Develop: Evaluation: Cognitive Walkthrough

Anita Sarma

(anita.sarma@oregonstate.edu)

Double Diamond: Develop

Objective: Ideate and prototype multiple potential solutions

Method : Ideation, prototyping, **evaluation**, iteration

Class: Storyboarding, low-fi prototype, **Cognitive Walkthrough**

Outcome: prototypes or preliminary solutions that can be tested and iterated upon..

Evaluation

- How it's done?
  - Analytical
    - Guidelines, heuristics, theory – without real users
    - We'll cover: Cognitive walkthrough, Heuristic evaluation
  - Empirical
    - Based on data
    - We'll cover: Usability Study

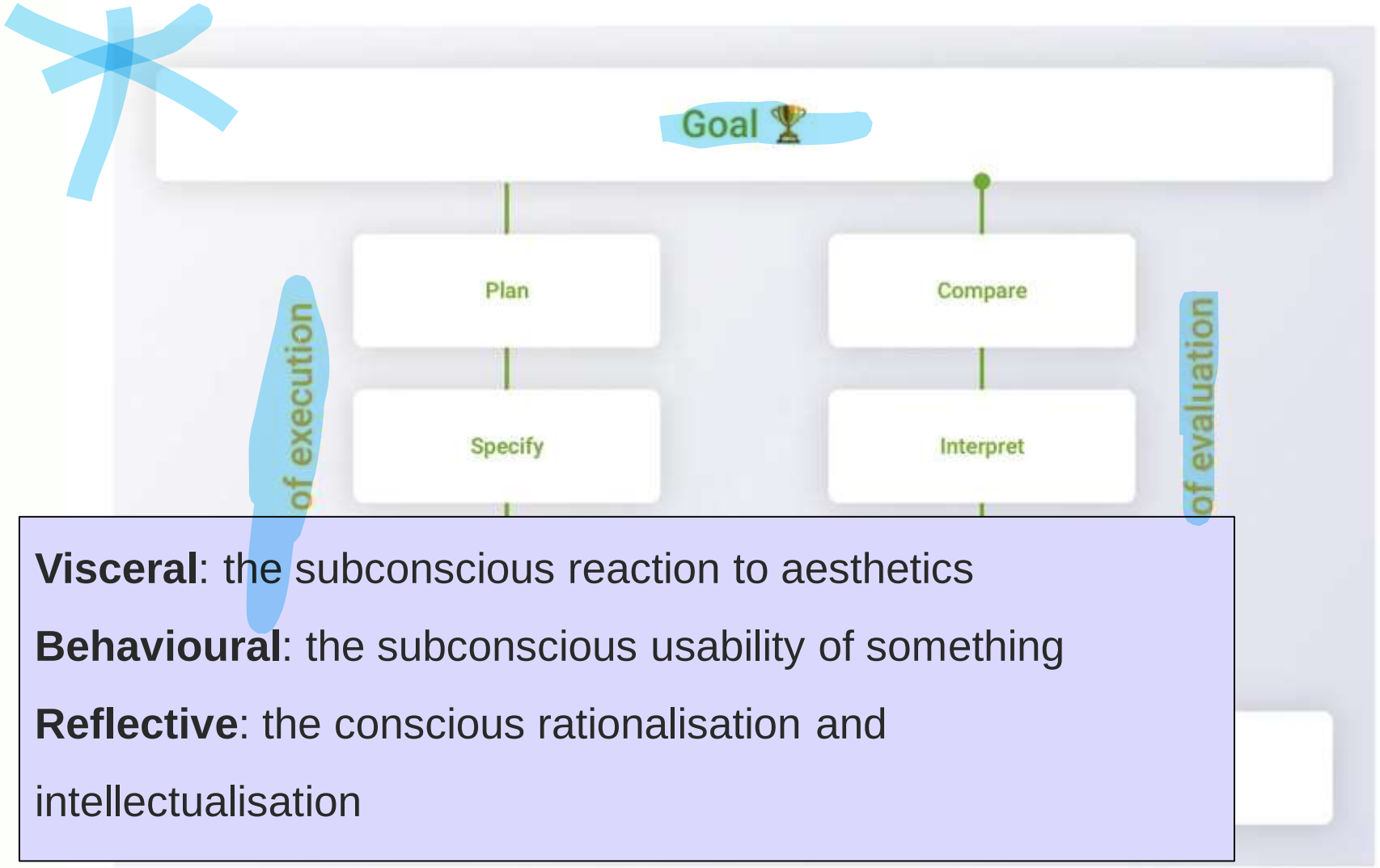
- When it's done?
  - Formative (early stages, what is still needed?)
  - Summative (at the end, did it work?)

Cognitive Walkthroughs

Cognitive Walkthrough

- Inspection method where evaluators work through a series of tasks and ask a set of questions from the perspective of a new or infrequent user.
  - Learnability of the system
  - Create a persona of the user

Norman's Action Cycle: The 7 stages of action



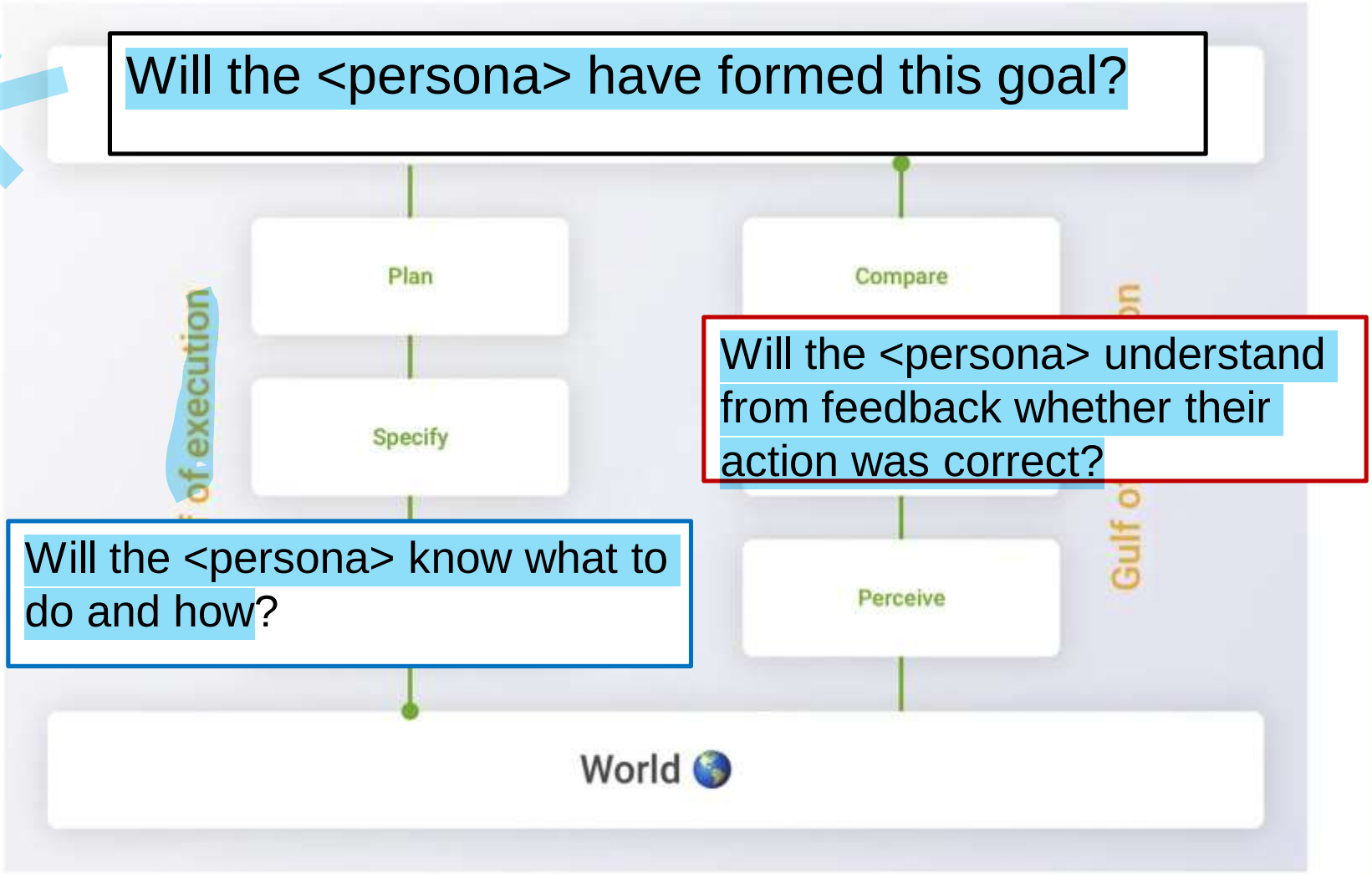
Visceral: the subconscious reaction to aesthetics

