Hydro One Networks Inc.

PILOT PROJECT:

P&C TRAINING SITE

User Experience (UX)

Design Report

Updated: 4/19/2021

LIST OF REVISIONS

Version	Date Issued	Reasons for revision	Revised by
Draft	April 19, 2021	Initial draft	G. Wright
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A copy of this report shall be placed at the following location:

- P&C Training Site - Supporting Documents Library

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Introduction

Background

In October 2020, the P&C engineering leadership team expressed an interest in designing a tool that would allow their staff to easily register for training courses as part of their technical curriculum. Given the complexity of P&C engineering as a profession, it was indicated that junior/rotation staff would benefit from technical training courses taught by senior staff.

To develop the tool, a user experience (UX) design student was asked to create an intuitive process for managing internal training courses given the technology available (SharePoint 2010). The UX design student proposed a pilot project to test the UX design methodology's feasibility at Hydro One based on the framework outlined in Juno College of Technology's UX Design course curriculum.

Methodology

The UX design methodology uses the British Design Council's Double Diamond design process framework which consists of four phases: 1. Discover, 2. Define, 3. Develop, and 4. Deliver. At the beginning of the project, the UX designer starts with a brief outline what is expected from the client and the goal is to get from a state of "Don't know/Could be" to a state of "Do know/Should be", through user research and testing.

In the discovery phase, the designer performs generative/evaluative research with users to understand their past experiences. Based on user feedback, the designer develops clusters which are then used to create mental models to help visualize user behavior, preferences, and tendencies. In the define phase, the designer draws insights from the mental models and uses the themes to frame the problem statements in the context of individual users. In the develop phase, the designer ideates upon the problem statements and generates potential solutions that may be feasible, given the resources available. In the deliver phase, a prototype is developed and iterated upon until the designer is ready to test for usability and to identify opportunities for improvement. The resulting design is a working product/solution that has been curated using data collected in the appropriate user context.

Research Objectives

1) To determine the preferred method of course registration for P&C employees
2) To learn about makes for a good/bad user experience when enrolling/teaching a course

Research Plan

Screening Criteria

Based on personal experience, the UX designer assumed that there were three user group perspectives that would need to be analyzed in order to understand the enrollment process:

1) Students – Those who are taking the class
2) Instructors – Those who are responsible for teaching the class
3) Administrators – Those who are responsible for keeping the training infrastructure running

To be eligible for this study, participants needed to be Hydro One employees with experience working in the P&C engineering department and have enrolled in a course, class, or conference in the past few years.

Research Participants

Participants were recruited formally by asking their manager's permission to assist in the study and met the screening requirements. Consequently, there were 8 participants (4 students, 3 instructors, 1 administrator) who volunteered to take part in this study.

Registration Context

Based on personal experience, the UX designer assumed that there were two contexts of registration that must be considered:

1) Digital (Mobile or Desktop)
2) Physical (In–Person, Mail, or Phone)

Quantitative (Generative) Research

Each participant was asked the following questions as a survey exercise with the goal of narrowing the focus of the study to a single context of registration:

1) How did you register for your last course (online, in–person, on the phone, mail, etc.)?
2) Have you ever enrolled in a course in other methods (different from the one initially mentioned)?
3) Would you do the other method again?

Qualitative (Evaluative) Research

One–on–one interviews were conducted using the WebEx teleconferencing service. Each interview was recorded, and responses were transcribed for analysis using the browser–based white boarding software, known as Miro.

During the first half of the interview, the interviewer asked open–ended questions regarding their experiences with course registration. Each question was aimed at understanding before/during/after the enrollment process, as well as, what improvements the participant would make to the process to create a better user experience in the future.

During the second half of the interview, participants were asked to complete an exercise where they must describing their steps they would take if they had to research and register for a course during the interview. From this activity, the user designer could observe the participant's decision–making process in real–time and ask participant what they are feeling as they complete their journey (see figure below).

Figure 1: Task analysis during one–on–one interview with Participant 4 (using WebEx)

Interview Script

Introduction

Introduce interviewer:

- 30 minutes – over WebEx

Why are we here?

- To learn about your experience enrolling in a class/course.

Recording permission:

- Ask for permission to record.
- The recording shall be transcribed and feedback will be used to build mental models to develop a better understanding of user preferences.
- This data will be used by to guide decisions in the creation of the P&C training site.
- This data will be primarily shared with managers as a pilot project for the UX design methodology at Hydro One.

During the interview, we will be:

- Asking questions pertaining to course registration experiences
- We will walk through the registration process for a technical training course to get more feedback about your expectations, observations, and experience.

Interview

Tell me about the last time that you registered for a course?

- What was your key motivator?
- How did you register for it (online, in person, on the phone, mail, etc.)?
- Why did you enroll in the course in this way instead of other mediums (online, in person, phone, mail, etc.)?
- How easy/difficult was it?
- What were some things that you liked?
- What were things that slowed you down/didn't work?

What were the things that you did before filling out the registering for the course?

- What were you doing before you filled out the form?
- Did you research the course? Look into the instructor? Find ratings? Talk to friends?
- Did you make the decision to enroll alone or with someone else?

What were the things that happened after you filled out the registration for that course?

- Did you receive a confirmation?
- Was follow up instructions provided to you (next steps, expectations, etc.)

Have you ever enrolled in a course in other methods (different from the one initially mentioned), what was that experience like?

- How many times did you enroll in this method?
- Would you do it again?

Do different course formats matter to you when picking a course (i.e. in–person, online)?

- Would these choices affect your decision about enrolling?
- Why or why not? Specify the key component that matters.

What device would you prefer to use for the registration (desktop, mobile)?

How would you improve this registration process (before/during/after)?

Instructor–only questions:

As an instructor, are there any additional features that you would find useful when teaching a course?

As an instructor, are there any features that you wouldn't find useful when teaching a course?

Task Analysis

Scenario:

- Imagine you're looking to enroll online in a P&C continuing education course. Please walk me through the steps that you would take as you make your decision to enroll.

Notes for the interviewee:

- Act on your own behalf
- Pretend that you're enrolling in a real course
- Please articulate your decisions
- I may stop you at various points in your explanation to ask questions about your decisions.

Conclusion

Can we follow up with you on any additional testing in the weeks to come?

Do you have any questions for me?

Thank you for your time, and have a safe day!

Research Analysis

Survey Results

The results of the survey-type questions were used to create graphs (see figures below), and as a result, the following observations were made:

1) Online course registration was the most common recent experience (87% of participants)
2) In–person course registration was the most common alternative method of registration (62% of participants
3) Online was the preferred method of registration by users (88% of participants)

Based on the survey findings, **online** registration became the focus of the UX design activity.

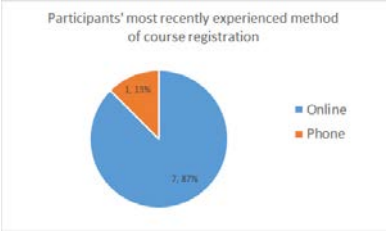

Figure 2: Participants' most recently experienced method of course registration

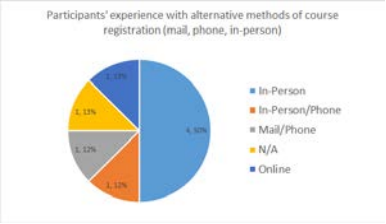

Figure 3: Participants' experience with alternative methods of registration

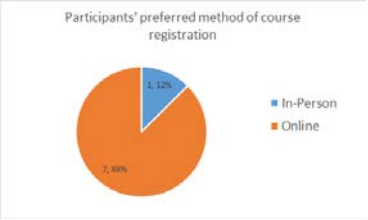

Figure 4: Participants' preferred method of course registration

Affinity Mapping

A series of affinity maps were created for each user (see Appendix) by grouping feedback into themes. After combining similar themes, five themes emerged which are displayed in the figure below:

1) Research & Motivation
2) Instructor & Course Delivery
3) Ease of Use & Accessibility
4) Registration & Follow Up
5) Challenges & Expectations

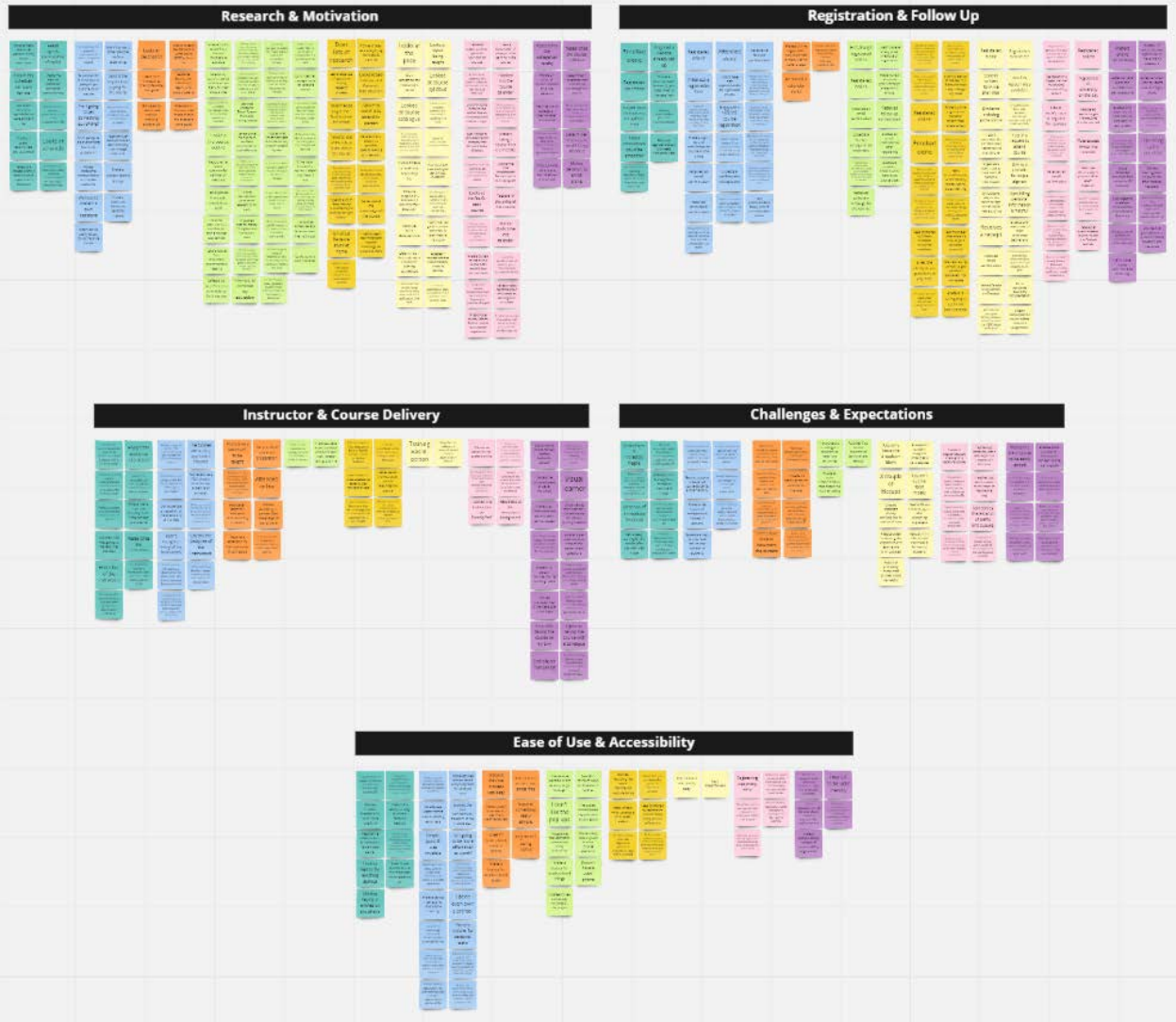

Figure 5: Final Affinity Maps (for Preliminary Affinity Maps – see Appendix)

Affinity Grouping #1: Research & Motivation

This group included each of the data points where users described the aspects of their research process when building a business case to enroll in a course. This includes identifying their motivations, determining the applicability of course contents, gathering feedback from peers, performing self–assessments, cost/benefit analysis, and logistic factors that they take into consideration.

Insights:

- Users generated lots of questions during the research process for a course
- Users prioritized content and schedule over the instructor assuming that the institution that is presenting information is reputable
- Users recognized that HONI has a particular way of doing and so they're critical of the applicability of external course contents
- Users relied on word–of–mouth testimonials in order to form the bulk of their opinions on a course, instructor, or institution
- Users assessed their own abilities, identified gaps in their skillset, and sought training to fill those gaps
- Users relied on their managers for guidance in picking the right course from the options outlined in their business cases
- Users performed cost/benefit analysis exercises to determine if the time/energy investment in a course would be worth the effort
- Users hoped to continue their educational development despite being stuck at home during lockdown
- Users often looked internally for continuing education/learning opportunities within the company and team sites
- Users often made the decision to enroll in a course alone unless they had colleagues/friends that was planning on attending the session
- Users disliked sales pitches from admissions staff when researching a course because they simply wanted to assess a course's applicability

Figure 6: Affinity Grouping #1 – Research & Motivation

Affinity Grouping #2: Instructor & Course Delivery

This group included each of the data points where users described their preferences regarding the instructor and the delivery of the course itself. This includes their preferences for attending a class, audience participation, teaching styles, training material, class sizes, technical barriers, and social factors that they take into consideration when evaluating the quality of a course.

Insights:

- Users preferred attending classes in–person if the course necessitates building a network and making personal connections
- Users valued audience participation and felt bored when instructors did not engage their students regularly
- Users preferred attending classes in–person when the course content is challenging because it helps them to stay motivated and focused
- Users evaluated instructors and determined whether their instructors had enough practical experience to have their opinions carry any weight
- Users preferred having the physical copies of the training material
- Users preferred smaller class sizes in order to minimize distractions and it offerred them more opportunities to ask questions
- Users felt concerned about technical barriers/difficulties reducing the quality of comprehension during virtual classes
- Users valued the serendipity of meeting with likeminded individuals in the same space and having informal discussions with other attendees

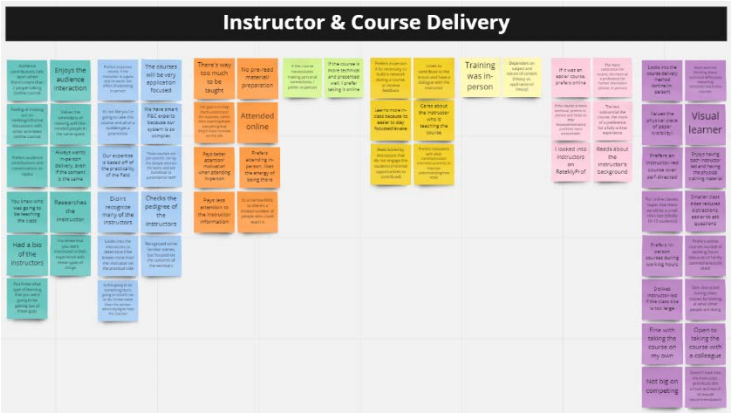

Figure 7: Affinity Grouping #2 – Instructor & Course Delivery

Affinity Grouping #3: Ease of Use & Accessibility

This group included each of the data points where users discussed their preferences for usability in the registration process. This includes their preferences for task completion, receiving feedback, account login, duplicated efforts, laptop/mobile preferences, sentiment towards the user interface, process mapping, system status, timeout constraints, distractions, and opportunities to speed up the enrollment process if they are well-prepared.

Insights:

- Users preferred to be able to complete the task of registering for a course in a single sitting
- Users preferred to receive timely feedback after being hit with a roadblock in the registration process which provides them with a clear path forward
- Users preferred to have the system remember their personal information
- Users disliked entering the same information multiple times or maintaining multiple account login details
- Users preferred to use a laptop/desktop for work/serious tasks because they have more control over tabs, windows, and data entry
- Users avoided using their mobile phones for work because they disliked mixing their personal life with business and inputting information using a touch screen
- Users expected a simple and clear registration process that's intuitive enough for them to not even notice or remember it
- Users preferred having the entire registration process mapped out as well as continuous updates on the system status
- Users disliked timeout conditions being set on their registration form because it forces them to re–enter information if they took too long to complete the task
- Users preferred using the mobile application for low commitment browsing if they are away from their work laptop or travelling for work
- Users disliked pop–ups that distract them from achieving their goals in the registration process
- Users preferred having the option to register for multiple courses at once if they know the course code ahead of time
- Users expected a 'hand–holdy' user interface with a straight line to accomplish a given task

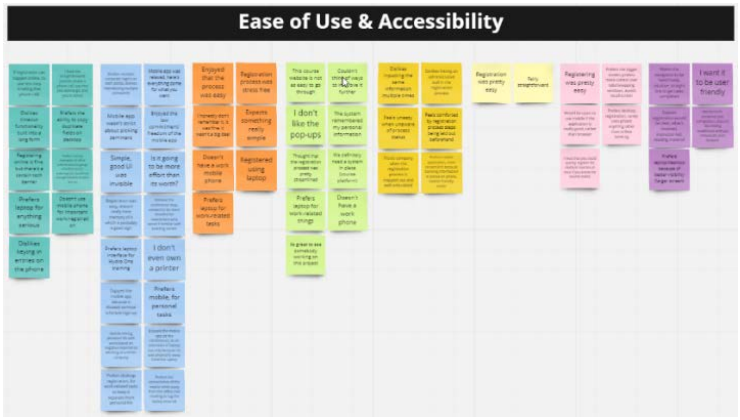

Figure 8: Affinity Grouping #3 – Ease of Use & Accessibility

Affinity Grouping #4: Registration & Follow Up

This group included each of the data points where users described their preferences towards the registration and follow up process. This includes pre–course instructions, email confirmation, reminders, communication, getting questions answered, logging in, and dealing with salespeople when their assessing the course's applicability.

Insights:

- Users preferred clear instructions to be laid out prior to the course beginning which indicates where to go, what to bring, what to prepare, and next steps
- Users expected a formal receipt emailed to them to use when filling out their expenses
- Users expected an email confirmation indicated that they've been successfully enrolled in the course
- Users expected an email reminder a week/month before the scheduled start date of their course
- Users expected consistent communication leading up to the course starting because they're often scattered thinking about different projects
- Users preferred having the ability to have their burning questions answered in a timely manner
- Users preferred when the registration remembers and auto–fills their information so that they don't need to duplicate their efforts.
- Users preferred using single sign–on through a social media account so that they don't need to maintain multiple credentials across sites
- Users expected instructions for how to submit homework assignments electronically
- Users preferred to test out the course platform prior to beginning the course in order to iron–out any technical issues
- Users preferred online course registration for smaller-scale courses
- Users preferred in–person/phone registration for more substantial courses but still expected commitments to be in writing (electronic/physical)
- Users preferred to opt–in to newsletters and promotional material rather than being automatically signed up during registration
- Users expected a calendar placeholder for the course in order to block out their time

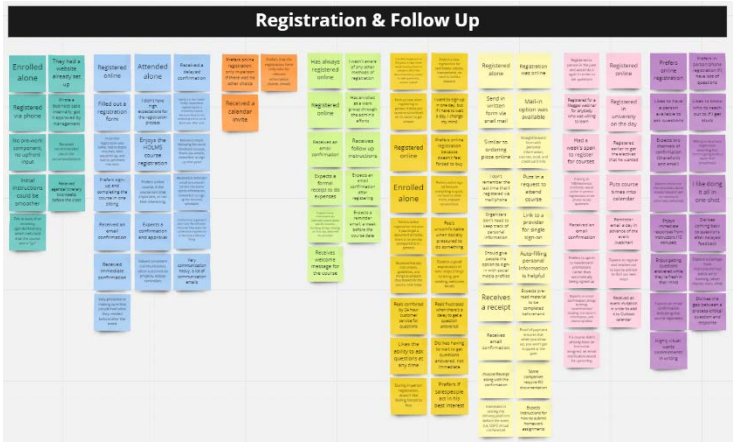

Figure 9: Affinity Grouping #4 – Registration & Follow Up

Affinity Grouping #5: Challenges & Expectations

This group included each of the data points where users outlined past challenges and their expectations for potential solutions. This includes instructor–specific functionality, uploading contents, sending announcements, segmenting content, sending out pre–read material, keeping a record of completion, editing content, and notification preference flexibility.

Insights:

- Instructors expected the site to be simple with few workflows to cause grief in the long term
- Instructors expected a place to upload pre–read material for students to review ahead of time
- Instructors expected a place to upload assignments which could be partitioned by class/class
- Instructors expected a way to send out announcements to their students via email
- Instructors expected a way to drip–feed educational contents to students (if needed)
- Instructors expected to be able to upload the contents to the site once and allow students to reference them as they need them
- Instructors expected a record of completion be tracked in the backend
- Administrators expected the contents on the site to be easily edited and contain job aids for how to make changes
- Administrators expected a basic course outline indicating the assigned instructor and a call to action directing students to the registration form
- Administrators expected a completion record email to be sent to the admin/manager after the course has been completed to act as a backup record
- Administrators indicated that managers expected to have the ability to turn off email notifications

Figure 10: Affinity Grouping #5 – Challenges & Expectations

Empathy Mapping

A series of empathy maps were created for each user (see Appendix) by grouping feedback based on what each user 'says', 'does', 'thinks', or 'feels' during the course registration process. After analyzing the similarities and differences between each participant, four distinct user personas emerged, which are displayed in the figure below:

1) The Student
2) The Minimalist (Instructor)
3) The Customizer (Instructor)
4) The Administrator

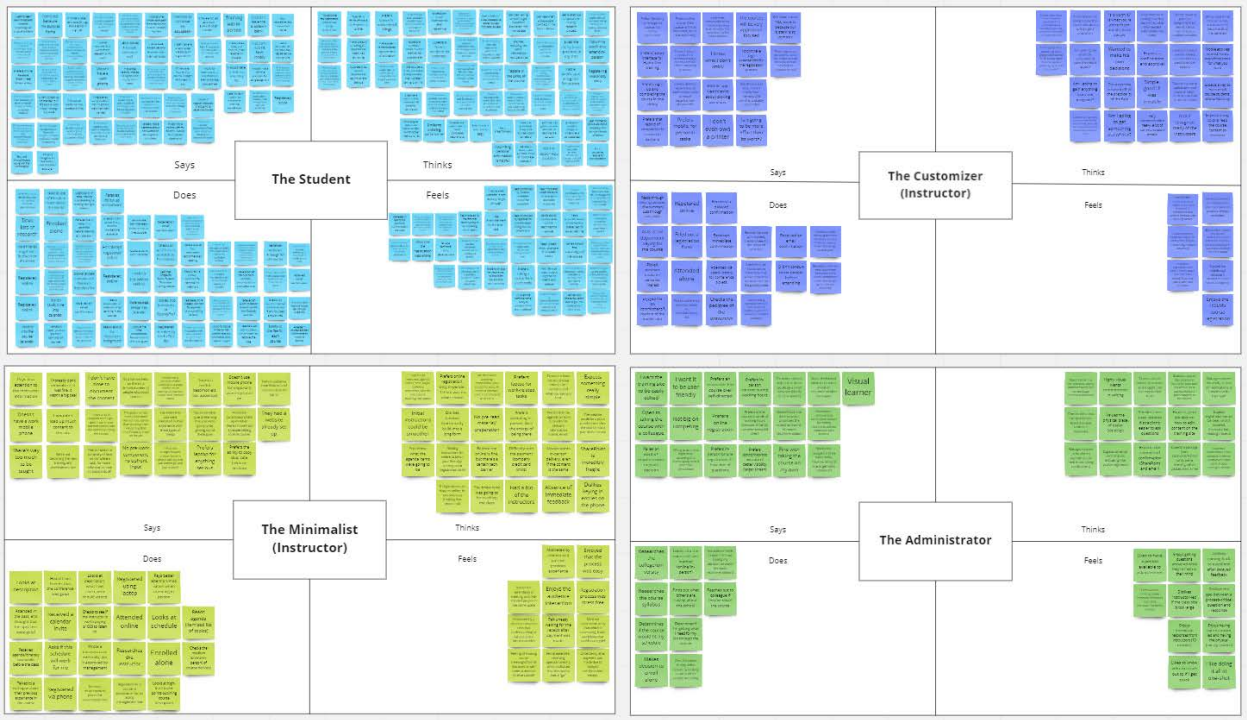

Figure 11: Final Empathy Maps (for Preliminary Empathy Maps – see Appendix)

Persona #1: The Student

Whether new or seasoned in their career, this user group expected a guided experience as they researched and registered for a course. From this user's perspective, each stage of the registration process needed to be clearly outlined upfront and instructions needed to be provided in order to help mitigate roadblocks. This user group expected immediate feedback to get their questions answered, and preferred receiving commitments in writing. This user group preferred to complete the registration in a single sitting, and felt frustrated when hit with administrative barriers or timeouts. When researching a course, this user group preferred to gather as much information from the site/peers before making the decision to enroll, and factored ratings into their decision making process. This user group focussed heavily on the course contents and performed a cost/benefit analysis on whether the contents will be applicable to their role. Often times, this user group made the decision to enroll in the course alone, although they were open to attending with a colleague. Further, this user group preferred to attend in–person sessions wherever possible and completed the registration process on a work laptop rather than mobile phone in order to keep personal/business lives separate.

Quotes from interviews:

- "I picked courses that were more relevant to my work"
- "I know what I don't know"
- "I attend certain sessions just to ask difficult questions"

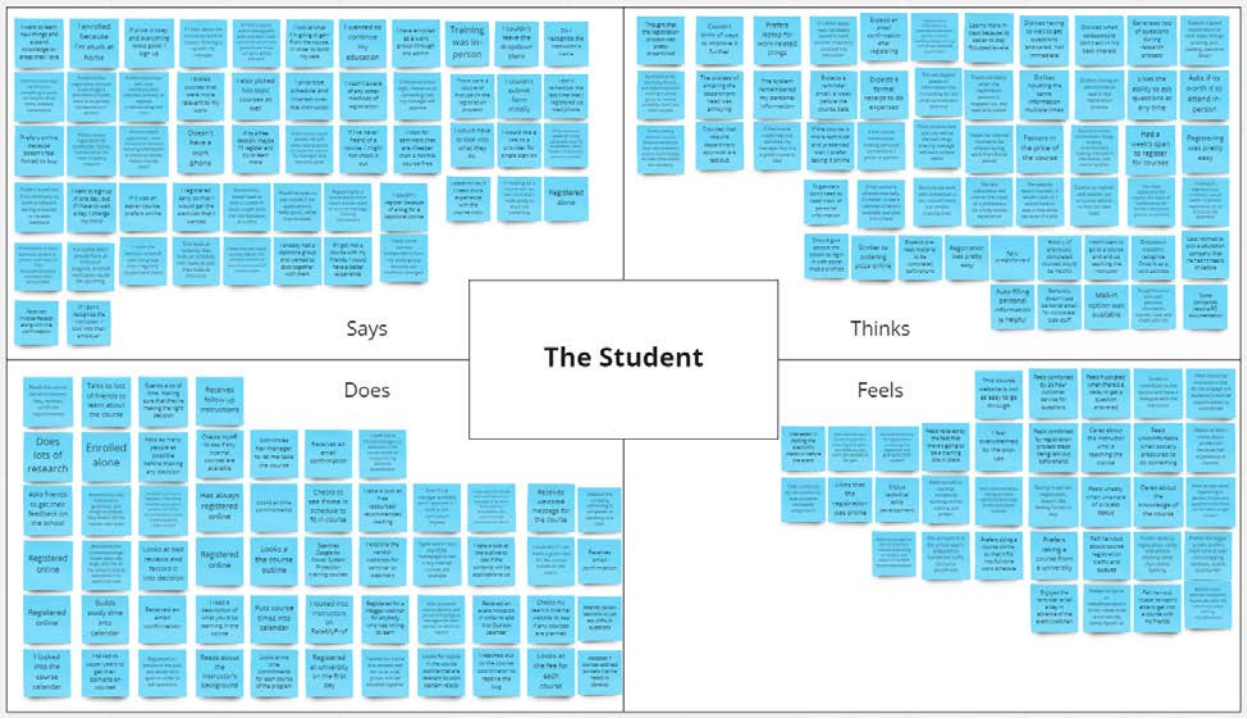

Figure 12: Empathy Map #1 – The Student

Persona #2: The Minimalist (Instructor)

Instructors expected a very simple user experience and aimed to minimize the time spent managing the curriculum in the training platform. From this user group's perspective, the training platform should be a place to store resources that students can reference after/between classes as they see fit. Similarly, they were open to providing studnets with all of the content up front and letting them govern themselves on how they want to interact with it.

Quotes from interviews:

- "I have a lot of projects on the go, I don't have time to put content into the website (running the course)"
- "I want there to be minimal automation (only that which is necessary) and fewer workflows that could cause grief"
- "We don't want anything complicated, very straightforward, in terms of interface and the simplicity of what's in it"

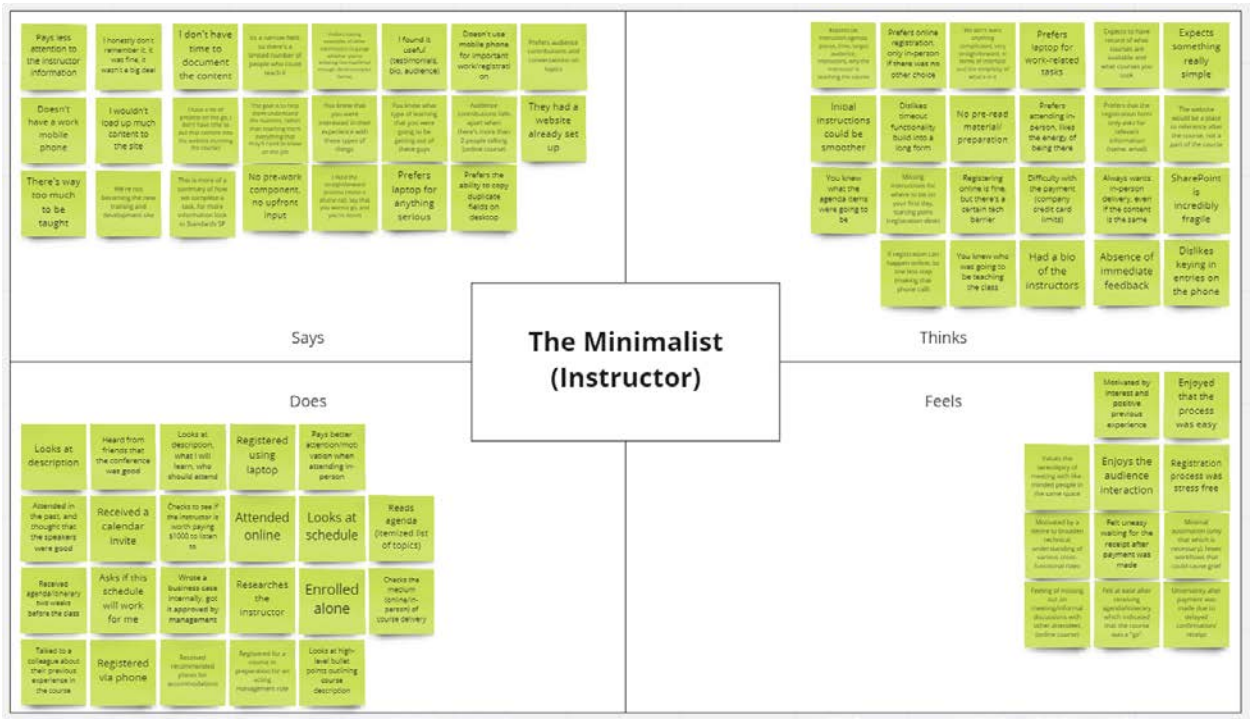

Figure 13: Empathy Map #2 – The Minimalist (Instructor)

Persona #3: The Customizer (Instructor)

Instructors expected the ability to customize the content delivery experience for their students. From this user group's perspective, the site should allow the instructor the ability to separate and partition course readings, assignments, and content by class so that they're able to drip–feed the content to the students as they reach each milestone in the course. Similarly, they expected the attendance and student records to be tracked in the backend.

