

User-centered design in practice

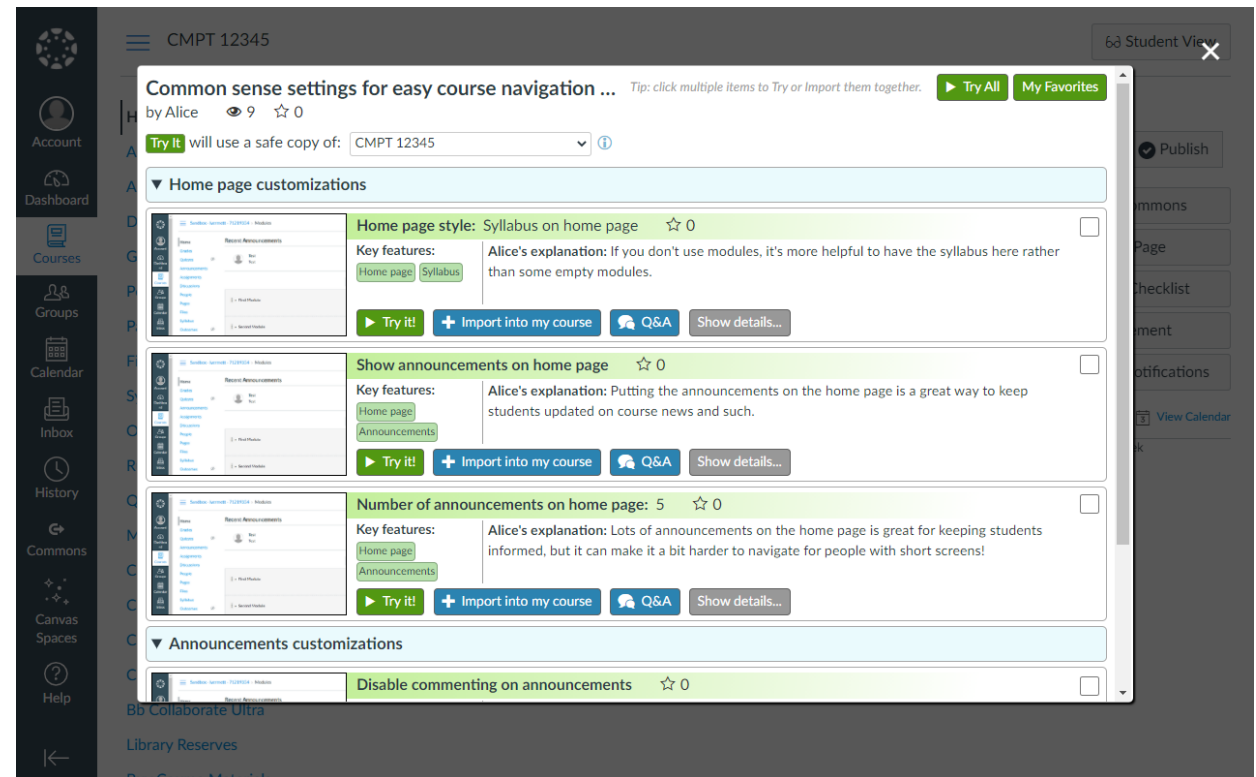
Helping educators customize their digital classrooms

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Learning management systems offer educators many features...

Course Name: Marine Biology Discussion Analytics

Number of participants	Avg comments per participating student	Avg word count for student comments	Avg grade of discussion
80 of 140	3.2	17	92%

78% participation

Students who have not participated

- Lc: Lenora Davis-Mauldaux
- Nt: Neil Tabner
- Sg: Susan Governmentson
- GW: Gemma Winters
- Mo: Maurice Overton
- Rh: Roberto Hacendia
- Bs: Burt Sanders
- Ks: Klaus Sanders
- Tt: Tina Thudless
- Bm: Betsy Samsonite

displaying 26 of 60

Comments with the most replies

- Sf: "The edible red alga called nori is actually derived from a platypus blood when confrontations with honeybadgers for..." By Sammie Franklin | 20 replies
- Rt: "The gametophyte phrase is reduced to a insignificance due to the fact that it was created in a time when the knowl..."

Blackboard LMS

COOP 101 > Modules

Home | View Progress | + Module

- Announcements
- Assignments
- Discussions
- Grades
- People
- Pages
- Files
- Syllabus
- Outcomes
- Quizzes
- Modules
- Course Outline
- Course Eval Reports
- Question Selection & Response Rates
- Course Evaluations

Module 1: Introductions

- Assignment 1: What is COOP (10 pts)
- Quiz #1 (5 pts)

Module 2: All about employment

- Assignment 2: Employment standards (0 pts)

Module 3: Workplace Interactions

Canvas LMS

Mount Orange School English (en)

Dashboard | Site home | Calendar | Private files

Try Moodle as a student

You are currently using the demo student account of Barbara Gardner. You are on the dashboard, a customisable page with links to courses. See some examples of what you can do with this account or just dive in below!

Course overview

Sort by Title | Card

Timeline

- Wednesday, 26 December: Assignment 1 (Text or Audio) is due 01:00
- Tuesday, 12 February: From Concept to Reality: Trauma ... 00:00
- Saturday, 16 February: Database: Food for Moodlers closes 11:05
- Quiz: Know your Geography! closes 11:07

Moodle LMS

...but creating effective courses can involve a **steep learning curve**.

Instructors need to **customize** their courses



Bob

- Teaching 1st year math courses
- Trying out flipped classrooms
- Needs lightweight graphing tools built-in

Grading Scheme: ☐ Enable course grading scheme

License: Private (Copyrighted) [?](#)

File Copyright: ☐ Copyright and license information must be provided for files before they are published.

