TOOLS FOR
ONLINE TEACHING

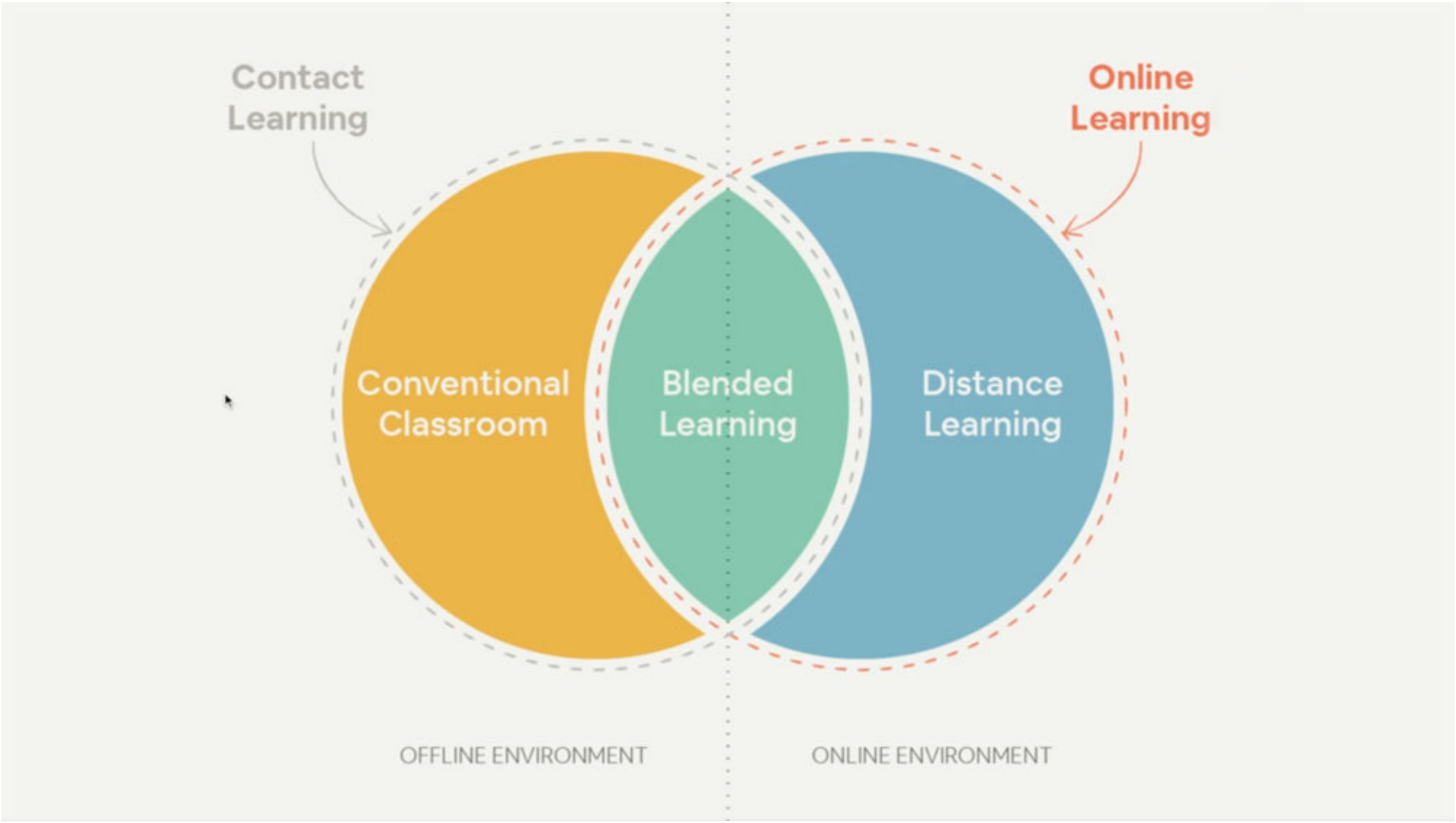
with Team BodhiTree

Maulashree Shanbhag | 15U130001
Guided by Prof. Anirudha Joshi

P3 | Pre-Recorded Presentation

A Quick Introduction

Problem space - topic
BodhiTree (presently)
Needs to be addressed
Premise: BodhiBooks and Courses


Contact Learning
Online Learning
Conventional Classroom
Blended Learning
Distance Learning
OFFLINE ENVIRONMENT
ONLINE ENVIRONMENT

LEARNING ENVIRONMENTS

Offline Contact Learning

Offline classrooms

No use of online tools for core teaching practice

Fixed venue and scheduling

Blended Learning

Mix of online+offline

Uses online tools in varying capacity

Blend of fixed and flexible venue with controlled scheduling

Distance Learning

Purely online

Trade-off between scale and real-time engagement

Flexible venue with sync/async scheduling

BodhiTree 1.0

As of June, 2020

BodhiTree Explore

Learn from subject experts and award winning teachers at IIT Bombay.

Introduction to Computer Programming

Data Structures

Operating Systems

Unix and Scripting

Complement "interactive" theory lessons with "hands-on" labs and "auto-graded" quizzes that nurture higher-order thinking.

Eight multimedia books available!