Behavioural: the subconscious usability of something

Reflective: the conscious rationalisation and intellectualisation

https://uxdesign.cc/ux-psychology-principles-seven-important-questions-960579272880

Norman's Action Cycle: The 7 stages of action



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Cognitive Walkthrough

- Briefing session for designers / experts
  - Identify characteristics of user and task
- Evaluation period of 1-2 hours where:
  - Experts (3 is ideal)
  - “walkthrough the UI” answering questions (next slide)
  - Identify issues that a new user would face and why
  - Debrief session to prioritize problems to fix
- Drawbacks
  - Takes time to “walkthrough” each action
  - Designers may get defensive about choices

How to do Cognitive Walkthrough

- Setup
  - The persona of your user
  - What is the use case (task/goal) and (sub)goal for the user to complete the task
  - What actions you (designer) expect the user to follow to complete the goal

How to do Cognitive Walkthrough

- Answer three questions: [Yes/No/Maybe] [Why][Where]
  - Will the <persona> have formed this goal?
  - Will the <persona> know what to do and how?
  - Will the <persona> understand from feedback whether their action was correct?

How to do Cognitive Walkthrough

- Record the answers but also:
  - Assumptions about what would cause the problems and why
  - Notes about side issues
  - Notes about possible solutions
- Example walkthrough next
  - Download Media from Canvas

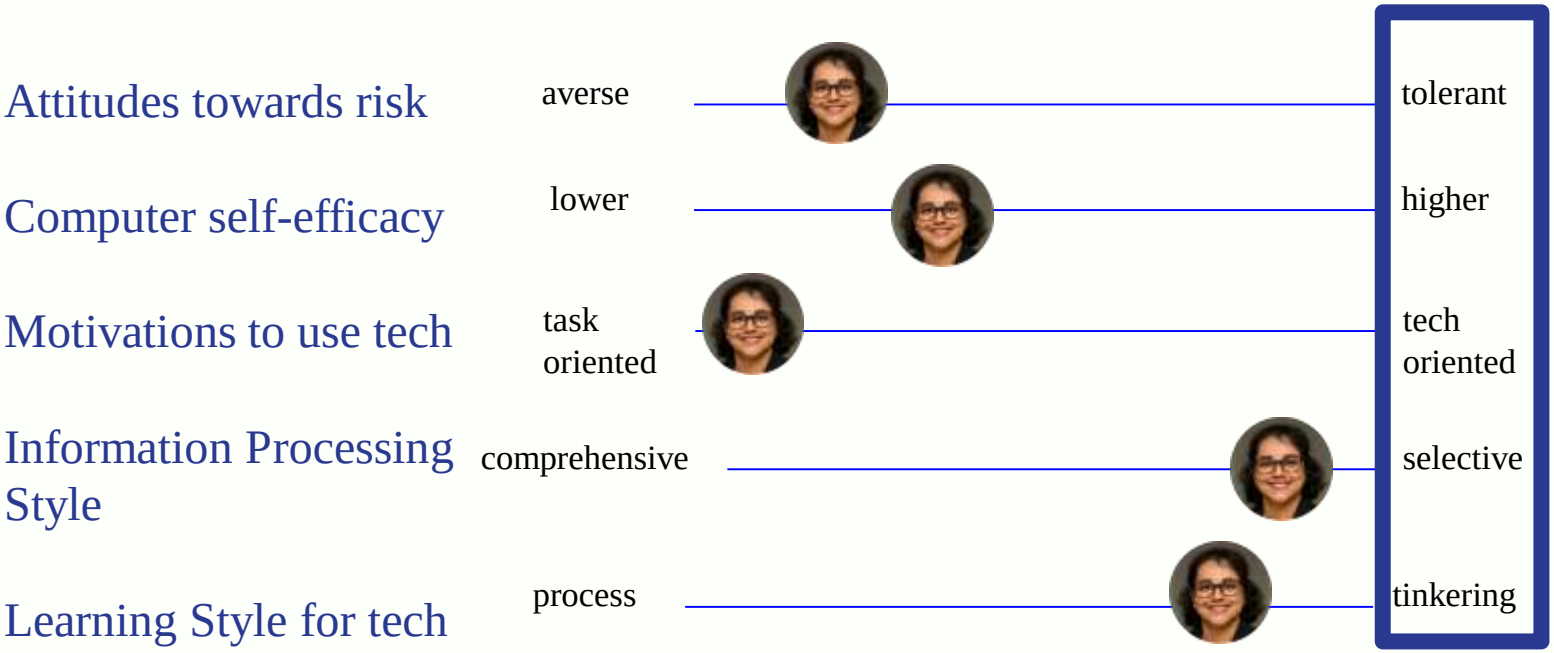
Setting up for Cognitive Walkthrough: Notes

- Download cognitive walkthrough materials from Gdrive
- Read Notes on CW
- Pick your persona: Abi or Dav
  - Here: Abi (read through the exp + cog styles)
- Pick our roles:
  - Dr. A facilitator, Driver; Summit: recorder + evaluator; All: evaluators
- Pick out subgoal, Action list
  - Pick the task you have selected for your design sketch
  - Here: Download Media from Canvas
- Perform Cognitive Walkthrough
  - Walk through use case
  - Perform Debrief

Inclusive Technology: cognitive styles

Cognitive Diversity, *i.e. variations in cognitive styles*

diverse ways users perceive, process, and interact with information & technology, as well as their approach to problem-solving



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Abi (Abigail/Abishek)

- 55 years old
- Employed as a Instructor
- Lives in Eugene, OR

Abi has always liked music. When she is on her way to work in the morning, she listens to music that spans a wide variety of styles. But when she arrives at work, she turns it off, and begins her day by *scanning all her emails first to get an overall picture before answering any of them.* (This extra pass takes time but seems worth it.) Some nights she exercises or stretches, and sometimes she likes to play computer puzzle games like Sudoku.

Background and Skills

Abi works as a part-time instructor. She is comfortable with the technologies she uses regularly, but she just moved to this employer 1 week ago, andthe software systems are new to her.

Abi has never taught using Canvas before or have experience in flipped classroom She likes Math and knows how to think with numbers. She is confident making slides in power point and paper-based grading.

In her free time, she also enjoys working with numbers and logic. she especially likes working out puzzles and puzzle games, either on paper or on the computer.