Visibility: Course [?](#)

☐ Customize

☐ Include this course in the public course index

Format: Not Set

Description:

[fewer options](#)

☐ Let students self-enroll by sharing with them a secret URL

☐ Show recent announcements on Course home page

2 Number of announcements shown on the homepage

☒ Let students attach files to discussions

Application settings

Home

Project Teams

Announcements

Assignments

Discussions

Grades

People

Pages

Files

Syllabus

Outcomes

Quizzes

Modules

Course Outline

Course Eval Reports

Question Selection & Response Rates

Course Evaluations

Library Reserves

Collaborations

Sign up here for your group project team.

Team 1

Team 2

Options Can edit this page role selection

Teachers and students

☐ Add to student to-do

☐ Notify users that this content has changed

Course structure/navigation

External Apps

View App Configuration

Apps are an easy way to add new features to Canvas. They can be added to individual courses, or to all courses in an account. Once configured, you can link to them through course modules and create assignments for assessment tools.

See some LTI tools that work great with Canvas.

All Not Installed Installed

collaboration

Amplify.

BOOK CREATOR

CircleIn

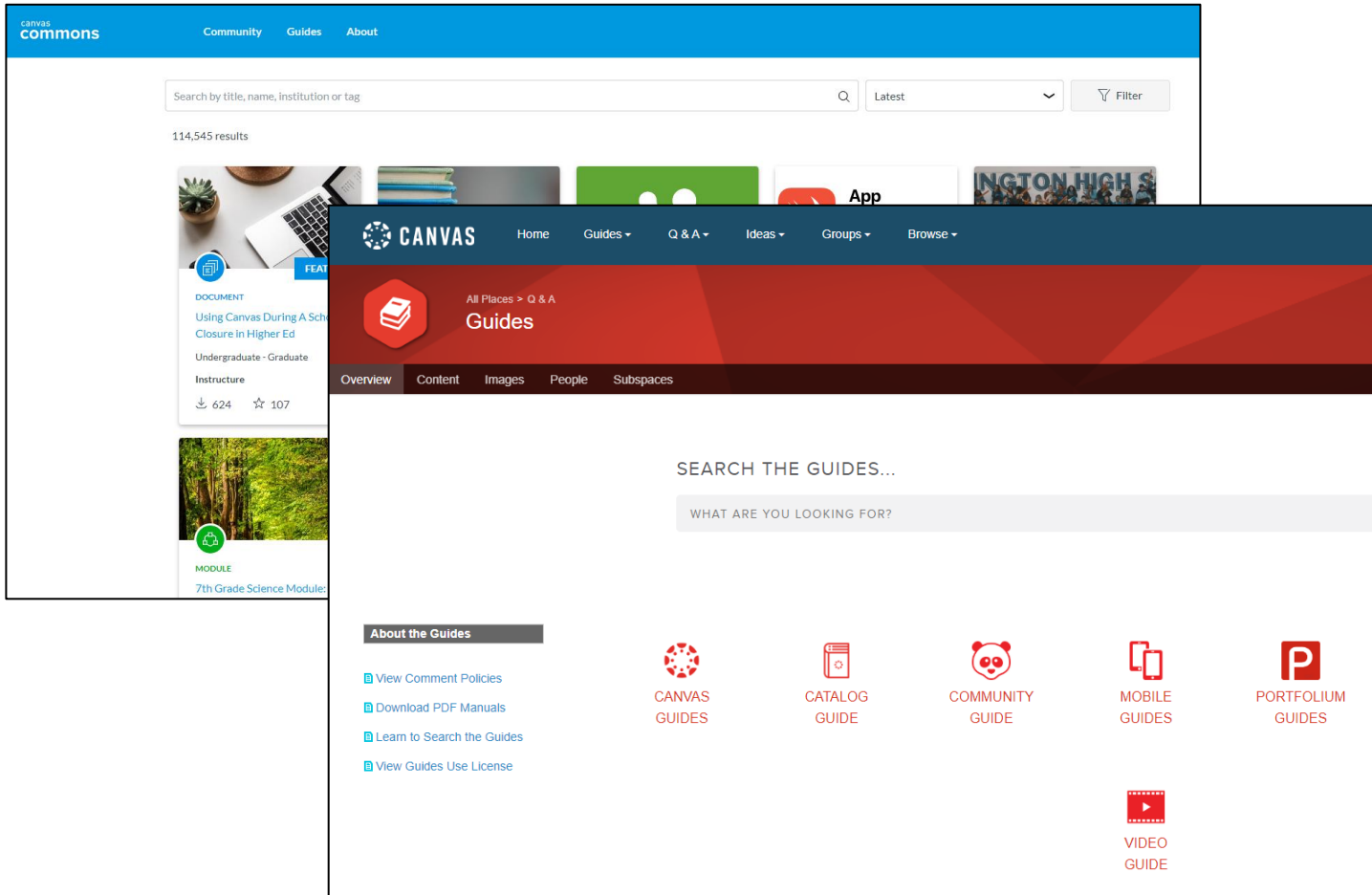
cn POST

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External plugins

It's common to seek **social help** from colleagues



Online help & documentation

We wanted to better understand how instructors approach this problem...