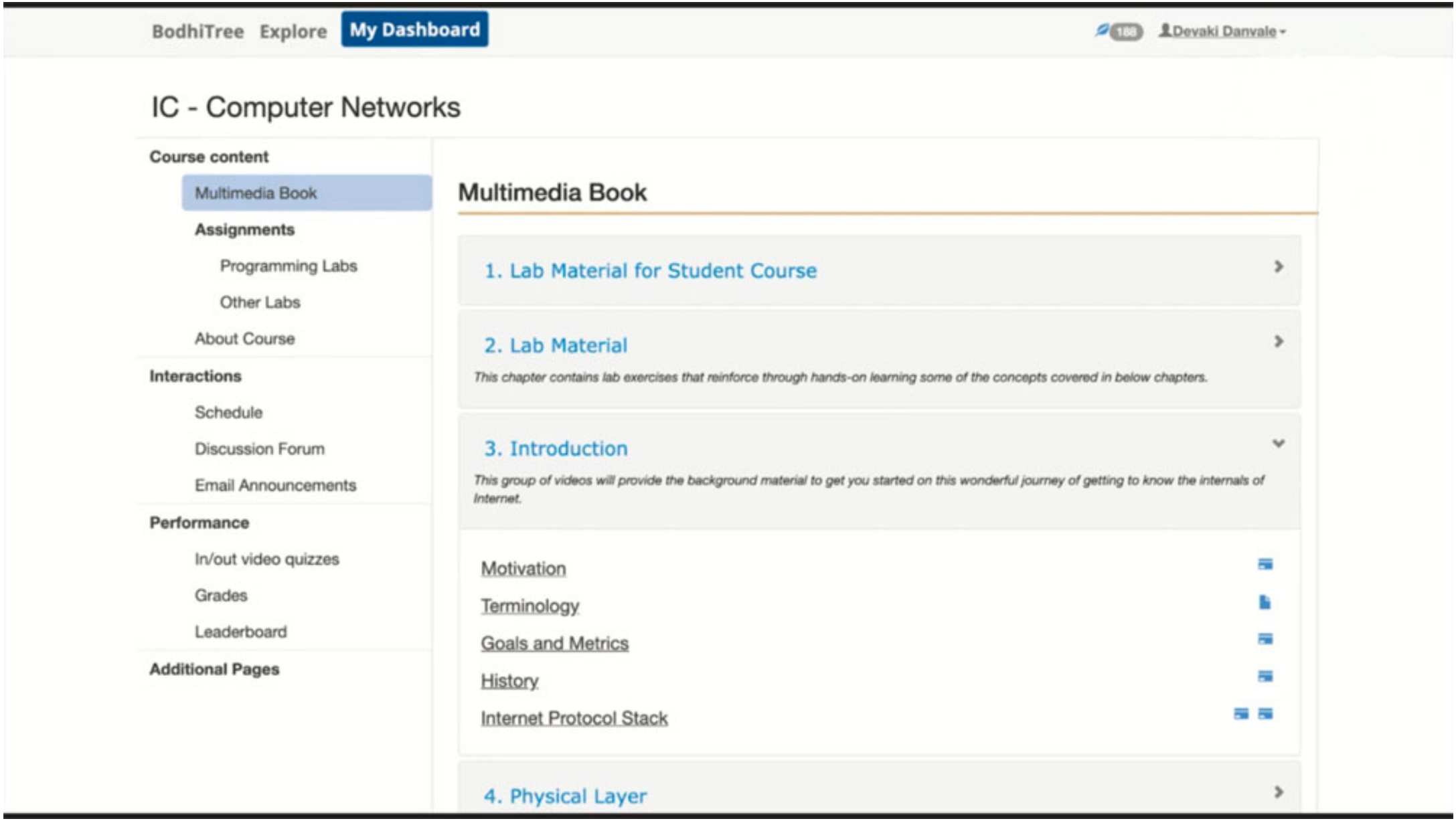
Computer Organization and Architecture

Computer Networks

Wireless Networks

Foundations of Computer Security

https://mayur.bodhi.cse.iitb.ac.in/courseware/instructor_landing/


BodhiTree
Explore
My Dashboard
188
Devaki Danvale
IC - Computer Networks
Course content
Multimedia Book
Assignments
Programming Labs
Other Labs
About Course
Interactions
Schedule
Discussion Forum
Email Announcements
Performance
In/out video quizzes
Grades
Leaderboard
Additional Pages
Multimedia Book
1. Lab Material for Student Course
2. Lab Material
This chapter contains lab exercises that reinforce through hands-on learning some of the concepts covered in below chapters.
3. Introduction
This group of videos will provide the background material to get you started on this wonderful journey of getting to know the internals of Internet.
Motivation
Terminology
Goals and Metrics
History
Internet Protocol Stack
4. Physical Layer

WHAT TEACHERS CAN DO with BodhiTree 1.0

Disseminate Content

Assemble course specific book from multiple sources

Asynchronous or schedule-based setups

Coordinate Courses

Enroll students, impose schedule, track progress

Interact with students via emails, discussion forum

Evaluate Students

Share and download marks/grades

Conduct cheating free labs that can be manual or auto-graded

Immediate NEEDS

BodhiTree 1.0

Clarity in mental model

Vast range of subjects
(currently supports CS)

Migrating to BodhiTree

Content

Communication

Immediate NEEDS

BodhiTree 1.0

Clarity in mental model

Vast range of subjects (currently supports CS)

Migrating to BodhiTree

Content

Exists as slides, lectures, etc.

Set of known creation tools

Difficult to plan an online course

Communication

Immediate NEEDS

BodhiTree 1.0

Clarity in mental model

Vast range of subjects (currently supports CS)

Migrating to BodhiTree

Content

Exists as slides, lectures, etc.

Set of known creation tools

Difficult to plan an online course

Communication

Feedback

Gauge whether students are following

Facilitating interaction

Towards BodhiTree 2.0

Redesign for product growth

THE BIG PICTURE

There are two distinct work spaces:

- BodhiBooks
- Courses

BODHIBOOKS
compiled content

no connection with other stakeholders

content can be re-used

COURSES
use BodhiBooks for teaching

iterative (linked to student batches and timelines)

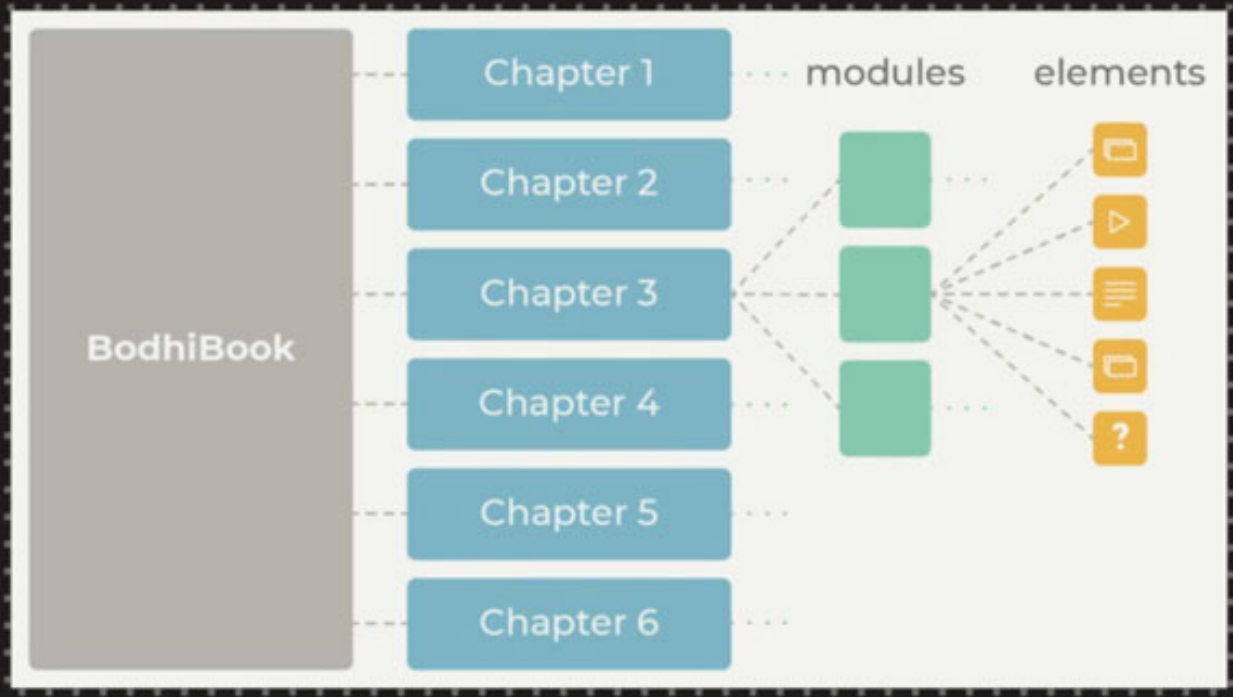
involve learning environments, contextual factors, etc.