Quotes from interviews:

- "I expect a way to mass email course students that allows flexibility"
- "I prefer flexibility to manage the course, not overly–prescriptive"
- "I expect a way to partition assignments for new students from previous student solutions"

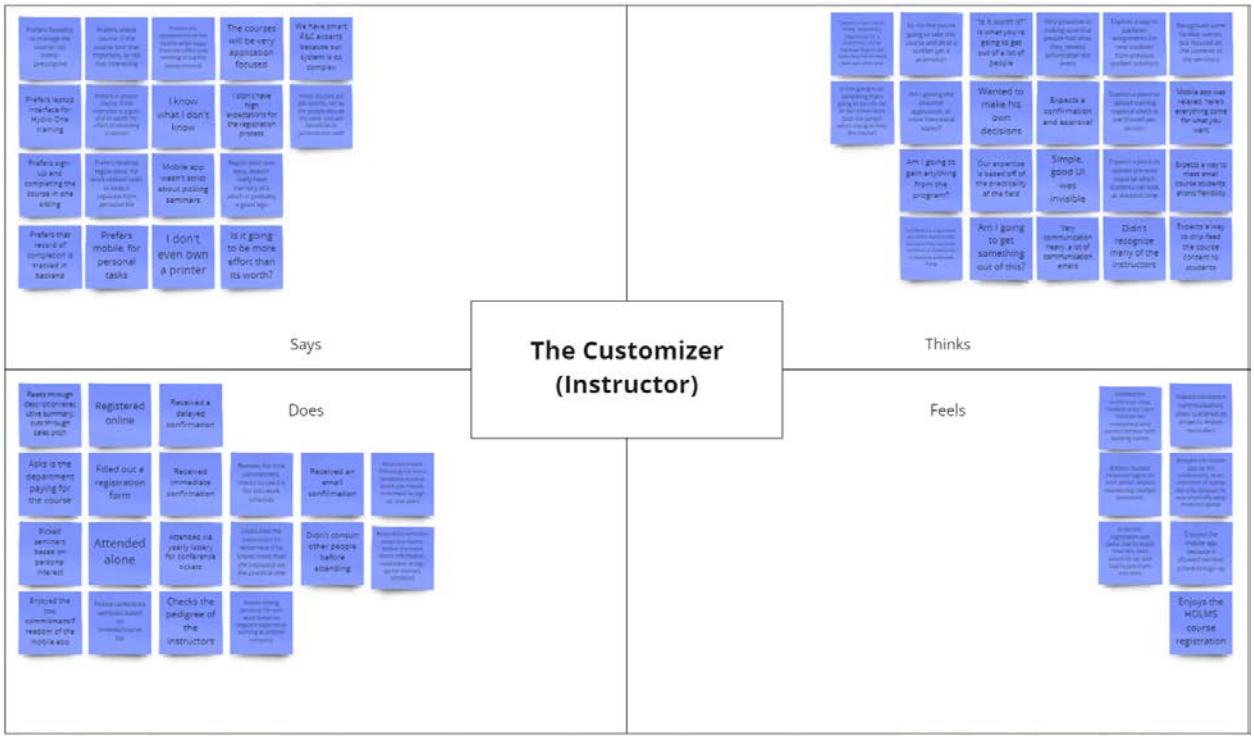

Figure 14: Empathy Map #3 – The Customizer (Instructor)

Persona #4: The Administrator

Administrators expected the site to be easily edited and maintained by supplementing their role with comprehensive job aids. This user's role had four components, setting up courses, editing existing course details, scheduling a class, and tracking completion records. Once a course had completed, they expected to receive a the student's proof of completion to be sent as a backup record to themselves and their manager, as well as the ability to turn on/off notifications as per their manager's request.

Quotes from interviews:

- "I want the training site to be easily edited"
- "I expect good job aids on how to edit content on the training site"
- "I want it to be user friendly"

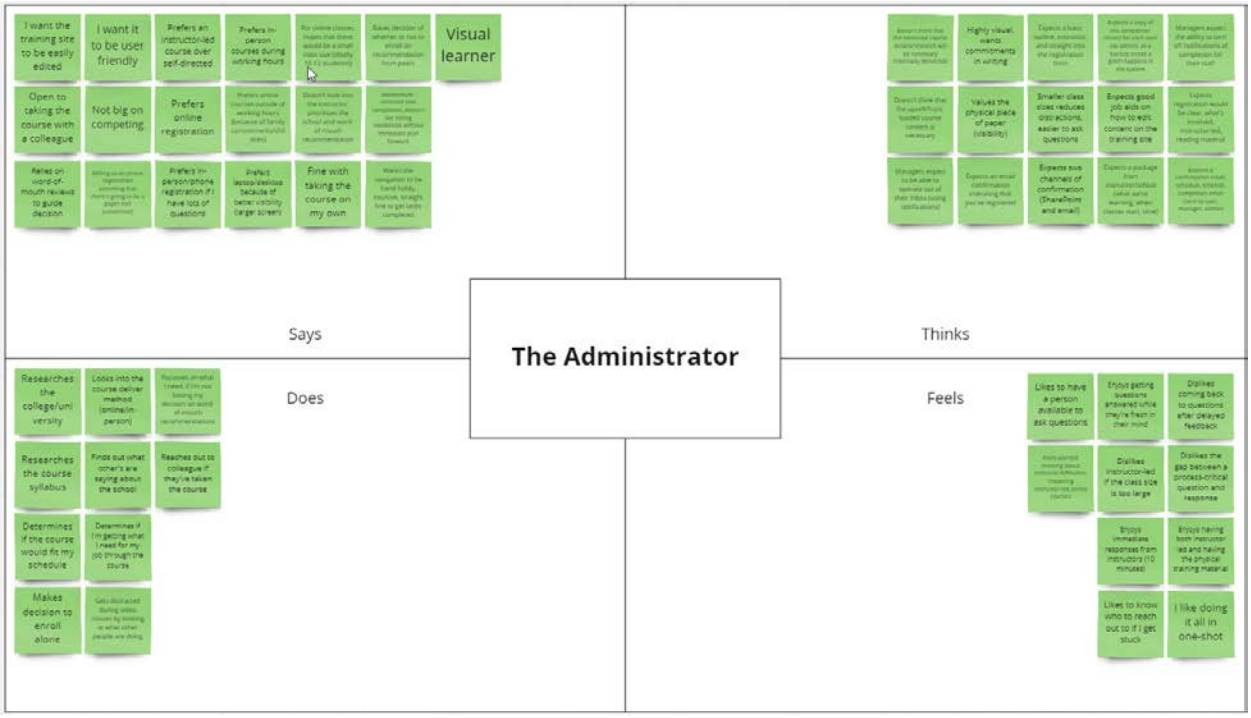

Figure 15: Empathy Map #4 – The Administrator

Research Findings

Finding #1: Researching a course (as a student user)

We know/believe that:

Students need to be able to perform a basic search into the details of a course before enrolling.

This is a problem because:

There is currently no way for a user to see a list of all the courses that are offered, or for them to gauge whether a given course would be useful to their professional development. Similarly, there is no way for students to assess the course requirements to determine if they meet the job/experience criteria prior to registering.

Our solution should enable:

Users to quickly browse through the course description, outline, time commitments, instructors, prerequisites, and requirements before making the decision to enroll.

The goal/job/task:

To develop a system that allows students to browse through available courses and gather the necessary information needed to provide them with confidence when deciding to sign up.

Insight #1: Problem Framing (4W Method)

Our curious student has the problem that they cannot perform preliminary research on a P&C training course when they are determining if they should register. Our solution should deliver a way for students to browse through available courses and gather the necessary information so that they feel confident enrolling in the next class.

Ideation #1: "How Might We" statement:

How might we help our curious student find what they're looking for when researching available classes?

- Create a course list with definitions, outlines, instructor, time commitments and requirements
- Allow users to open a form to learn more about a given course
- Show users which classes are planned or a given course
- Redirect users to the appropriate class registration form from the course form
- Clearly outline the steps/process for completing the registration before initiating a call to action (i.e. register now)

Finding #2: Reviewing record of completion (as a student user)

We know/believe that:

Students need to be able to review their record of previously completed courses, so that they can determine which courses are still pending.

This is a problem because:

There is currently no way of tracking the courses that a student has completed as part of their P&C professional development plan, in a way that is easily accessible to the student.

Our solution should enable:

Users to assess whether they are on track to accomplishing their professional development goals. User research suggests that users prefer to fill gaps in their skillset, and so, this solution would provide them with visibility of where they stand.

The goal/job/task:

To develop a system that shows users their own personalized record of enrolled/completed courses, as well as a full list of courses that may become available as they progress in their careers.

Insight #2: Problem Framing (4W Method)

Our responsible student has the problem that they cannot review their record of completion for P&C development courses when they are deciding which courses to take next. Our solution should deliver a way for students to view their transcript and determine if they meet the necessary pre–requisite requirements so that they feel encouraged to progress.

Ideation #2: "How Might We" statement:

How might we help our responsible student find out which courses they have enrolled–in and completed?

- Create a database containing each student's course code, completion date, name, instructor, and class code.
- Automate the population of the database once the administrator marks a class form as "complete"
- Allow records of completion to be added/edited/removed by the administrator
- Provides students with a view which shows them only their individual records (filtered by user)

Finding #3: Registering for a course (as student user)

We know/believe that:

Students need to be able to register for a class when it becomes available/open for applicants

This is a problem because:

There is currently no way of keeping track of student registration, or gauging student–interest in a given course topic in a structured way that is repeatable for various course topics.

Our solution should enable:

Users to demonstrate their interest in attending a course, as well as, reserving their spot in the class on a first–come/first–serve basis.

The goal/job/task:

To develop a system that takes in the personal details for an applicant, and stores the applicant as a record in the system. Once a certain number of users apply for a given class, the system should prompt the administrator to schedule the sessions and limit any additional applicants from registering for a given class.

Insight #3 Problem Framing (4W Method)

Our motivated student has the problem that they cannot reserve a spot in the next class after they have decided to register for a course. Our solution should deliver a way for students to immediately transition from researching and into registering for a course, so that they feel satisfied by completing their goal without hitting any administrative walls.

Ideation #3: "How Might We" statement:

How might we help our motivated student more easily reserve their spot in an upcoming class after they have made the decision to enroll?

- Allow users to find open classes and to notify the administrator if no open classes are available
- Create a redirection link/button which takes users from the course summary to the registration form
- Provide users with the ability to add their name to a registration form to reserve their spot
- Carry over the users personal details from their user profile in the active directory
- Allow users to save their progress and submit their registration form to the database

Finding #4: Receiving confirmation after registering (as a student user)

We know/believe that:

Students need to be able to receive confirmation that their slot has been reserved and their registration has been successful, in order to have piece of mind.

This is a problem because:

There is currently no structured way of providing registrants with feedback in a timely manner, while providing them with a commitment made–out in writing to demonstrate to their manager that they've completed the registration process.

Our solution should enable:

Users to have the ability to show their manager that they have initiated the registration process and indicate that they are in the process of taking steps forward in their professional development.

The goal/job/task:

To develop a system that automatically notifies/sends confirmation to users when their registration form has been completed and processed by the system.

Insight #4: Problem Framing (4W Method)

Our busy student has the problem that they do not receive immediate confirmation when registering for a class. Our solution should deliver a way for students to automatically receive feedback after completing actions in the registration process, so that they feel at ease with the timely response.

Ideation #4: "How Might We" statement:

How might we help our busy student receive confirmation that their spot has been successfully reserved in a class after signing up?

- Allow users to opt–in to receiving notifications at the time of registration
- Once submitted, send an automated email confirming that their actions have been processed.
- Outline next steps for users in the confirmation email
- Allow users to retroactively edit their notification preferences through some mechanism managed by the administrator

Finding #5: Receiving a reminder after registering (as a student user)

We know/believe that:

Students that have many projects on the go need reminders sent prior to the class's start date, especially when they have registered several months before the classes are scheduled.

This is a problem because:

There is currently no structured way of automatically notifying users at set time intervals when they have got a course start date upcoming. This lack of proactive messaging may lead to students getting double booked or forgetting to carve out time in their week to prepare.

Our solution should enable:

Users to have the ability to "turn on" reminder notifications when registering for a course, so that they don't miss out on any important deadlines.

The goal/job/task:

To design a form element that will allow users to receive reminder notifications and create a system that detects upcoming course start dates and reaches out to registrants at set times to remind them that the kickoff is fast approaching.

Insight #5: Problem Framing (4W Method)

Our engaged student has the problem that they do not receive reminder emails in the days/weeks leading up to a class start date when they have registered months in advance and are tied up with projects. Our solution should deliver a way for students to opt–in to reminders so that they feel relieved in knowing that the class is still happening.

Ideation #5: "How Might We" statement:

How might we help our engaged student stay on top of their upcoming course commitments?

- Allow users to opt–in to receiving reminders ahead of their class start date
- Generate automated reminder emails for students in the weeks leading up to the class start date in the form.

Finding #6: Contacting the administrator (as a student user)

We know/believe that:

Students who are performing their pre–registration research into a course need to be able to reach out to the administrator to get their questions answered in a timely manner.

This is a problem because:

Aside from sending an email/calling the administrator, there is no way of tracking frequently asked questions for a given course. Without being able to track these gaps in understanding, the course outlines/descriptions cannot be improved over time. Similarly, ideas for more courses into topics that may not be covered by a given course are also not tracked in a repeatable way.

Our solution should enable:

Users to have a way of quickly reaching out to the administrator in order to get their questions answered. These questions could be recorded and used to improve the course descriptions/contents in the future.

The goal/job/task:

To deliver a system that takes-in user questions and redirects the message to the respective individual who can best answer the question. Further, the system should notify the administrator via email and store a record of the interaction for future improvements/clarification.

Insight #6: Problem Framing (4W Method)

Our inquisitive student has the problem that they cannot easily reach out to a course administrator when questions crop up during the research process. Our solution should deliver a way for students to reach out to their administrator while keeping a record of the questions/correspondence so that students feel comforted by the customer service.

Ideation #6: "How Might We" statement:

How might we help our inquisitive student more easily reach out to their administrator with their burning questions?

- Create a contact form that users can submit during the research/registration process that allows them to contact the administrator
- Automatically send the question to the administrator via email
- Store the contact message in a FAQ mailbox/database

Finding #7: Accessing course material (as a student user)

We know/believe that:

Students who are registered for a course need to be able to access the contents/reading material ahead of time so that they can be prepared for their first day of class.

This is a problem because:

There is currently no structured course documents filing/categorization system that easily/quickly allows users to find what they are looking for when attending a course. This may lead to students feeling confused/discouraged to take the course seriously if this information is not provided to them in a timely/easily digestible manner, which may lead to poorer comprehension of the subject matter.

Our solution should enable:

Users to have a clear path towards the necessary preparatory/reading material for a course immediately after they've completed their course registration and received their enrolment confirmation. This functionality would ensure a consistent logical flow for users who are familiar with course registration through university portals (i.e. D2L/Blackboard).

The goal/job/task:

To design a system that immediately provides users with access to the necessary learning materials for their given course. Similarly, this system also needs to create a connection between a given course code and the documents that are stored/maintained on the server.

Insight #7: Problem Framing (4W Method)

Our proactive student has the problem that they cannot easily access the course reading material ahead of each lesson when they are preparing for a course. Our solution should deliver a way for students to access the most up–to–date version of their respective course material so that they feel prepared going into each lesson.

Ideation #7: "How Might We" statement:

How might we help our proactive student gain access to the reading material before the course starts so that they can be prepared on their first day?

- Provide the users with a link to the course documents library when they receive their confirmation
- Allow users who navigate to the course documents library the ability to browse for what they want by instructor, course code, or topic

Finding #8: Submitting assignments (as a student user)

We know/believe that:

Students need to be able to submit their assignments electronically for their instructor to review/provide feedback in a timely way.

This is a problem because:

There is currently no system in place to allow students to easily upload their assignment/solutions into a centralized space where the instructors can see/interact with them. As a result, the process of getting their work reviewed is not immediately clear to the students.

Our solution should enable:

Students to clearly understand what is expected of them, how to accomplish their goals, and what the process is for getting feedback on their assignments.

The goal/job/task:

To develop a system that simplifies the assignment submission process by outlining the steps, providing a link to a submission form, and updating the user with a confirmation that their work has been received and is being reviewed. Similarly, this system should also notify the instructor by providing them with a clear path towards reviewing the work, providing commentary, and allowing them to upload a revised/marked up version of the assignment. Finally, the students should be notified when their assignment is processed.

Insight #8: Problem Framing (4W Method)

Our responsible student has the problem that they cannot submit their assignments to a shared space where their instructor can review it when they are taking a class. Our solution should deliver a way for students to easily upload their assignments and get timely feedback from their instructor so that they feel guided.

Ideation #8: "How Might We" statements:

How might we help our responsible student submit their assignment so that their instructor can review it and provide feedback?

- At the time of receiving confirmation, provide users with a link/instructions for how to submit their assignments
- Allow users to open a submission form via email that requires their course code, name, date, assignment title, and instructor
- Notify users with a confirmation when the assignment has been processed. Further, notify the instructor with a link to the form

Finding #9: Uploading course material (as an instructor user)

We know/believe that:

Instructors need to be able to upload course material (readings, syllabus, tutorials), so that their students can access it prior/during/after the course. This material needs to be revisable and kept up to date in order to stay relevant to future alumni students that will be referencing the material.

This is a problem because:

There is currently no system in place that would allow instructors to upload course content. Without a structured approach to storing, categorizing, and partitioning the content in a way that is easily searchable, students may have issues finding the resources that they need. Similarly, the students may also struggle to find the most up–to–date version of the material. Further, without a centralized storage location, course information may be lost during employee turnover/rotations.

Our solution should enable:

Instructors to easily upload their course contents, so that the documents get stored/organized systematically. Further, the students need to be able to access the relevant contents for their respective courses.

The goal/job/task:

To develop a system that collects metadata at the time of document submission which will allow students to easily search for what they want (i.e. course code, topic, instructor). This solution would serve as a working–repository for the most up–to–date course contents.

Insight #9: Problem Framing (4W Method)

Our organized instructor has the problem that they cannot easily upload course material for their students to review when they're teaching a class. Our solution should deliver a way for instructors to upload and update their course material so that their students feel like they are getting access to the most up–to–date training documentation.

Ideation #9: "How Might We" statement:

How might we help our organized instructor upload and maintain their course documents for their students?

- Provide instructors with a document library that allows them to store, categorize, and edit their course material
- Allow instructors to group documents by course code or class code
- Give instructors the ability to version control
- Allow instructors to see all of their course documents as well as legacy documents
- Give instructors the ability to control the order of documents by type (i.e. assignment, quiz, etc.)

Finding #10: Uploading assignments/solutions (as an instructor user)

We know/believe that:

Instructors need to be able to upload assignments/solutions and have the flexibility to make certain portions of the content visible/hidden to students at the instructor's discretion. Further, the solution needs to allow instructors to have the ability to opt–out of managing the visibility of the content and allow them to make all of the content visible to their students at once.

This is a problem because:

There is currently no system in place that would give the instructors a high-level of flexibility/autonomy over how the course is run. Without this functionality, instructors may find it challenging to transfer the knowledge in the appropriate doses to their students, so that they don't get overwhelmed with new information.

Our solution should enable:

A way for instructors to have control over the visibility/accessibility of their course content for students. This solution should allow instructors to have the freedom to "turn on/off" content's visibility from the primary audience, while preserving the course content's categorization information in the repository. This solution would prevent the instructors from having to re–upload content during each class, and instead giving them agency over what is visible.

The goal/job/task:

To develop a system that gives instructors control over who can see what course content, and when they can see it.

Insight #10: Problem Framing (4W Method)

Our methodical instructor has the problem that they cannot easily control the availability of certain course documents (assignments, lectures, solutions,) when they are teaching a class. Our solution should deliver a way for instructors to have a level of autonomy over how their content gets released to students so that their students don't feel overwhelmed by information overload.

Ideation #10: "How Might We" statement:

How might we help our methodical instructor more easily control the availability of their course contents for their students?

- Enable instructors to categorize documents as active/inactive so that they appear/disappear from the student's perspective
- Allow instructors to edit the properties of multiple documents at once from a datasheet view
- Allow instructors to easily contact their students when new content becomes available

Finding #11: Contacting students with announcements (as an instructor user)

We know/believe that:

Instructors need to be able to send announcements to students in their class, in order to notify them of changes, updates, and feedback. This functionality also needs to keep a record stored on the server for future reference in upcoming classes.

This is a problem because:

There is currently no system in place that would allow instructors to address their class. Without this functionality, instructors would find it challenging to address their students in a structures way, while keeping a record of the correspondence on a centralized storage location.

Our solution should enable:

A way for instructors to quickly compose a message to their entire class via email, while providing students with a predictable messaging format (i.e. Class Code – Announcement). Further, this solution should allow for future instructors to reference what was done in previous classes to ensure continuity in correspondence.

The goal/job/task:

To develop a system that guides instructors through announcement message composition, and stores the message in a centralized location, while relaying the message to the students who are registered for the class.

Insight #11: Problem Framing (4W Method)

Our communicative instructor has the problem that they cannot easily send out announcements to their students when they are teaching a class. Our solution should enable instructors to have the freedom to send out structured messages to their students while keeping a record of the correspondence so that their students feel informed.

Ideation #11: "How Might We" statement:

How might we help our communicative instructor more easily connect with their students so that their announcements are received?

- Create a form that lets an instructor pick a class to address, and automatically populates the recipients.
- Allow instructors to have the freedom to choose whether or not to use the emailing tool
- Store a copy of every announcement to the server for future reference
- Provide a link to the course documents library with each new announcement so that users can easily access the course documents

Finding #12: Viewing course registrants (as an instructor user)

We know/believe that:

Instructors need to be able to see which students have registered for a given class.

This is a problem because:

There is currently no system in place which provides the instructors with transparency into the interest–levels of their upcoming classes. Further, without this visibility, instructors are unable to gauge who their students are and whether their students would be receptive to a certain teaching style/method based on their familiarity with the course topic.

Our solution should enable:

Instructors to have visibility into the students who are registered to attend their next class. Further, this solution should provide visibility to the site administrator to show which courses are in high–demand and demonstrate which courses may require additional classes to satisfy the interest.

The goal/job/task:

To develop a system that shows a record of all the registrants that are signed up for a given class, which is visible to the instructor of that class.

Insight #12: Problem Framing (4W Method)

Our investigative instructor has the problem that they cannot easily see which/how many students have registered for their upcoming class when they are preparing their lesson plan. Our solution should deliver a way for instructors to gain visibility into their class composition so that they feel primed for a successful session.

Ideation #12: "How Might We" statement:

How might we help our investigative instructor find out who/how many students are registered for their next class?

- Provide instructors with the ability to easily see which students are registered for each class through a list or a form
- Offer instructors the ability to see their class when they send out announcements by querying the class form
- Allow instructors to see a registration list (where status = enrolled), that is grouped by class code and filtered by instructor. Therefore, only showing the classes that pertain to a given instructor.

Finding #13: Setting up a new course/class (as an admin user)

We know/believe that:

The administrator needs to be able to set up new courses (description, requirements, audience, time commitments) as they become necessary by the P&C Engineering team. Further, the admin needs to be able to set up a new class and assign an instructor, so that students can begin registering for the class.

This is a problem because:

There is currently no system in place that would give the administrator a high-level of autonomy over the course delivery. Further, by not providing the administrator with this structured approach to course management, the course delivery method many not be consistent year–over–year as new staff enter/exit the group.

Our solution should enable:

Administrators to have the ability to handle all of the administrative tasks in getting a course up and running as easily as possible. This solution should give the admin control over which courses are in the system, which ones are active (accepting applicants), and the logistic/descriptive details for each course. An admin should be able to set up a new course, fill in the description/instructor/schedule, generate a new class, edit existing information, delete courses/classes, and activate/deactivate the registration.

The goal/job/task:

To develop a system that allows the admin to easily manage the course logistics, descriptions, activity, and maintain a course catalogue as courses are added/removed.

Insight #13: Problem Framing (4W Method)

Our decisive administrator has the problem that they cannot easily set up a new class when they're planning a course to address an area of need for their students. Our solution should deliver a way for the administrator to create and edit the details of a course. Further, the solution should enable administrators to initiate a new class so that students can sign–up and feel confident in knowing that their spot is reserved.

Ideation #13: "How Might We" statement:

How might we help our decisive administrator more easily set up a course or class so that students can begin to sign–up?

- Allow admins to create new classes from an existing course list containing the description, requirements, etc.
- Allow admins to create a new class instance form which pulls information from the parent course list, and systematically generates a class code based on the course code
- Allow admins to "activate" a class via the class form, indicating that the course is currently “In Progress”

Finding #14: Scheduling a class (as an admin user)

We know/believe that:

Once the necessary number of registrants have applied to a given class, the site administrator needs to be notified and be able to easily take the class information (instructor, course code, outline, registrants) and begin scheduling timeslots in users' calendars for the training sessions.

This is a problem because:

There is no system in place that would give the administrator an easy way of assigning a scheduled start date/end date for a class. Further, there is no automated system that would notify the admin that a course has reached the registration capacity, prompting the admin to begin scheduling sessions.

Our solution should enable:

Administrators to have the ability to document the planned start date for a class and be notified when an appropriate number of users have applied, issuing a prompt to start booking sessions.

The goal/job/task:

To design a system that recognizes when ample registrants have applied to a class, and notifies the admin with the appropriate details/links to begin scheduling sessions.

Insight #14: Problem Framing (4W Method)

Our meticulous administrator has the problem that they cannot easily tell when the number of class applicants has reached the threshold (i.e. 5 applicants). Our solution should deliver a way for the administrator to know when scheduling action is necessary so that they feel on top of their course management accountabilities.

Ideation #14: "How Might We" statement:

How might we help our meticulous administrator know that a class should be scheduled?

- Notify the admin when a classes' application–level reaches the threshold by counting the number of applicants for a given class code
- Provide the admin with instructions for how to proceed, which includes a link to see the registration records for that class

Finding #15: Viewing a record of completion for students (as an admin user)

We know/believe that:

Administrators need to be able to easily search for a students' record of completion for a given course.

This is a problem because:

There is no system currently in place that would give the admin this level of flexibility into each student's completion record. By lacking this visibility, it becomes challenging for the admin to keep track of their employees' development plans/requirements, and may make it more difficult for manager to resource plan in their department, especially for larger teams.

Our solution should enable:

Admins to have the ability to edit/see all of their employees' completion records, organized by employee's manager so that it is easier to separate applicants by reporting relationships.

The goal/job/task:

To design a system that allows the admin to view and search through a given employee's record of completion. These records of completion should be system generated as a result of a class nearing completion, however, it should also allow the admin to manually add/edit completion records when necessary. Further, managers should be notified each time that a record is added for their team.

Insight #15: Problem Framing (4W Method)

Our supervisory administrator has the problem that they cannot easily keep track of their students' completion records when they are following up on their students' development plans with their manager. Our solution should deliver a way for the administrator to easily see/edit their student records, so that their managers feel informed by their student's progress.

Ideation #15: "How Might We" statements

How might we help our supervisory administrator more easily track their students' records of completion?

- Enable admins to change the class form status from "in progress" to "complete", which triggers a workflow to update all of the student records
- Provide admins with an admin–only page which allows them to see all of the students' records without limitations
- From the admin–only page, allow the admin to search through the records list via search box and dropdown for either student name, manager name, course code, class code, or status
- Create a data–connected spreadsheet for the admins to send to their manager containing all of the student's records

Finding #16: Disabling/Enabling Notifications (as an admin user)

We know/believe that:

Managers expect to have the ability to turn off email notifications for the training platform (i.e. record of completion, registration, etc.)

This is a problem because:

There is no system currently in place to allow users to have this level of flexibility to control their communications with the training platform, which may lead to users feeling annoyed with the lack of control over their user–experience.

Our solution should enable:

Users to have the ability to unsubscribe from site communications which should be accessible from the administrator's area. This should give users more control over their experience because the admin would be able provide that level of customization on their behalf.

The goal/job/task:

To design a system that allows users to add their names to an unsubscribe list which provides them with the option to unsubscribe from: 1) Personal record of completion updates, 2) Subordinate record of completion updates, 3) Course updates (announcements). This system should check this list's criterion before sending any messages out in order to be respectful to each user's preferences.

Insight #16: Problem Framing (4W Method)

Our adaptable administrator has the problem that they cannot easily enable/disable site notifications for their users (students, instructors, managers) when their users request a personalized experience. Our solution should deliver a way for the administrator to create a customized notification profile for each user, so that users feel like their boundaries are being respected.

Ideation #16: "How Might We" statement:

How might we help our adaptable administrator create personalized notification experiences based on their users' preferences?

- Allow admins to build unique notification profiles from the admin page for individual users
- Automatically send users a record of completion when their record changes from "In Progress" to "Complete" in the records list

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Assignment Form

Based on the user research, students expected a way to submit and have their assignments reviewed by their instructor. To do this, an assignment submission form was developed that accepts the student's personal information, class details, and the assignment document as an attachment. Once submitted, the form would be stored in SharePoint, the student would receive a "submission confirmation" email notification and the instructor would receive an email notification indicating that they have an assignment "pending review". After the instructor reviews and provides feedback, the form would move from "pending review" to "reviewed" state, where the student would be notified that their assignment has been "reviewed" with a link to the form. In this early draft (state 2 in the figure below), the student had the ability to edit their assignment form after submission, but this idea was later removed in order to simplify the state–change logic of the form.

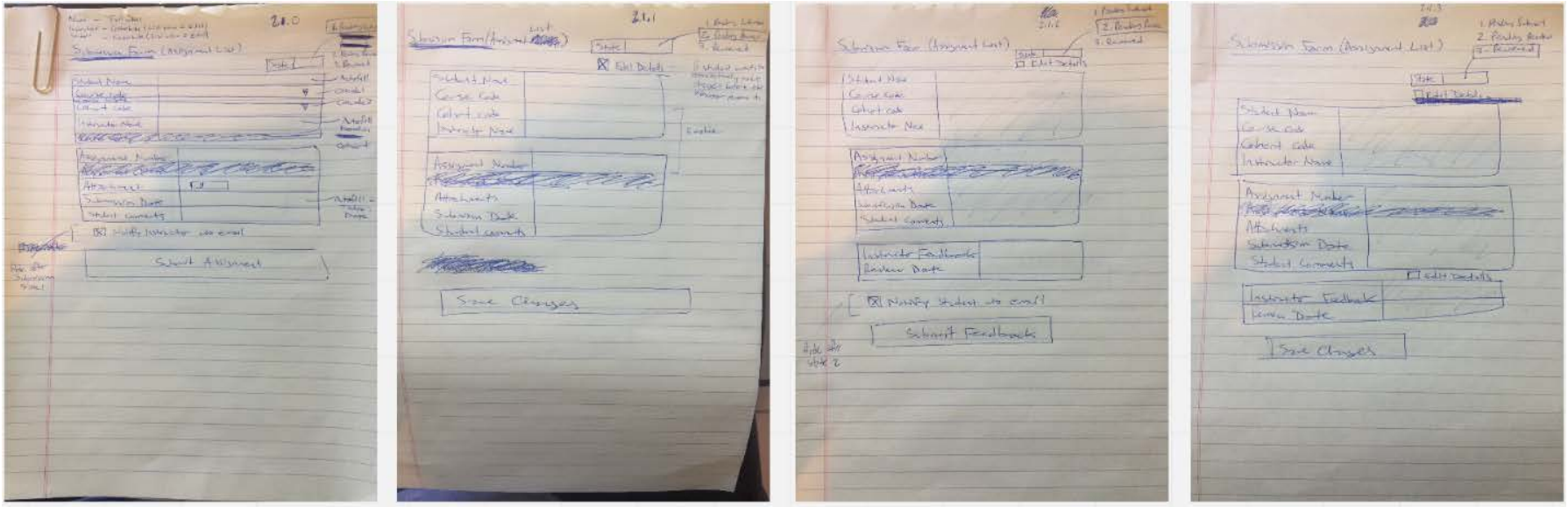


Figure 16: Assignment Submission Form – States 1–4 (left–to–right)

Announcement Form

Based on user research, instructors expected a way to notify all of the students in their class with announcements. To do this, an announcement form was designed that would be accessible from the “Instructor Area” of the site and would automatically query the registration list for students that are registered under a given class code and would add each student to a temporary mailing list via workflow. Upon sending an announcement, each instructor’s past announcements would be stored within the “Instructor Area” of the site for future reference.