Interviewed 10 post-secondary educators

Semi-structured: following a rough script, but also probing interesting lines of thought

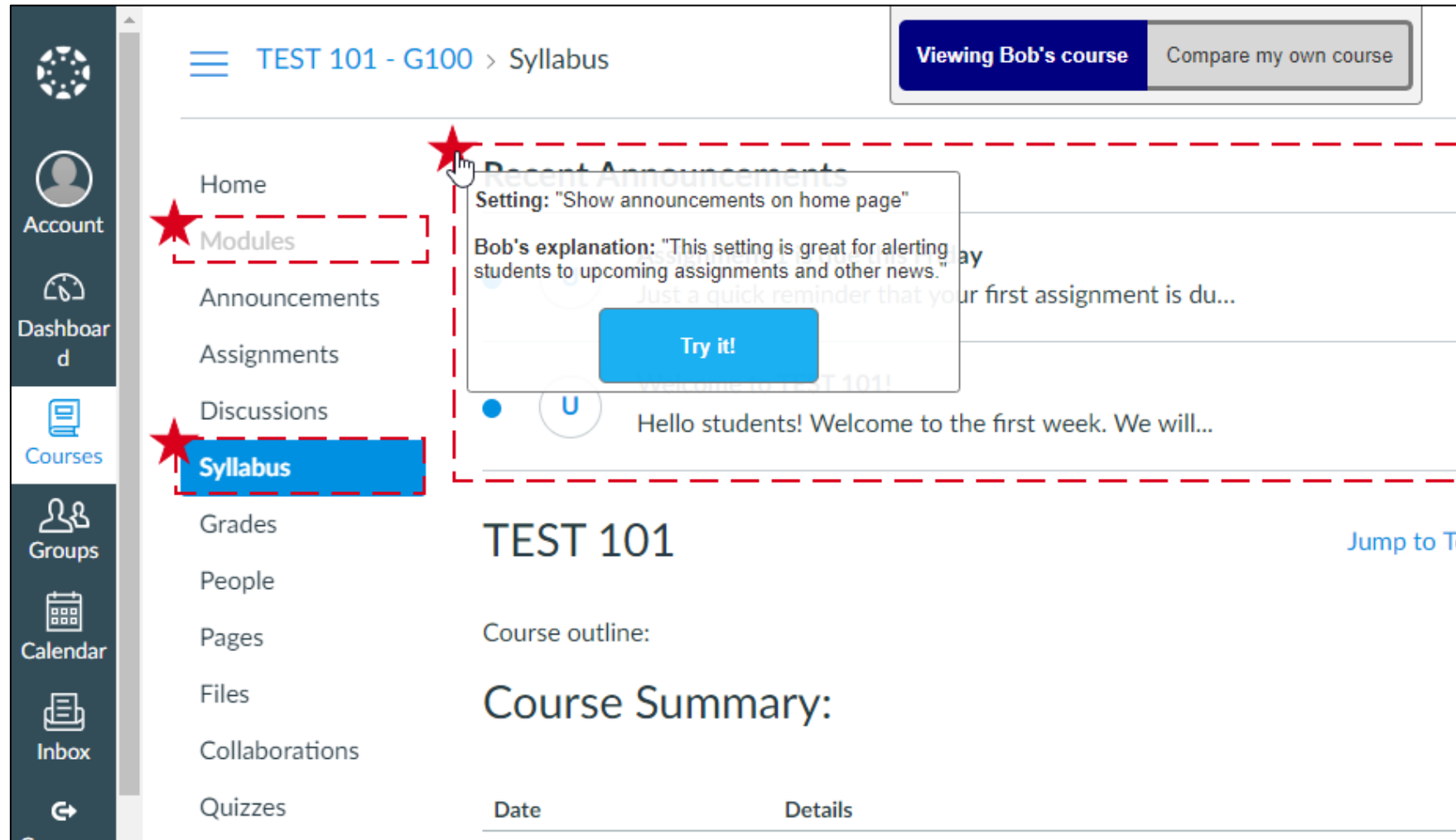
Qualitative coding: tagging snippets of the interview according to topics, sentiments, tasks, etc.

- Then collapsing these “tags” into higher-level **themes**

Key insights:

1. Very common to rely on **example customizations** for both *task-oriented help* and *inspiration*
2. Often end up engaging in **exploratory learning** (e.g., trial-and-error)
 - But perceived as too risky in live/ongoing courses