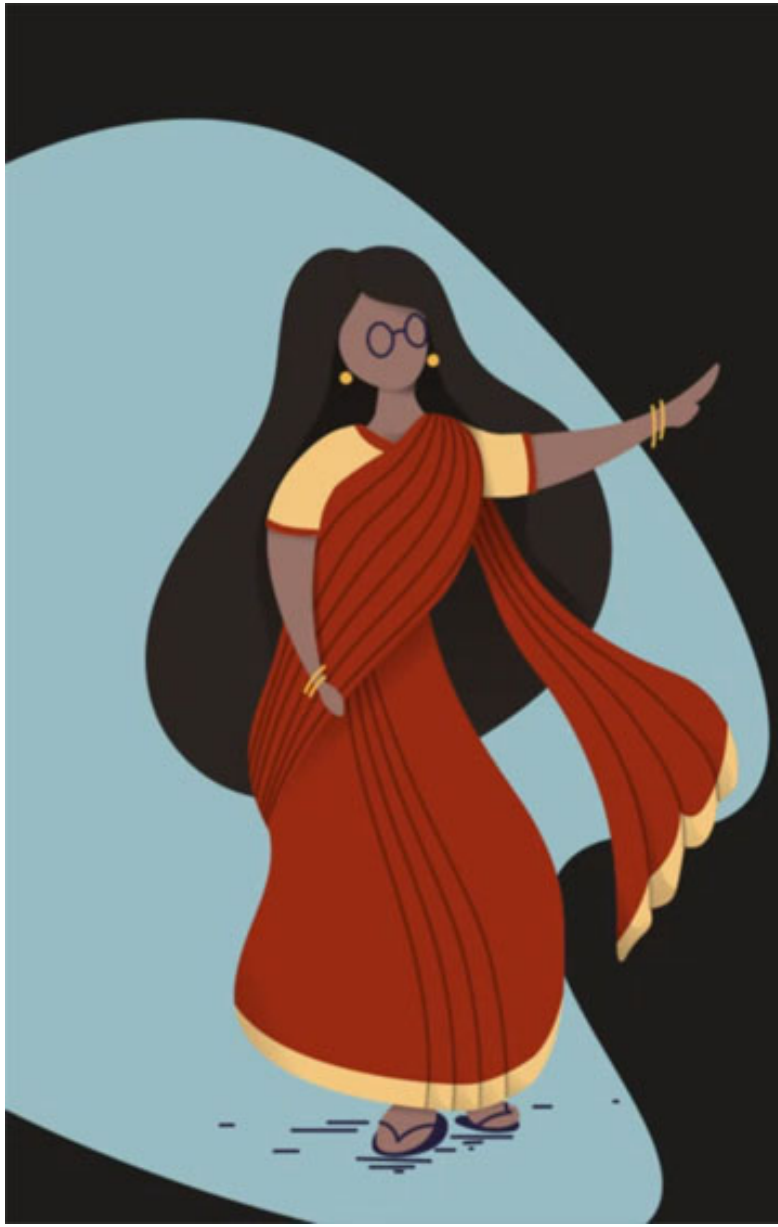
BodhiBooks

A BodhiBook can consist of several chapters

Each chapter is formed of one or more microlearning modules (based on Merrill's CDT)

Modules comprise of multimedia elements (sharable objects)





ELEMENTS

BodhiBooks

Presentation Slide
Text document
Image
Audio file
Video
URL
Review Question

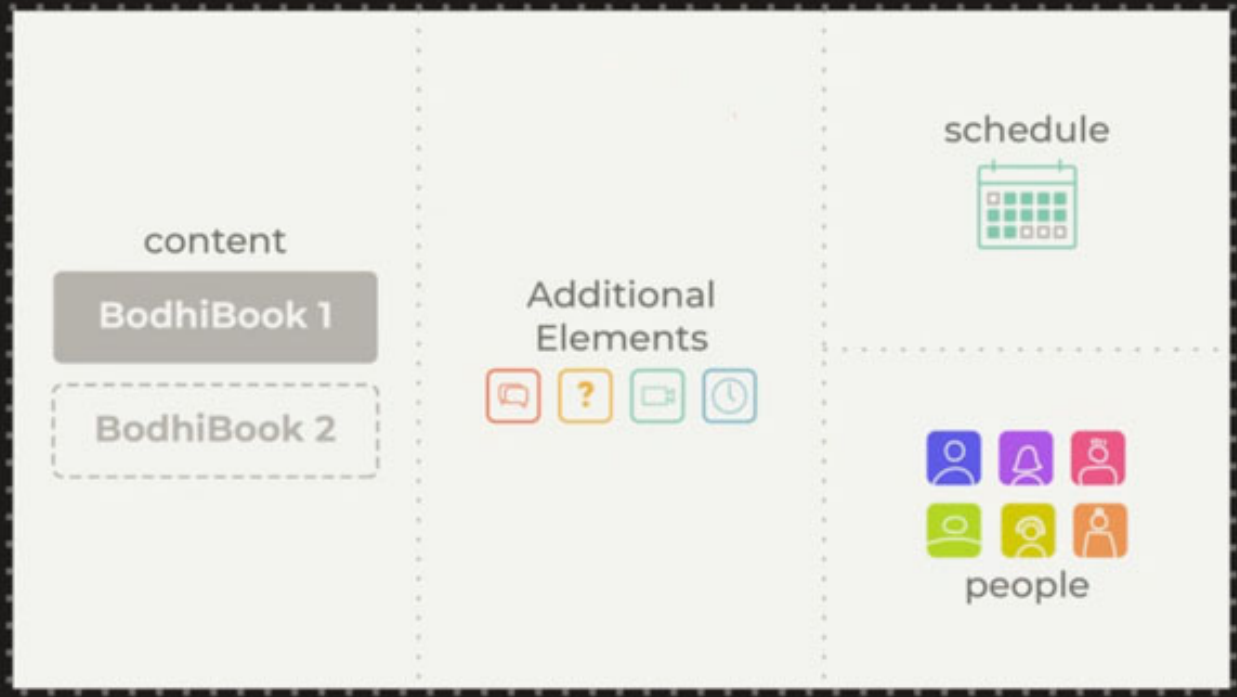
Courses

(In addition to BodhiBooks)
Quiz (evaluated)
Discussion
Feedback Question
Poll
Placeholder