Motivations and Attitudes

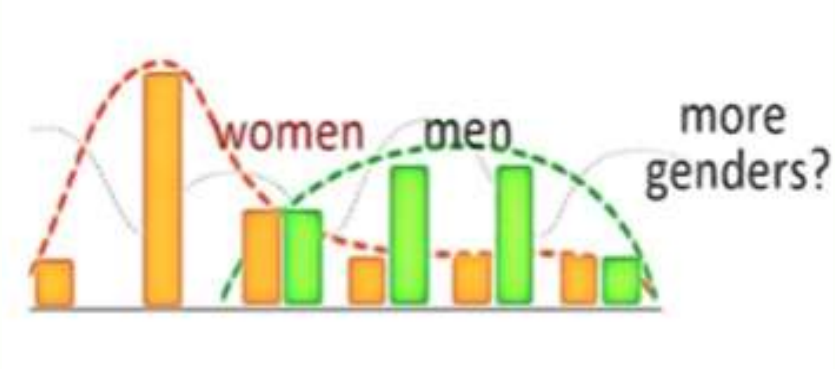
- ***Motivations***: Abi uses technologies to accomplish her tasks. She learns new technologies if and when she needs to, but prefers to use methods she is already familiar and comfortable with, to keep her focus on the tasks she cares about.
- ***Computer Self-Efficacy***: Abi has lower self confidence than her peers about doing unfamiliar computing tasks. If problems arise with her technology, she often blames herself for these problems. This affects whether and how she will persevere with a task if technology problems have arisen.
- ***Attitude toward Risk***: Abi's life is a little complicated and she rarely has spare time. So she is risk averse about using unfamiliar technologies that might need her to spend extra time on them, even if the new features might be relevant. She instead performs tasks using familiar features, because they're more predictable about what she will get from them and how much time they will take.

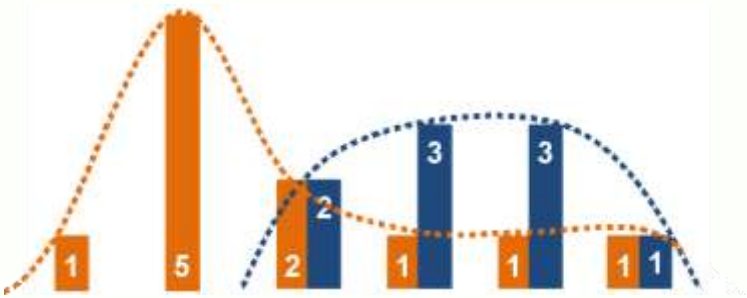
Attitude to Technology

- ***Information Processing Style***: Abi tends towards a comprehensive information processing style when she needs to gather more information. So, instead of acting upon the first option that seems promising, she gathers information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, her style is "burst-y"; first she reads a lot, then she acts on it in a batch of activity.
- ***Learning: by Process vs. by Tinkering*** : When learning new technology, Abi leans toward process-oriented learning, e.g., tutorials, step-by-step processes, wizards, online how-to videos, etc. She doesn't particularly like learning by tinkering with software (i.e., just trying out new features or commands to see what they do), but when she does tinker, it has positive effects on her understanding of the software.

[1]Abi represents users with motivations/attitudes and information/learning styles similar to hers. For data on people similar to and different from Abi, see http://gendermag.org/Foundations.html

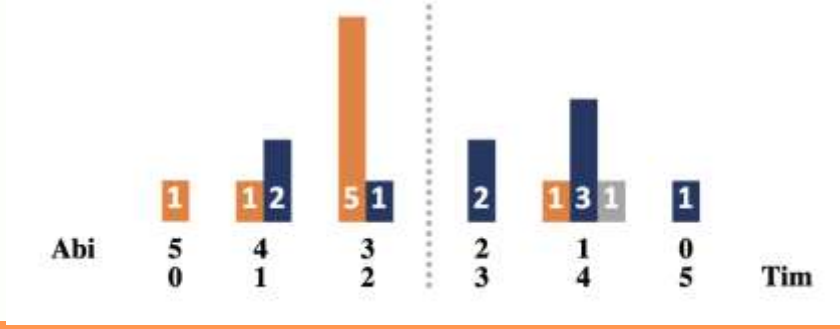
Becomes a Gender Bias Problem

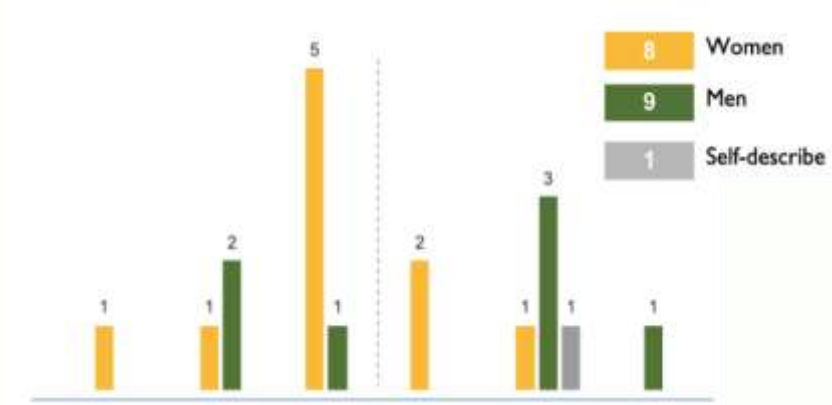




Individual differences in cognitive style values statistically cluster by gender;

Hence it becomes a Gender Bias problem





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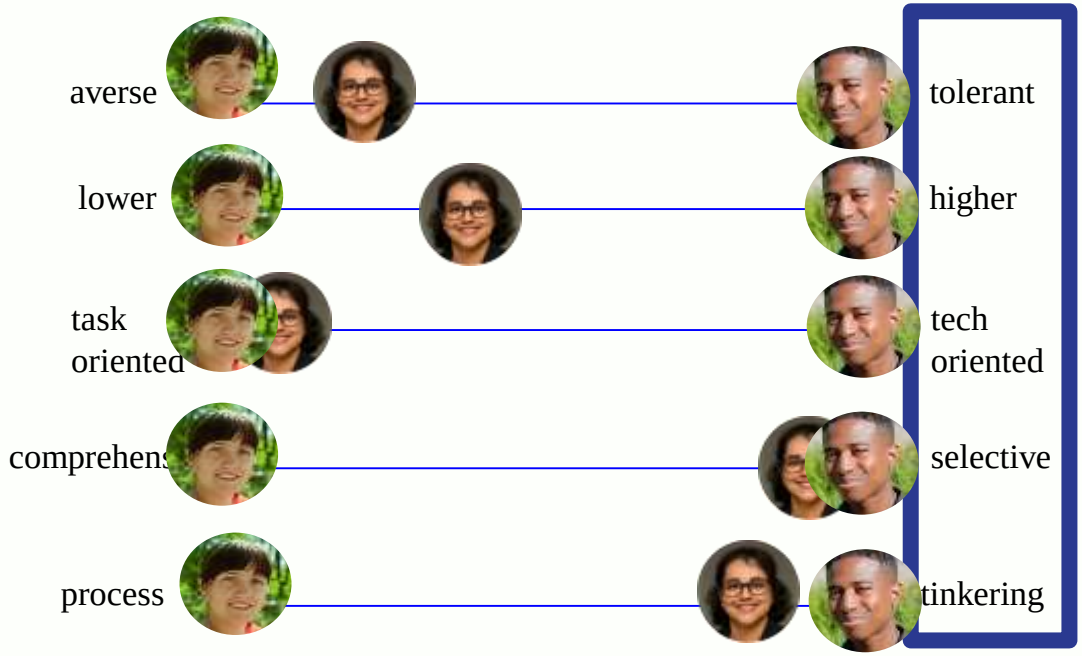

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Use case and Subgoals

- Use Case: Download class recording to email to colleague.
- Subgoals:

1. Find the class recording in Canvas
2. Download the recording
3. Email the recording

Walkthrough using Google Docs

- Subgoal1: Find the class recording
  1. Go to MyMedia
- Subgoal 2: Download the media
  1. Click on the Edit icon
  2. Click on Downloads + available format
  3. Click on Save
  4. Click on go to Media
  5. Go to Downloads
  6. Click on the Arrow/down button

Spring 2025

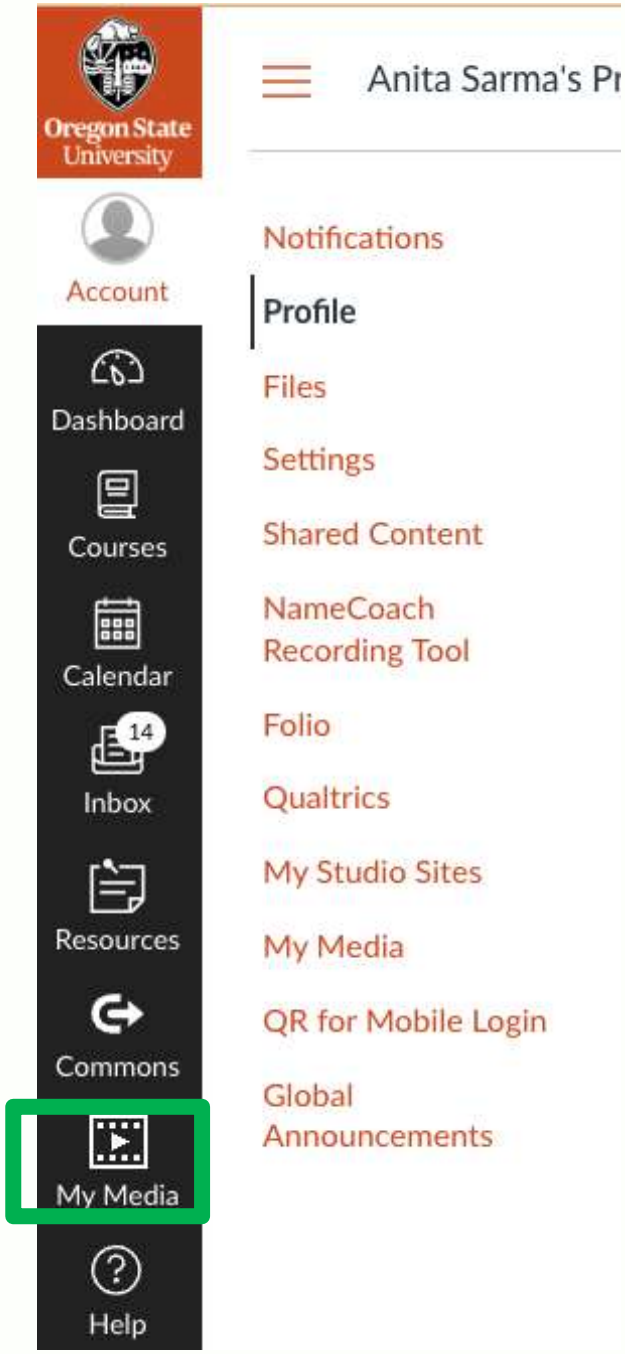
- Home
- Announcements
- Syllabus
- Assignments
- Poll Everywhere
- Grades
- People
- Zoom
- Files
- Rubrics
- Discussions
- New Analytics
- Media Gallery
- OSU Instructor Tools
- NameCoach
- Quizzes
- Pages
- Collaborations
- Modules
- Outcomes
- Settings

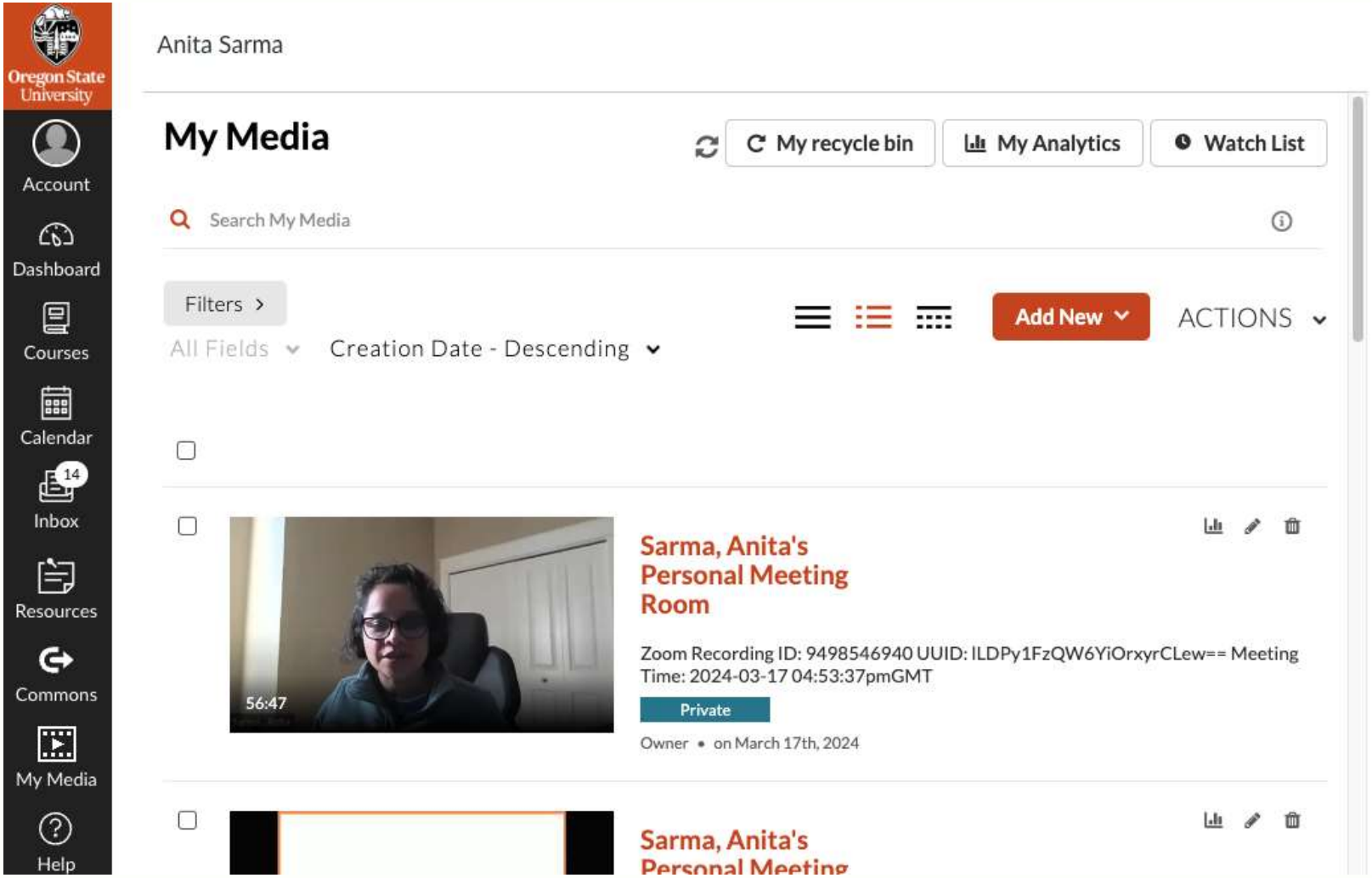
The class will be very hands-on and we will have in class activities everyday. We will use (activities. (You need to be logged in with Oregon State credentials to access the drive).

The **tentative schedule** is here. This gives the "big picture" of how the course fits together apt to shift.