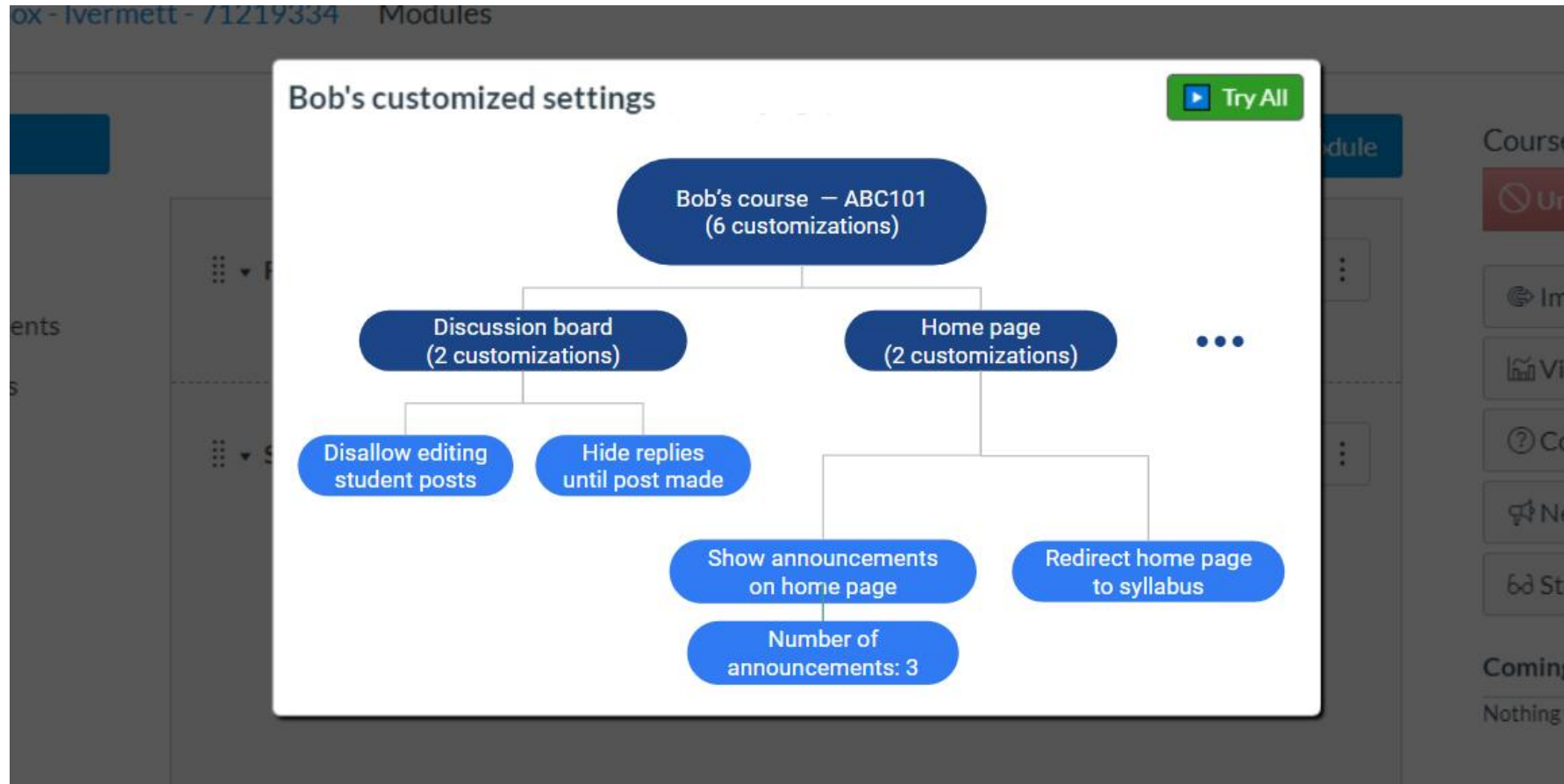
Prototyping and participatory design



Prototyping and participatory design

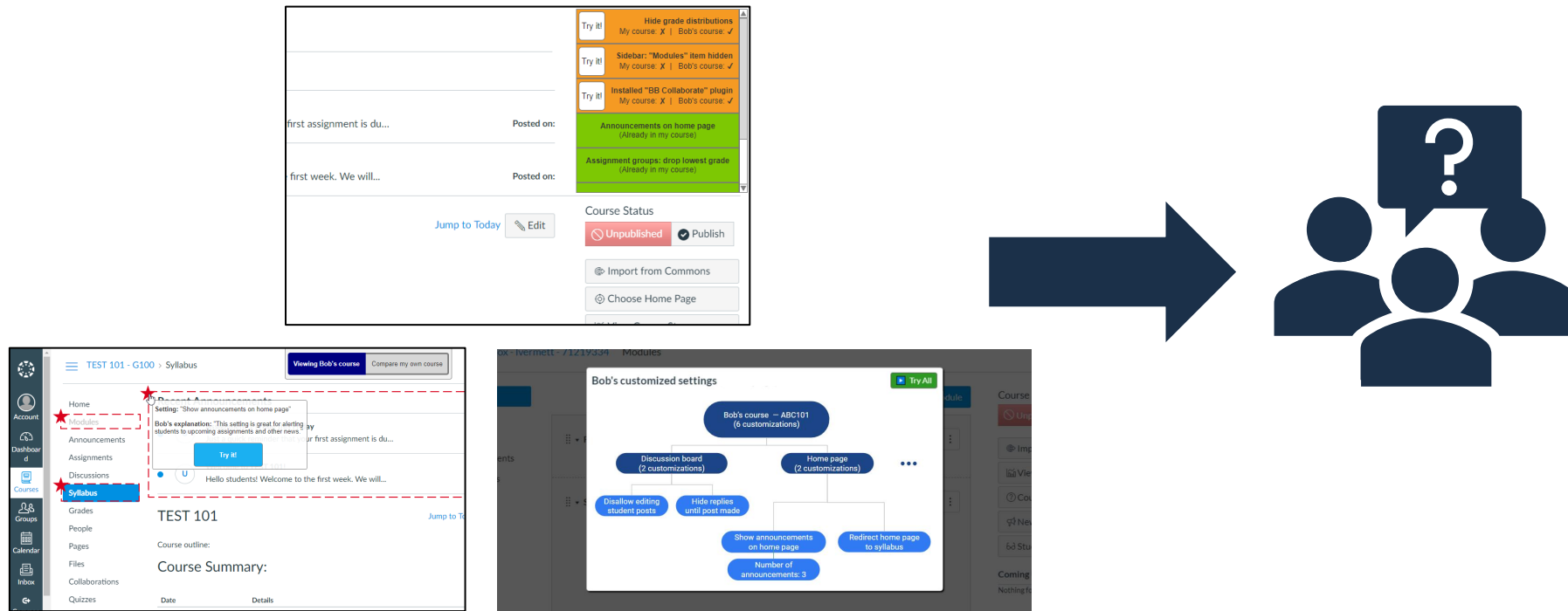
		<div>Try it!</div> <div>Hide grade distributions My course: X Bob's course: ✓</div>
		<div>Try it!</div> <div>Sidebar: "Modules" item hidden My course: X Bob's course: ✓</div>
		<div>Try it!</div> <div>Installed "BB Collaborate" plugin My course: X Bob's course: ✓</div>
first assignment is du...	Posted on:	<div>Announcements on home page (Already in my course)</div>
first week. We will...	Posted on:	<div>Assignment groups: drop lowest grade (Already in my course)</div>
<div>Jump to Today</div> <div>Edit</div>		<div>Course Status</div> <div><div>Unpublished</div><div>Publish</div></div> <div>Import from Commons</div> <div>Choose Home Page</div>

