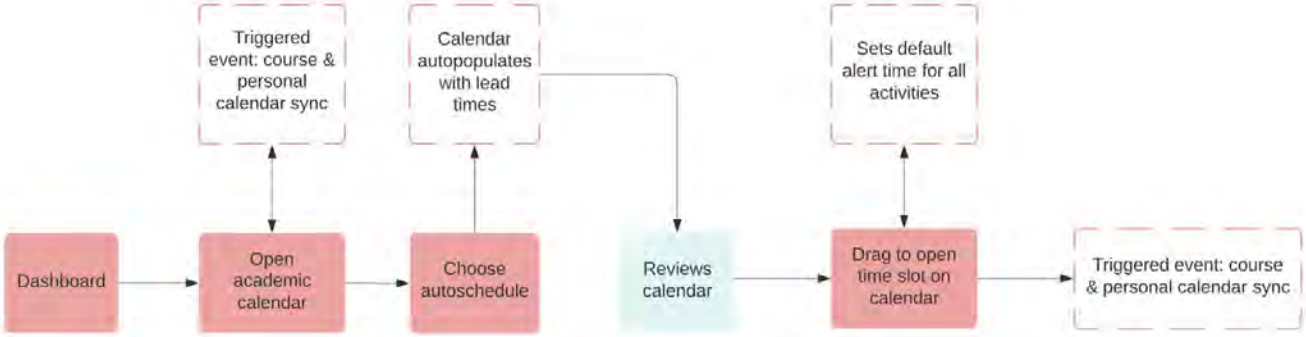
4-3. Studying with Classmates



Jane is a freshman who is used to *studying with friends*. She did not expect online learning to feel so isolating and misses study sessions, which helps keep her motivated. She wishes she had a way to *work on assignments with others*.

- Jane needs to work on an assignment that she unsure about.
- She opens her assignment and sees that others are working on the same assignment.
- Jane hovers over the sudents to see classmates' names and decides to join them to study.
- She joins the study session in progress.

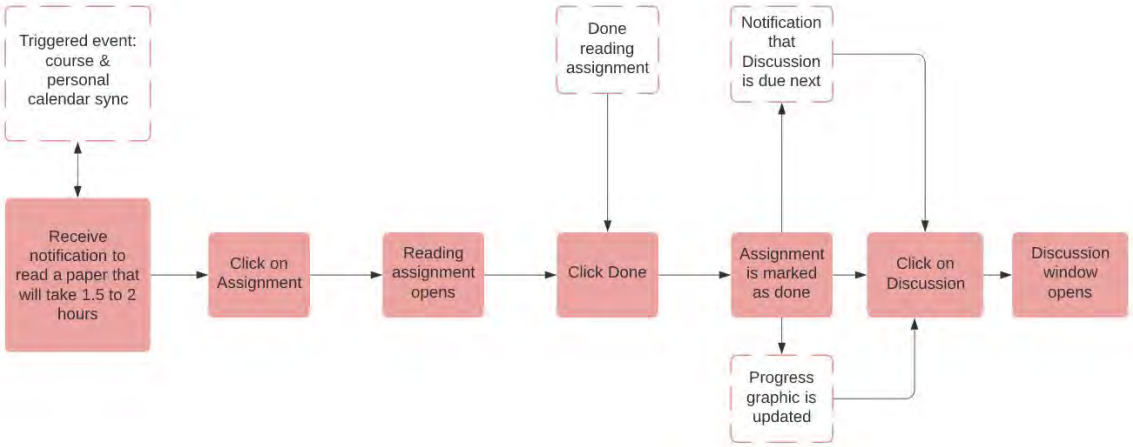
4-4. Managing Schedules



Cathy is a returning learner who has a busy professional schedule and *has to squeeze course work in when she can*.
Sometimes she *doesn't get assignments completed on time* because *she misjudges how much time is needed* to complete an assignment.
She wishes she could more *effectively plan her course schedule* around her personal appointments.

- Cathy started a new course and wants to plan her schedule for the quarter.
- She opens her dashboard to view her course calendar that shows all the activities for the course she is taking this quarter. Her personal calendar is synched with her course calendar.
- She chooses autoschedule so all the assignments add a suggested lead time to the calendar.
- Cathy reviews the calendar and wants to make some adjustments to get an earlier start on some of the bigger assignments.