Courses

A course uses the content from one or more BodhiBooks

It involves connecting with the enrolled students, coordinating schedules etc. through additional interactive elements



Meet the LEARNING SETUPS

In Class/Live
Real-time i.e. Synchronous live interaction between users

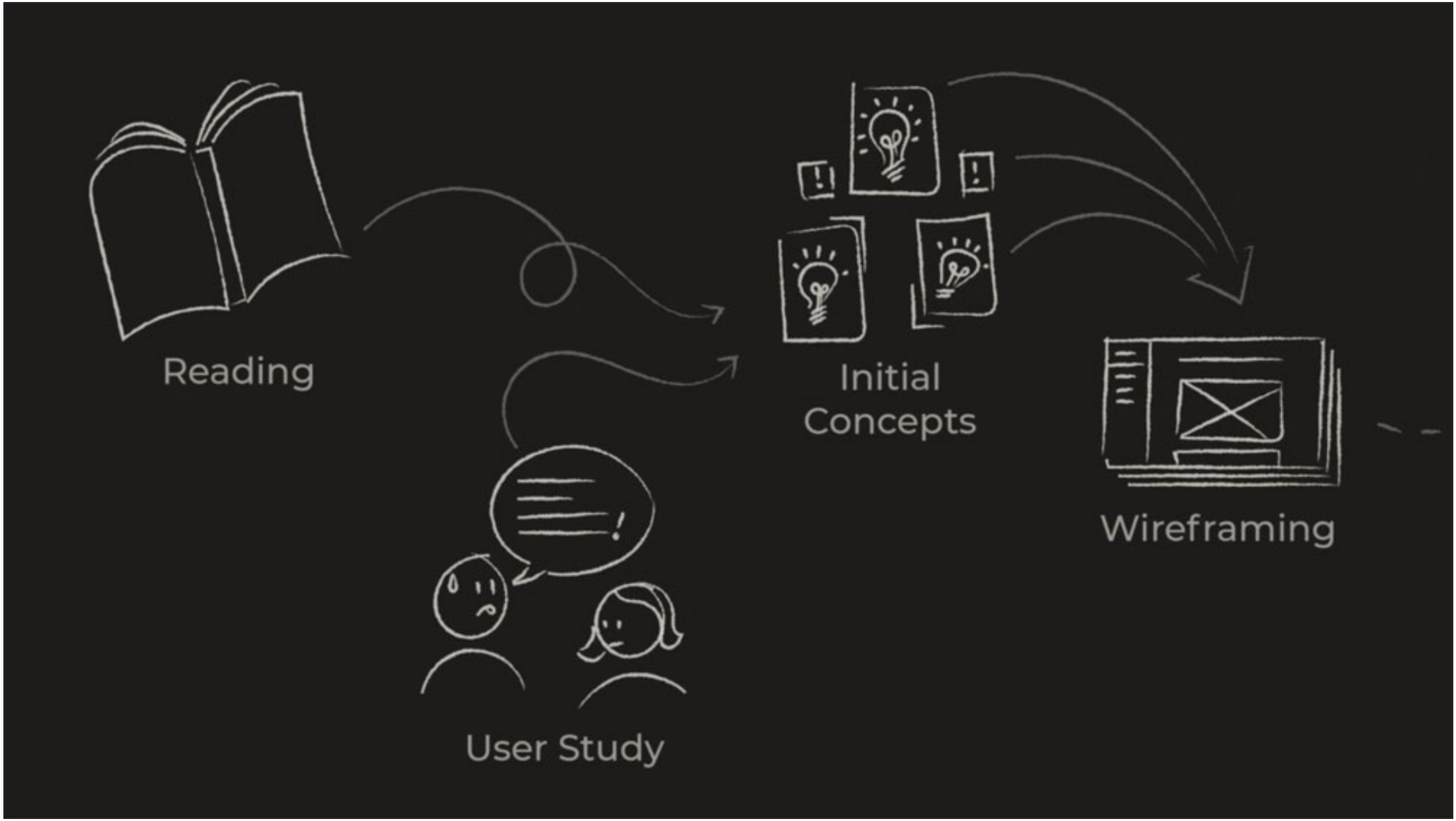
Scheduled
Global time i.e. some schedule/landmarks followed across users