Prototyping and participatory design

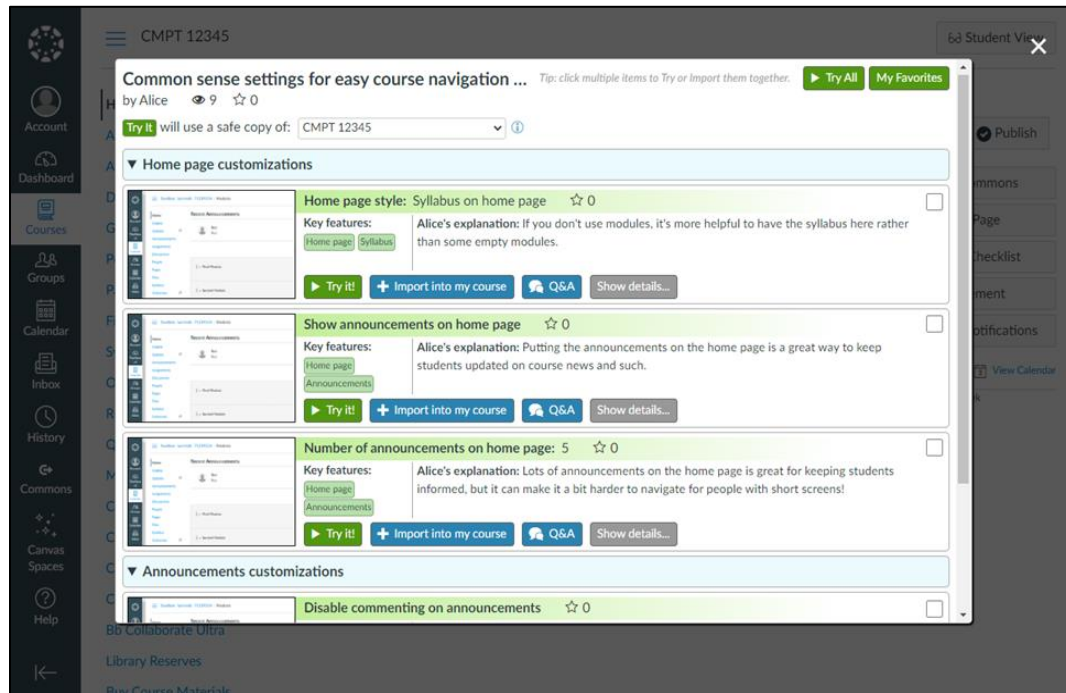


Prototyping and participatory design

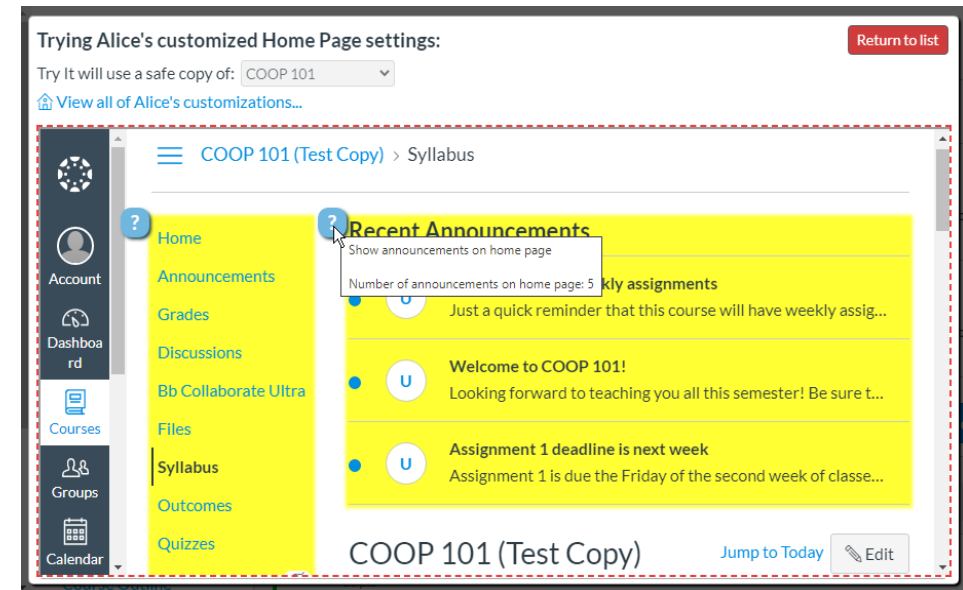
Further 10 interviews, letting participants try the prototypes and offer feedback/ideas



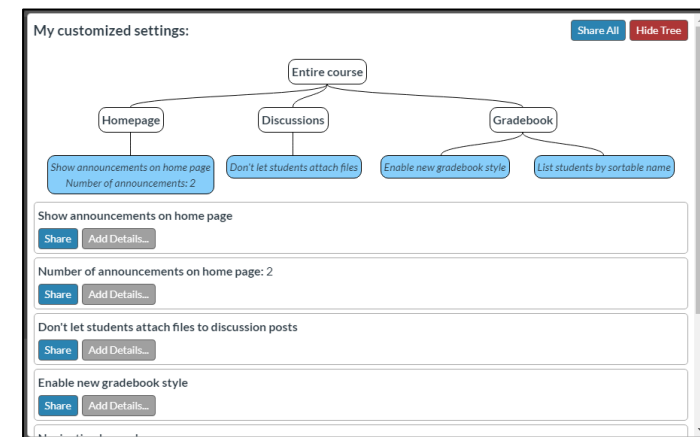
Customizer: a platform for example-based customization sharing



Customizer's Discovery Interface



Customizer's Exploratory Interface



Customizer's Authoring Interface

Customizer: a platform for example-based customization sharing



Discovery interface for finding shared examples

The screenshot displays the Canvas LMS interface for a course titled "COOP 101". The left sidebar contains navigation links: Home, Announcements, Assignments, Discussions, Grades, People, Pages, Files, Syllabus, Outcomes, Quizzes, Modules (selected), Course Outline, Course Eval Reports, Question Selection & Response Rates, Course Evaluations, Library Reserves, Collaborations, and Settings. The main content area shows the "Modules" section with three modules: "Module 1: Introductions", "Module 2: All about employment", and "Module 3: Workplace interactions". Module 1 includes "Assignment 1: What is COOP" (10 pts) and "Quiz #1" (5 pts), both marked with green checkmarks. Module 2 includes "Assignment 2: Employment standards" (0 pts). The right sidebar shows "Course Status" (Unpublished/Publish), "Import from Commons", "Choose Home Page", "View Course Stream", "Course Setup Checklist", "New Announcement", "Student View", "Coming Up" (Nothing for the next week), and "View Calendar".