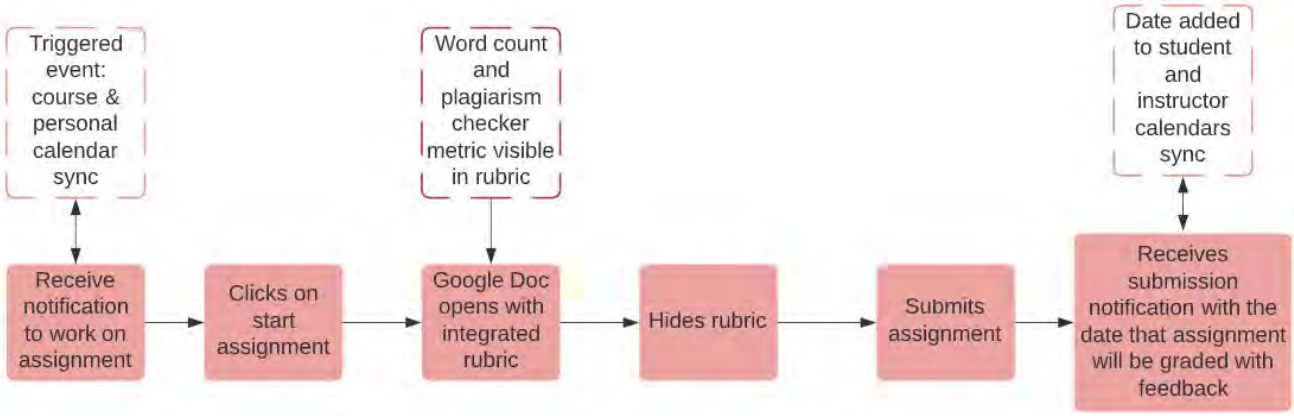
4-5. Accomplishing Tasks/Working on Assignments



Meiling is an inexperienced online learner who is used to the high school schedule in which assignments are assigned the day before they are due. Now she has to *track her own progress and feels overwhelmed with understanding what she has completed in each of her courses*. Meiling likes *using checklists* to cross off activities she has completed because it gives her a feeling of accomplishment.

- Meiling gets a calendar notification suggesting that it's a good time to read a paper. The notification says the paper will take about 1.5 to 2 hours to read. She's free so she clicks on the assignment to to open the paper.
- She finishes her reading and marks the assignment as done. The overall progress graphic on the dashboard updates, and then she explores her progress in each course and feels accomplished.
- Meiling sees a message from the system that she needs to write a discussion entry, which should take approximately 1 hour.
- Meiling wants to work on the discussion while the reading is fresh on her mind so clicks on the assignment, which opens the discussion.