Week	Class	Lecture Topic	Readings
Week 1	Mar 31	Usability goals, Design Process	Rogers, Ch. 1.6.1, Usability Goals NN/g video on Usability
	Apr 2	Intro to GenAI/prompt Engineering	Double Diamond design Process 10 basic AI words
Week 2	Apr 7	Contextual Inquiry: Observations & Interview	Rogers, Ch. 9.3.1. Who are the Users? Article by NN/g: Contextual Inquiry Rogers, 7.6. Observation
	Apr 9	Personas and User Journey	NN/g articles:Affinity Diagramming, Personas, Thematic analysis NN/g User journey articles: 1 and 2
Week 3	Apr 14	Design Principles	Rogers, Ch. 1.6.3. Design Principles NN/g articles: Mental models, UX Gulf
	Apr 16	Ideation	Career Foundry article: Ideation

My Canvas Dashboard

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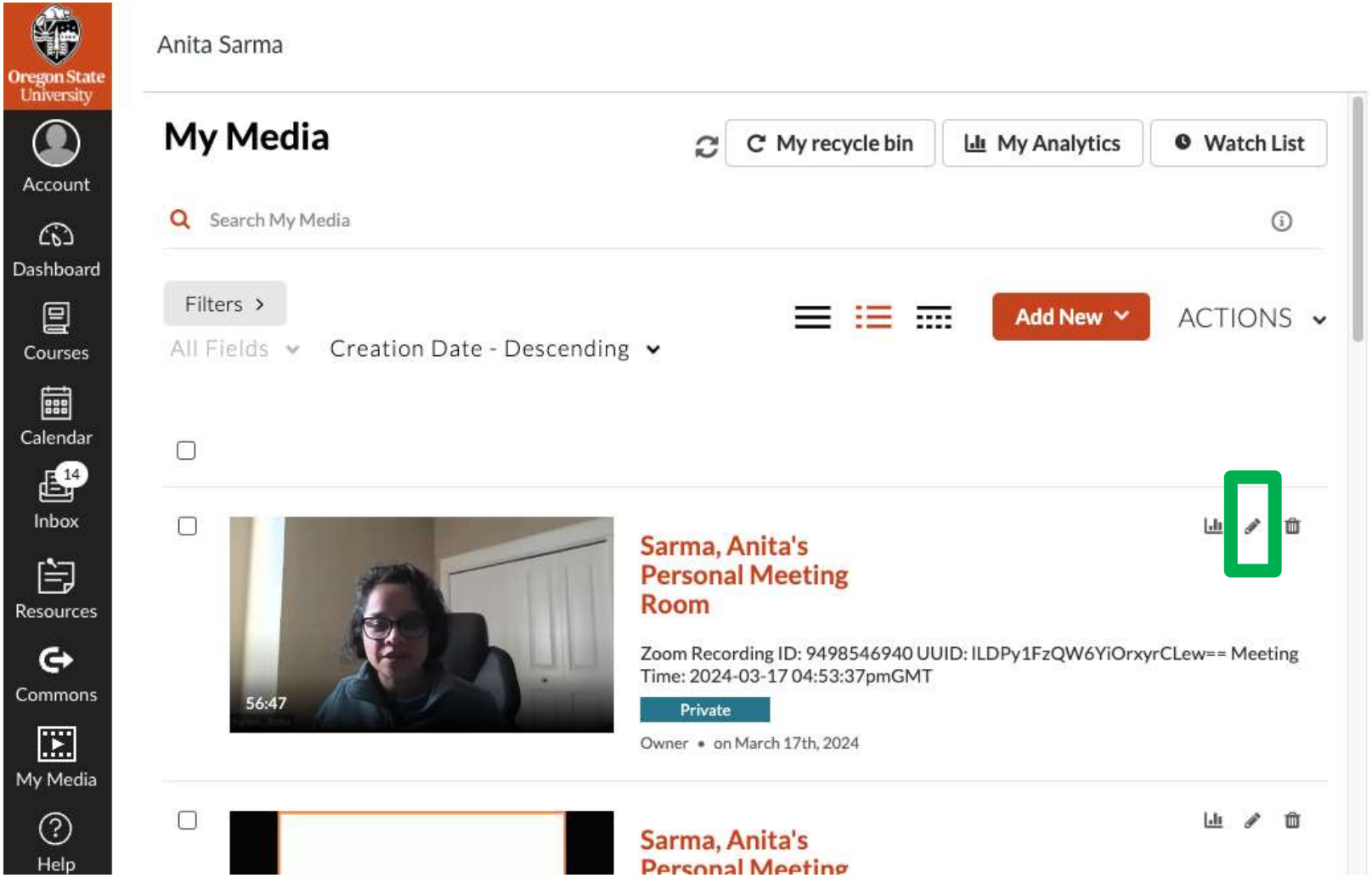
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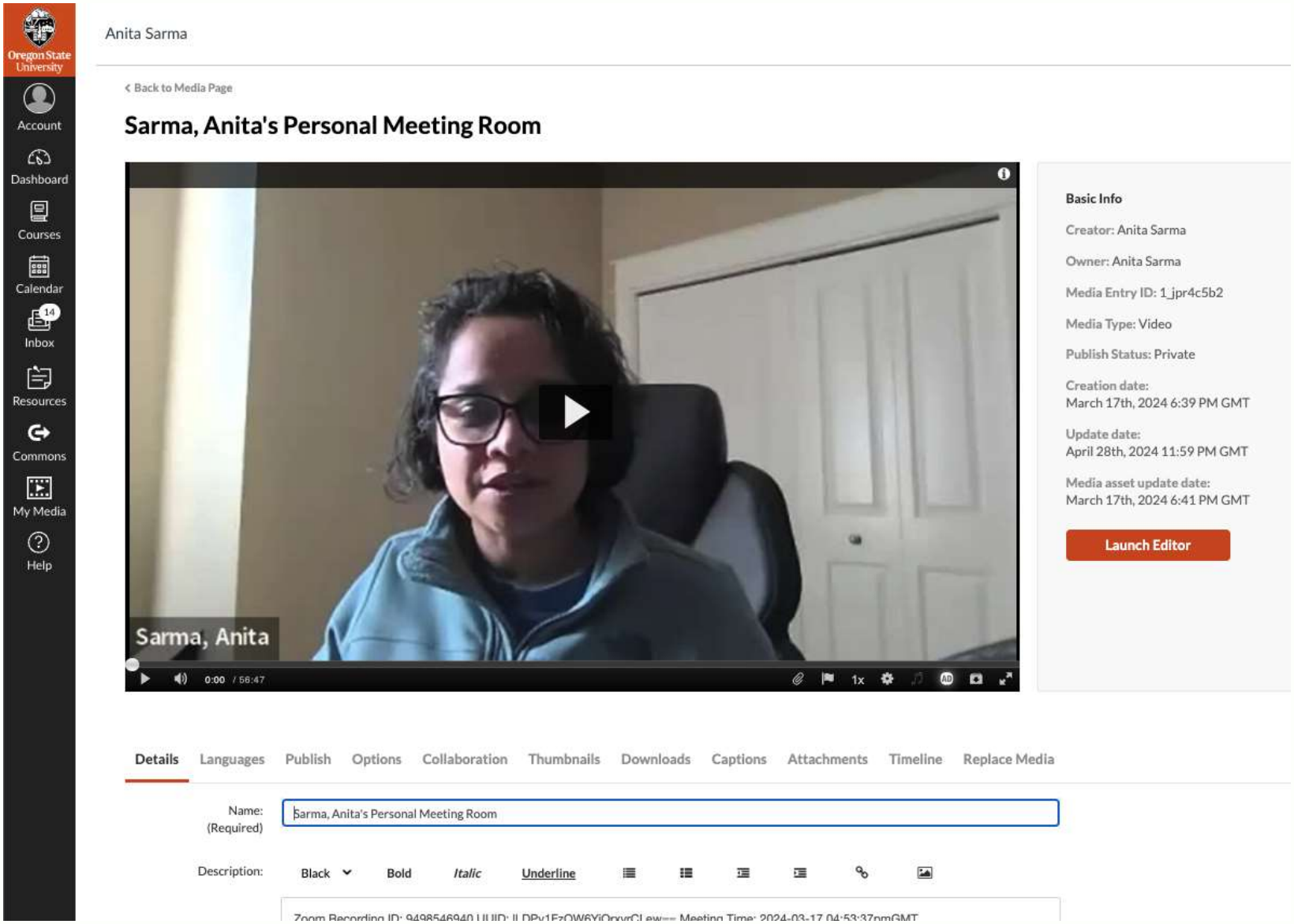
Walkthrough using Google Docs