COOP 101 > Modules

Home View Progress + Module

Course Status Unpublished Publish

Import from Commons

Choose Home Page

View Course Stream

Course Setup Checklist

New Announcement

Student View

Coming Up View Calendar

Nothing for the next week

Module 1: Introductions

Assignment 1: What is COOP 10 pts

Quiz #1 5 pts

Module 2: All about employment

Assignment 2: Employment standards 0 pts

Module 3: Workplace interactions

Full demo video available at: <https://dl.acm.org/doi/10.1145/3357236.3395507> (scroll down to supplemental materials)

Browsing another instructor's customizations...

The screenshot shows a Canvas LMS interface. On the left is a dark sidebar with navigation icons and labels: Account, Dashboard, Courses, Groups, Calendar, Inbox, Commons, Canvas Spaces, Help, and a list of course-related items like Home, Announcements, Assignments, Discussions, Grades, People, Pages, Files, Syllabus, Outcomes, Quizzes, Modules, Course Outline, Course Eval Reports, Question Selection & Response Rates, Course Evaluations, Library Reserves, Collaborations, Buy Course Materials, and Settings. The main content area shows the course page for 'COOP 101 > Modules'. It lists 'Module 1: Intro' with 'Assignment 1' (10 pts) and 'Quiz #1' (5 pts), and 'Module 2: All about' with 'Assignment 2' (0 pts). A modal window titled 'Alice's customized settings (Entire course):' is open, showing a list of settings with preview thumbnails and descriptions. The settings include: 'Home page style: Syllabus', 'Disable commenting on announcements', 'Show announcements on home page', 'Number of announcements on home page: 5', 'Hide grade distribution graphs from students', and 'Navigation bar order:'. Each setting has a 'Try it!' button, an 'Import' button, and a 'How it works...' link. A 'Try All' button is at the top right of the modal. The modal also shows a dropdown menu for 'Try It will use a safe copy of: COOP 101'.

Alice's customized settings (Entire course): Try It will use a safe copy of: COOP 101

Home page style: Syllabus
Alice's explanation: If you don't use modules, it's more helpful to have the syllabus here rather than some empty modules.
Try it! Import How it works...

Disable commenting on announcements
Alice's explanation: There's no need for students to comment on announcements most of the time... just direct them to the discussion board for that! It's also hard to notice when students have sometimes left urgent comments on an announcement (at least for me, I never check my announcements so it's better if this is disabled altogether).
Try it! Import How it works...

Show announcements on home page
Alice's explanation: Putting announcements on the home page is a great way to keep students updated on course news and such.
Try it! Import How it works...

Number of announcements on home page: 5
Alice's explanation: Lots of announcements on the home page is great for keeping students informed, but it can make it harder to navigate!
Try it! Import How it works...

Hide grade distribution graphs from students
Enabling this setting will prevent students from seeing the grade distribution graphs, which show them the min/max/average grade among all students in the class for each assignment.
Try it! Import How it works...

Navigation bar order:
Enabled: [Home, Announcements, Grades, Discussions, Bb Collaborate Ultra, Files, Syllabus, Outcome...]
Disabled: [Course Outline, Bb Collaborate, Roster Photos, Part List, People, Pages]

Exploratory mode to “try out” customizations in context

The screenshot displays a Canvas LMS interface with a 'Try It' modal open. The modal title is 'Trying Common sense settings for easy course navigation (from my ECON 100 course)' by Alice, with 9 views and 0 stars. A 'Try It' button is present, and a dropdown menu shows 'CMPT 12345'. The modal content shows a preview of the course navigation for 'CMPT 12345 (Test Copy) > Syllabus'. The left sidebar of the preview shows a list of navigation items: Home, Announcements, Assignments, Discussions, Grades, People, Pages, Files, Syllabus, Outcomes, Rubrics, Quizzes, Modules, Collaborations, and Course Outline. The right side of the preview shows a 'Recent Announcements' section with three items: 'Assignment 1 is due this Friday!', 'Midterm prep session this Thursday at 3pm', and 'Assignment 2 deadline extended until Monday'. Below this is a 'CMPT 12345 (Test Copy)' section with a 'Jump to Today' button and an 'Edit' button. The modal is framed by a red dashed border, and a 'Close Try It' button is in the top right corner.

Trying Common sense settings for easy course navigation (from my ECON 100 course)
by Alice 9 0

Try It will use a safe copy of: CMPT 12345

CMPT 12345 (Test Copy) > Syllabus

Student View

Recent Announcements

Show announcements on home page

- Assignment 1 is due this Friday!
Remember to submit a zip file including your PDF writ...
Posted on:
- Midterm prep session this Thursday at 3pm
Remember to attend the midterm prep session where...
Posted on:
- Assignment 2 deadline extended until Monday
Since we didn't get through all the material you need ...
Posted on:

CMPT 12345 (Test Copy)