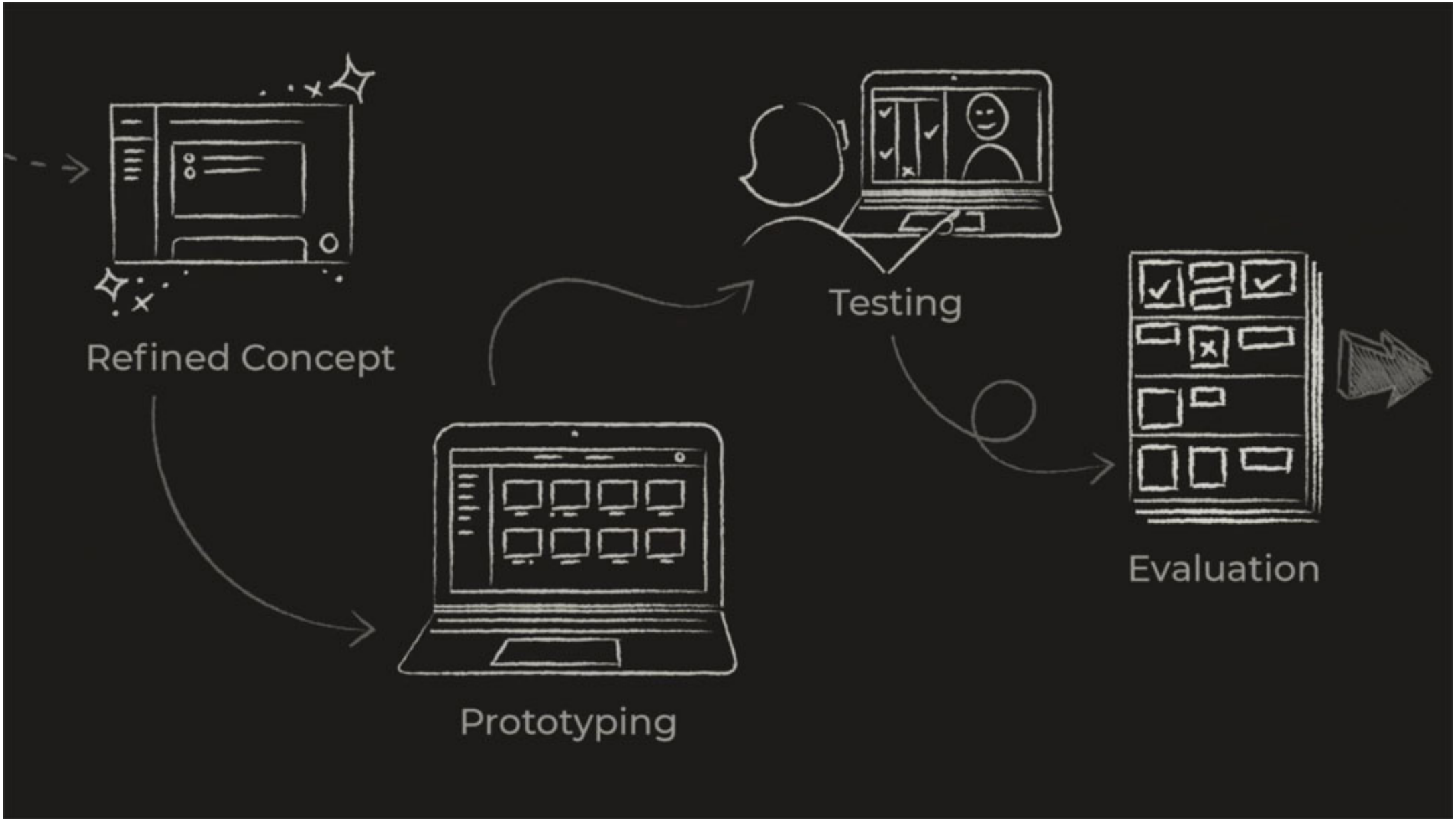
Self-Study
Self-paced i.e. purely local time, based on the learners' requirements

Courses

BodhiBooks

An online Learning Management Service (LMS) which cate
self-study and flipped-class setups