4-6. Understanding Assignment Expectations

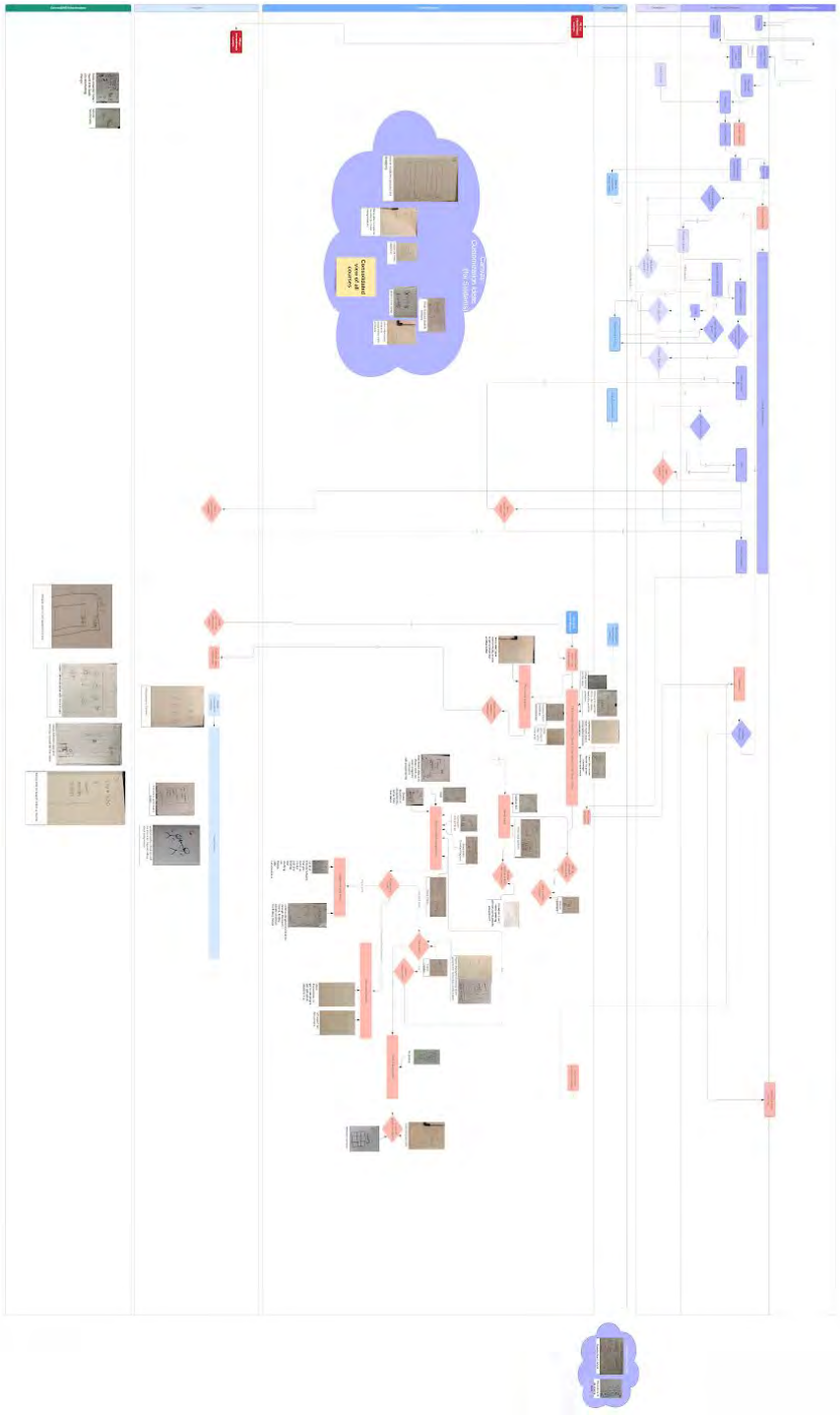


Cathy tends to forget that a rubric is available until she sees the rubric when she is turning in her assignment, but by then it's too late to make changes. She has gotten marked down for missing some key expectations. Sometimes she doesn't receive the feedback in time to make adjustments for the next assignment. She wishes she didn't have to think so hard about the expectations so she can focus on the activity.

- Cathy gets a notification to work on her next assignment so opens her assignment.
- She writes her paper and continually refers to the rubric.
- Cathy feels like she has met the expectations of the assignment. She wants to do some final formatting and doesn't want the distraction of the rubric so hides the rubric pane.
- She submits assignment and sees that she'll receive grading and feedback in 4 days.

APPENDIX 5: INSTRUCTIONAL DESIGN PROCESS WORKFLOW DIAGRAM

See an editable Visio file here or viewable PDF.



APPENDIX 6: HUMAN-CENTERED DESIGN (HCD) RESOURCES

Articles for reading

- A New Usability Heuristic Evaluation Checklist
- 10 Usability Heuristics for User Interface Design
- How to Get to Know Users
- How to Know Your Users Needs
- UX to LX: The Rise of Learning Experience Design
- Universal Design for Learning

HCD Toolkits/Methods

- 18F Methods
  Website with comprehensive selection of human-centered design methods and tools, with printable cards for various stages of work, from research to user testing.
- Universal Design of Instruction in Postsecondary Education
  Resources from The Center for Universal Design in Education that help with identifying how universal design can be incorporated into the education experience.
- Stanford d. School Bootleg Deck
  Methods and tools for understanding empathy, conducting interviews, brainstorming, prototyping, and much more.
- IDEO Design Kit: The Field Guide to Human-Centered Design
  Contains information on brainstorming, prototyping, and learning to understand the people you're designing for. The IDEO site is a good place to find methods for every stage of the design process. Including:
  - Participant interviews
  - Card sorting
  - Insight statements
- Design Thinking for Educators
  Examples of how to phrase design questions around addressing school pain points (geared toward K-12).
- Nielsen Norman Group
  Offers lots of videos and articles on various aspects of usability design.
- Roman Pichler
  How to use the Product Canvas and Business Model Canvas in a human-centered design process.
- Microsoft's Inclusive Design

HCD Courses/Curriculums

- Acumen Academy
  Classes offered in collaboration with IDEO, including: Introduction to Human-Centered Design.
- Interaction Design Foundation
- Human-Centered Design: an Introduction
  Course offering by UC San Diego through Coursera

Universal Design

- UW Do It Program and list of principles
- Teaching Commons Universal Design Website

Behavior Change Models

The following six pages are behavior-change model cards referenced in the report.