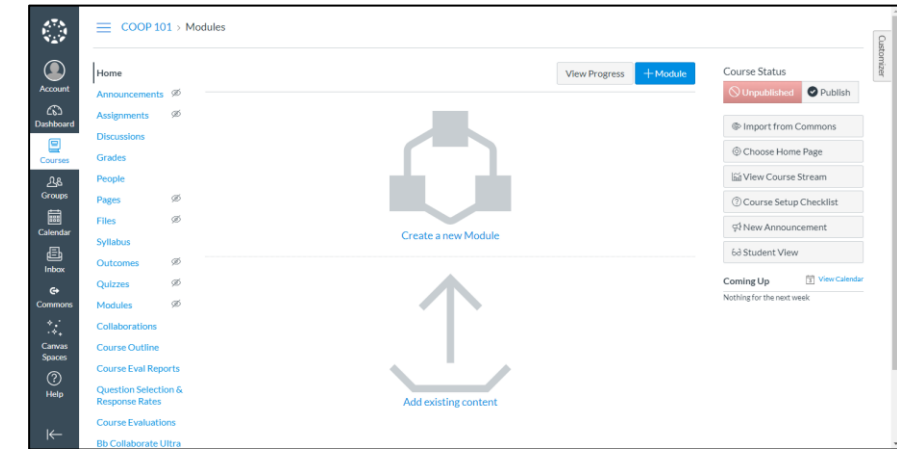
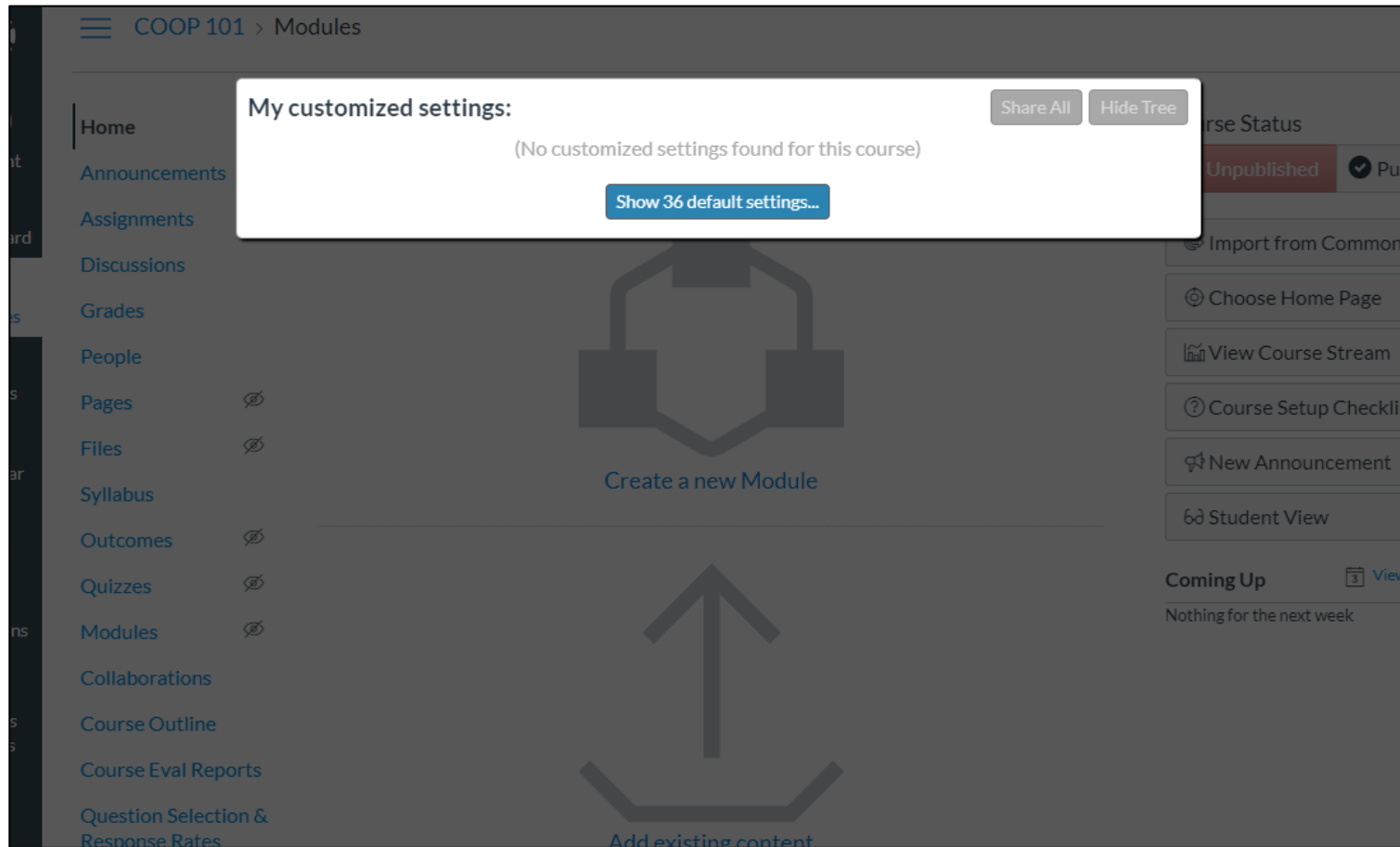
Jump to Today Edit

Welcome to CMPT124!!

Here is the link to the lectures:
<link>

Here your teaching help instructions:

Authoring tools to review and share my customizations



A course with default settings only

Authoring tools to review and share my customizations

COOP 101 > Modules

My customized settings: Share All Hide Tree

```
graph TD
    EC[Entire course] --> H[Homepage]
    EC --> D[Discussions]
    EC --> G[Gradebook]
    H --> HA[Show announcements on home page  
Number of announcements: 2]
    D --> DNF[Don't let students attach files]
    G --> ENG[Enable new gradebook style]
    G --> LSSN[List students by sortable name]
```

Show announcements on home page Share Hide details

Explanation:
I find that students really appreciate having the announcements front and center, rather than having to go look for them on a separate page.