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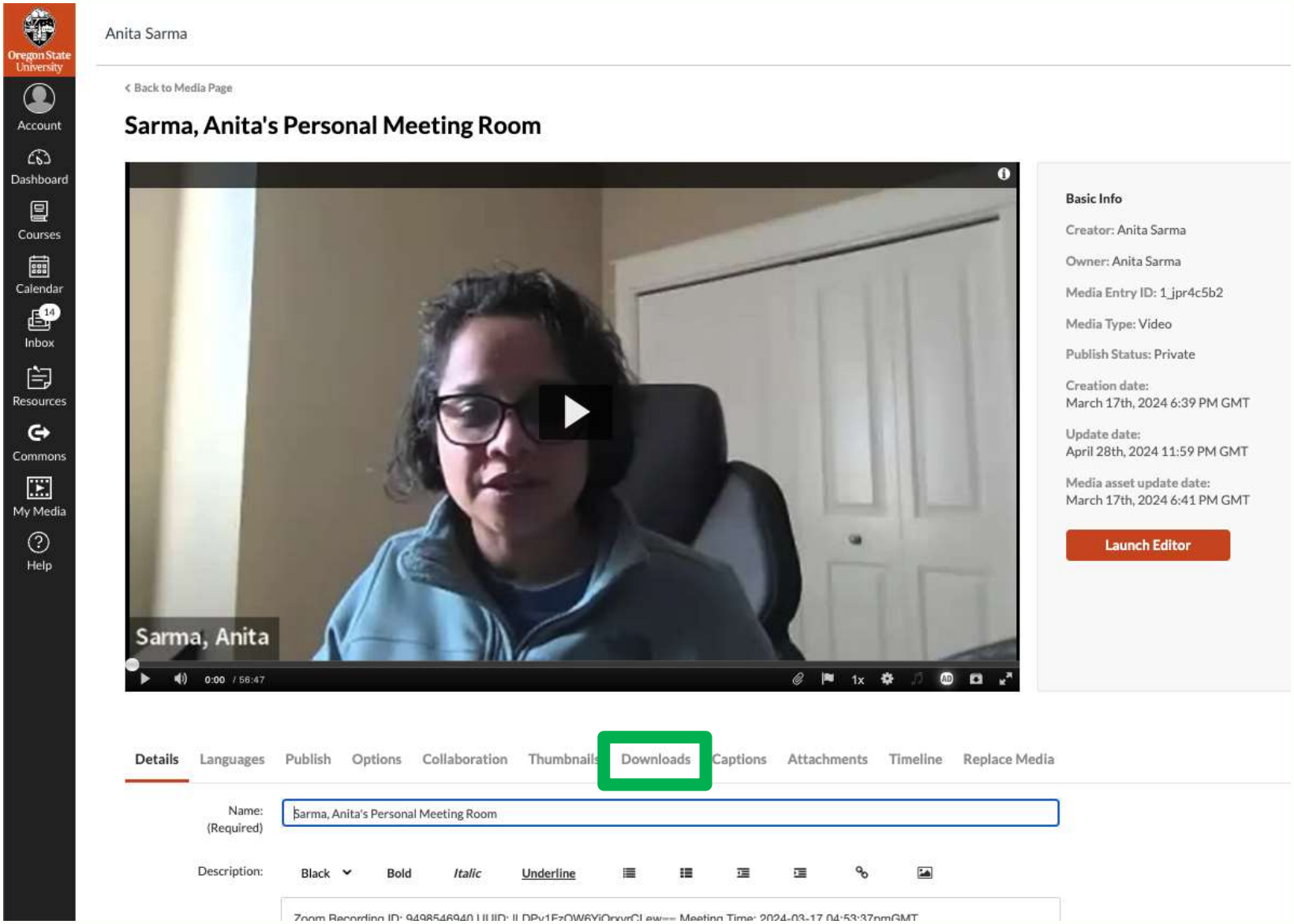