Reading
Initial
Concepts
Wireframing
User Study

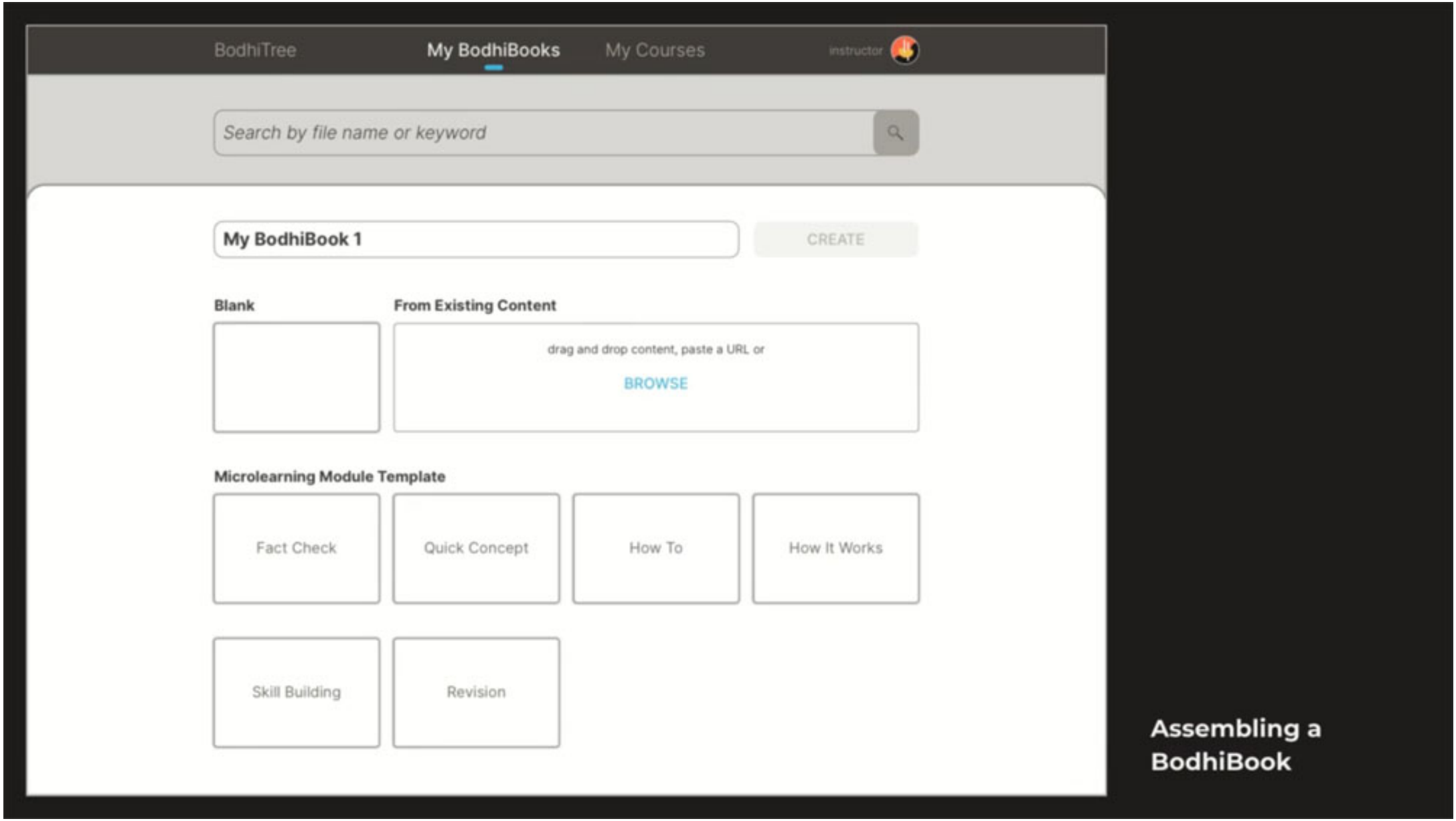

Refined Concept
Prototyping
Testing
Evaluation

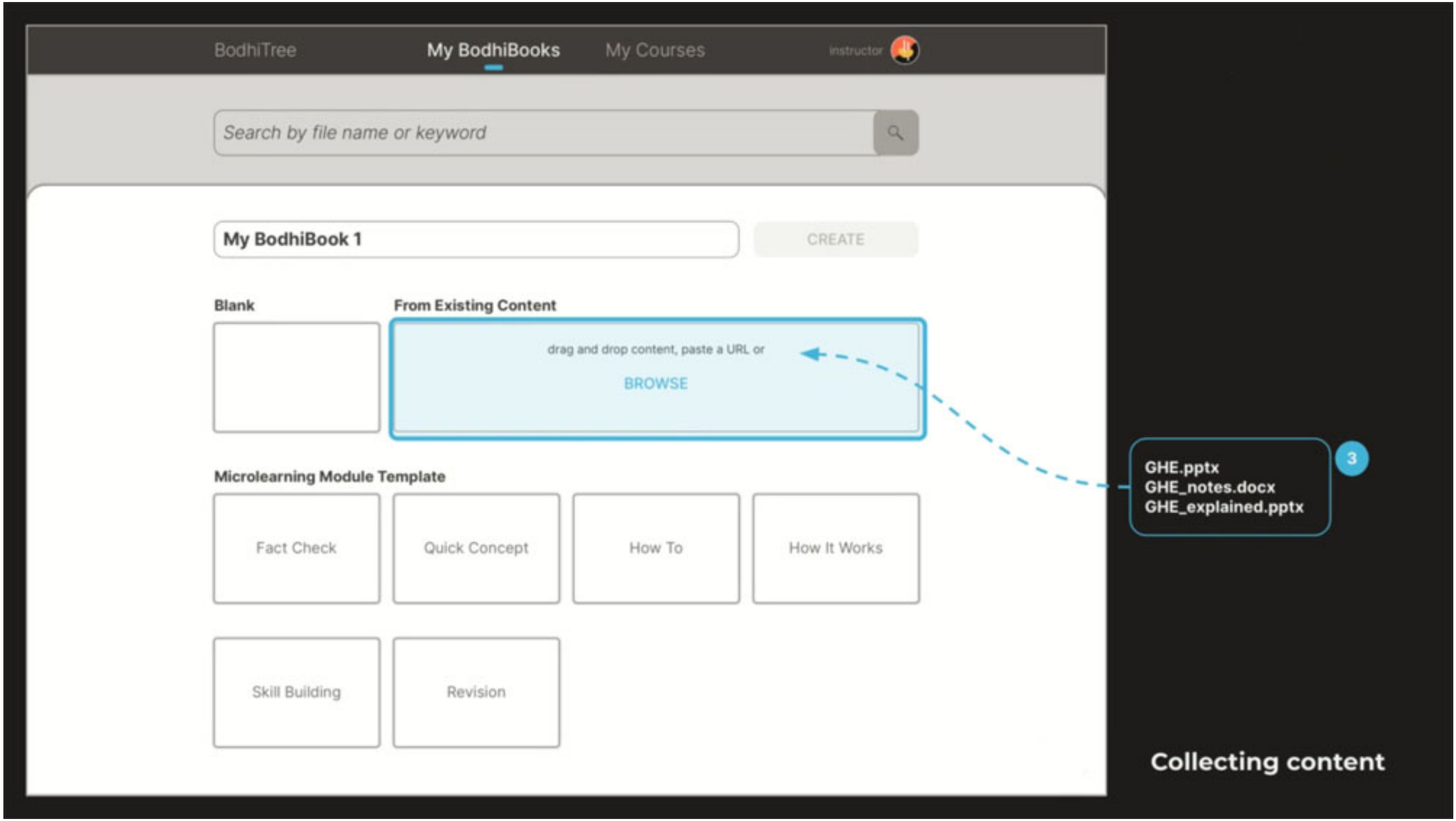
How does the solution feature a teacher's life?

Setting up a BodhiBook from existing content
Preparing for an online course
Running a live/synchronous class
Engaging students asynchronously