Health Belief Model – Self-efficacy

Empowering Effectiveness

Including empowerment strategies in design will result in higher levels of self-efficacy in safe decision making.

Building confidence early on leads to self efficacy. Providing communication and negotiation suggestions creates situational empowerment. Reminders of effective communication tactics and negotiation skills can improve self-efficacy over decision making.

DOs

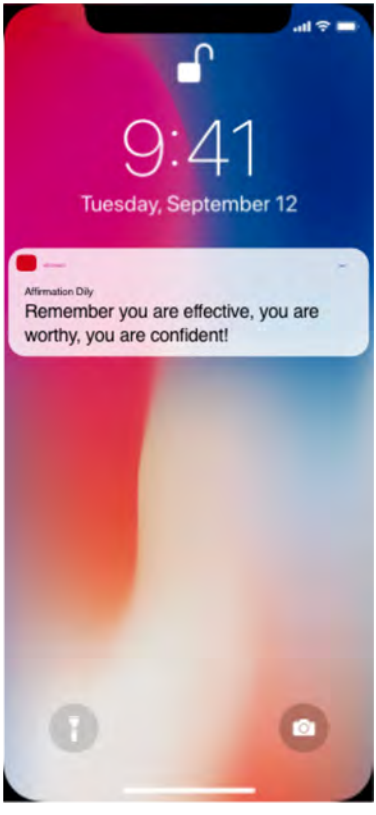
- Offer suggestions for communication or refusal in risky situations.
- Create and practice scenarios.
- Remind of self-confidence and value.
- Enforce equality.
- Demonstrate desired behaviors.

DON'Ts

- Exclude members of the LGBTQ community or those who do not identify with gender norms in creating scenarios.
- Exclude multi and interracial groups.
- Forget context.

Health Belief Model – Self-efficacy

Empowering Effectiveness



Using in app affirmation reminders will improve user confidence. While having access to communication tactics tailored to specific situations will develop self-efficacy.

There was a **significant decrease** in risky behaviors among young female adolescents who received an intervention focusing on self-efficacy.[1]

Self-efficacy is the common thread that seams to increase intervention effectiveness.[1]

Ethical notation **:** Do not forget context. Consider social and economic situations that may differ between use cases. Design for a broad population remember minority groups while developing scenarios.

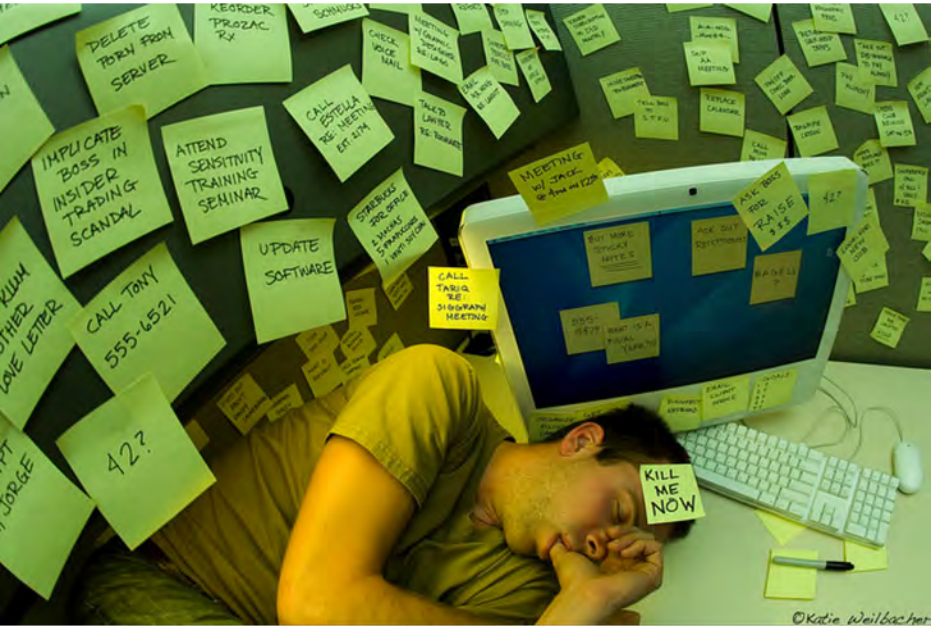
Author:
Haley Rohl

Reference
1. Champion, V.L., & Skinner, C.S. The Health Belief Model.