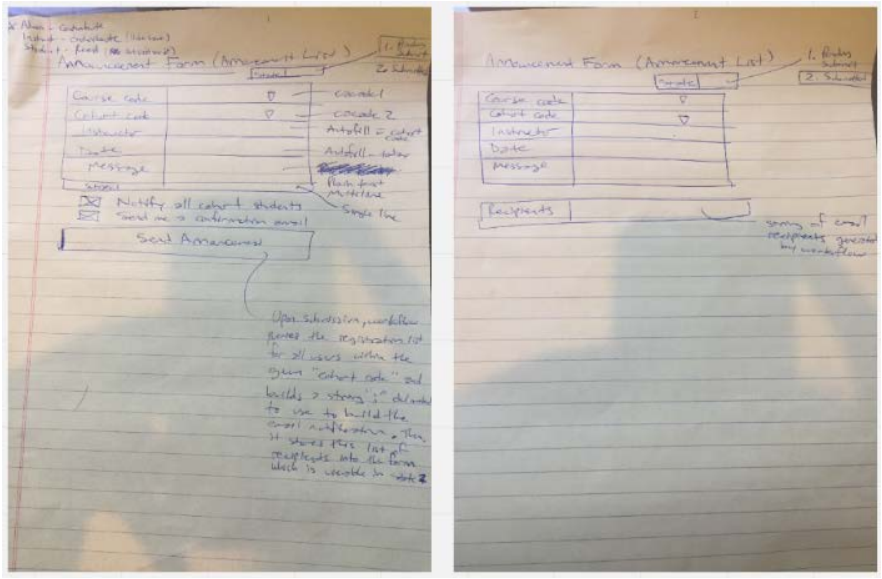


Figure 17: Announcement Form – States 1–2 (left–to–right)

Registration Form

Based on user research, the students expected a way to quickly register for a class on the site and to specify their notification preferences before submitting the registration form. These notification preferences would allow the students to have control over whether or not they receive an email confirmation, a reminder when their class start date is approaching, or whether their manager is automatically notified of their successful registration. Students expected the form to remember their personal details so that they did not need to waste time filling out basic registration information and opted for a more streamlined experience. The administrator expected the registration form to only allow users to register for classes that were open for enrollment in order to control class sizes. To do this, cascading dropdown fields were implemented that would only query for classes with the “open” enrollment status, and would auto–populate the class details (start date, end date, and instructor) once the user selected a class code from the dropdown options in the form.

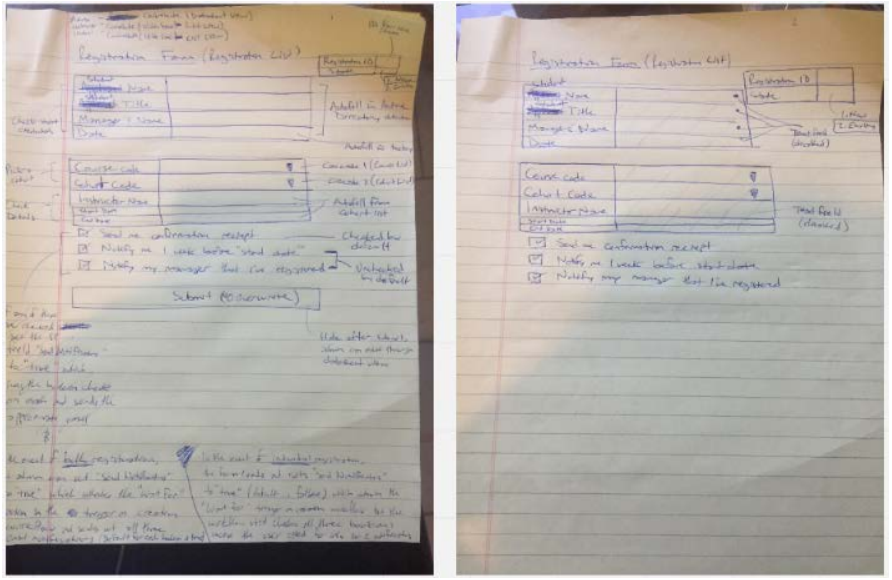


Figure 18: Registration Form – States 1–2 (left–to–right)

Course Form

Based on user research, students indicated that during the research process they would often browse to see available classes, compare class schedules, and look into different instructors before deciding to go forward with registering for a course. To make it easier for students to compare classes, the course form was developed to allow for query table functionality that would provide students with the ability to perform a side–by–side comparison between each class's start date, end date, and instructor before redirecting them to the registration form in a different tab of the browser.

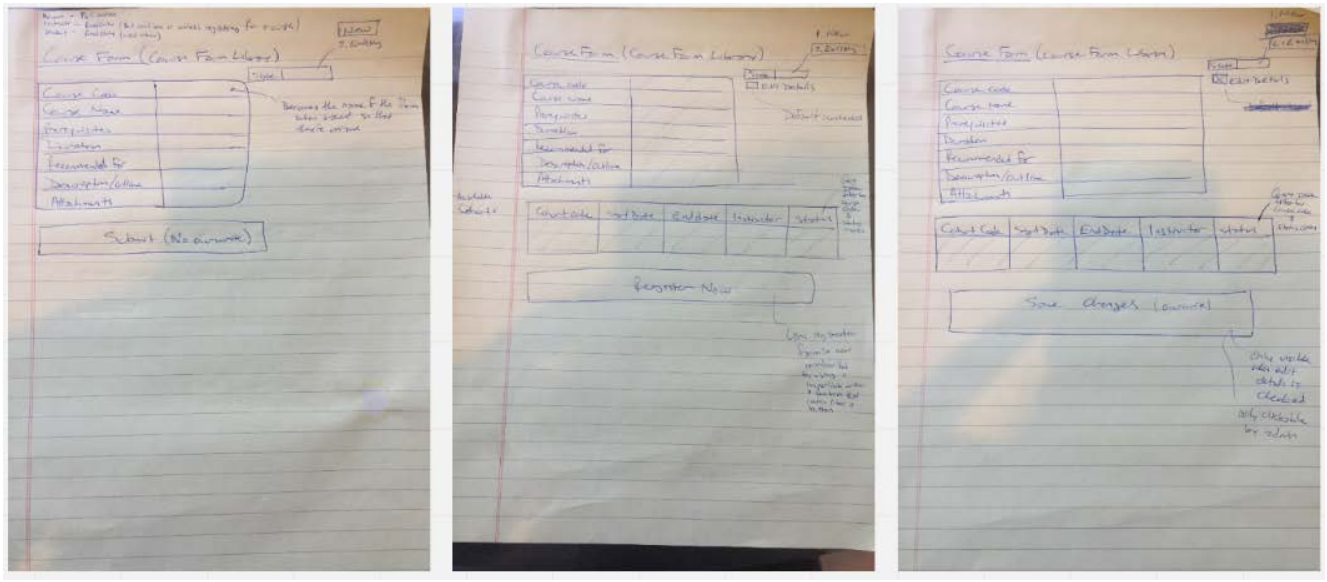


Figure 19: Course Form – States 1–3 (left–to–right)

Class Form

Based on the user research, the administrator expected a way to set up individual classes for a given course. To do this, a class form was designed so that each class would have its own unique start date, end date, and instructor that are managed from the “Admin Area” of the site. Once five students had registered for a class, the class status would automatically change from “open” to “closed” and the class code would no longer appear in the query table embedded in the course form, nor in the casecading dropdown sections of the registration form. Once the start date had passed, the class status would automatically be set to “in progress”, and after the end date had passed, the class status would be set to “completed”. Each of these automation preferences were designed to be optional and set by the administrator.

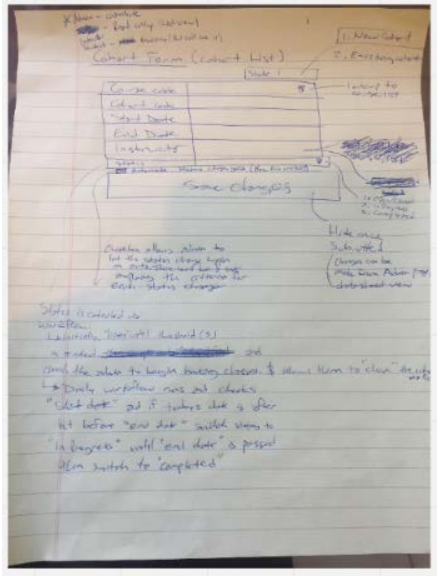


Figure 20: Class Form (later known as the Class Form)

Registration Page

Based on the user research, the students expected a place where they could browse, search, and research a course prior to registering for a class. To do this, the registration page was designed to provide users with the ability easily navigate to each area of the site while also allowing them to type their interests into the search bar to quickly filter the results. Once a course was found, the student could learn more about upcoming classes by clicking the course code link to open the form. Alternatively, if the student already knew which course they wanted to register for ahead of time, then they could immediately jump into the registration form by clicking the “Register Now” button. Students also expected a way to contact the administrator if they had questions or challenges during the registration process, so the “Contact Us” button was implemented.

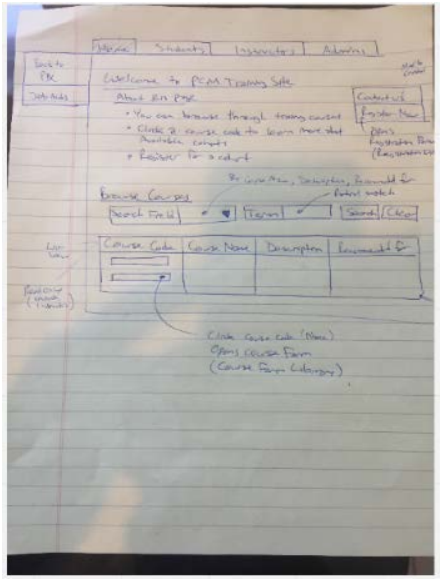


Figure 21: Registration Page

Administrator Area

Based on user research, the administrator expected a way to manage each aspect of the site from one place, as well as job aids to offer them guidance, and the ability to easily contact the developer with technical difficulties. To do this, the “Administrator Area” was created to provide the users with the ability to manage course forms, class forms, registration, workflows, permissions, and notification preferences. In early versions of the page, the administrator could see every button and list Web Part with from a single view, however, this layout was simplified to reduce visual clutter and to minimize potential rendering issues. In later iterations, the list Web Parts were replaced with navigation buttons to guide the user to different areas of the site depending on what they were trying to accomplish from a centralized admin page on the site. Given that the administrator indicated that they wanted a quick way to contact the developer, a “Technical Difficulties” button was created and added to the top of the page.

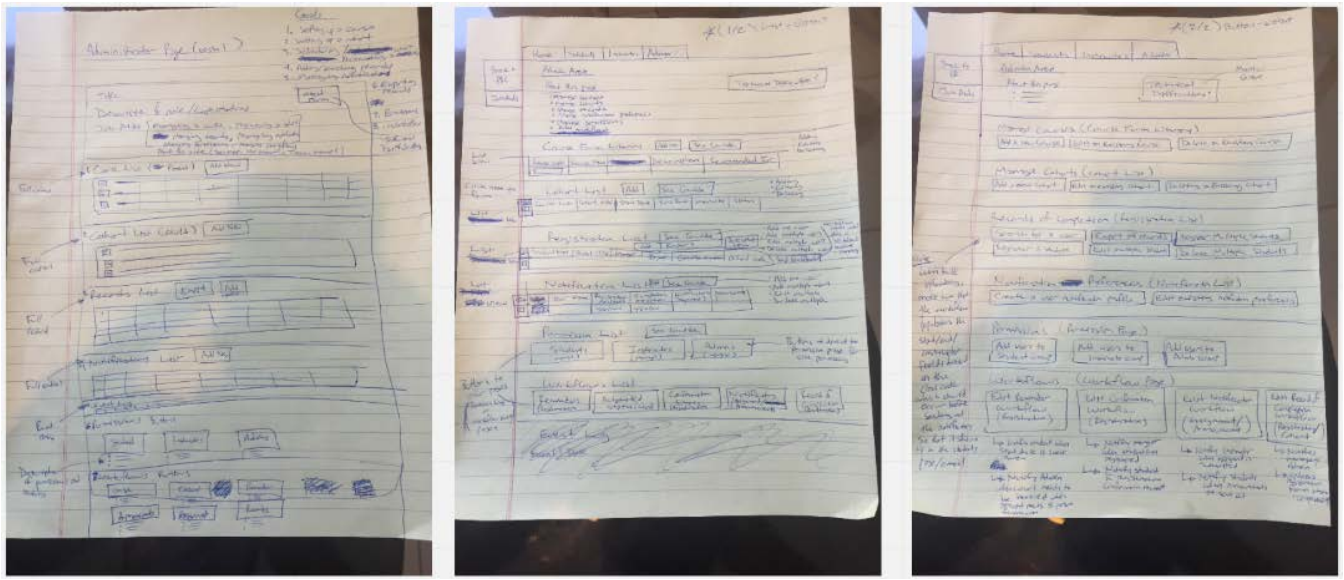


Figure 22: Administrator Page – Versions 1–3 (left–to–right)

Student Area

Based on user research, the students expected to be able to register for classes, access course material, view their registration history, and submit assignments within the site. To do this, the “Student Area” was designed to provide students with a personalized user experience that would allow them to only the registration records and assignments which were relevant to them by taking advantage of the ability to filter Web Parts by user. In the early iterations (version 1–3 in the figures below) of the page, the registration functionality was included in the “Student Area”, however, in later iterations (version 5–7 in the figures below) it made more sense to separate the “new students” role from the “existing students” role on the site, so that those who were browsing for courses did not become overwhelmed by functionality intended to be used by existing students, thus, registration was given its own page.

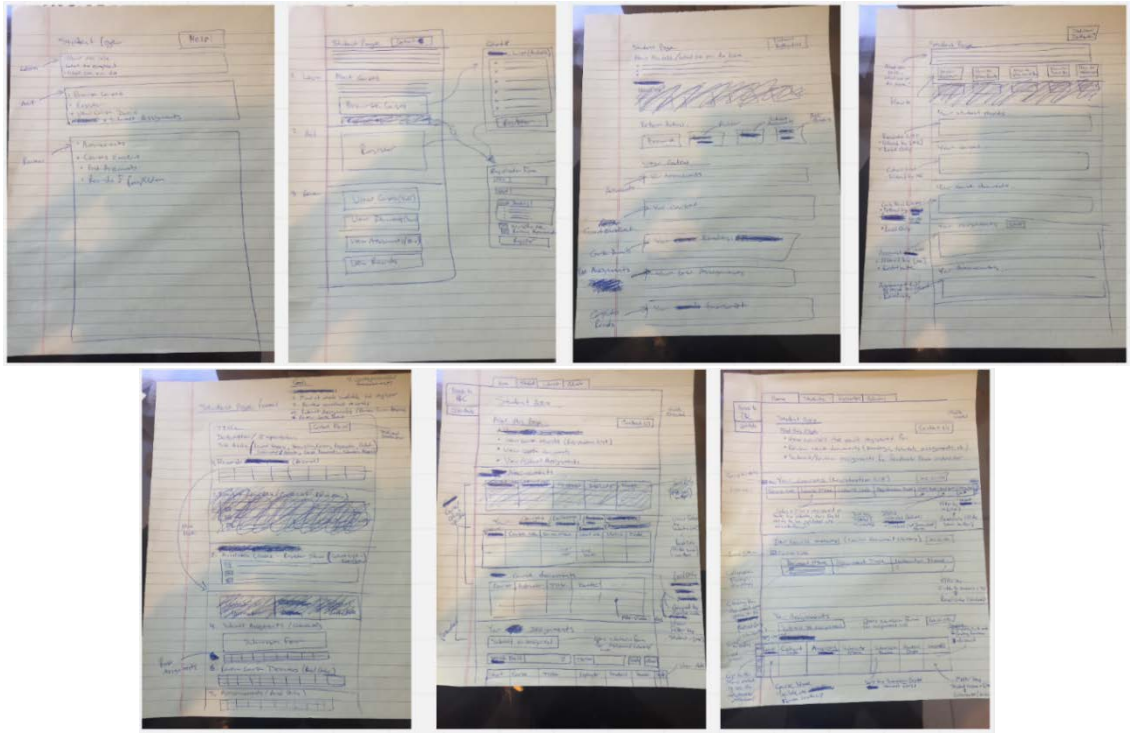


Figure 23: Student Page – Version 1–7 (left–to–right)

Instructor Area

Based on user feedback, the instructors expected a way to easily see which students were registered for their classes, view their teaching schedule, upload/manage course material, review assignments, and send out announcements to students. To do this, the "Instructor Area" was designed to provide instructors with a personalized user experience by taking advantage of the ability to filter Web Parts by user. In early iterations (version 1–3 in the figure below), the page used a list Web Part layout that would provide users with visibility to each data point in the site that was relevant to them, however, in later iterations (versions 3–5 in the figure below) the layout was changed to include more navigation buttons in order to minimize potential rendering issues and to avoid overwhelming the user with options.

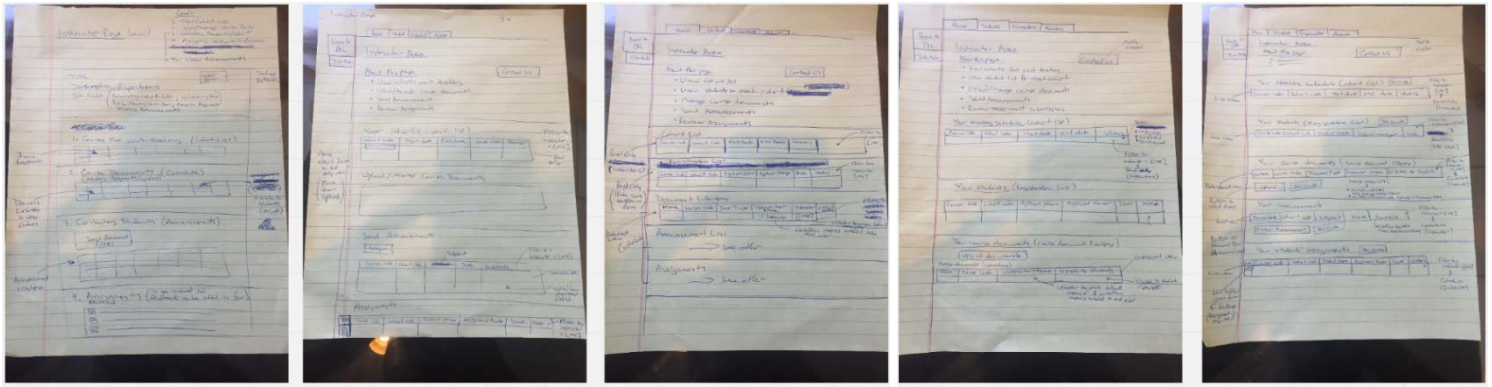


Figure 24: Instructor Page – Version 1–5 (left–to–right)

Evolution of Ideas | High Fidelity Sketches

The following mock-ups were created using Sketch design software and were made clickable by using InVision prototyping software on the UX designer's personal 2015 MacBook Pro due to the software only running on Apple products. Given that remote testing was possible via the browser, the UX designer was able to test potential solutions with users without installing additional software onto the HONI standard laptops.

Administrator Area

Layout Iterations (changes numbered in the figures below):

1. The initial layout for the administrator page featured sections of each list (courses, classes, registration, and notification preferences) as well as their respective buttons. However, it was later determined that there may be performance issues that result of rendering so many items on a page at once. As a result, the lists were removed and replaced with buttons that directed the user to see only the information that was pertinent to them at the time.
2. The bullet points that outline the user's role at the top of the page were replaced with hyperlinks to various job aids that would assist the user with performing their role on the page.
3. The button–centric layout (shown in version 2) for the administrator page was determined to be overly cluttered with options that may overwhelm the user. The design was further simplified and each category of user flows (manage classes, manage courses, etc.) was given its own navigation button (as shown in version 3)

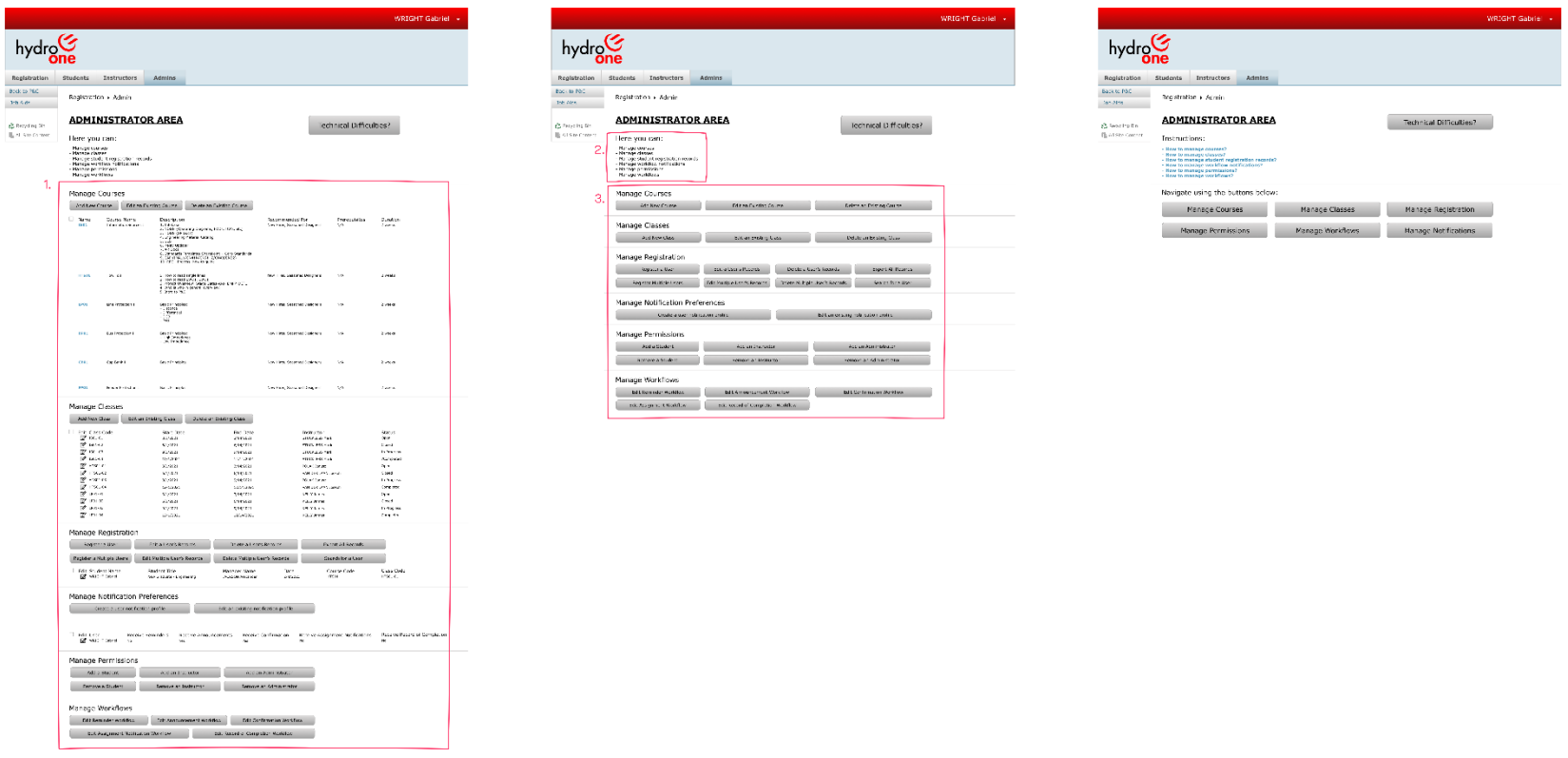


Figure 25: Administrator Area – Layout (Versions 1–3)

User Flow Screens (Based on layout version 3)

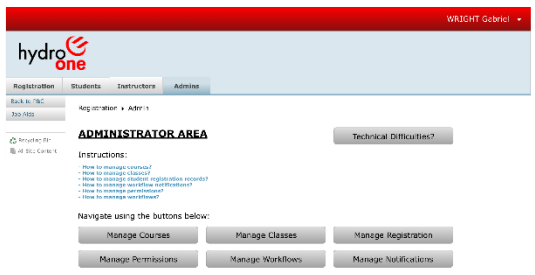


Figure 26: Administrator Area

Figure 27: Administrator Area – Manage Courses

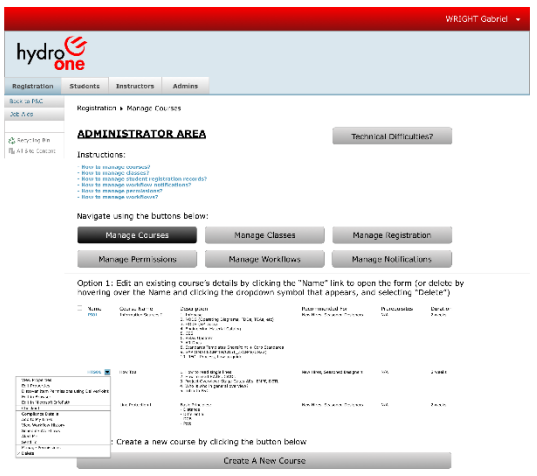


Figure 28: Administrator Area – Manage Courses – Delete a Course

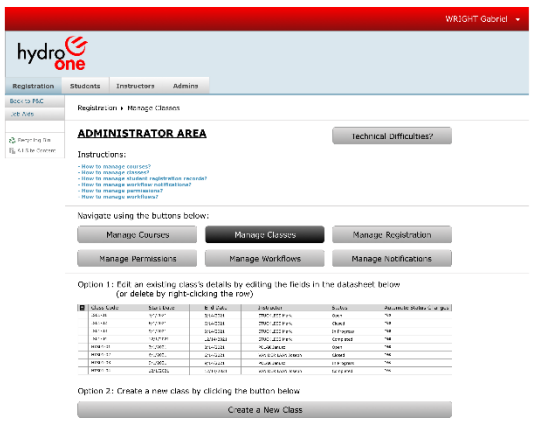


Figure 29: Administrator Area – Manage Classes

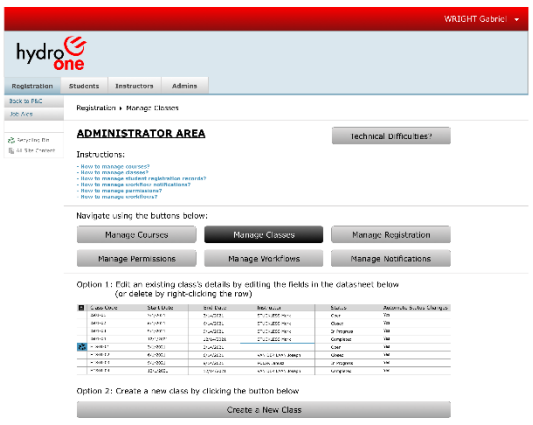


Figure 30: Administrator Area – Manage Classes – Edit a Class

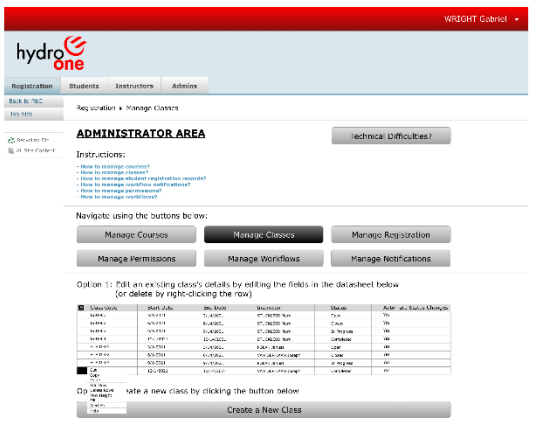


Figure 31: Administrator Area – Manage Classes – Delete a Class (1)

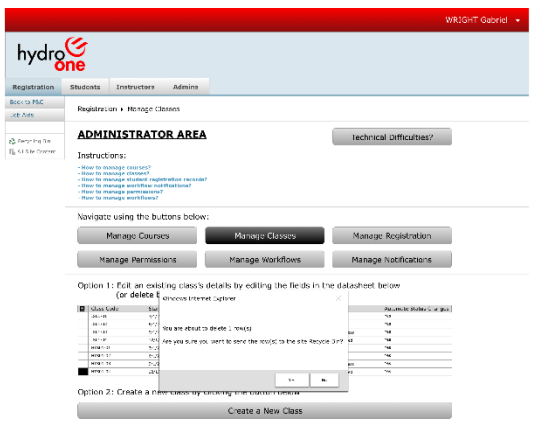


Figure 32: Administrator Area – Manage Classes – Delete a Class (2)

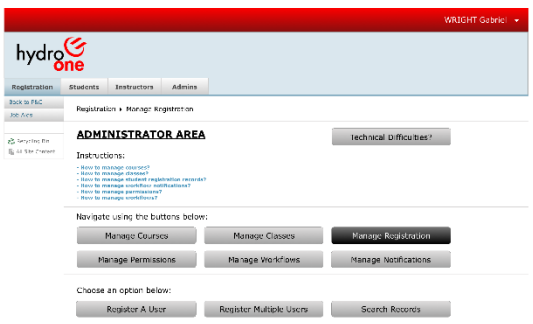


Figure 33: Administrator Area – Manage Registration

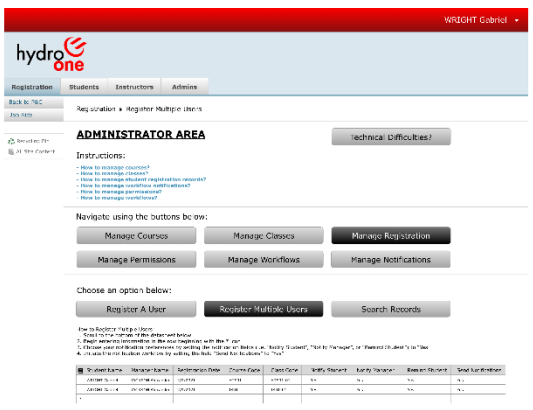


Figure 34: Administrator Area – Manage Registration – Register Multiple Users (1)

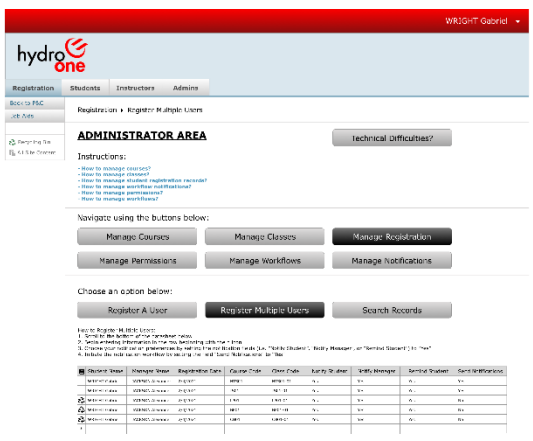


Figure 35: Administrator Area – Manage Registration – Register Multiple Users (2)

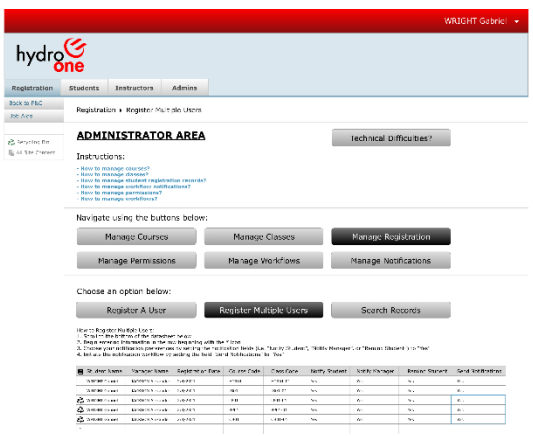


Figure 36: Administrator Area – Manage Registration – Register Multiple Users (3)

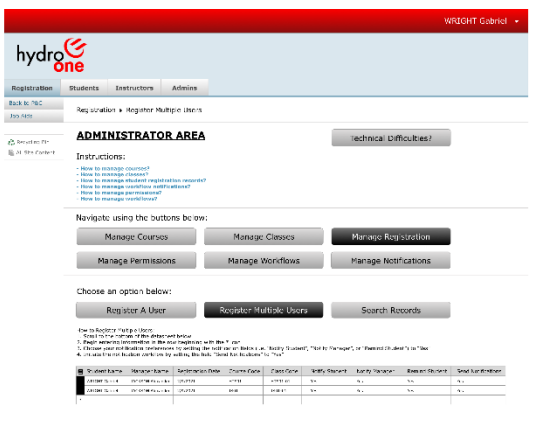


Figure 37: Administrator Area – Manage Registration – Delete Multiple Users (1)