Using BodhiTree 2.0 for Online Teaching

Getting content up and ready


BodhiTree
My BodhiBooks
My Courses
instructor
Search by file name or keyword
My BodhiBook 1
CREATE
Blank
From Existing Content
drag and drop content, paste a URL or
BROWSE
Microlearning Module Template
Fact Check
Quick Concept
How To
How It Works
Skill Building
Revision
Assembling a BodhiBook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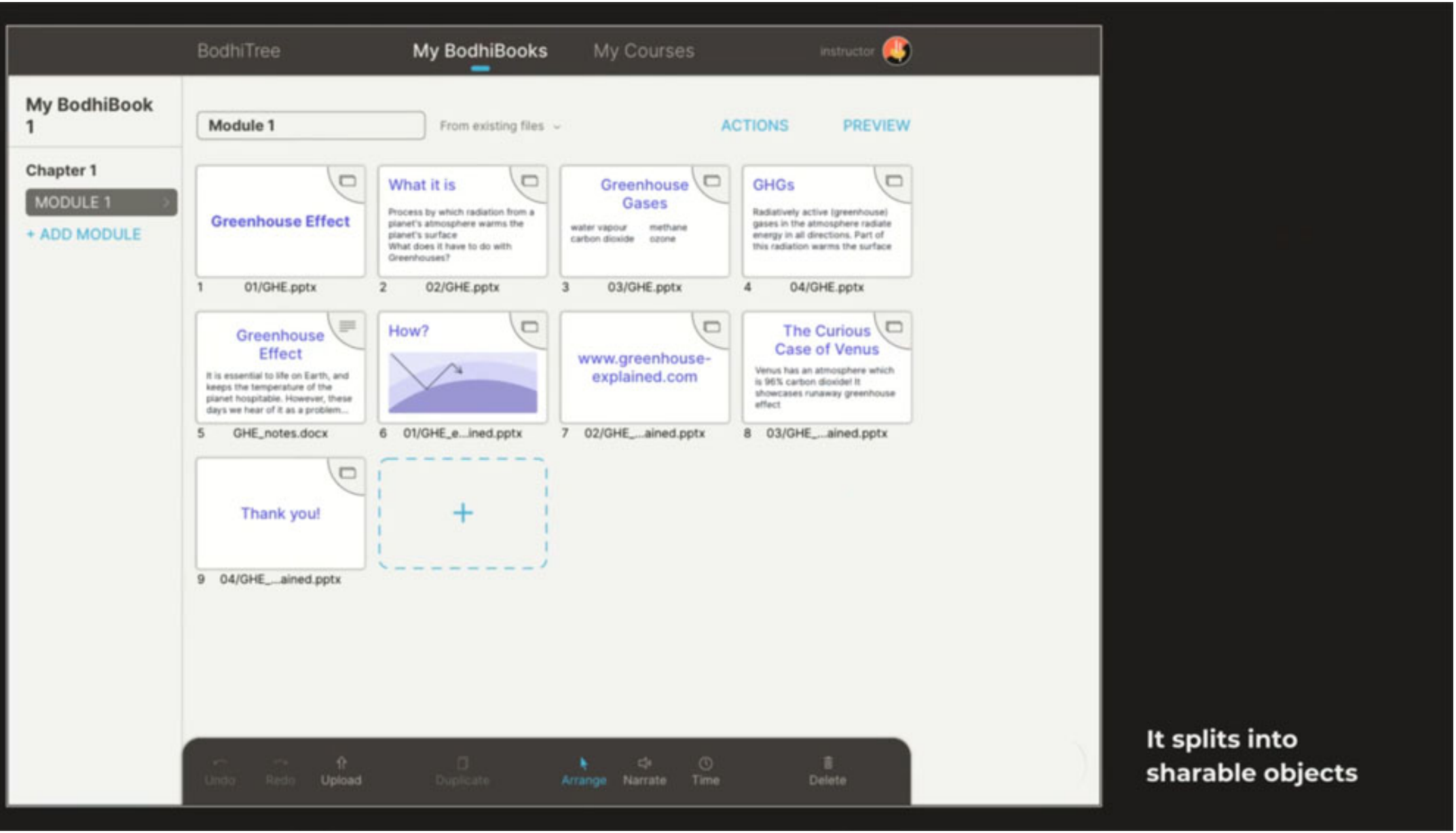
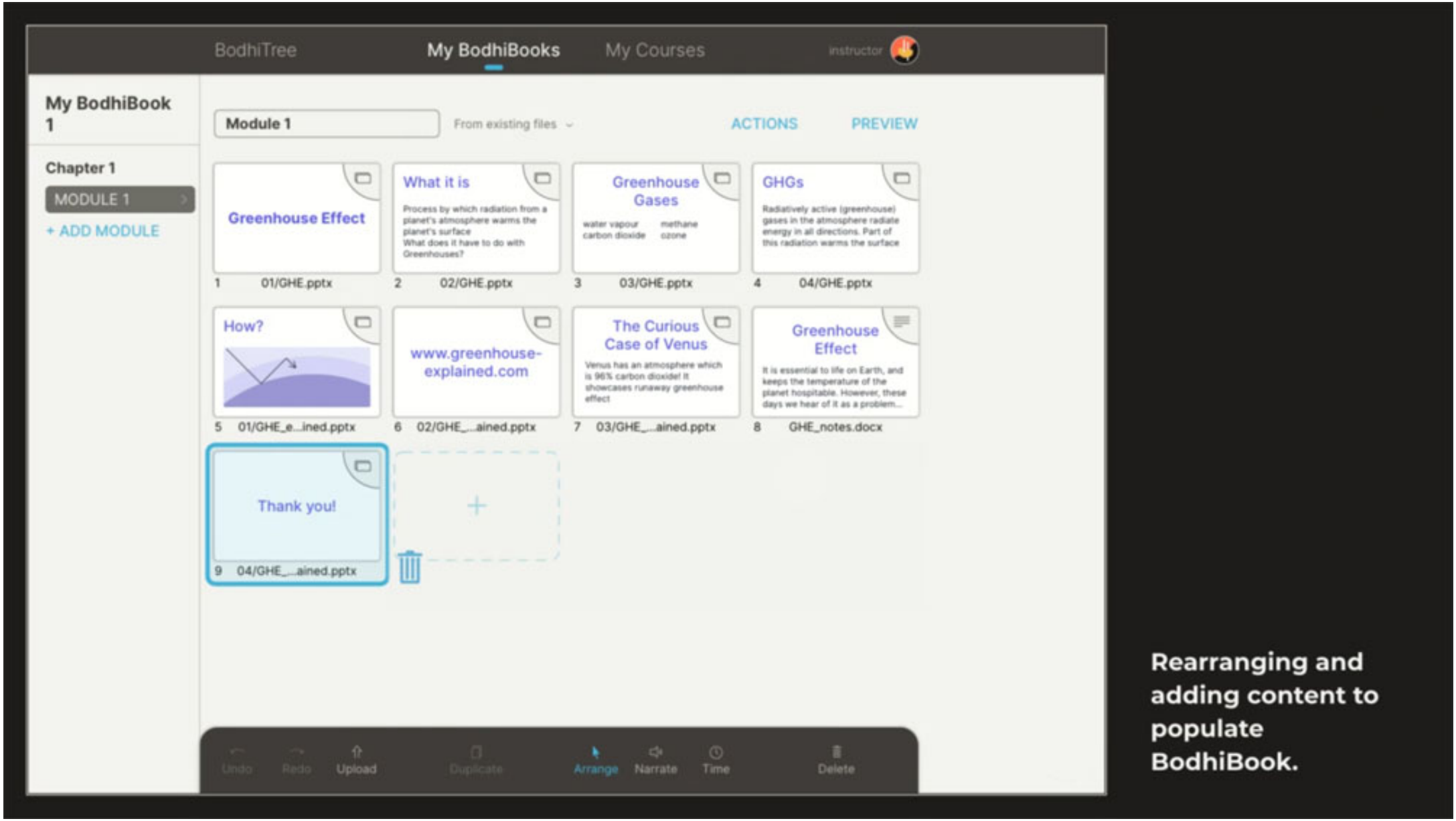
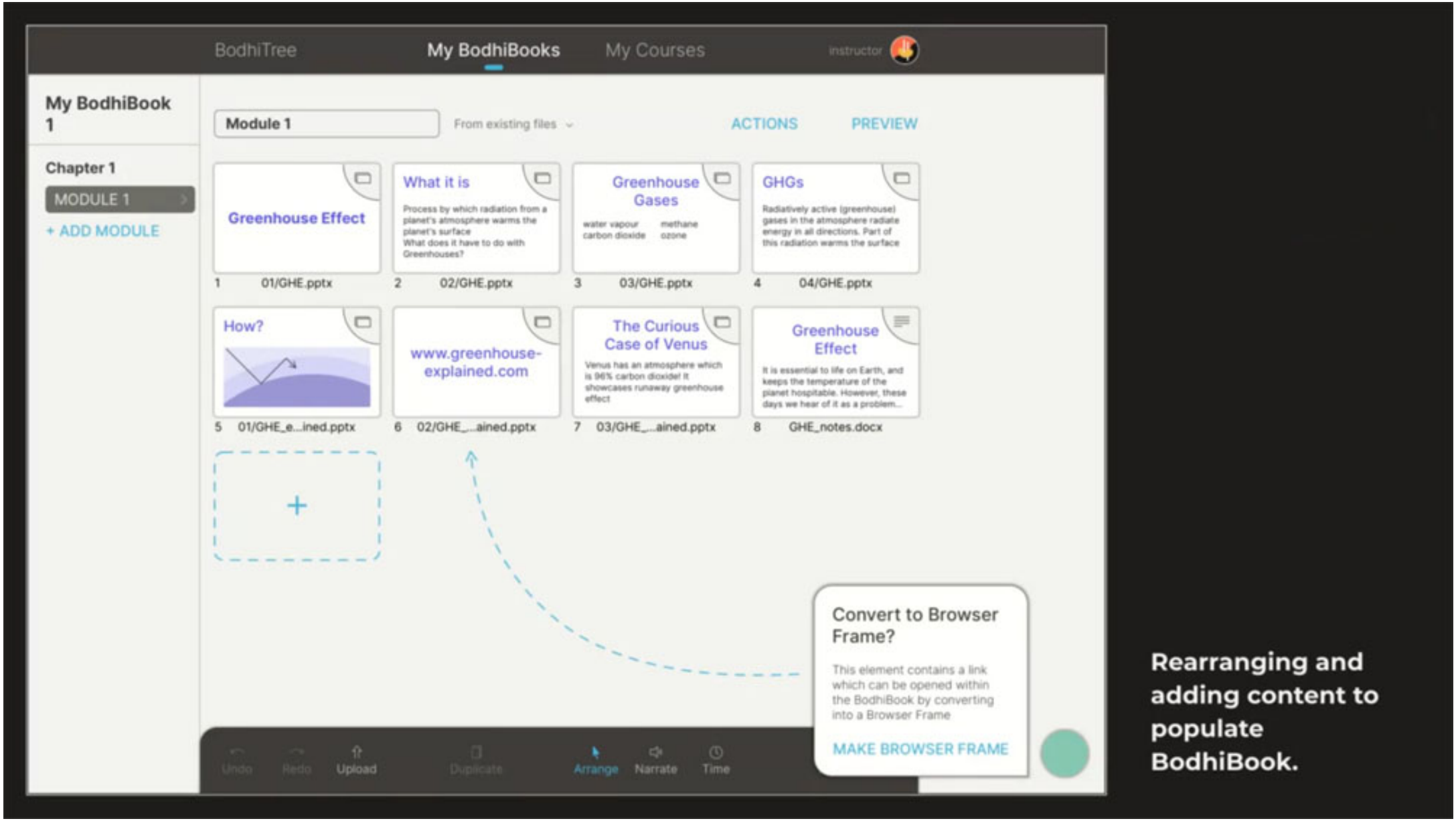
Skill Building
Revision
GHE.pptx
GHE_notes.docx
GHE_explained.pptx
3
Collecting content