Health Belief Model - Cues to Action

Optimize on Reminders to Engage with the Intervention

Reminders to remain engaged with a digital health intervention can be good cues to action. However, these reminders may be more effective if they are only sent to people who disengage (versus a weekly reminder that goes out to everyone to stay engaged) and if they address other barriers such as perceived barriers, perceived benefits, and/or self-efficacy.



http://addspacetoyourlife.com/organizing-sticky-notes-organizing-kitchen-gadgets/

People get too many reminders, often for things that aren't relevant or important to them, leading them to ignore important reminders.

DOs

- Send reminder messages when relevant
- Use reminder messages to address address other barriers to change by targeting self-efficacy and perceived barriers

DON'Ts

- Send "reminder to use our product" messages to everyone

Health Belief Model - Cues to Action

Optimize on Reminders to Engage with the Intervention

Hi Noreen,

We noticed you haven't logged into MyWebQuit in 8 days, we miss you! Did you know people who log in at least once a week are more likely to quit for good?

We know it can be easy to forget logging in. We also want you to have the best chances of reaching your goal to have a smoke-free life! Hope you come back soon!

"Even though I really wanted to quit, I kept forgetting to login to practice the tools and track my progress. Life just got too busy with my two teenage boys. I decided to bookmark the site and put on on my phone. That really helped! It's been six months since I quit smoking and I still go back and log my progress so I can see how much money I've saved by not smoking. It's so nice to see!"

-Shonda, from Tennessee, smoked for 35 years

http://adage.com/article/cmo-strategy/shonda-rhimes-dove-work-feel-commercial/309084/

This is an example of an email that could serve as a a *relevant* cue to action to someone who has stopped logging in to a web-based smoking cessation intervention.

It addresses perceived benefits of logging in.

It also provides a brief "user story" where User X states that s/he was feeling overwhelmed and finding it difficulty to find time and remember to log in to the website. It goes on to indicate what she did about it and how that was helpful (addresses perceived barriers).

"Cancer screening studies have used reminder letters or post-cards as an intervention and found that, for many participants, this intervention is significant... Researchers have found that simple reminders may be all that is needed for women who have already had a mammogram or are contemplating getting another (Saywell and others, 2003)."

NOTE: If messages are being pushed out to users, users should always have ways of turning them off or to opt out of receiving them.

Author:
Noreen Watson

Reference
Champion, V.L., & Skinner, C.S. The Health Belief Model.

Health Belief Model (HBM)

Provide support and reassurance to overcome perceived barriers

Barriers to behavior change may include misinformation, social stigma, cost, inconvenience or other issues. Interfaces that enable social support and accurate information may allow users to overcome perceived barriers.

https://hubpages.com/health/Bra-that-Can-Detect-Breast-Cancer

Women may avoid scheduling regular breast exams because of concerns about modesty, cost, scheduling, or discomfort. If their specific concerns can be addressed through social support or accurate information, women are more likely to follow through on getting regular mammograms.

DOs

- Remind people of benefits of the target action that relate to the perceived barriers
- Address barriers specific to the target behavior and population

DON'Ts

- Provide misleading or inaccurate information

Health Belief Model (HBM)

Provide support and reassurance to overcome perceived barriers

https://i.pinimg.com/originals/41/96/67/419667c5efd31674bbd9d9979c4562a9.jpg

The home screen of the headspace website immediately addresses possible concerns about meditation, such as time commitment and difficulty.

Perceived barriers were the most powerful single predictor across all studies and behaviors.

A critical review of HBM studies conducted between 1974 and 1984 combined new results with earlier findings to permit an overall assessment of the model's performance (Becker, 1974; Janz and Becker, 1984)

ETHICAL NOTE: It may be tempting to overstate the perceived benefits or severity of a behavior to help people overcome barriers, but it would be unethical to do so.

Authors.
Samantha Muscat-Scherr, http://sms.design

Reference
Champion, V. L., & Skinner, C. S. (2008). The health belief model