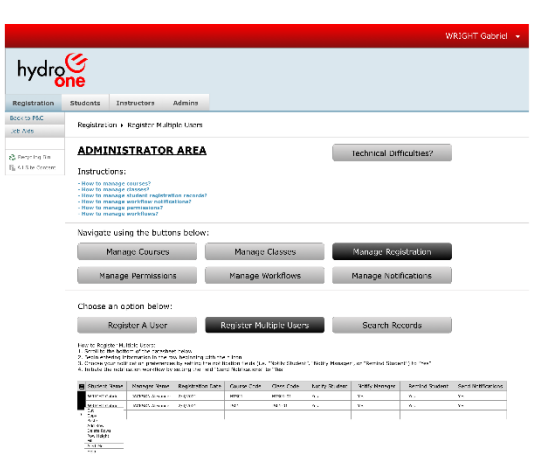


Figure 38: Administrator Area – Manage Registration – Delete Multiple Users (2)

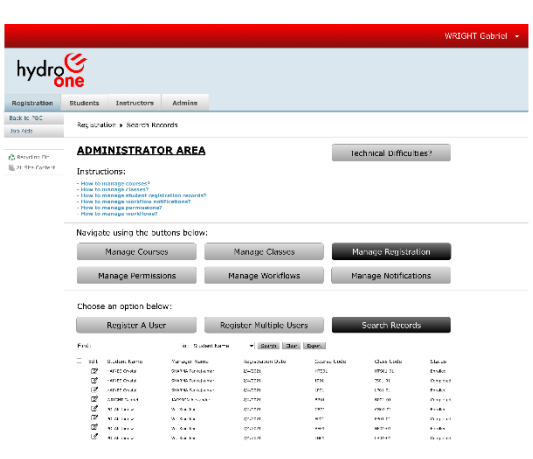


Figure 39: Administrator Area – Manage Registration – Search Records (1)

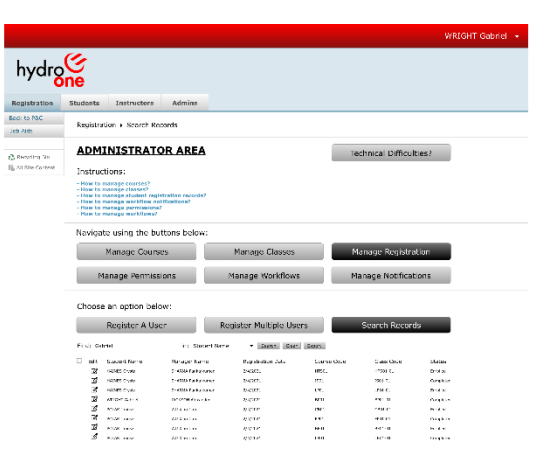


Figure 40: Administrator Area – Manage Registration – Search Records (2)

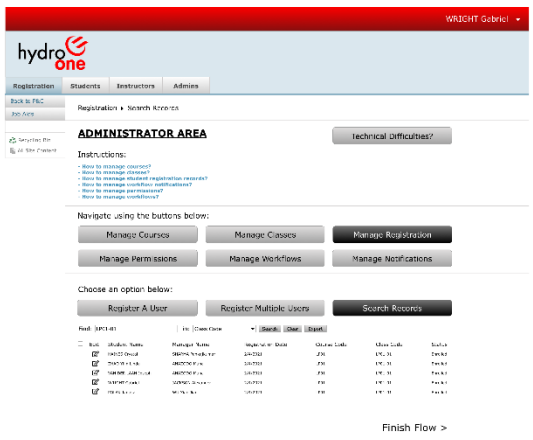


Figure 41: Administrator Area – Manage Registration – Search Records (3)

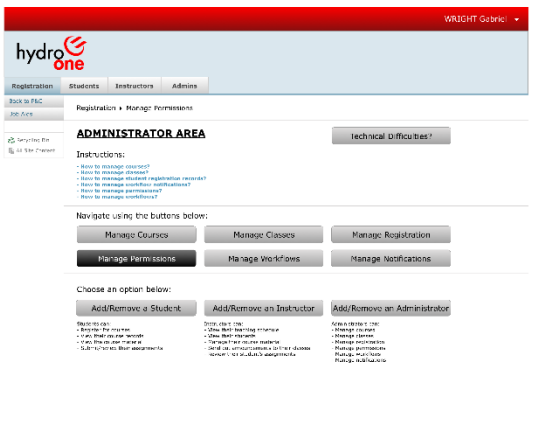


Figure 42: Administrator Area – Manage Permissions

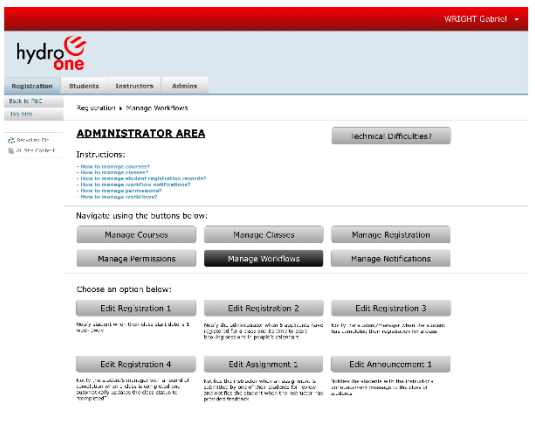


Figure 43: Administrator Area – Manage Workflows

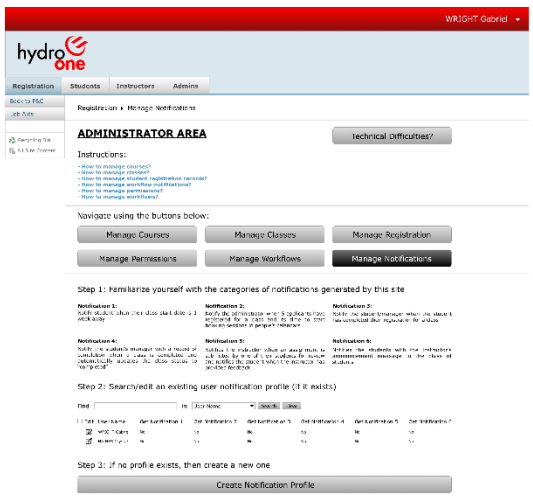


Figure 44: Administrator Area – Manage Notifications

Figure 45: Administrator Area – Manage Permissions – Add Instructor (1)

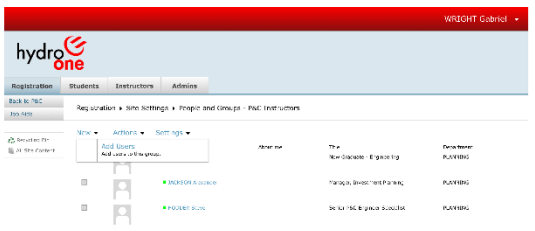


Figure 46: Administrator Area – Manage Permissions – Add Instructor (2)

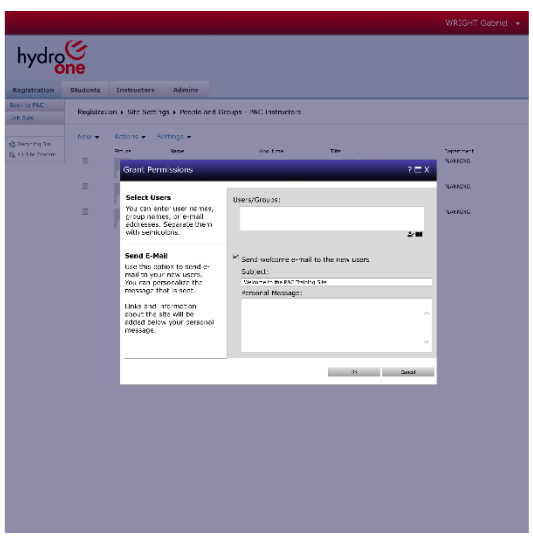


Figure 47: Administrator Area – Manage Permissions – Add Instructor (3)

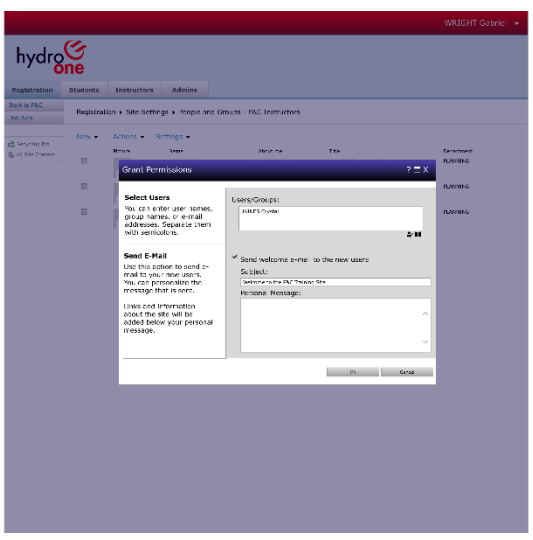


Figure 48: Administrator Area – Manage Permissions – Add Instructor (4)

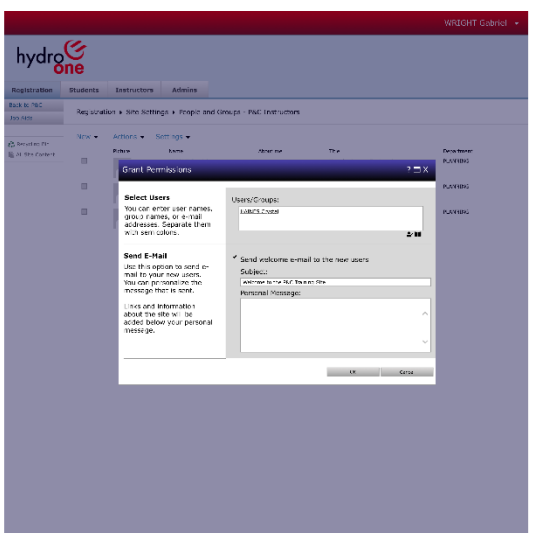


Figure 49: Administrator Area – Manage Permissions – Add Instructor (5)

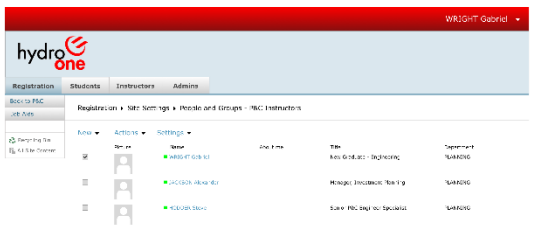


Figure 50: Administrator Area – Manage Permissions – Remove Instructor (1)

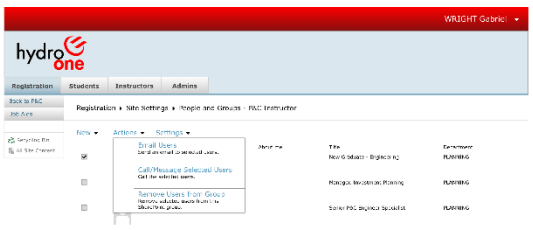


Figure 51: Administrator Area – Manage Permissions – Remove Instructor (2)

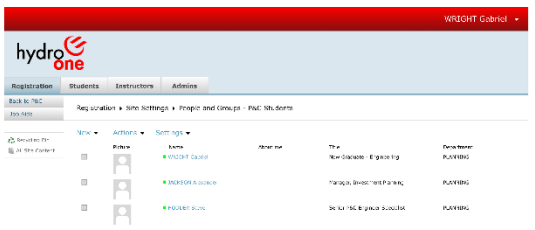


Figure 52: Administrator Area – Manage Permissions – Add Student (1)

Figure 53: Administrator Area – Manage Permissions – Add Student (2)

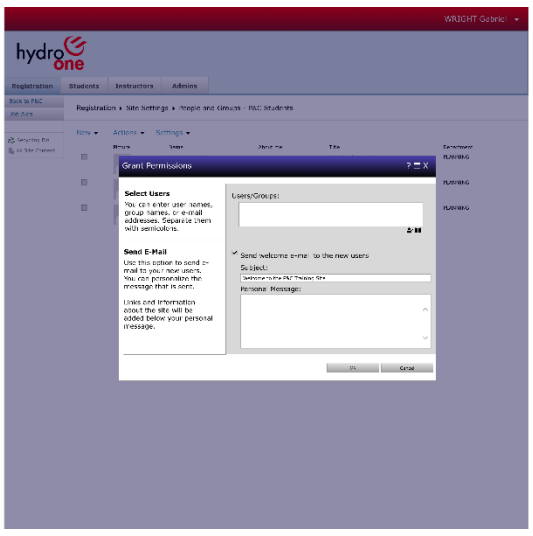


Figure 54: Administrator Area – Manage Permissions – Add Student (3)

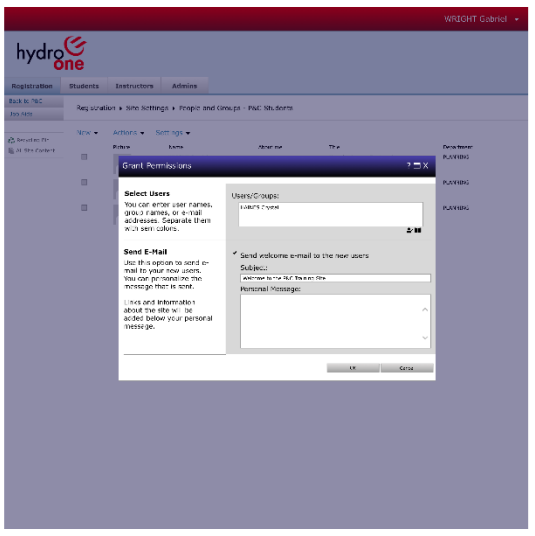


Figure 55: Administrator Area – Manage Permissions – Add Student (4)

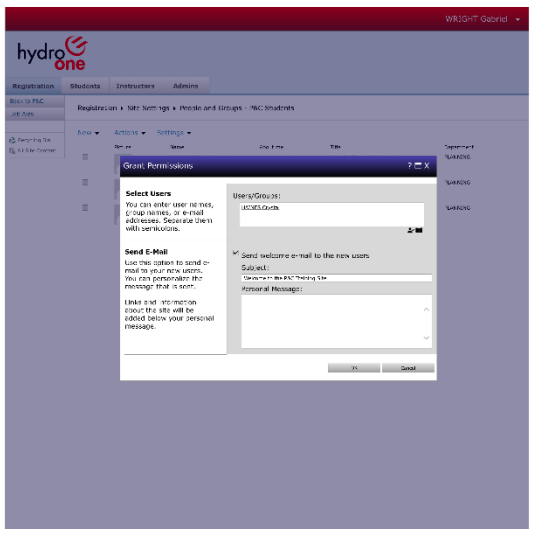


Figure 56: Administrator Area – Manage Permissions – Add Student (5)

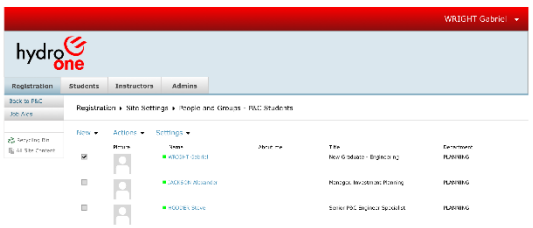


Figure 57: Administrator Area – Manage Permissions – Remove Student (1)

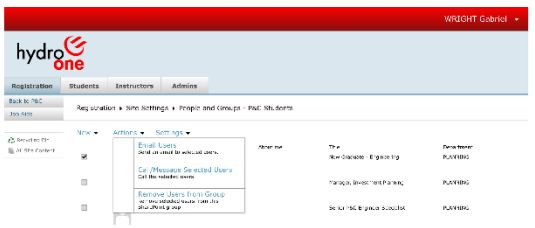


Figure 58: Administrator Area – Manage Permissions – Remove Student (2)

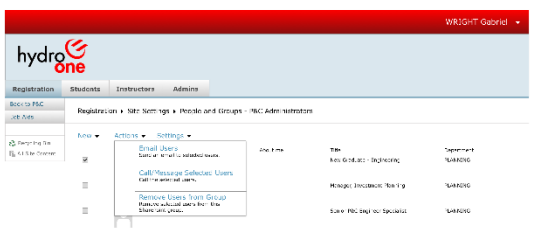


Figure 59: Administrator Area – Manage Permissions – Remove Administrator (2)

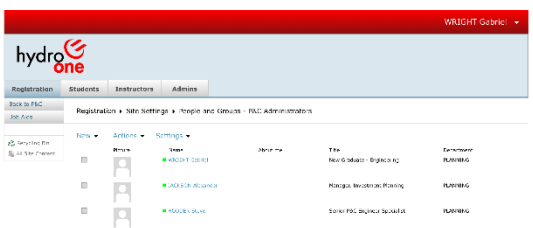


Figure 60: Administrator Area – Manage Permissions – Add Administrator (1)

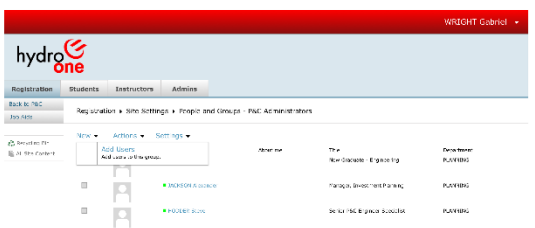


Figure 61: Administrator Area – Manage Permissions – Add Administrator (2)

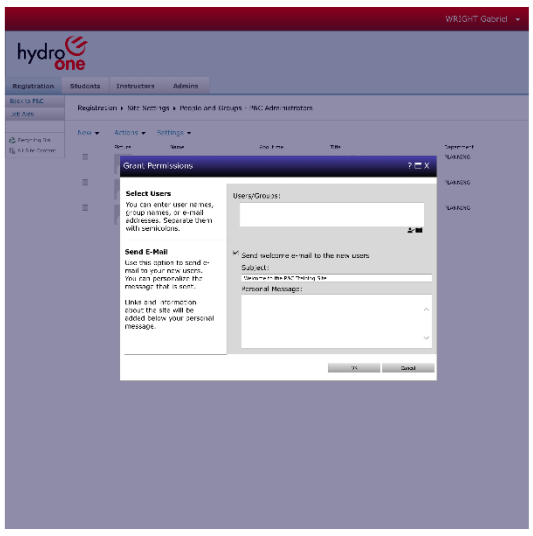


Figure 62: Administrator Area – Manage Permissions – Add Administrator (3)

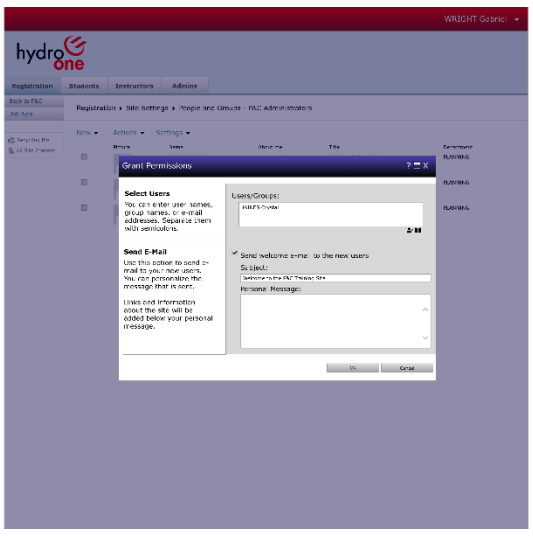


Figure 63: Administrator Area – Manage Permissions – Add Administrator (4)

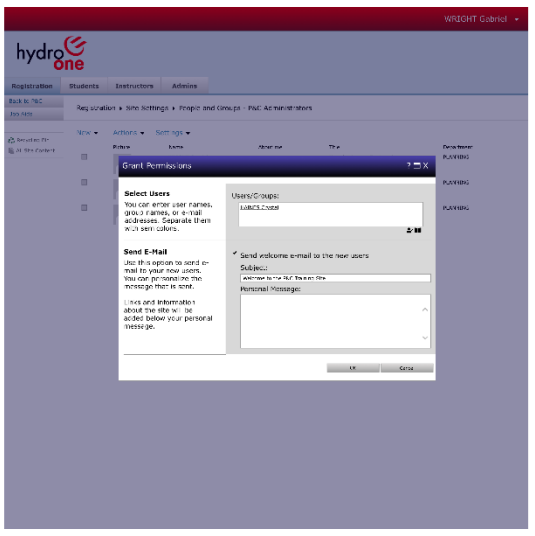


Figure 64: Administrator Area – Manage Permissions – Add Administrator (5)

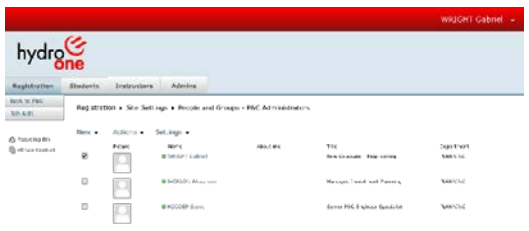


Figure 65: Administrator Area – Manage Permissions – Remove Administrator (1)

Registration Page

Layout Iterations (changes numbered in the figures below):

1. The "Name" field was moved to the right–hand side of the list because it provides the user with the least amount of information when they are researching a course.
2. The search bar's dropdown default value was changed from "Name" to "Description" so that users can easily search for what they want based on the course contents.
3. Additional fields were added for "Prerequisites", "Duration", and "Available Classes" to the right–hand side of the course list, in order to provide more information on each course.
4. The "About this page" text was edited to be more concise and to make it more obvious to users that they can immediately register for classes.

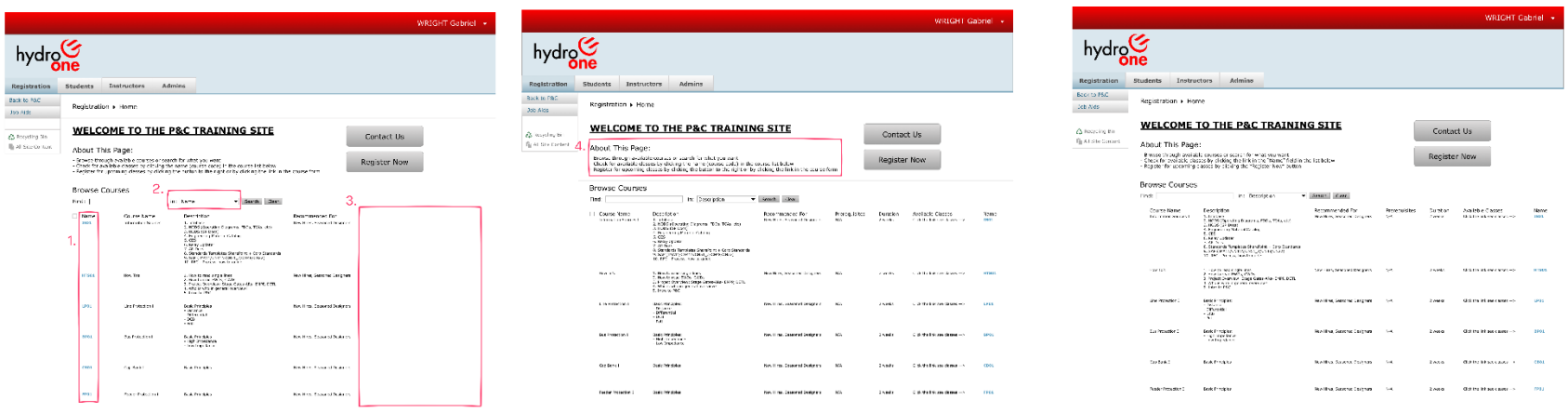


Figure 66: Registration Page – Layout (Versions 1–3)

User Flow Screens (Based on layout version 3)

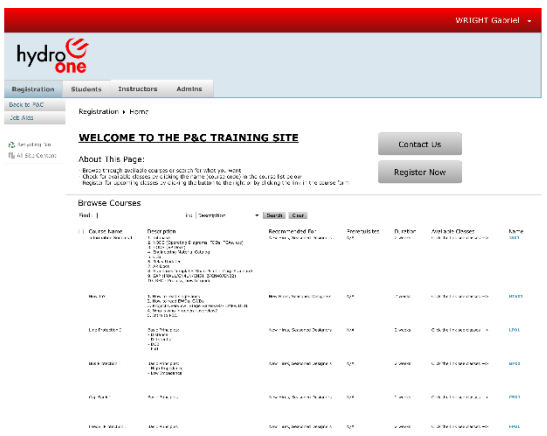


Figure 67: Registration Page

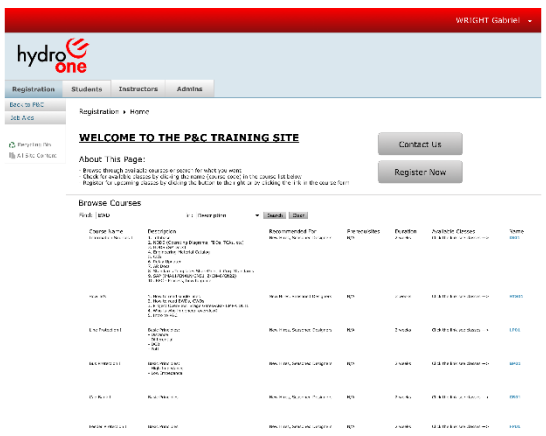


Figure 68: Registration Page – Search (1)

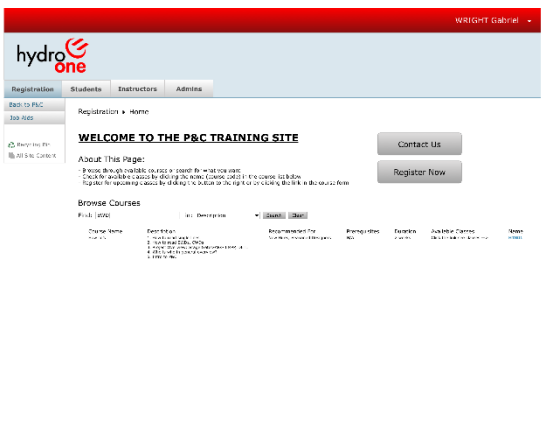


Figure 69: Registration Page – Search (2)

Registration Form

Layout Iterations (changes numbered in the figures below):

1. The "Student Details" heading was replaced with "Step 1: Confirm your personal information", so that the user immediately knows what is expected of them at each step of filling out the form.
2. The "Course Details" heading was replaced with "Step 2: Pick your desired course/class", in order to keep with the step–by–step theme in the rest of the form.
3. The notification preferences section was given the heading "Step 3: Confirm your notification preferences", in order to keep with the step–by–step theme in the rest of the form.
4. The "Submit" button was replaced with "Step 4: Submit", in order to keep with the step–by–step theme in the rest of the form.

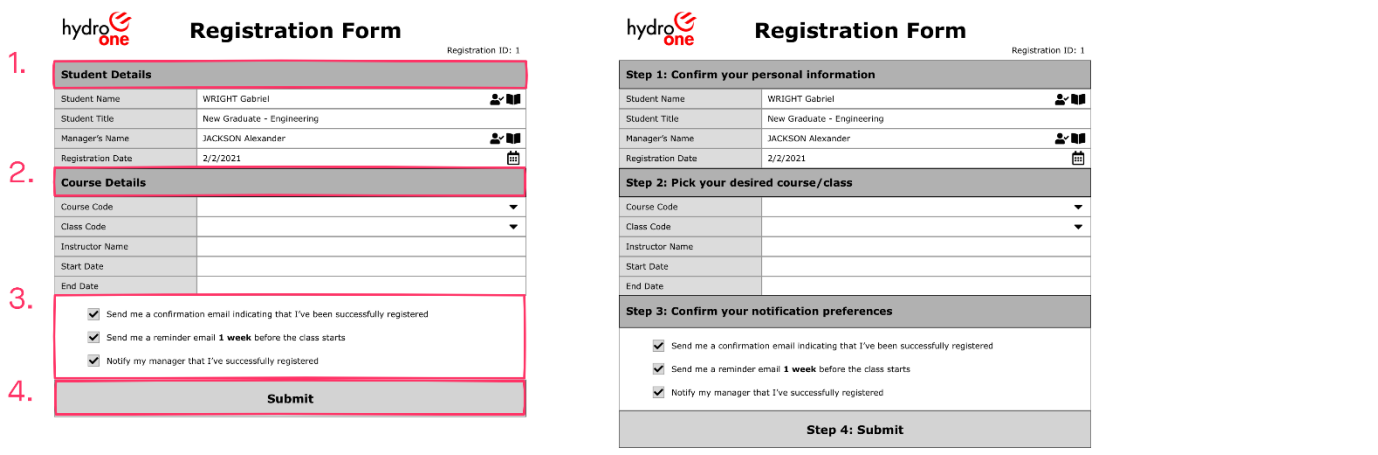


Figure 70: Registration Form - Layout (Versions 1-2)

User Flow Screens (Based on layout version 2)

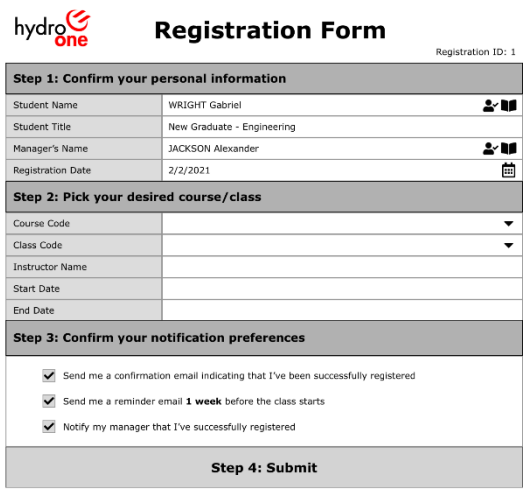


Figure 71: Registration Form (1)

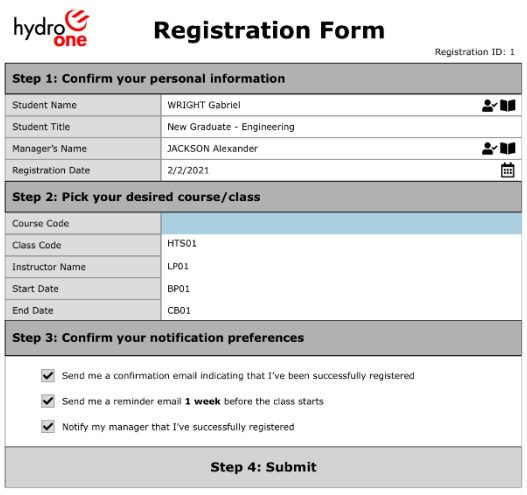


Figure 72: Registration Form (2)

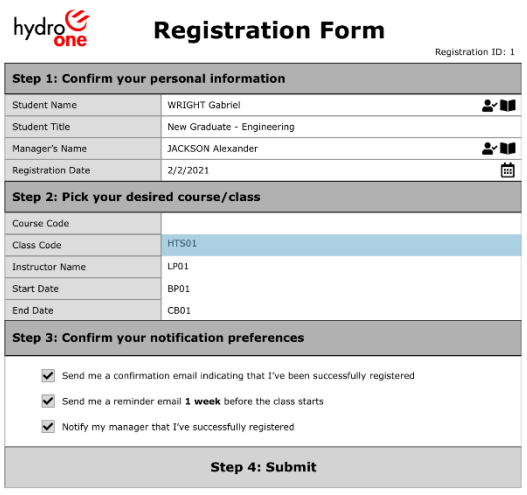


Figure 73: Registration Form (3)

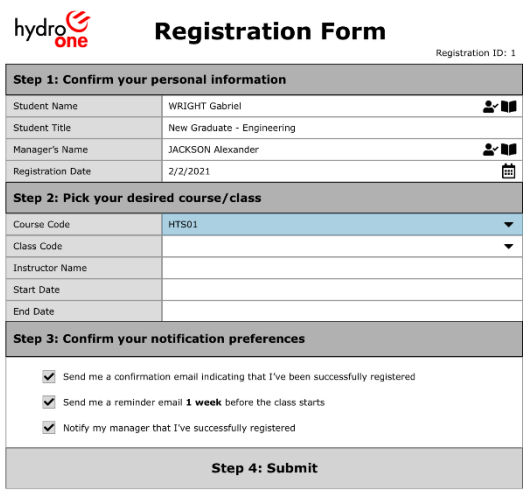


Figure 74: Registration Form (4)