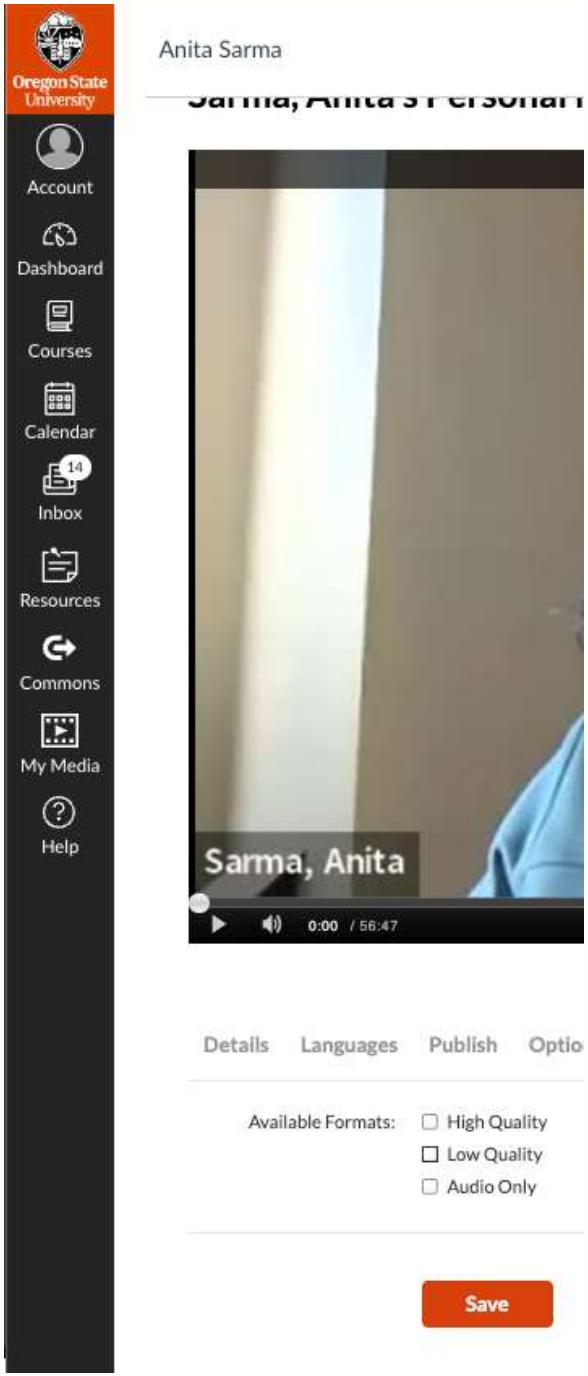
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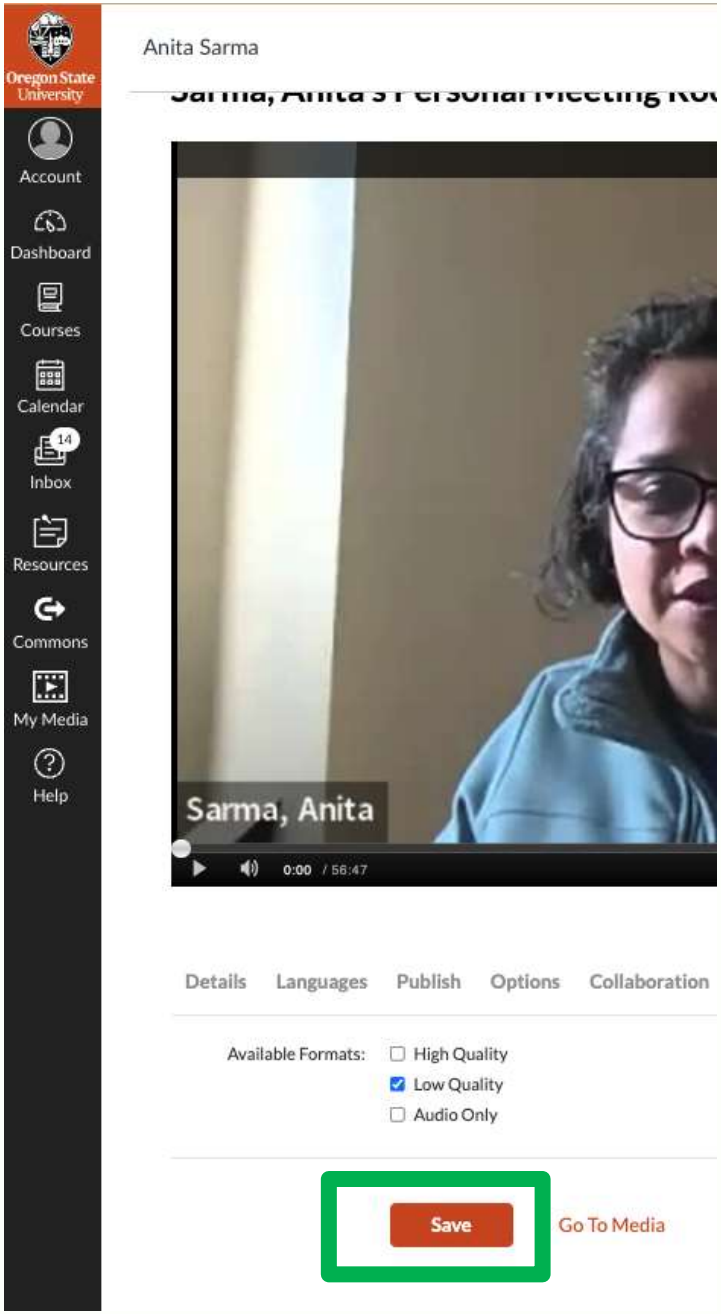
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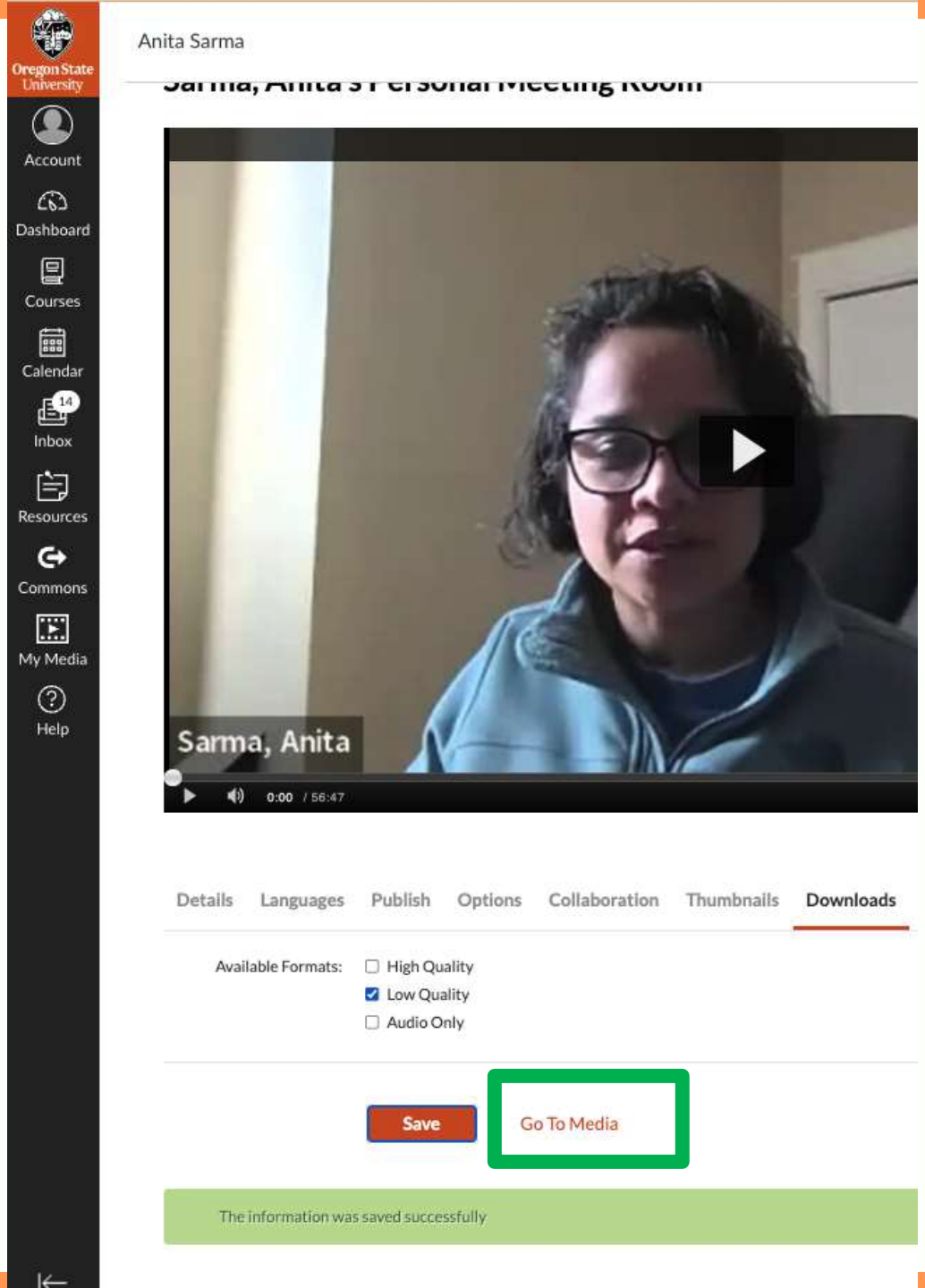
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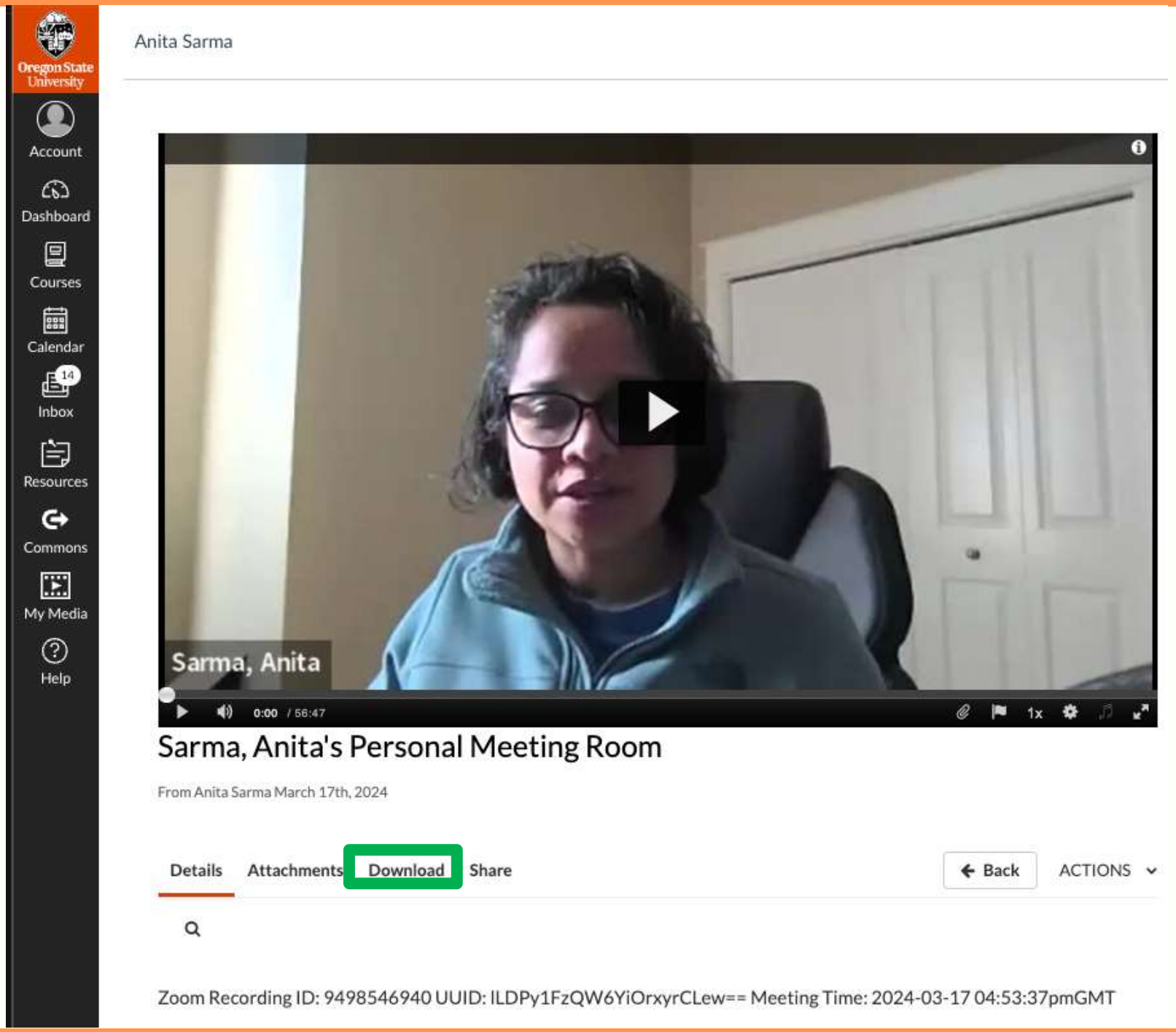
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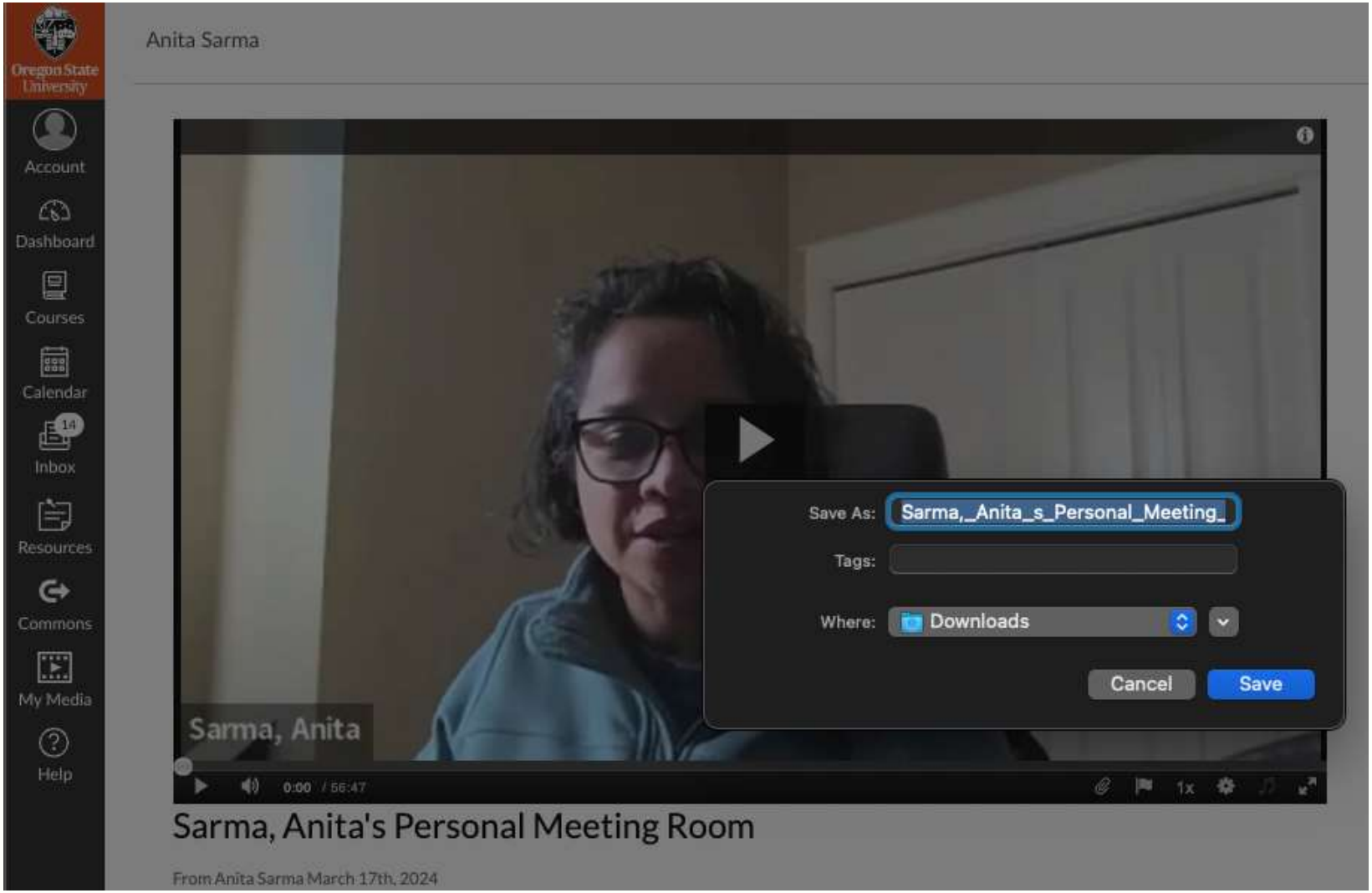
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Summary

- Walkthrough the UI in the shoes of your persona
  - First time user
- Is time consuming (but still less than user study)
  - Plan to evaluate the most risky/complex/new features through user tasks
  - Gets easier (and you can short circuit some obvious steps)
- Designers can become defensive

Let's do one together - GenderMag

GenderMag is a specialized cognitive walkthrough

Preparation

1. **Persona (lets use Abi cognitive styles)**
2. Use Case/Subgoals
3. Actions (Just in time or up front)
4. Setting up with the roles
    1. Facilitator: leads the discussion (Dr. Sarma)
    2. Driver: shares screen and interaction with prototype (Janita)
    3. Recorder: records evaluation response form (you)
    4. Evaluators: above roles + others in the team (you)