Complexity: Easy slider Hard

Number of announcements on home page: 2 Share Add details...

Question Selection & Response Rates Add existing content

COOP 101 > Assignments

Recent Announcements

- Exam date is finalized
The date for the final exam has been set and will be on April 11 in the...
Posted on: Jan 31, 2020 at 2:37pm
- Remember to post a comment on the discussion board for each week
This is worth 5% of your grade so don't forget!
Posted on: Jan 31, 2020 at 2:36pm

Search for Assignment + Group + Assignment

Assignments	Status
Assignment 1: What is COOP Module 1: Introductions Module 10 pts	✓
Quiz #1 Module 1: Introductions Module 5 pts	✓
Assignment 2: Employment standards Module 2: All about employment Module 5 pts	

Course Status: Unpublished Publish

- Import from Commons
- Choose Home Page
- View Course Stream
- Course Setup Checklist
- New Announcement
- Student View

Upcoming Assignments
Nothing for now View Calendar

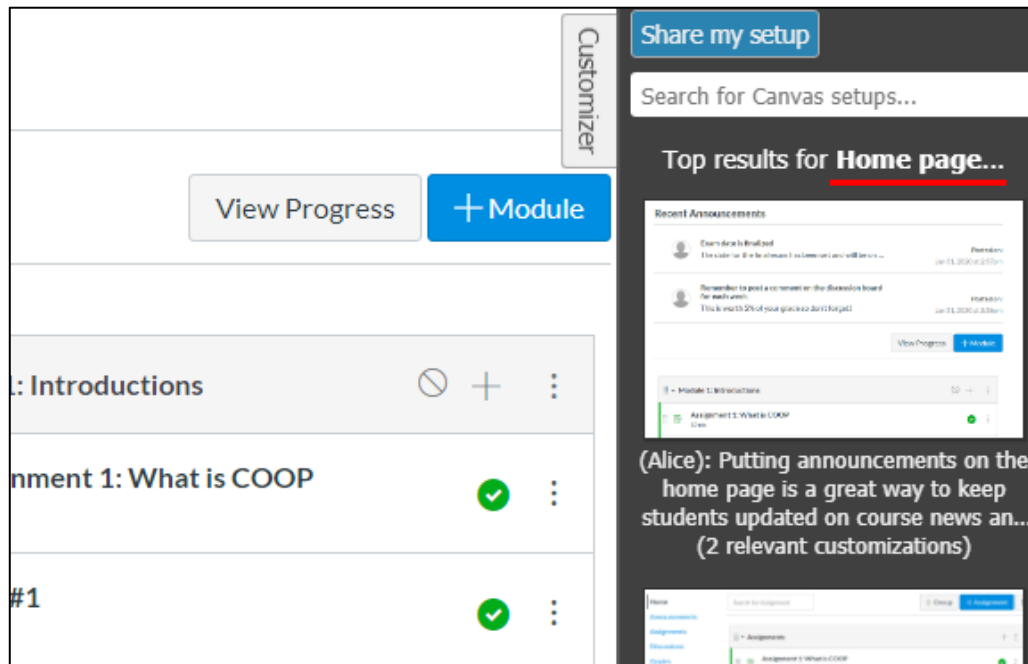
A course with several customizations

A few highlights from our usability study...

10 more participants (instructors & TAs) completed 3 usability tasks

Customizer's **context-based discovery** features were particularly intuitive

- Participants preferred using page context rather than search queries

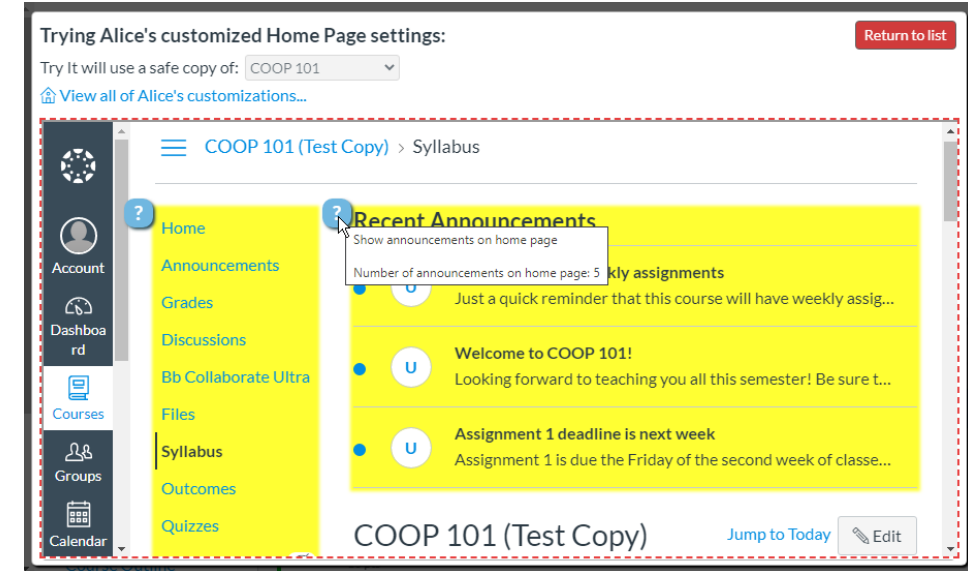


Participants were particularly fond of the exploratory mode

Similar to “guest” or “visitor” mode, but with **full instructor permissions**

A variety of **interesting & surprising uses** for the exploratory mode, e.g.:

- Confirming intuition about a customization’s purpose
- Visually comparing two different instructor’s courses



Some tips for prototyping & user-centered design

- Mock-up **lots of different ideas** and test them out with target users!
- Iterate frequently -- sometimes you need to “return to the drawing board” and rethink ideas
- You don’t always need to use professional prototyping tools; sometimes it’s easier to just kludge something together for quick feedback

Thanks for your attention!

Questions?