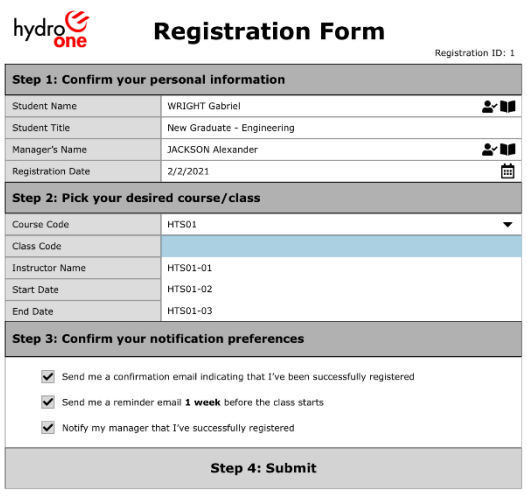


Figure 75: Registration Form (5)

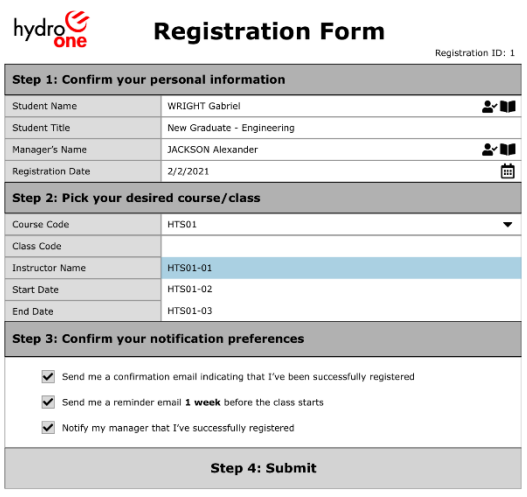


Figure 76: Registration Form (6)

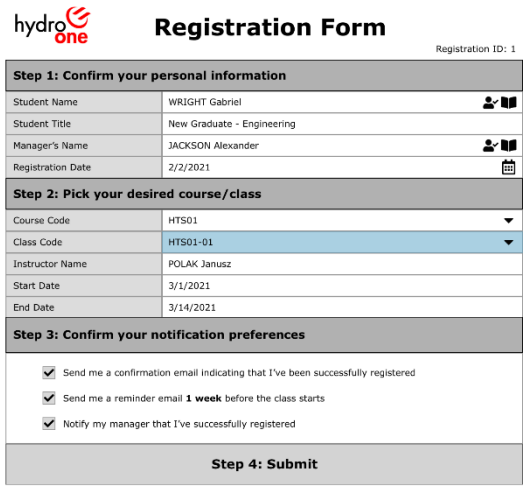


Figure 77: Registration Form (7)

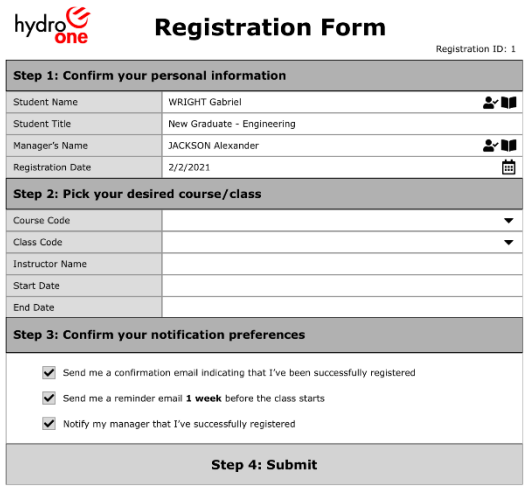


Figure 78: Registration Form – No Open Classes (1)

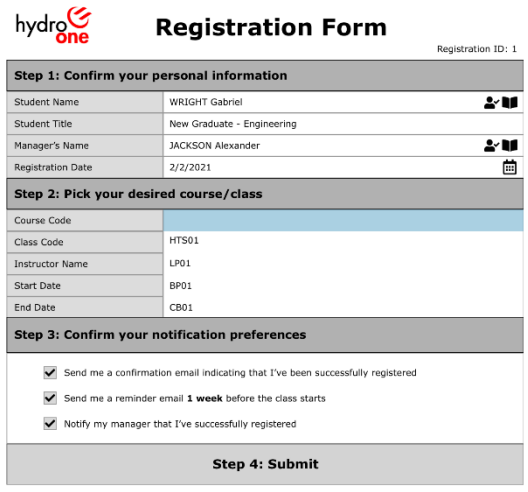


Figure 79: Registration Form – No Open Classes (2)

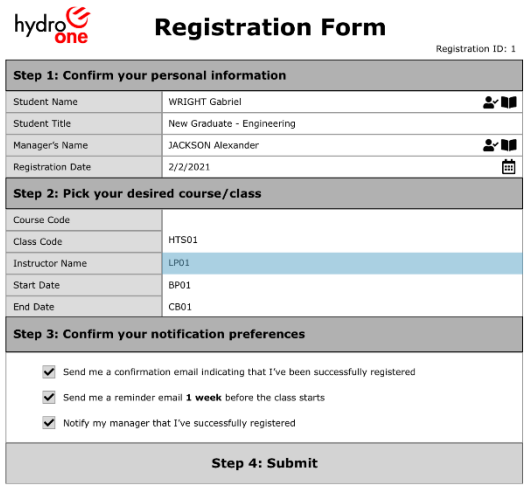


Figure 80: Registration Form – No Open Classes (3)

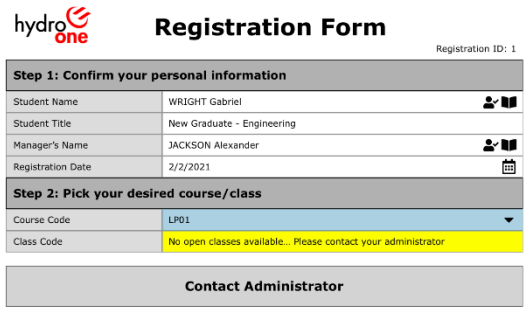


Figure 81: Registration Form – No Open Classes (4)

Announcement Form

Layout Iterations (changes numbered in the figures below):

1. The "Course Details" heading was replaced with "Step 1: Fill in the details below", so that the user immediately knows where to start.
2. The heading "Step 2: Confirm your notification preferences" was added to the notifications section, in order to keep with the step–by–step theme in the rest of the form.
3. The “Send Announcement” button was replaced with “Step 3: Send Announcement”, in order to keep with the step–by–step theme in the rest of the form.

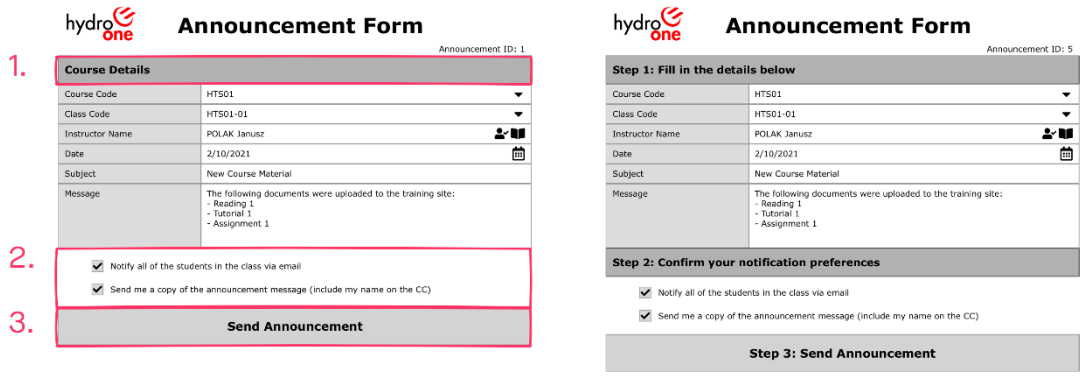


Figure 82: Announcement Form - Layout (Versions 1-2)

User Flow Screens (Based on layout version 2)

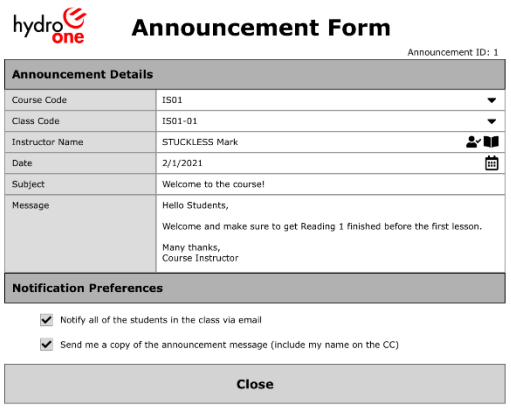


Figure 83: Announcement Form (1)

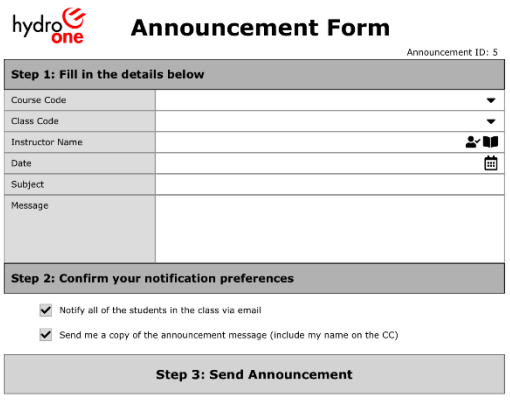


Figure 84: Announcement Form (2)

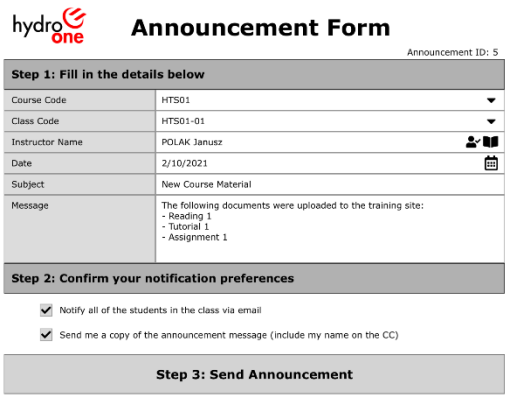


Figure 85: Announcement Form (3)

Assignment Form

Layout Iterations (changes numbered in the figures below):

1. The "Class Details" heading was replaced with "Step 1: Fill in the class details", so that the user immediately knows where to start.
2. The heading "Assignment Details" was replaced with "Step 2: Fill in the assignment details", in order to keep with the step–by–step theme in the rest of the form.
3. The notification preferences section was given the heading "Step 3: Confirm your notification preferences", in order to keep with the step–by–step theme in the rest of the form.
4. The "Submit Assignment" button was replaced with "Step 4: Submit Assignment", in order to keep with the step–by–step theme in the rest of the form.

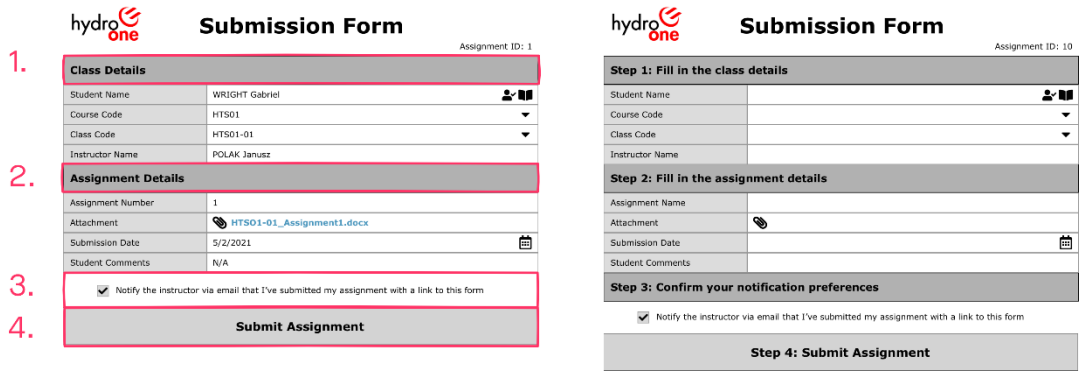


Figure 86: Assignment Form - Layout (Version 1-2)

User Flow Screens (Based on layout version 2)

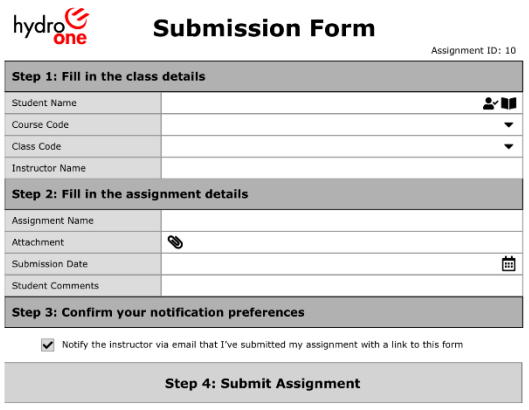


Figure 87: Assignment Form – Submit Assignment (1)

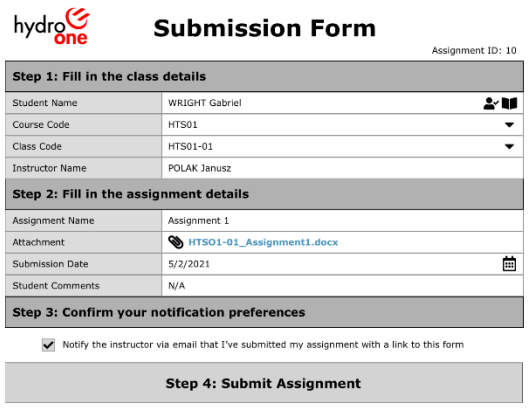


Figure 88: Assignment Form – Submit Assignment (2)

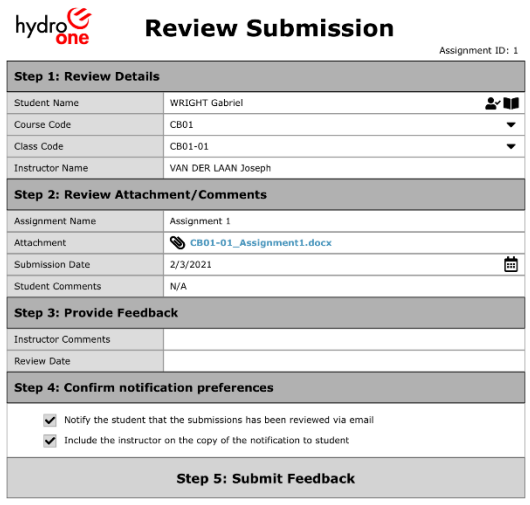


Figure 89: Assignment Form – Submit Feedback (1)

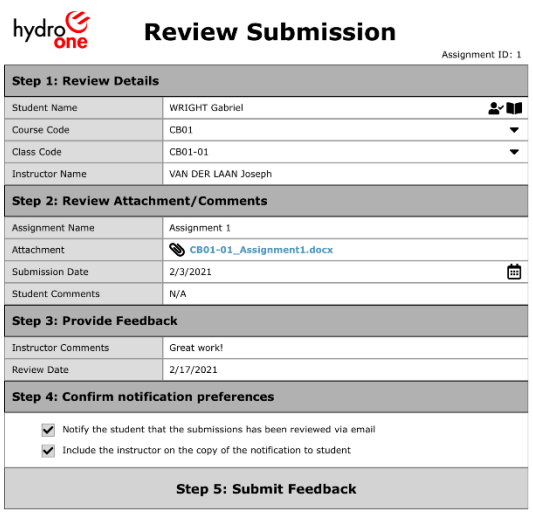


Figure 90: Assignment Form – Submit Feedback (1)

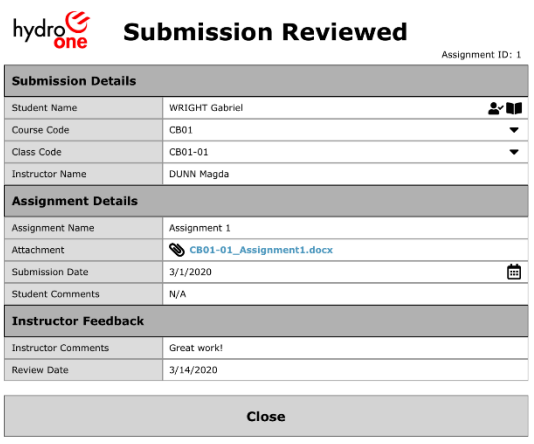


Figure 91: Assignment Form – Reviewed (1)

Class Form

Layout Iterations (changes numbered in the figure below):

1. The "Class Details" heading was replaced with "Step 1: Fill in the class details", so that the user immediately knows where to start.
2. The automation preferences section was given the heading "Step 2: Confirm your automation preferences", in order to keep with the step–by–step theme in the rest of the form.

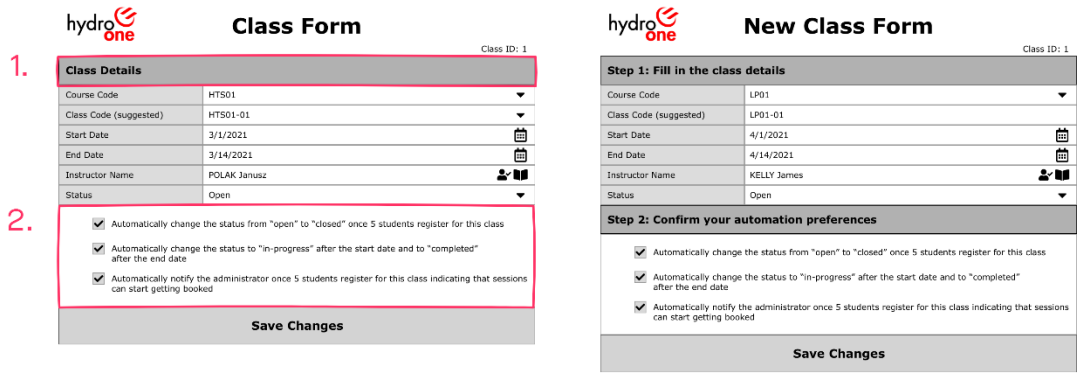


Figure 92: Class Form - Layout (Versions 1-2)

User Flow Screens (Based on layout version 2)

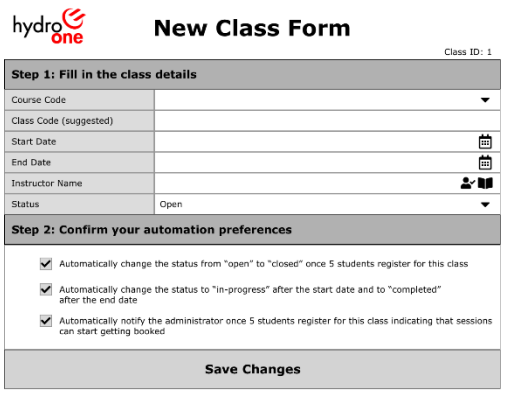


Figure 93: Class Form (1)

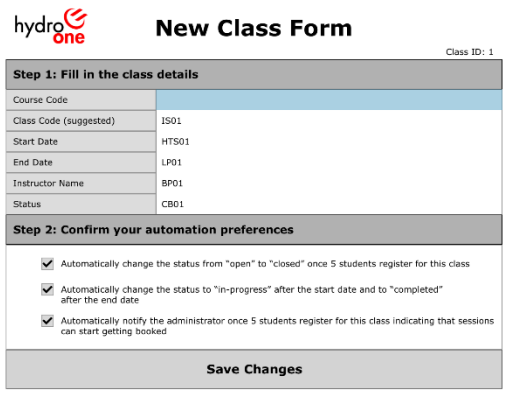


Figure 94: Class Form (2)

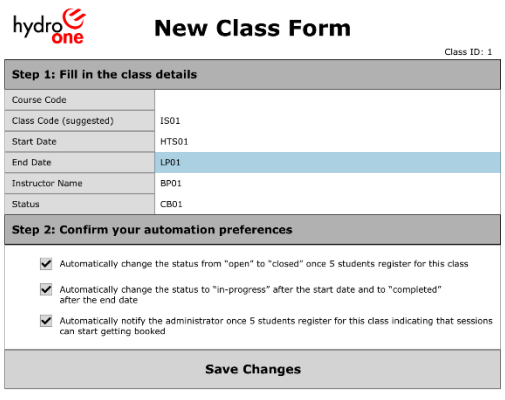


Figure 95: Class Form (3)

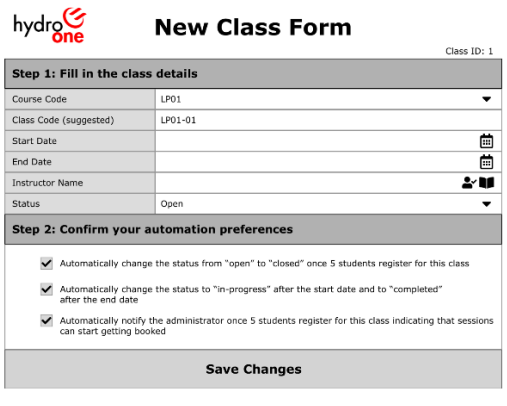


Figure 96: Class Form (4)

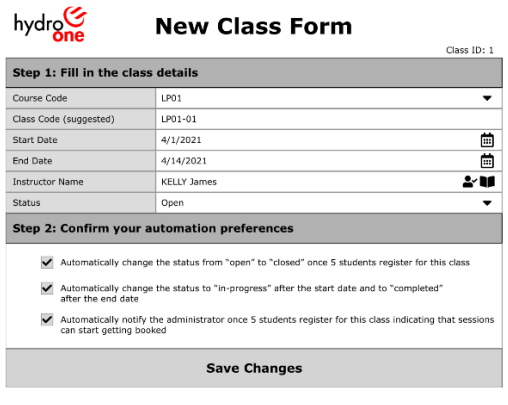


Figure 97: Class Form – Edit Details (1)

Course Form

Layout Iterations (changes numbered in the figure below):

1. The "Course Details" heading was changed to "Step 2: Browse upcoming classes", to keep with the step–by–step theme in the rest of the form.
2. The upcoming classes section was moved to above the course details section, and the heading was changed to "Step 1: Browse upcoming classes", so that users know where to start.
3. The "Register Now" button that opens a registration form in the browser was renamed "Step 3: Begin Registration, in order to keep with the step–by–step theme in the rest of the form.

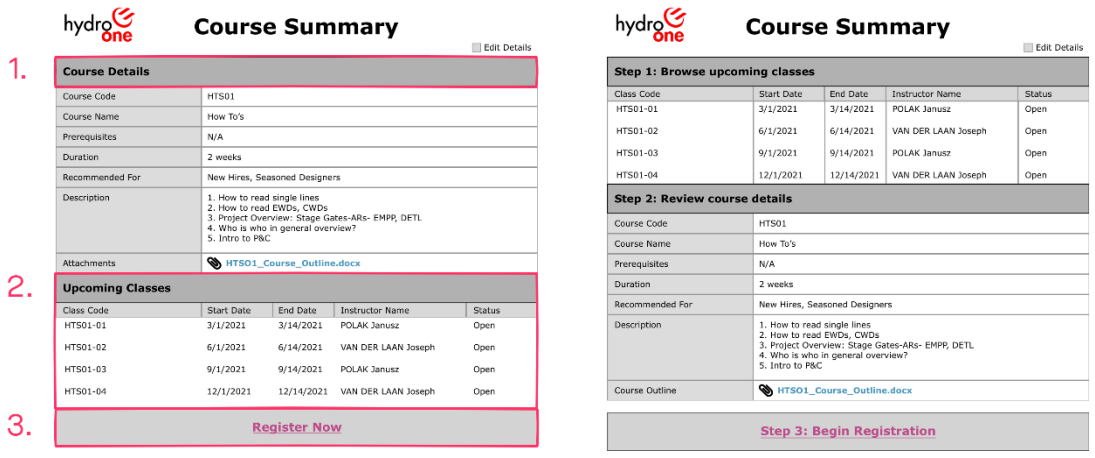


Figure 98: Course Form - Layout (Versions 1-2)

User Flow Screens (Based on layout version 2)

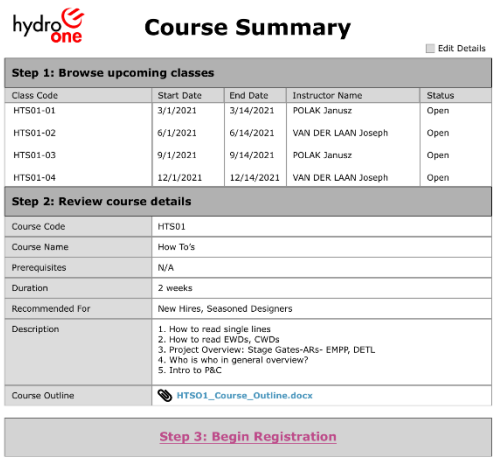


Figure 99: Course Form

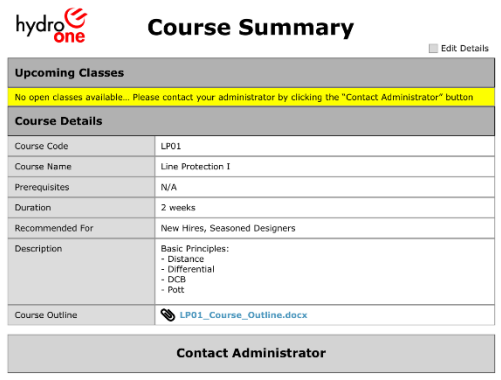


Figure 100: Course Form – No Open Classes (1)

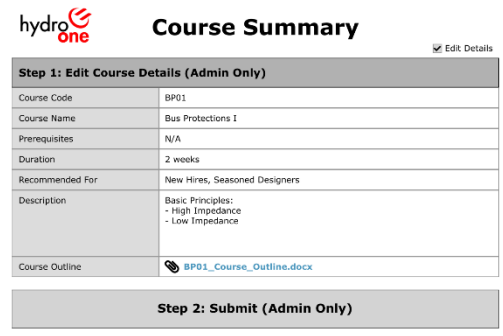


Figure 101: Course Form – New Course (2)

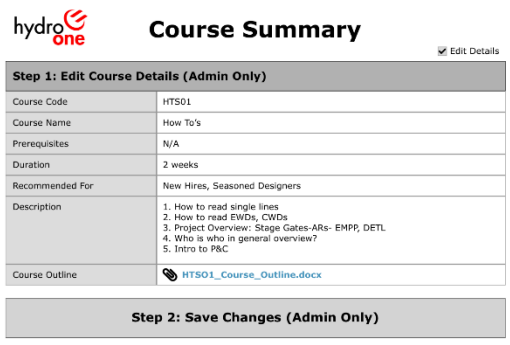


Figure 102: Course Form – Edit Details (1)

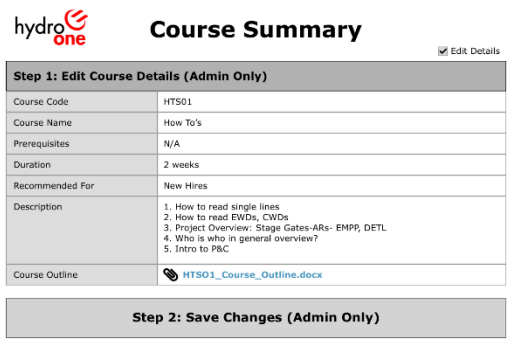


Figure 103: Course Form – Edit Details (2)

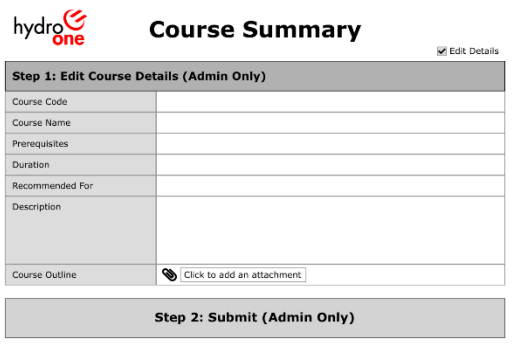


Figure 104: Course Form – New Course (1)

Student Area

User Flow Screens

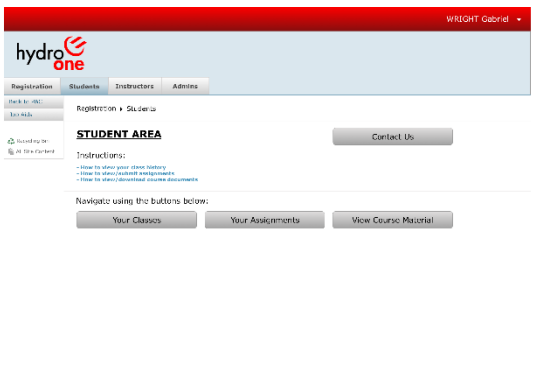


Figure 105: Student Area

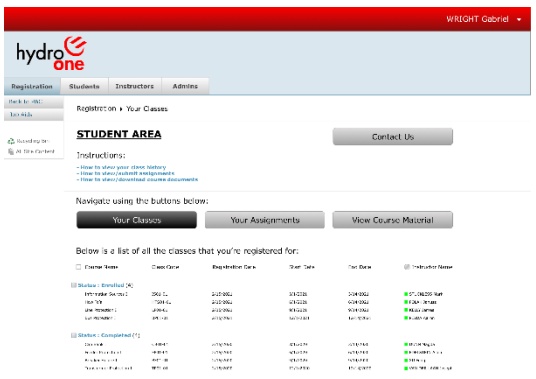


Figure 106: Student Area – Your Classes

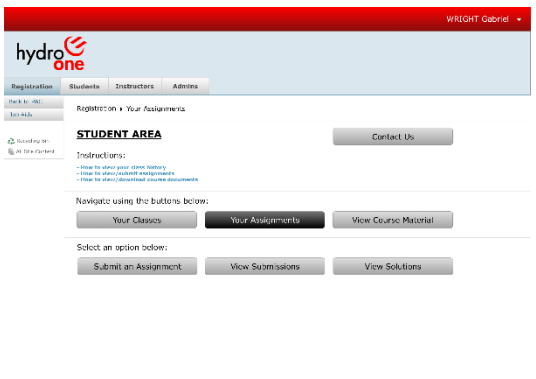


Figure 107: Student Area – Your Assignments

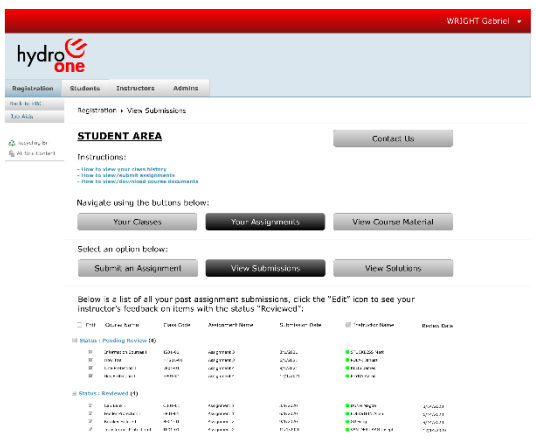


Figure 108: Student Area – Your Assignments – View Submissions

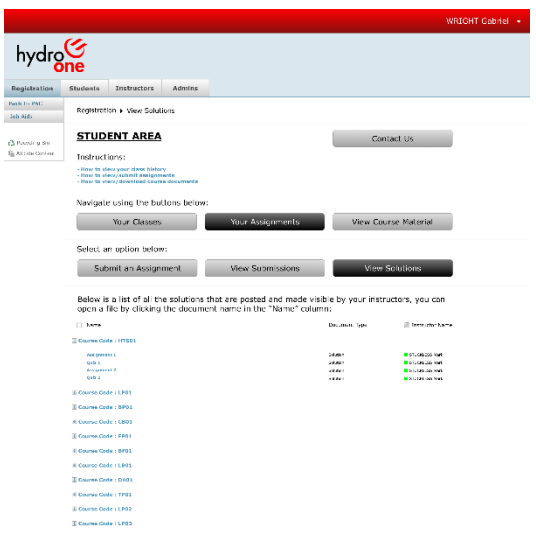


Figure 109: Student Area – Your Assignments – View Solutions

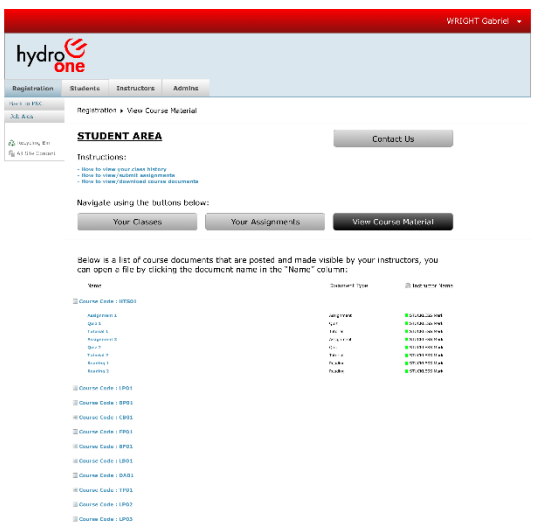


Figure 110: Student Area – View Course Material

Instructor Area

User Flow Screens

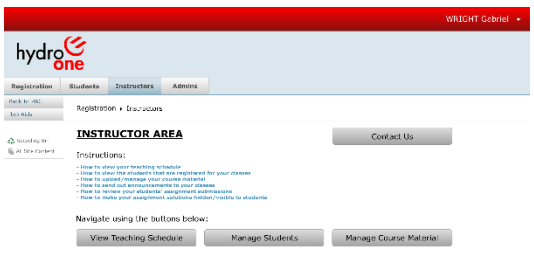


Figure 111: Instructor Area

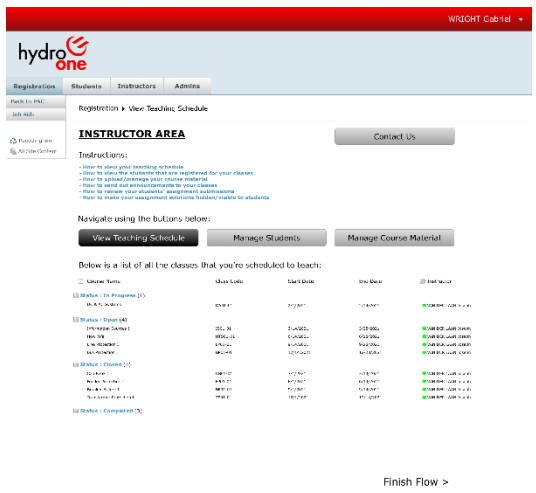


Figure 112: Instructor Area – View Teaching Schedule

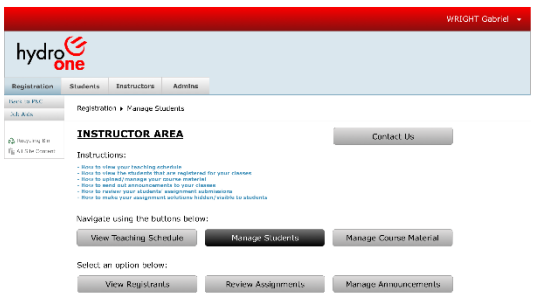


Figure 113: Instructor Area – Manage Students

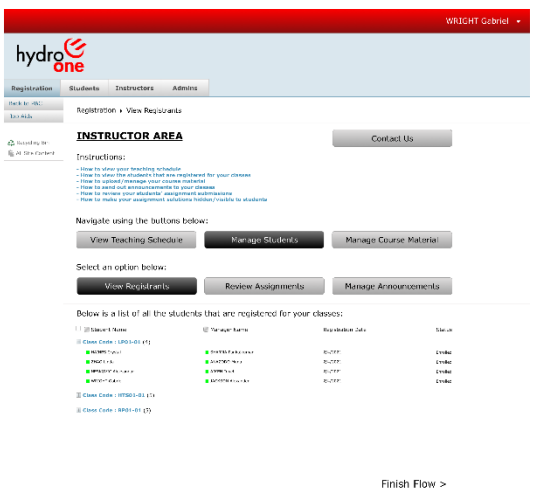


Figure 114: Instructor Area – View Registrants

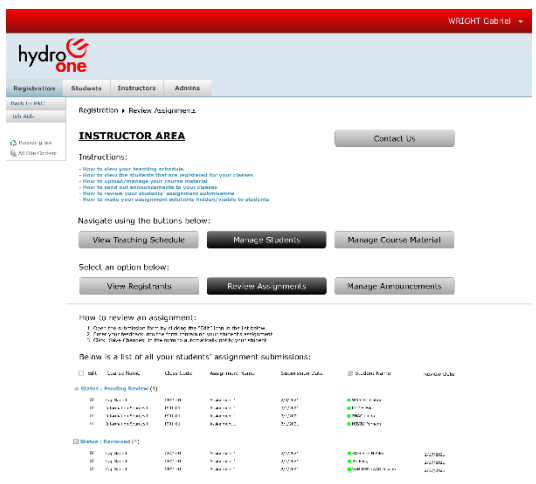


Figure 115: Instructor Area – Review Assignments

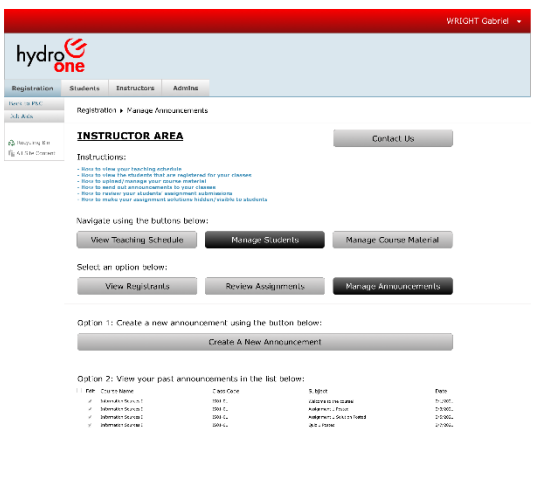


Figure 116: Instructor Area – Manage Announcements

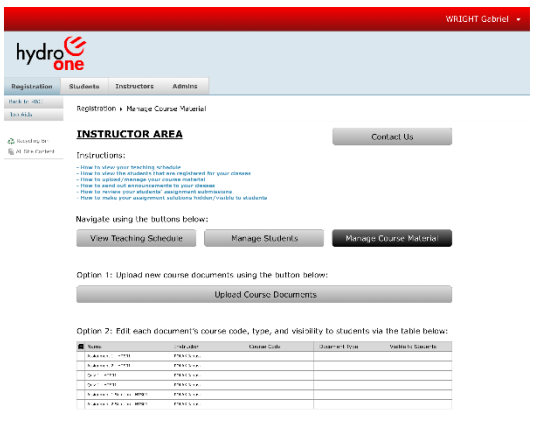


Figure 117: Instructor Area – Manage Course Material – Edit (1)

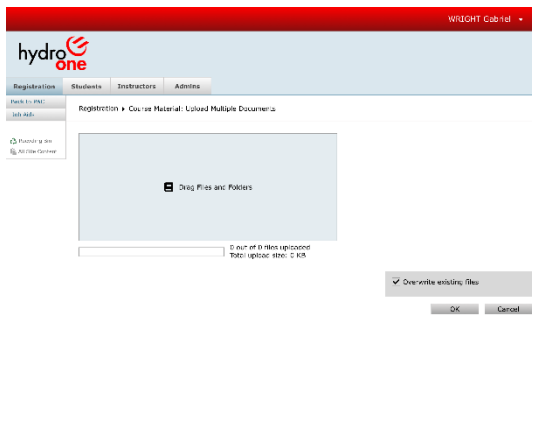


Figure 118: Instructor Area – Manage Course Material – Upload (1)

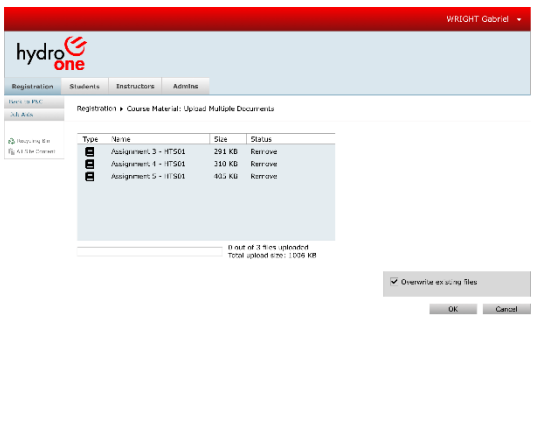


Figure 119: Instructor Area – Manage Course Material – Upload (2)

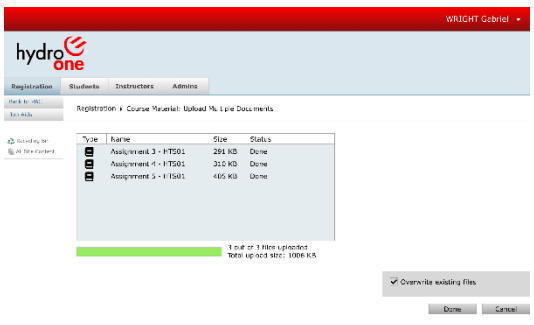


Figure 120: Instructor Area – Manage Course Material – Upload (3)

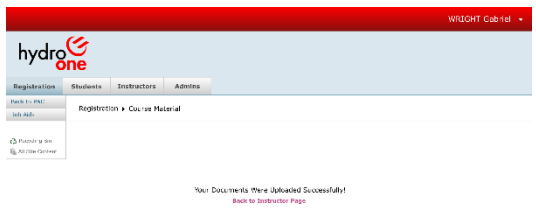


Figure 121: Instructor Area – Manage Course Material – Upload (4)

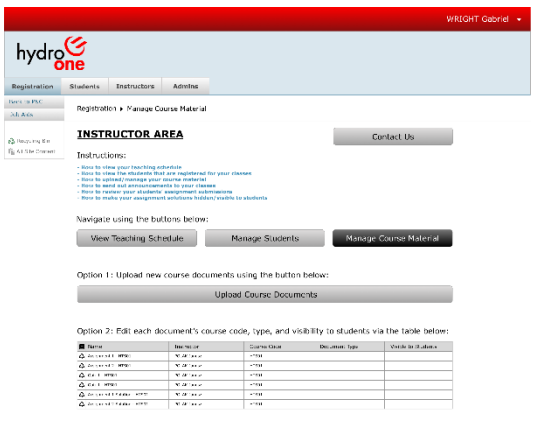


Figure 122: Instructor Area – Manage Course Material – Edit (2)

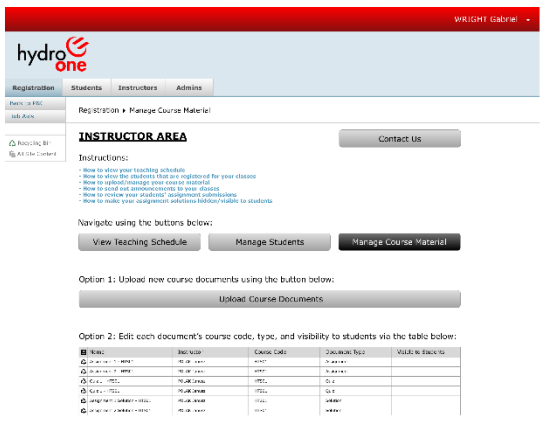


Figure 123: Instructor Area – Manage Course Material – Edit (3)

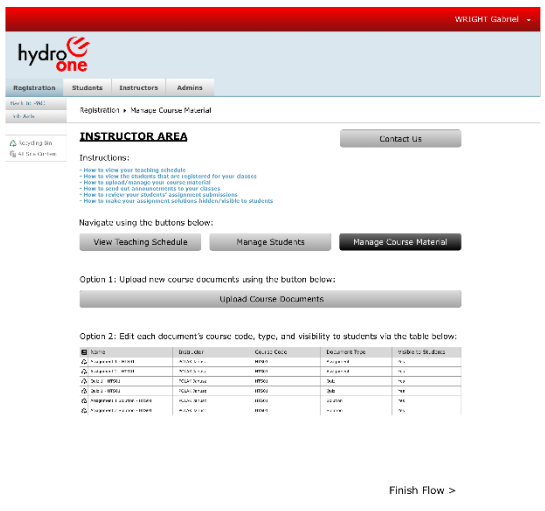


Figure 124: Instructor Area – Manage Course Material – Edit (4)

Notification Profile Form

User Flow Screens

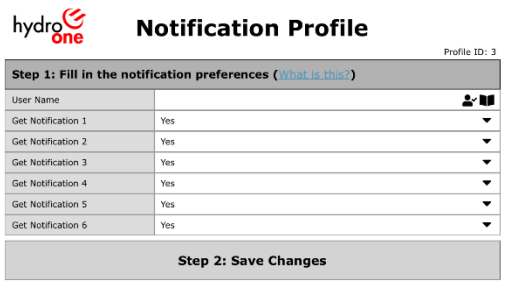


Figure 125: Notification Profile Form - New (1)

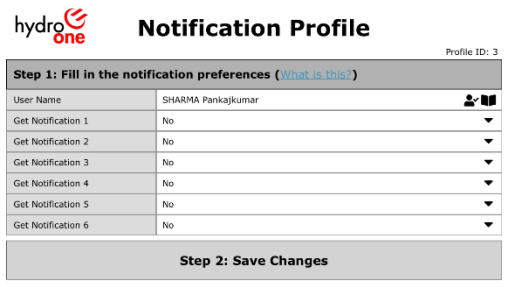


Figure 126: Notification Profile Form - New (2)

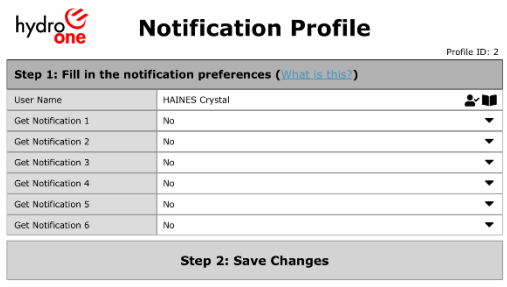


Figure 127: Notification Profile Form – Edit (1)

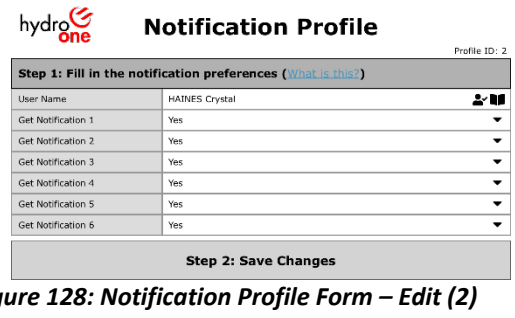


Figure 128: Notification Profile Form – Edit (2)

Email Notifications

User Flow Screens

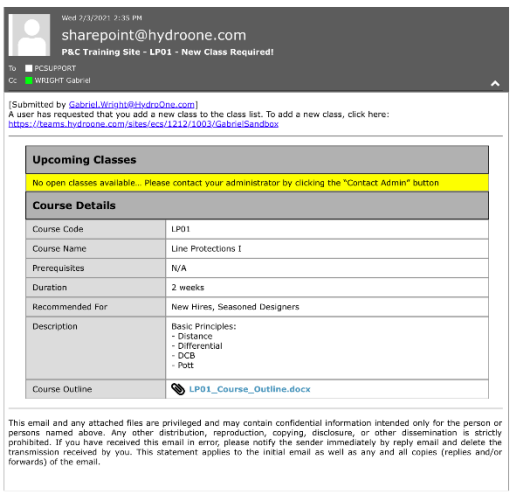


Figure 129: Admin – New Class Required (1)

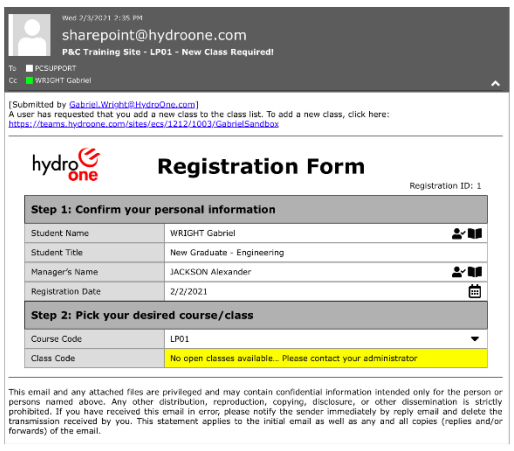


Figure 130: Admin – New Class Required (2)

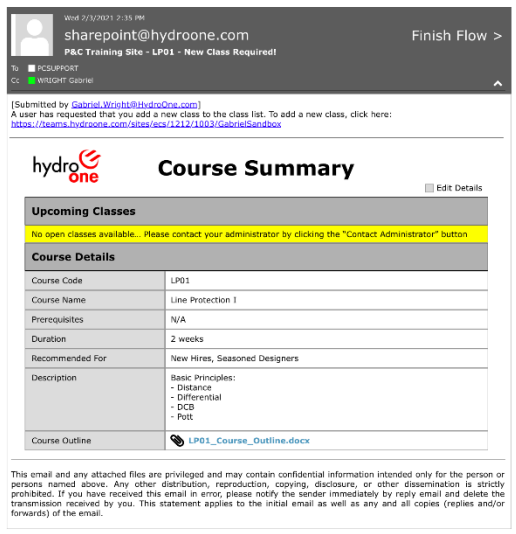


Figure 131: Admin – New Class Required (3)

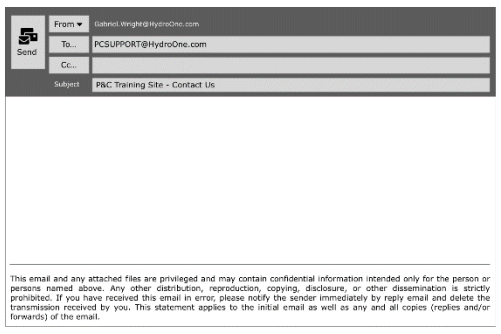


Figure 132: Admin – Contact Us (1)

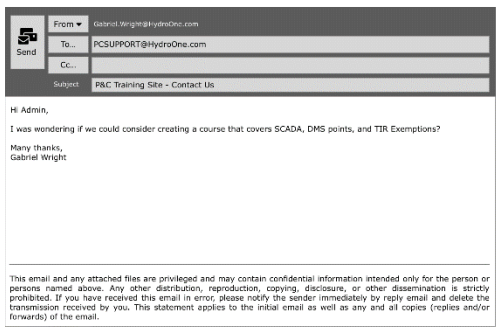


Figure 133: Admin – Contact Us (2)

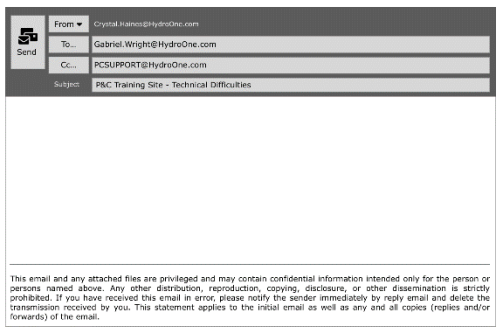


Figure 134: Admin – Technical Difficulties (1)

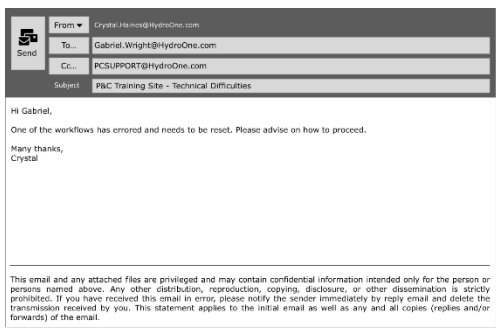


Figure 135: Admin – Technical Difficulties (2)

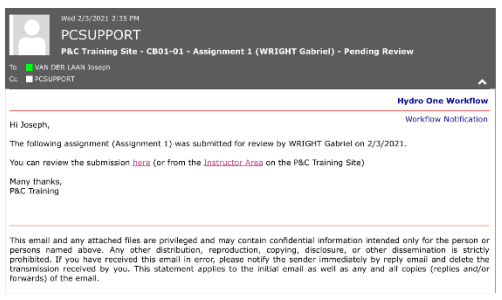


Figure 136: Instructor – Assignment – Pending Review

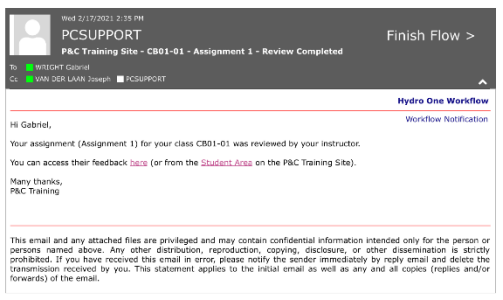


Figure 137: Instructor – Assignment – Review Completed

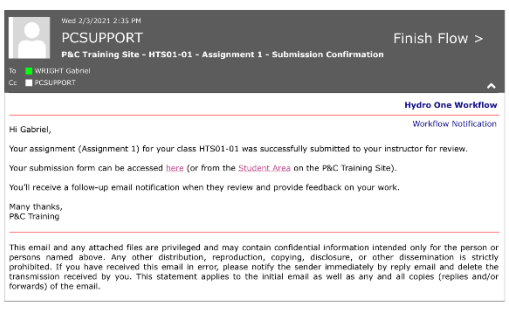


Figure 138: Student – Assignment – Submission Confirmation

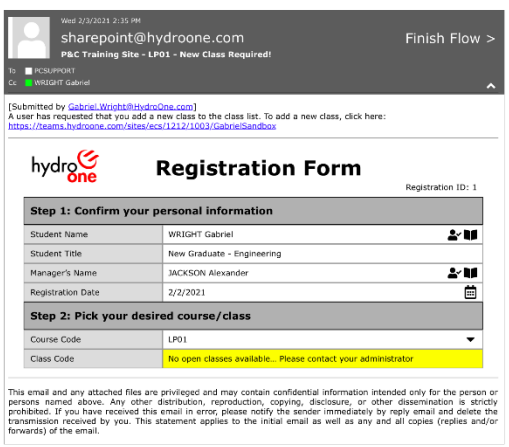


Figure 139: Admin – New Class Required (4)

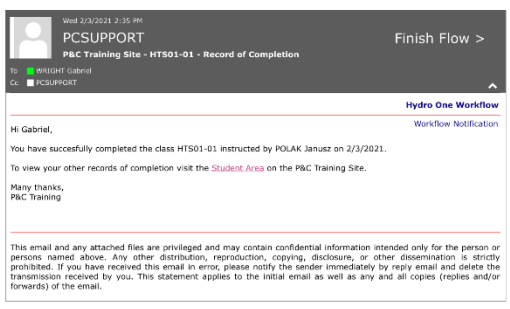


Figure 140: Student – Record of Completion

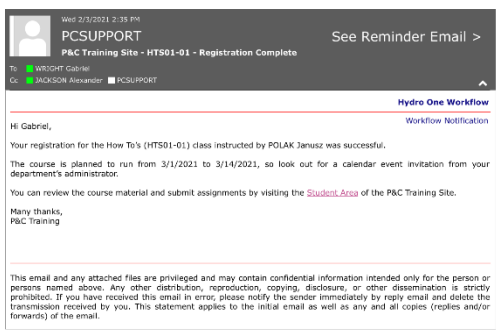


Figure 141: Student – Registration Complete (1)

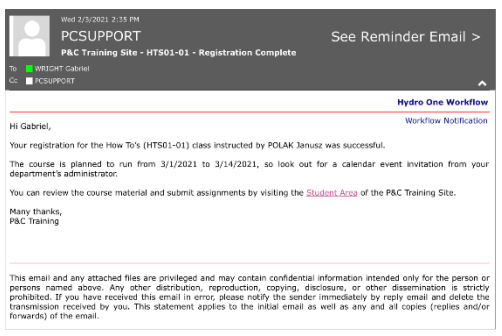


Figure 142: Student – Registration Complete (2)

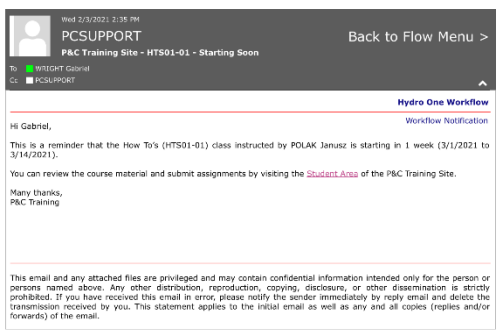


Figure 143: Student – Reminder

Style Guide

Displayed below is the visual user interface guidelines for the P&C Training Site, they are followed and executed as shown below without any variation from these guidelines.

Logo

Hydro One Networks Inc. logo is available in horizontal direction. There is no other variation used in this project.

Logo file pathway**:** **HONI\Logo**

Figure 144: Primary Logo

Color

The primary colors were selected by using the eyedropper tool in the Sketch design software to determine each Hex color code, each color is shown in the figure below and are as follows:

- Red: #FF0000
- Black: #000000
- White: #FFFFFF

Figure 145: Primary Colors

The secondary colors were approximated by analyzing the Hydro One's standard SharePoint theme, Microsoft Outlook theme, and Nintex Workflow notifications theme to come up with a set of colors that would be commonly seen by an employee at Hydro One. Each color is shown in the figure below and are as follows:

- Grey: #C0C0C0, #A0A0A0, #757575, #5C5C5C, #434343
- Turquoise: #DAE7EE, #7DA8BE, #4797C0
- Navy Blue: #8E8CA8, #130F88
- Purple/Maroon: #C0488B, #8B0F0F
- Green: #00FF0D
- Yellow: #FDFF00

Figure 146: Secondary Colors

Typography

Verdana Font Family: Used for labels, paragraphs, bullets, titles, form inputs, emails, tables, hyperlinks, groupings in SharePoint. Verdana (regular) font is primarily used for body, paragraph, and form input text, whereas the Verdana (bold) font is used for headings, titles, labels, and hyperlinks.

Verdana (44 pt.)

Verdana (28 pt.)

Verdana (24 pt.)

Verdana (18 pt.)

Verdana (16 pt.)

Verdana (14 pt.)

Verdana (12 pt.)

Figure 147: Font Family (Regular)

Verdana Bold (36 pt.)

Verdana Bold (20 pt.)

Verdana Bold (18 pt.)

Verdana Bold (14 pt.)

Figure 148: Font Family (Bold)

Iconography

Examples of each icon's usage in the high–fidelity prototype (see figure below):

1. Breadcrumbs navigation in SharePoint site
2. Dropdown control in the various forms
3. Date picker control in the various forms
4. User–check control in the various forms
5. Open the user directory for a people picker control in the various forms
6. Send icon for the contact us/technical difficulties email notification
7. Help icon for the grant permissions modal
8. Expand to full screen icon for the grant permissions modal
9. Close the dialog icon for the grant permissions modal
10. Attachment icon for the various forms
11. Wait for changes to finish updating/recycling bin icon SharePoint site
12. Add new row to datasheet for SharePoint site
13. Access icon for datasheet and upload multiple documents icon for SharePoint site
14. Edit icon (version 1) for SharePoint site
15. Delete icon for item dropdown field in SharePoint site
16. User profile icon in email notification
17. User profile icon in the SharePoint site
18. People picker field icon in SharePoint site
19. Checkbox icon in the various forms
20. Edit icon (version 2) for SharePoint site
21. All Site Content icon for SharePoint Site
22. Collapse icon in email notifications
23. Expand icon for item groupings in the SharePoint site
24. Collapse icon for item groupings in the SharePoint site
25. Dropdown control for an item in the SharePoint site
26. Online user status icon for email notifications/SharePoint site
27. Offline user status icon for email notifications/SharePoint site

Icons imported into Sketch from FontAwesome via 5.15.1 designer pack (see figure below):

- 1, 2, 3, 4, 5, 6, 10, 11, 13, 14, 20, 21, 22, 25

Icons created using Sketch design software (see figure below):

- 7, 8, 9, 12, 15, 16, 17, 18, 19, 23, 24, 26, 27

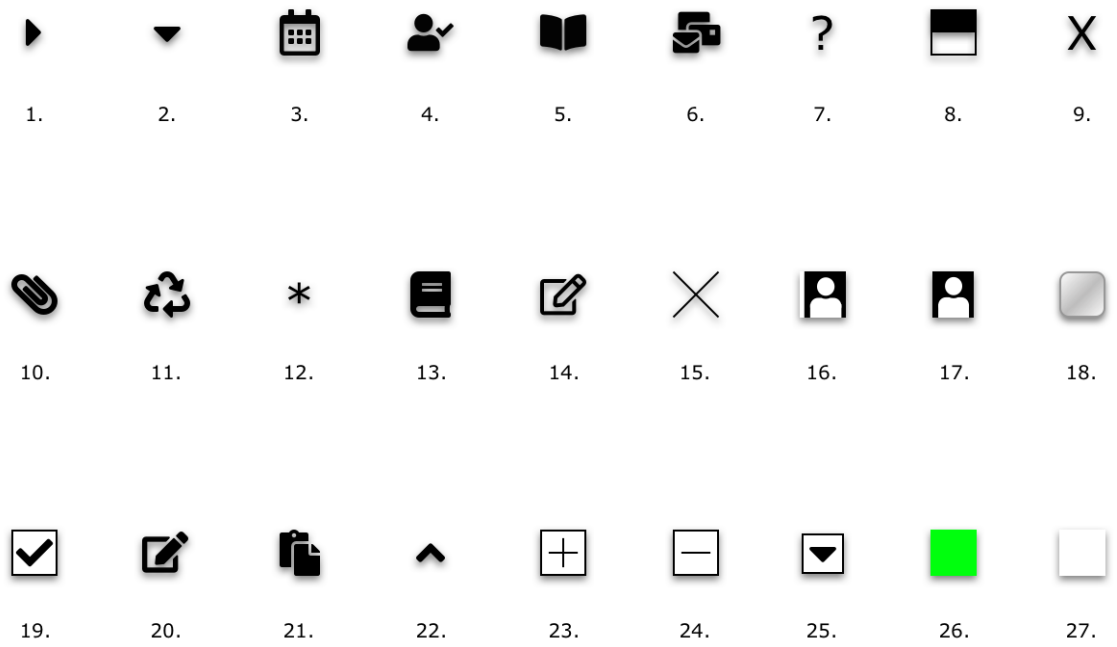


Figure 149: Icons

Buttons

Many of the navigation buttons used on the P&C Training Site have two states (unselected/selected), depending on which page the user is accessing. As the users interact with the high–fidelity prototype, the button changes color to indicate to the user where they are within the site's navigation. These buttons are outlined in the figure below.

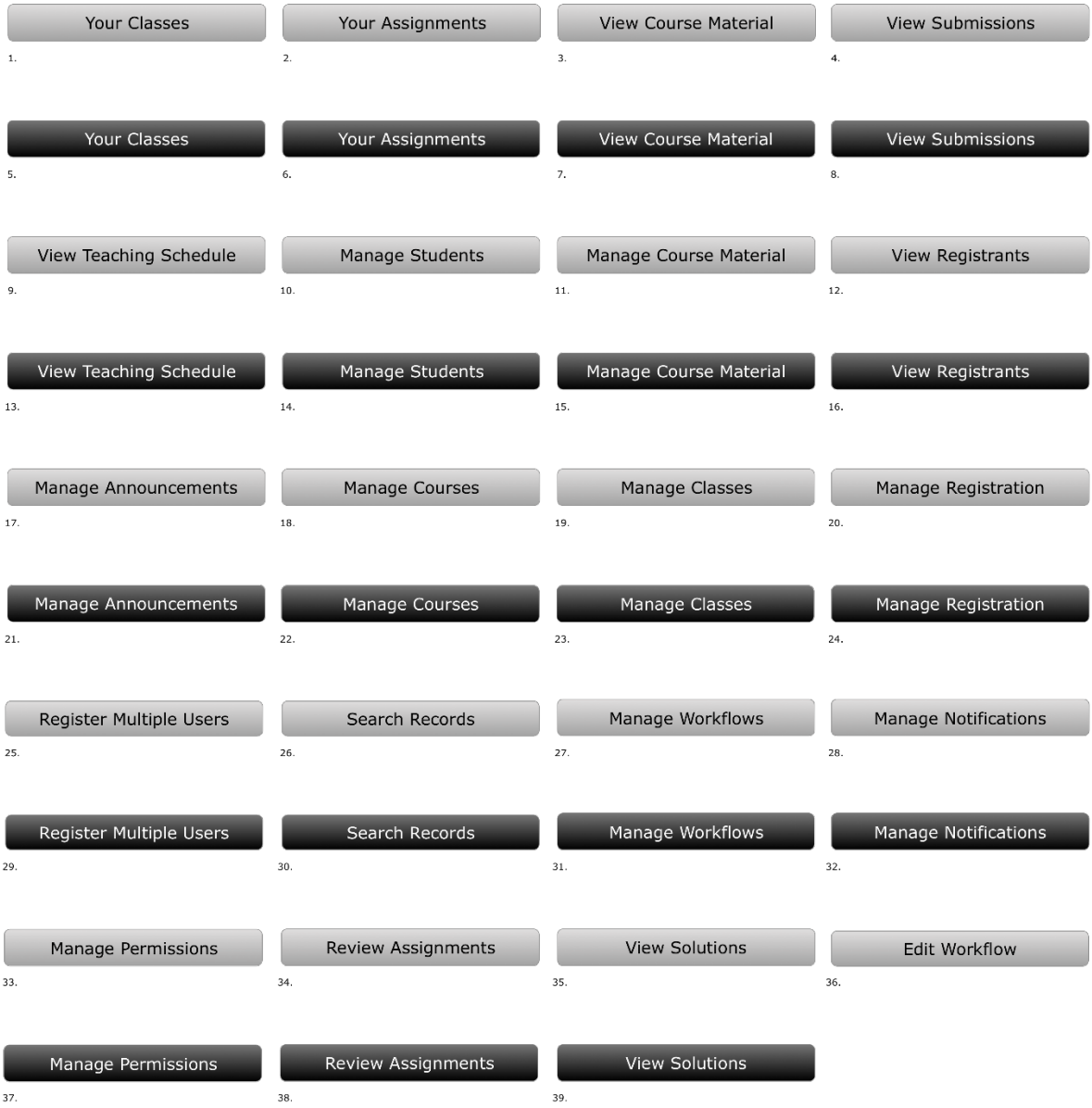


Figure 150: Multi–state buttons (grey – unselected, black – selected)

Some of the buttons used on the P&C Training Site are single–state (unselected) and upon clicking any of these buttons, the user is either redirected to an email notification, form, permission list, document upload page, workflow editing/scheduling page, or an action is triggered (i.e. search/clear refreshes the page). These buttons are outlined in the figure below.

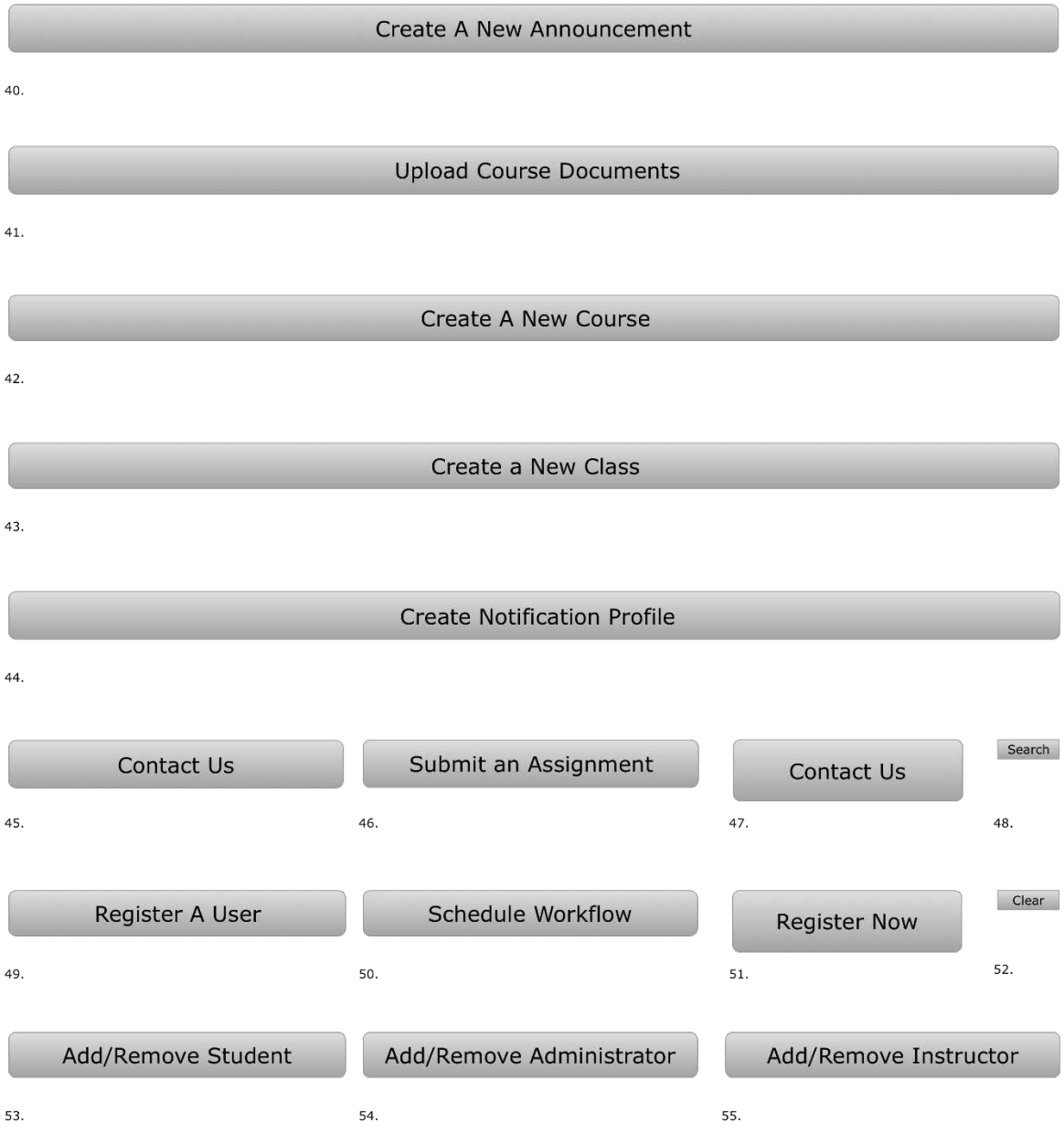


Figure 151: Single–state buttons (grey – unselected)

Usability Testing

Objective

To determine if each user group (student, instructor, and administrator) is able to accomplish their goals when navigating the high–fidelity prototype.

Testing Participants

Three participants were selected, one from each user group (student, instructor, and administrator) and recruited after receiving permission from their manager to participate in the testing exercise.

Testing Methodology

Usability tests were 30 minute meetings that were conducted remotely via WebEx. Before the meeting, each user was provided with a link to the interactive prototype that could be launched in the browser. Once opened, the UX designer asked for permission to record the audio/video for the session and each user was given a usability testing script that was unique to their user group. Once the session concluded, each participant was thanked and the user's feedback was incorporated into the design revisions.

Test Script (Student):

Flow 1: Search the course list on the registration page for a course that offers “EWD” and viewing the search results

Flow 2: Using the search results, check the available classes for that course

Flow 3: Find an available time slot, and begin the registration for the class HTS01–01

Flow 4: Check your email for the submission confirmation

Flow 5: Contact the administrator with a question (from the home page)

Flow 6: Look for available classes for the course LP01 and notify the administrator if there’s none available

Flow 7: Register for a course without needing to browse the course details (i.e. you already know the course code is LP01 but there’s no classes available, so contact the admin)

Flow 8: Check your course records to see if your registration for the class HTS01–01 was successful

Flow 9: Find the course material for the course HTS01 and open Assignment 1

Flow 10: Submit your Assignment 1 for the course HTS01 and check to see if it was received by the system

Flow 11: Check to see if the instructor has reviewed your assignment (Assignment 1 for the class CB01–01), and if so, check their feedback and close the form

Flow 12: Contact the administrator with your question

Flow 13: View the solution to Assignment 1 that your HTS01–01 instructor posted on the P&C Training Site

Test Script (Instructor):

Flow 1: View your teaching schedule

Flow 2: View your student list to see which student are registered for your classes

Flow 3: Upload your course material

Flow 4: Assign your newly uploaded course material to the appropriate course code (HTS01) and make it visible to your students

Flow 5: Send out an announcement to your class (HTS01–01) and tell them that new course documents have been uploaded

Flow 6: Review your student's assignment (Assignment 1 by WRIGHT Gabriel and provide feedback)

Flow 7: Contact the administrator with a question using the site

Flow 8: Review your past announcements and open up the welcome message for your class (IS01–01)

Test Script (Administrator):

Flow 1: Receive an email notification (from course form) and creating a new class based on student interest

Flow 2: Receive an email notification (from registration form) and creating a new class based on the student interest

Flow 3: Add a new class from the home page (add LP01–01)

Flow 4: Add a new course from the home page (add BP01: Bus Protections I)

Flow 5: Edit an existing class from the home page (change the instructor for HTS01–01)

Flow 6: Edit an existing course from the home page (edit HTS01 and change the “Recommended for” field)

Flow 7: Delet an existing class from the home page (delete HTS01–04)

Flow 8: Delet an existing course from the home page (delete HTS01)

Flow 9: Search for a user in the registration list (search for Gabriel)

Flow 10: Export student records to an excel document

Flow 11: Register a student on their behalf (register WRIGHT Gabriel in the class HTS01–01)

Flow 12: Register/edit multiple students records on their behalf (register WRIGHT Gabriel in LP01–01, BP01–01, and CB01–01 and enable automatic notifications)

Flow 13: Delete multiple student’s registration records

Flow 14: Create a user notification profile (disable all notifications for SHARMA Pankajkumar)

Flow 15: Edit an existing notification profile (enable all notifications for HAINES Crystal)

Flow 16: Add a user to the student permission group (add HAINES Crystal)

Flow 17: Add a user to the instructor permission group (add HAINES Crystal)

Flow 18: Add a user to the admin permission group (add HAINES Crystal)

Flow 19: Remove a user from the student permission group (remove WRIGHT Gabriel)

Flow 20: Remove a user from the instructor permissions group (remove WRIGHT Gabriel)

Flow 21: Remove a user from the admin permission group (remove WRIGHT Gabriel)

Flow 22: Edit the Registration 1 workflow

Flow 23: Edit the Registration 2 workflow

Flow 24: Edit the Registration 3 workflow

Flow 25: Edit the Registration 4 workflow

Flow 26: Edit the Assignment 1 workflow

Flow 27: Edit the Announcement 1 workflow

Flow 28: Contact the developer because of technical difficulties

Flow 29: Check your email for a notification signifying that a class has reached the minimum threshold of applicants (5 applicants) and sessions can booked in students'/instructors' calendars.

Usability Testing Findings

Student Feedback

During the usability testing session, the participant indicated that it was difficult to remember the course code when filling in the dropdown field of the assignment form, or navigating the course material page. The participant suggested that it would be better if the course name was used rather than the course code. As a result, the changes were implemented as outlined in red below.

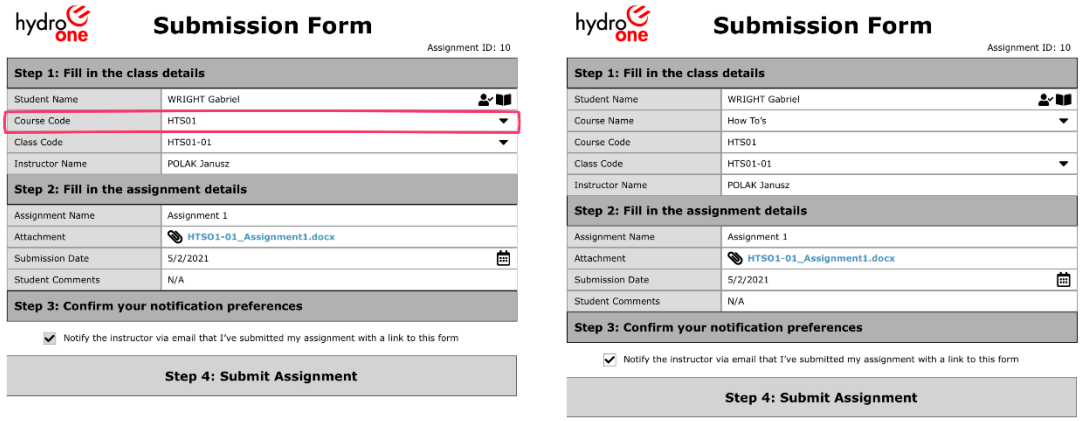


Figure 152: Assignment Form – Versions 2-3

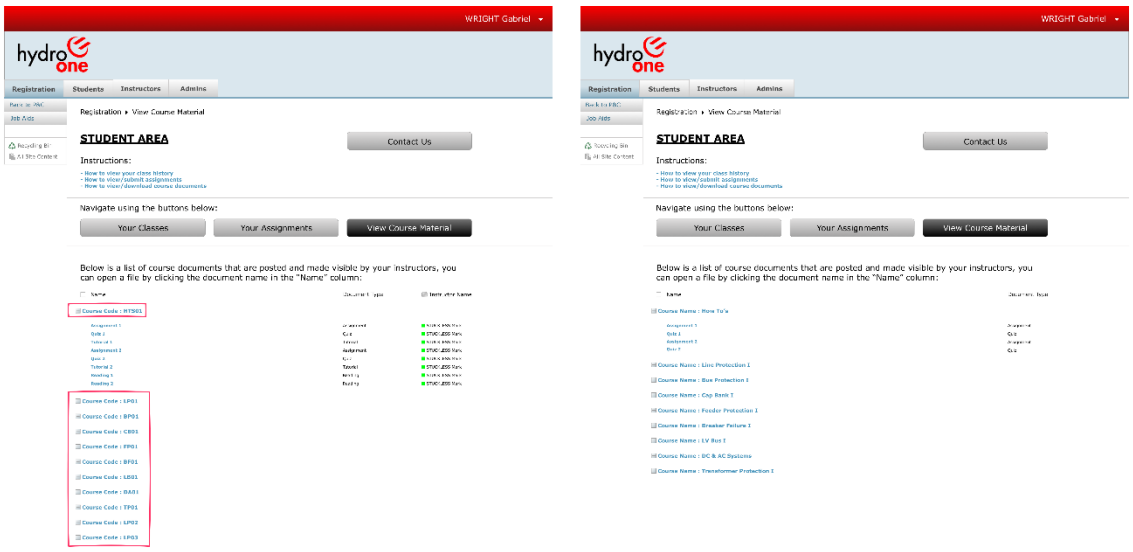
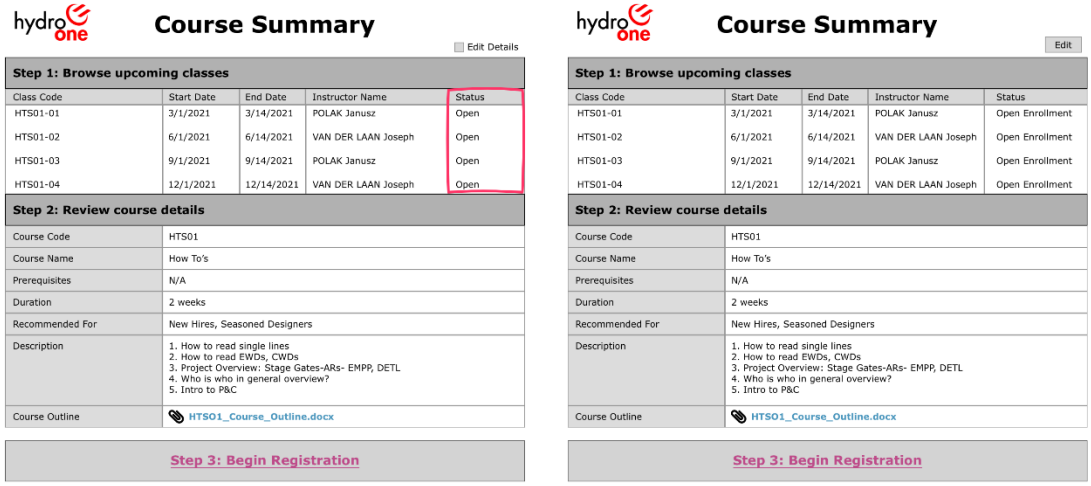


Figure 153: Student Area - View Course Material - Versions 2-3

Instructor Feedback

During the usability testing session, the participant indicated that classes having the “open” or “closed” status may lead to confusion when users are accessing the course summary form, or viewing their teaching scheduled in the instructor area. The participant suggested that it would be better to use the terms “open enrollment” and “closed enrollment”. As a result, the changes are outlined in red below.



Course Summary

Edit Details

Step 1: Browse upcoming classes

Class Code	Start Date	End Date	Instructor Name	Status
HTS01-01	3/1/2021	3/14/2021	POLAK Janusz	Open
HTS01-02	6/1/2021	6/14/2021	VAN DER LAAN Joseph	Open
HTS01-03	9/1/2021	9/14/2021	POLAK Janusz	Open
HTS01-04	12/1/2021	12/14/2021	VAN DER LAAN Joseph	Open

Step 2: Review course details

Course Code	HTS01
Course Name	How To's
Prerequisites	N/A
Duration	2 weeks
Recommended For	New Hires, Seasoned Designers
Description	1. How to read single lines 2. How to read EWDs, CWDs 3. Project Overview: Stage Gates-ARs- EMPP, DETL 4. Who is who in general overview? 5. Intro to P&C
Course Outline	HTS01_Course_Outline.docx

Step 3: Begin Registration

Course Summary

Edit

Step 1: Browse upcoming classes

Class Code	Start Date	End Date	Instructor Name	Status
HTS01-01	3/1/2021	3/14/2021	POLAK Janusz	Open Enrollment
HTS01-02	6/1/2021	6/14/2021	VAN DER LAAN Joseph	Open Enrollment
HTS01-03	9/1/2021	9/14/2021	POLAK Janusz	Open Enrollment
HTS01-04	12/1/2021	12/14/2021	VAN DER LAAN Joseph	Open Enrollment

Step 2: Review course details

Course Code	HTS01
Course Name	How To's
Prerequisites	N/A
Duration	2 weeks
Recommended For	New Hires, Seasoned Designers
Description	1. How to read single lines 2. How to read EWDs, CWDs 3. Project Overview: Stage Gates-ARs- EMPP, DETL 4. Who is who in general overview? 5. Intro to P&C
Course Outline	HTS01_Course_Outline.docx

Step 3: Begin Registration

Figure 154: Course Form - Versions 3-4

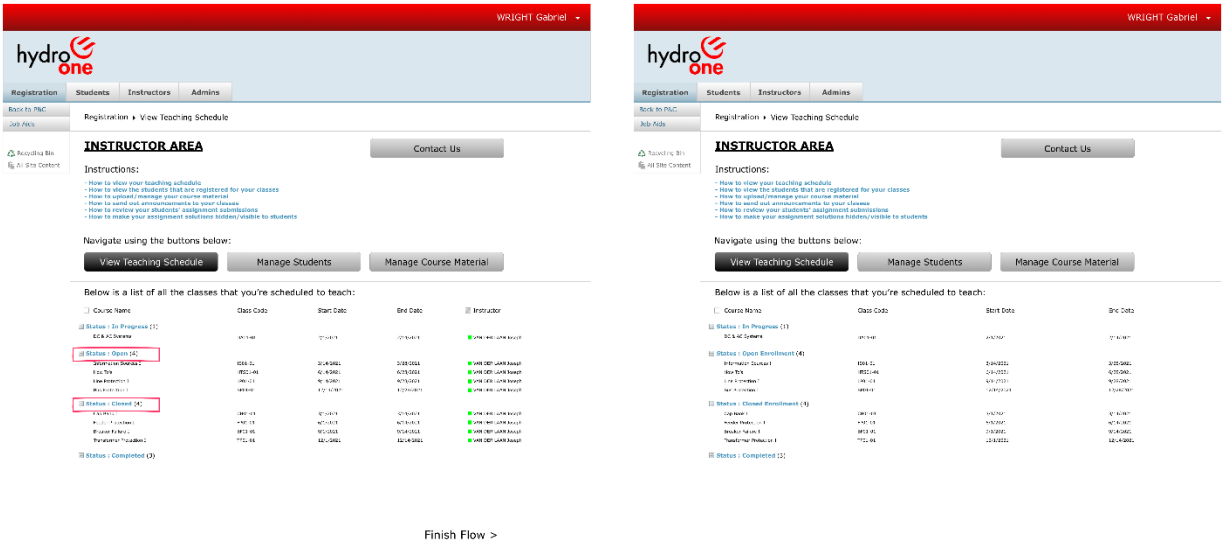


Figure 155: Instructor Area - View Teaching Schedule - Version 1-2

Administrator Feedback

During the usability testing session, the participant indicated that instructors needed to be automatically notified when they were assigned to teach a class through the class form in the administrator area of the site. The participant suggested that an email notification be generated each time that an instructor is assigned to a new class, or the class details (start date, end date, or instructor) change for an existing class. As a result, the email notifications in the figure below were added to the design.

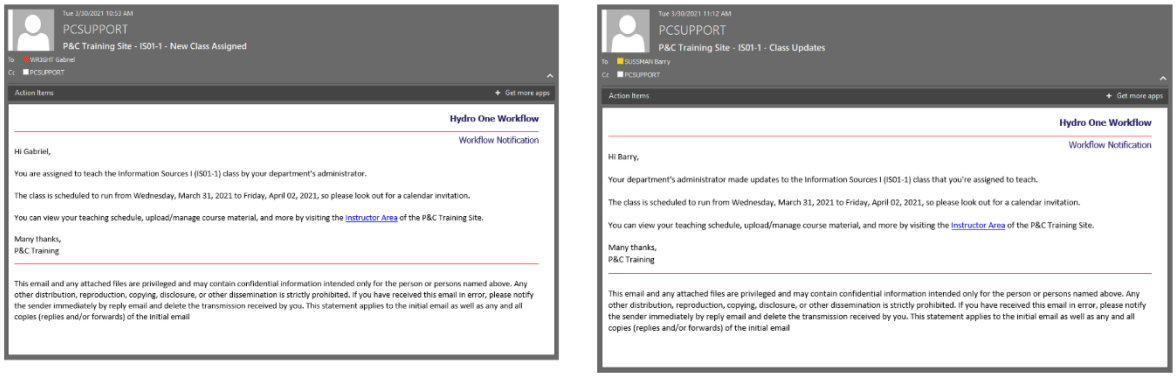


Figure 156: Email Notifications - New Class Assigned/Class Updates

Lessons Learned

Perform More User Interviews

It would be helpful in the future to use mental modelling techniques for synthesizing the feedback from usability testing interviews. If the usability testing observations were analyzed more thoroughly, it is possible that more improvements could have been made. Further, if more usability testing sessions were conducted with 3-5 users in each user group, then the degree of confidence in the revisions would be improved. In general, moderating interviews with different user groups using the same set of interview questions was an excellent way to understand the nuances of each user's expectations and applying the same scrutiny to the usability testing portion of the project would be beneficial, if time permits.

Build-in Buffer Time

It would be beneficial to build buffer time into the project schedule by taking the estimated time required to reasonably complete the methodology outlined in this report and doubling it. Due to this project involving more than one user group, completing eight preliminary research interviews was significantly more labor intensive than initially anticipated. The effort required to plan, interview, transcribe, and synthesize responses into mental models scaled with the number of users that were involved in the research portion of the project. Further, it took additional time to go over the findings, frame each problem statement, and come up with potential solutions that would be feasible with the technology available. Taking into account the time to build the low/high fidelity prototypes and to build interactive usability test flows for each user group, additional time to deal with setbacks and roadblocks would have been appreciated.

Improve Stakeholder Communication

It would be useful to set up regular stakeholder check-in meetings for user experience projects tackled in the future. Throughout this pilot exercise, it was challenging to communicate expectations with the various stakeholders due to the first-of-kind nature of this project. As a result, the stakeholders had to undergo long periods of 'radio-silence' while progress was being made in the background. It is recommended that a stage-gate approach be taken to communicating the project timeline, because each UX project follows the same double diamond project structure with a similar series of deliverables to be completed in each phase. It is also recommended that an additional phase be added to the end of the methodology for writing documentation to be provided to the stakeholders upon project completion. By bringing stakeholders into the process and offering updates along the way, it would make it easier to deal with roadblocks and gauge whether the scope of work can be reasonably be accomplished with the time and resources allotted.

Conclusion

The goal of this user experience design exercise was to improve the flow of researching and signing-up for a P&C training course. It was hypothesized by the user designer that there would be three perspectives (student, instructor, and administrator) that would need to be captured in order to fully understand user expectations. To do this, a research plan was developed to gather quantitative survey data to narrow the scope of which registration medium to focus on, and to gather qualitative data to develop an understanding of which factors made for a preferable user experience.

The study consisted of eight research participants that were recruited formally as employees with experience working within the P&C Engineering team. Based on the preliminary user feedback, it was determined that the method of registration that was most popular with users was online registration, and the themes that arose from the discussions fell into five affinity categories: 1. Research & Motivation, 2. Instructor & Course Delivery, 3. Ease of Use & Accessibility, 4. Registration & Follow Up, and 5. Challenges & Expectations. Building upon these themes, an empathy mapping exercise was completed in order to better understand the nuances of each user group's preferences. It was observed that participants fell into four unique personas: 1. The Student, 2. The Minimalist (Instructor), 3. The Customizer (Instructor), and 4. The Administrator.

Analyzing the mental models, sixteen findings were recorded and categorized into user flows that were specific to each user group. Problem statements were developed in order to frame the problem in the context of the user, and potential solutions were postulated by completing "How Might We" statement exercises. Low-fidelity paper prototypes were designed to test user flows, and following several iterations, the high-fidelity prototypes were developed using Sketch/InVision design software. A series of test scripts were developed for each user group that test the effectiveness of the solutions and to identify opportunities for improvement. After conducting three usability testing interviews, each piece of critical feedback was analyzed and suggestions were incorporated into the revised design. Finally, a comprehensive report was written to show the progress through the four phases of the UX Design methodology (Discover, Define, Develop, Deliver), whilst documenting the lessons learned throughout the user experience design journey. As a result of this exercise, the P&C Training Site was built and the tool was rolled-out to staff on April 19, 2021 along with the accompanying Job Aids, and the project was deemed successful.

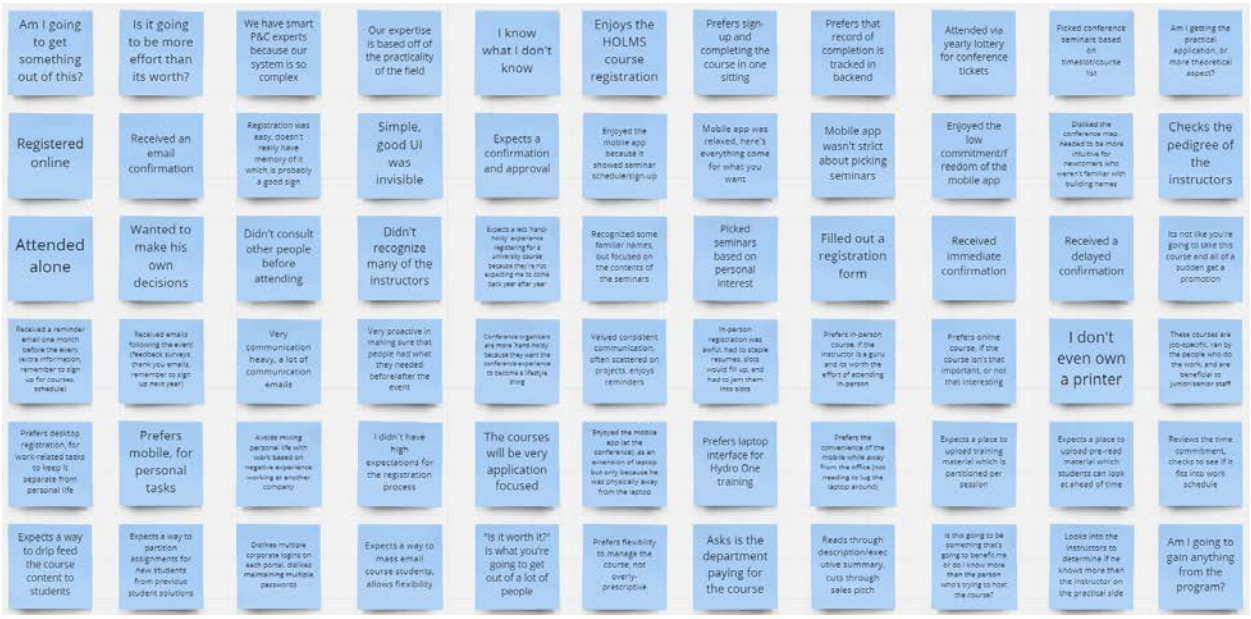
References

Juno College of Technology. UX Design Curriculum. n.d., https://junocollege.com/course/ux-design

Appendix

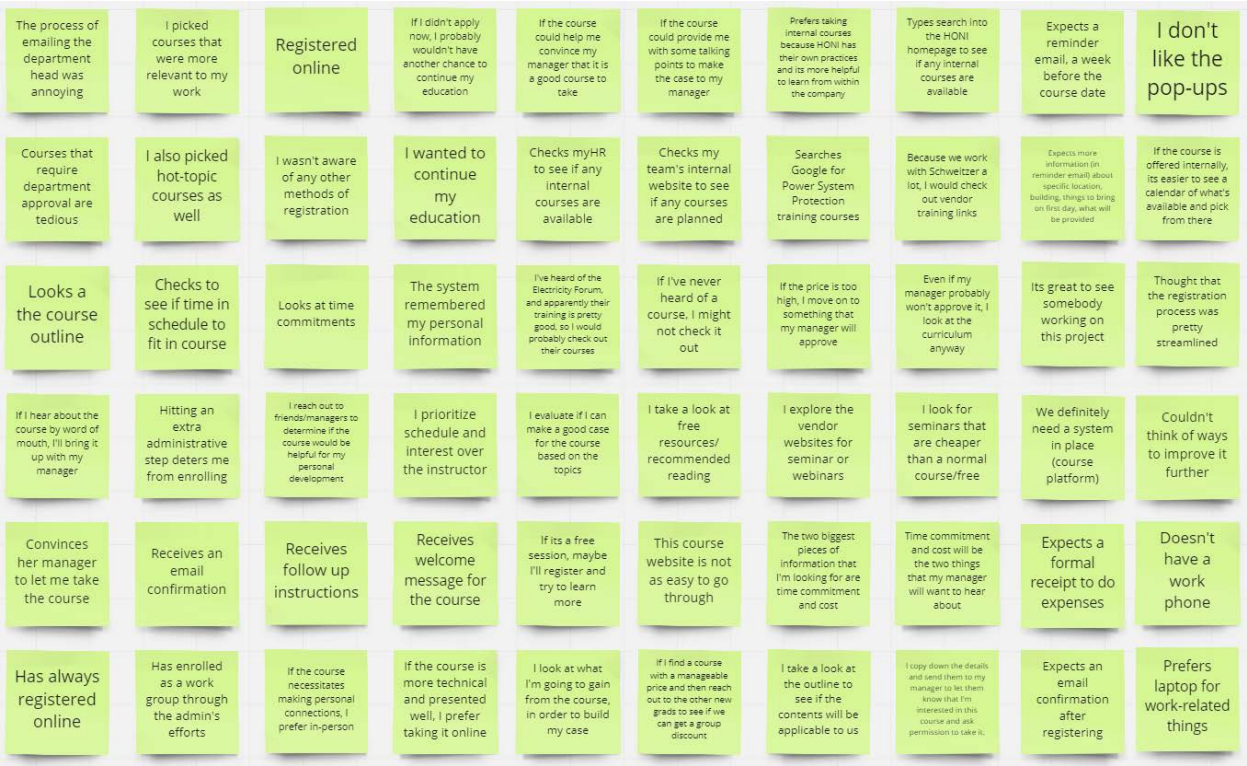
Preliminary Tag Cloud of Interview Responses (Participant 1)

Preliminary Tag Cloud of Interview Responses (Participant 2)



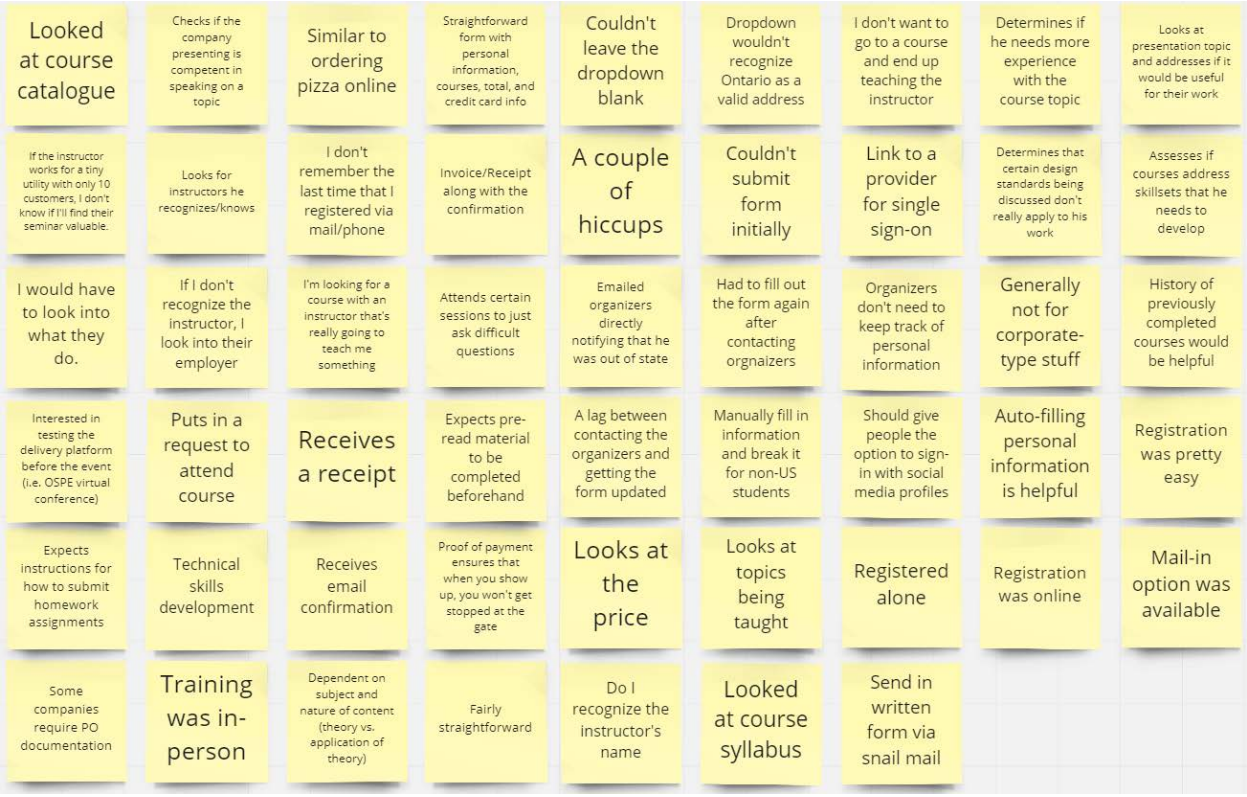
Preliminary Tag Cloud of Interview Responses (Participant 3)

Preliminary Tag Cloud of Interview Responses (Participant 4)

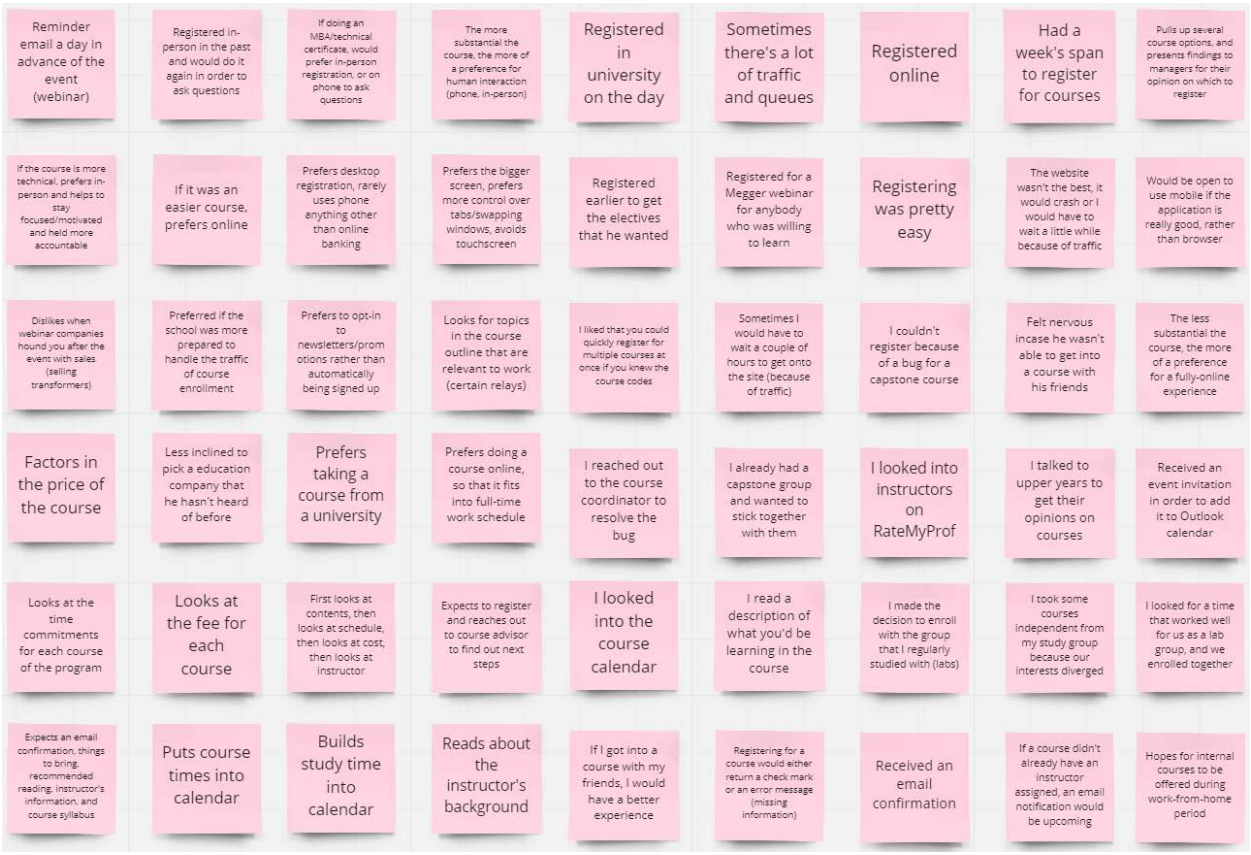


Preliminary Tag Cloud of Interview Responses (Participant 5)

Preliminary Tag Cloud of Interview Responses (Participant 6)



Preliminary Tag Cloud of Interview Responses (Participant 7)



Preliminary Tag Cloud of Interview Responses (Participant 8)

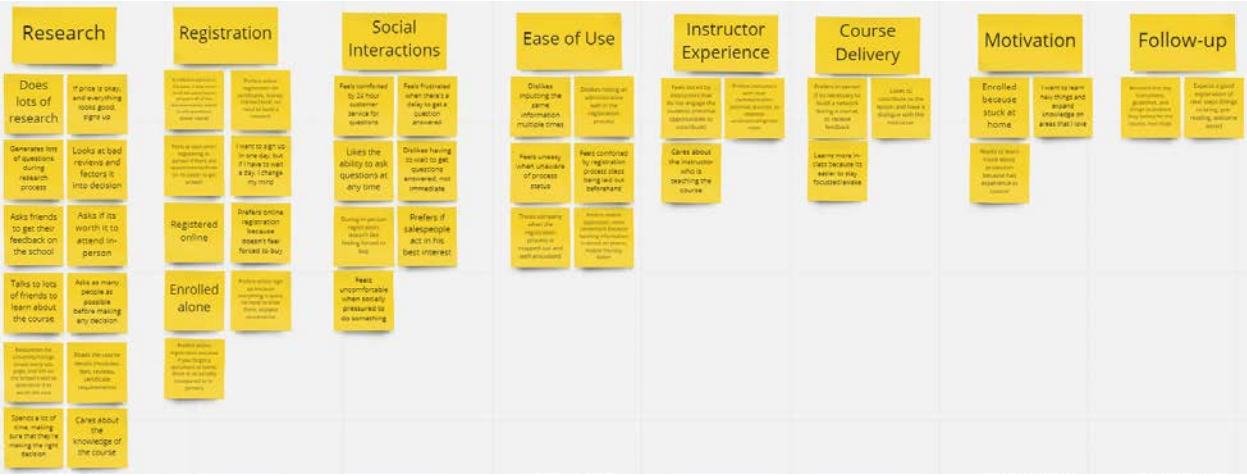
Preliminary Affinity Map (Participant 1)

Preliminary Affinity Map (Participant 2)

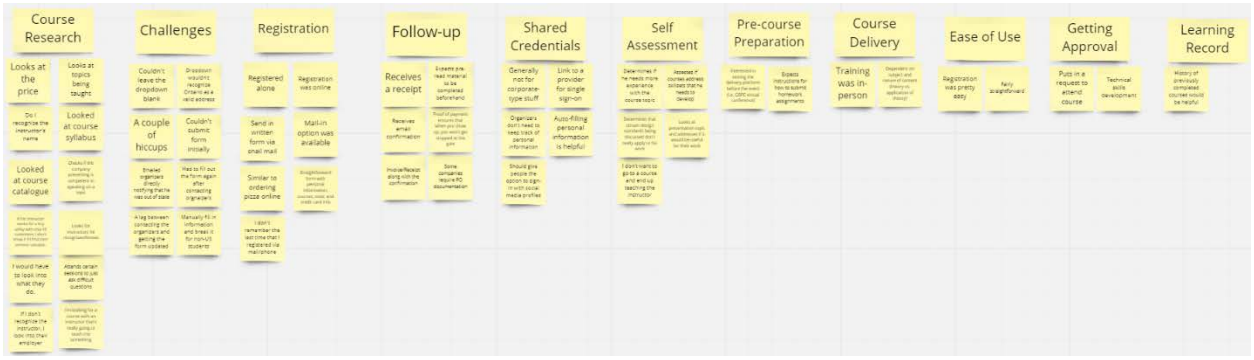
Preliminary Affinity Map (Participant 3)

Preliminary Affinity Map (Participant 4)

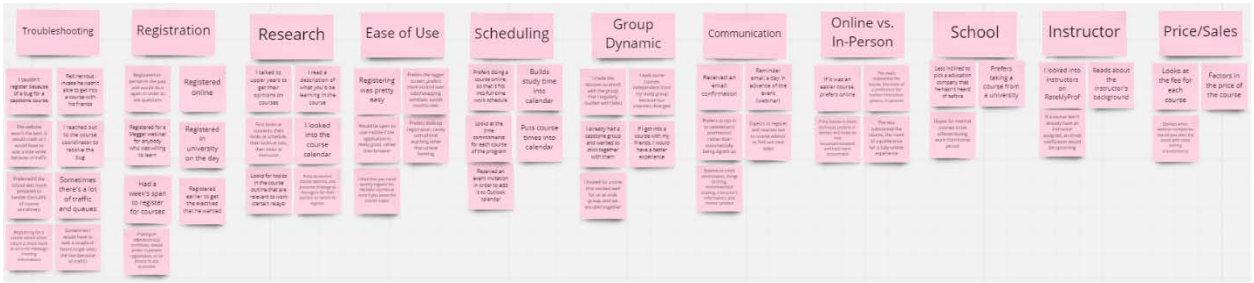
Preliminary Affinity Map (Participant 5)



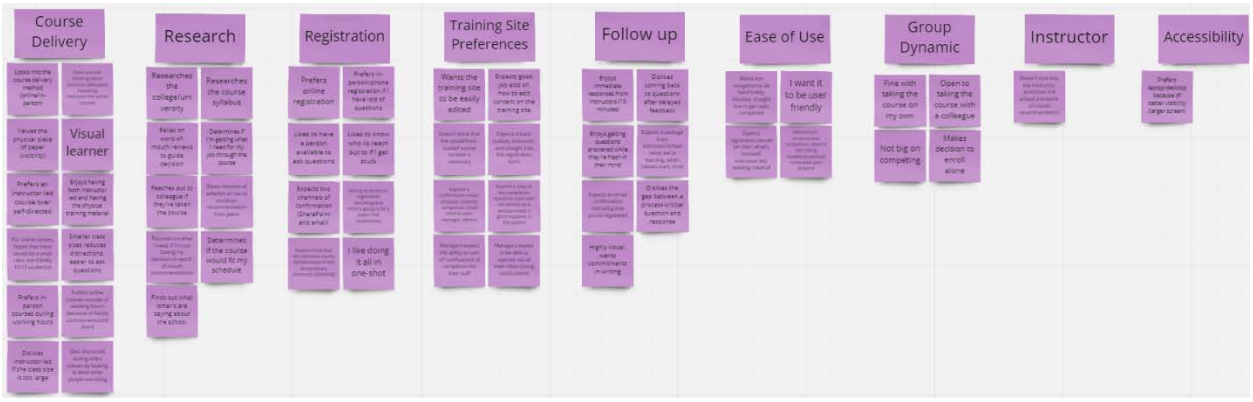
Preliminary Affinity Map (Participant 6)



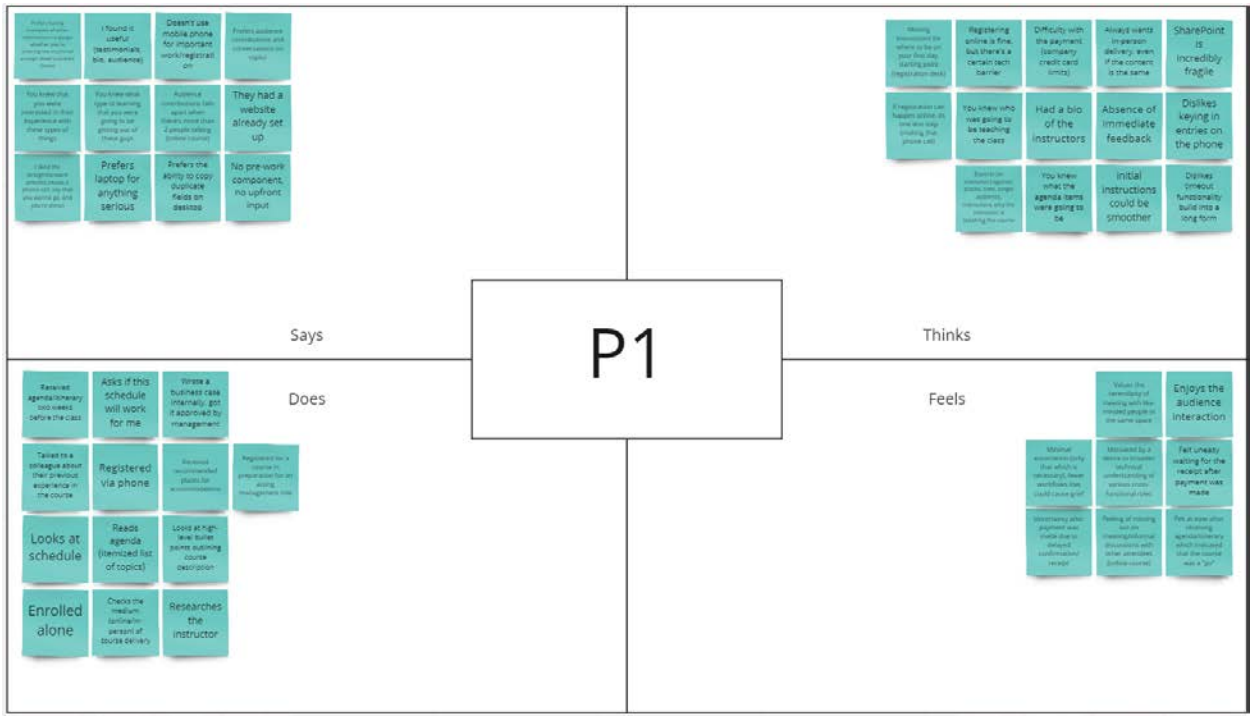
Preliminary Affinity Map (Participant 7)



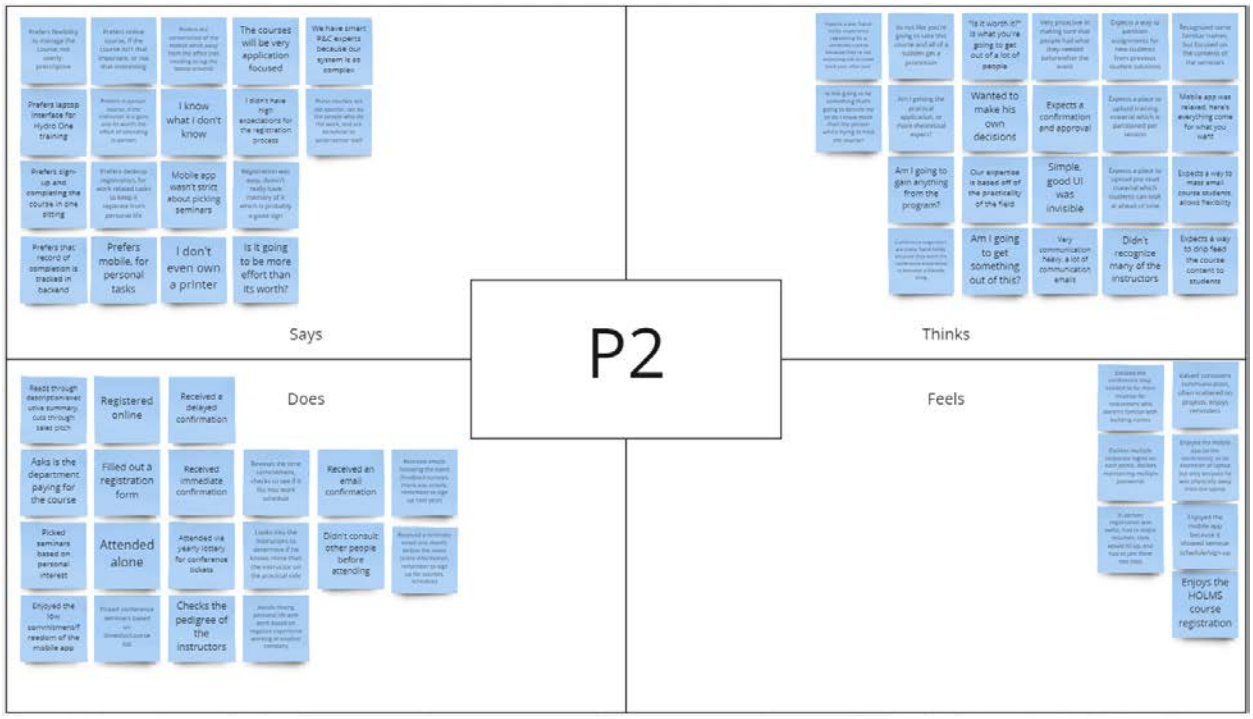
Preliminary Affinity Map (Participant 8)



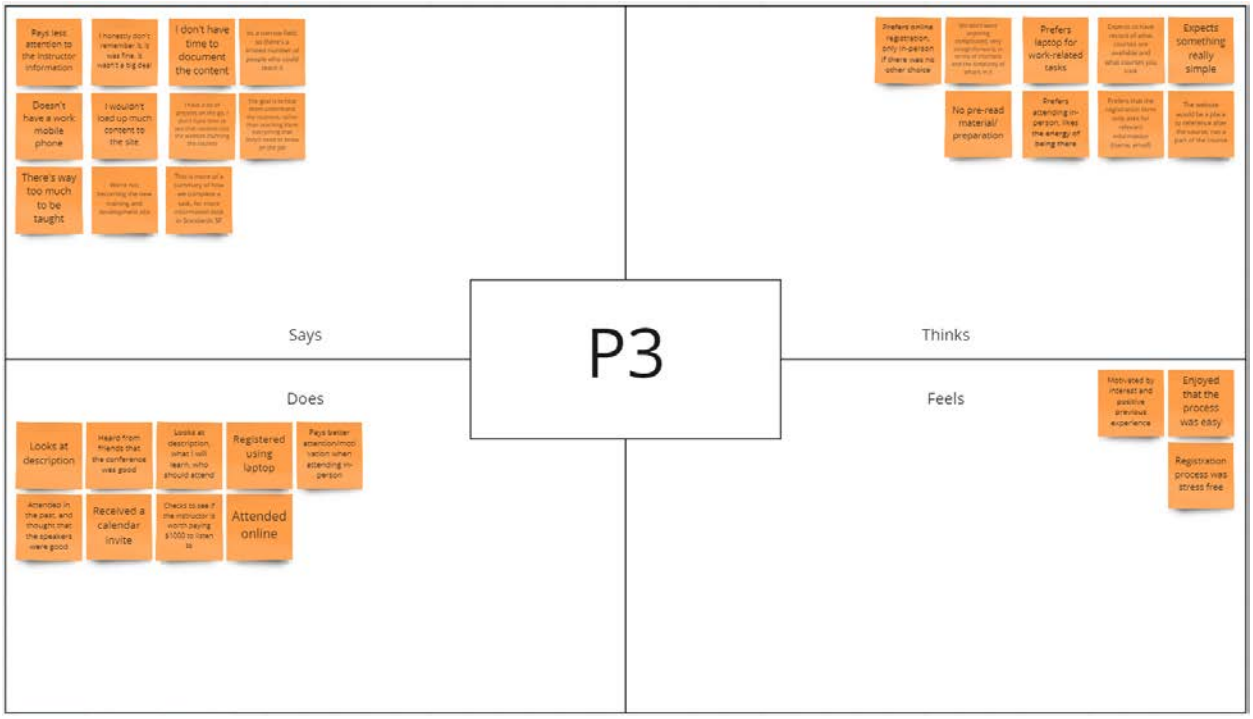
Preliminary Empathy Map (Participant 1)



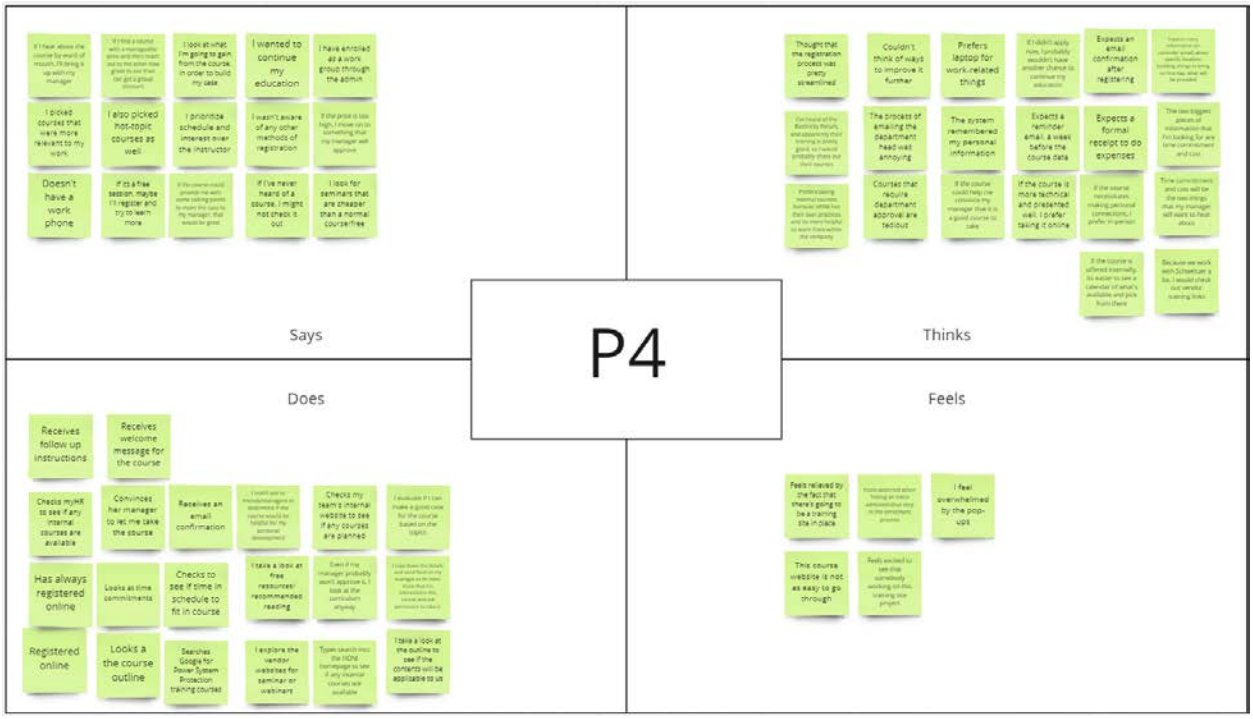
Preliminary Empathy Map (Participant 2)



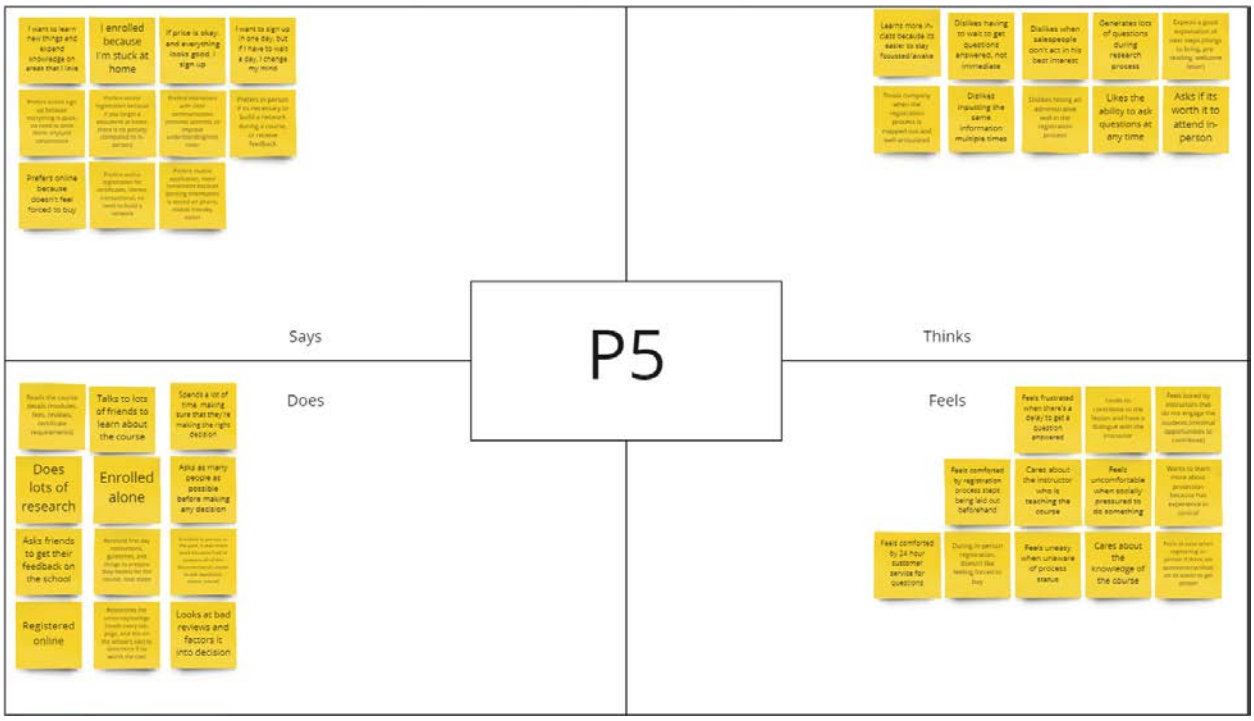
Preliminary Empathy Map (Participant 3)



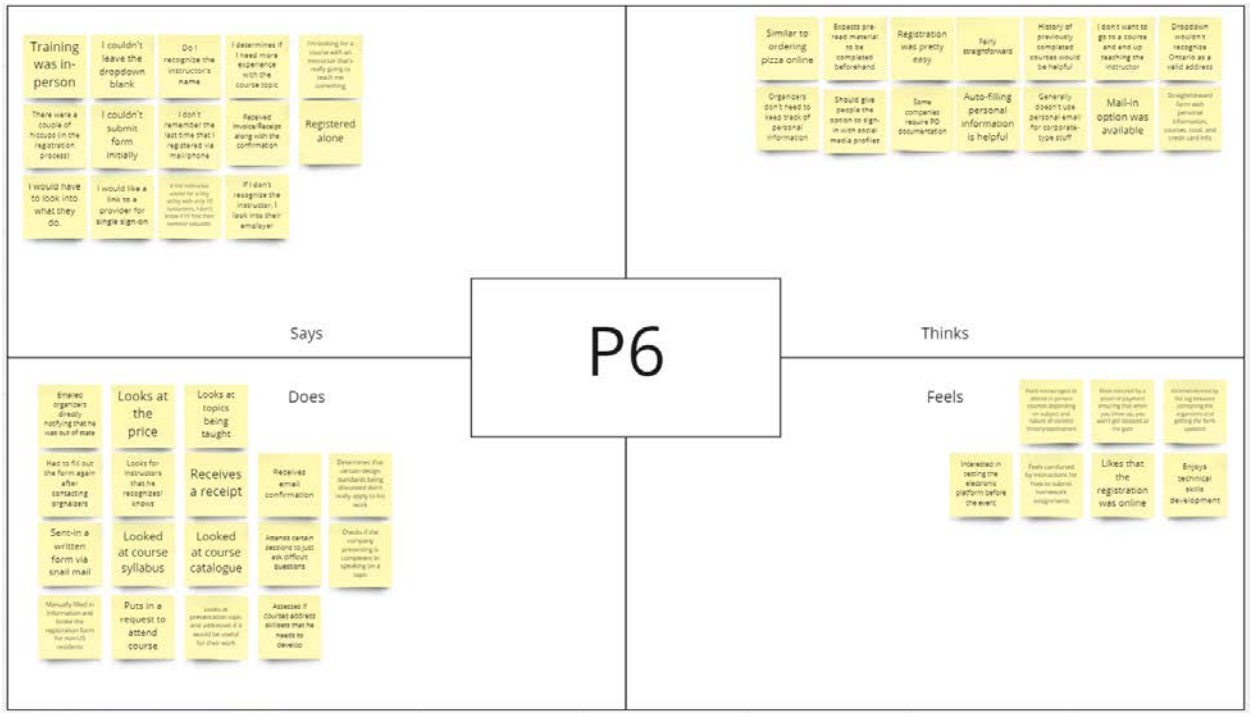
Preliminary Empathy Map (Participant 4)



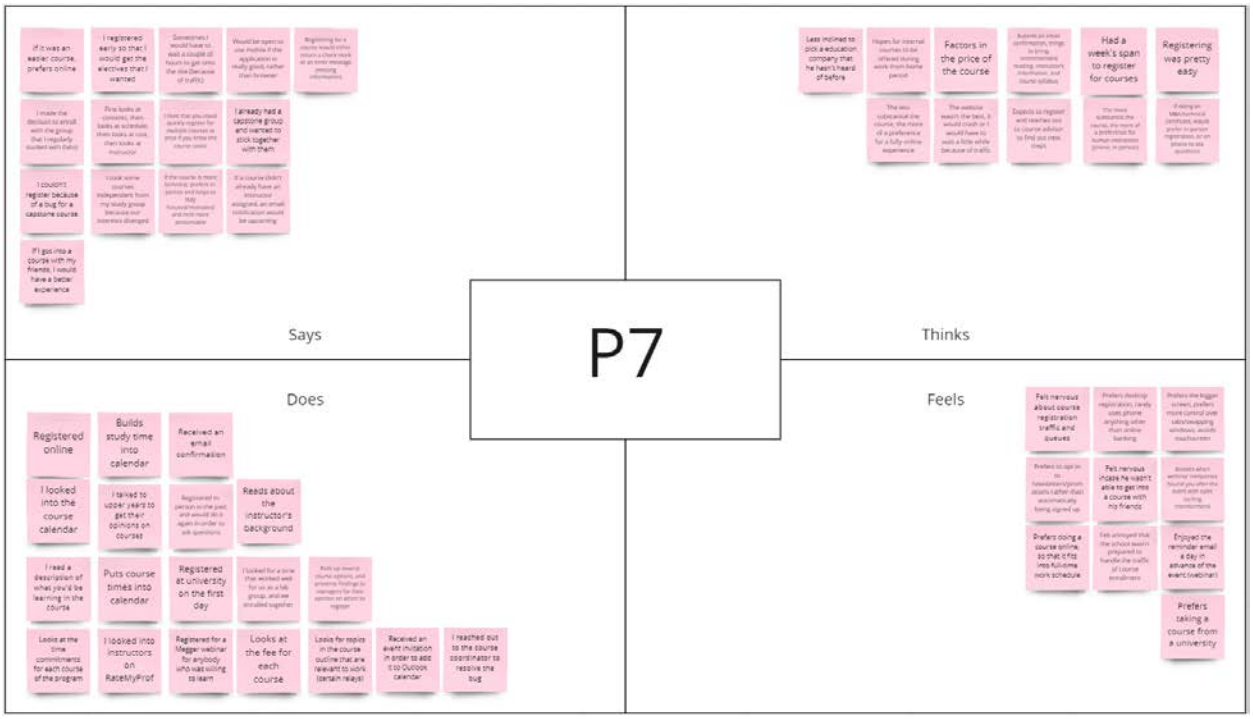
Preliminary Empathy Map (Participant 5)



Preliminary Empathy Map (Participant 6)



Preliminary Empathy Map (Participant 7)



Preliminary Empathy Map (Participant 8)