It splits into sharable objects



Rearranging and adding content to populate BodhiBook.



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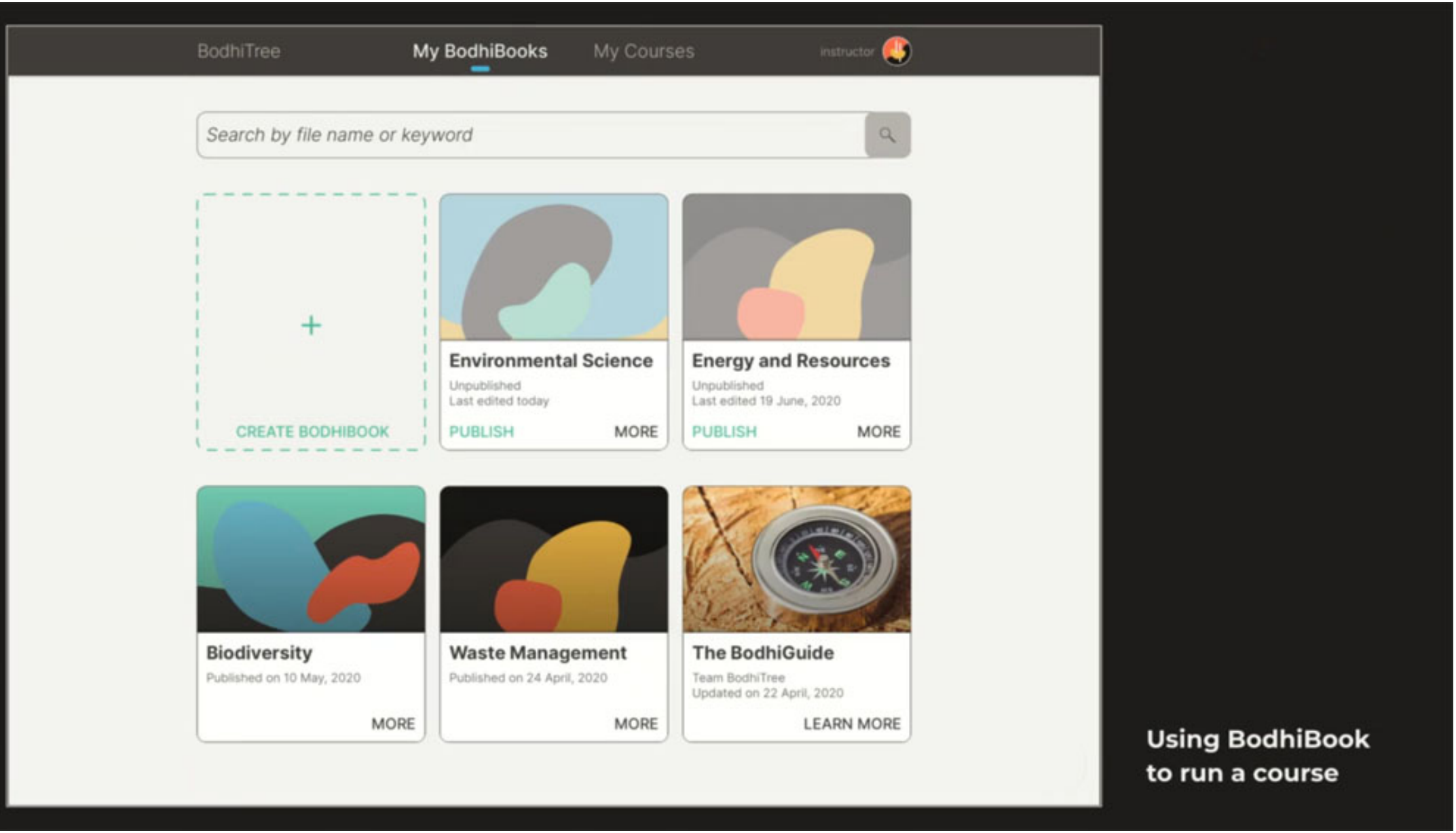
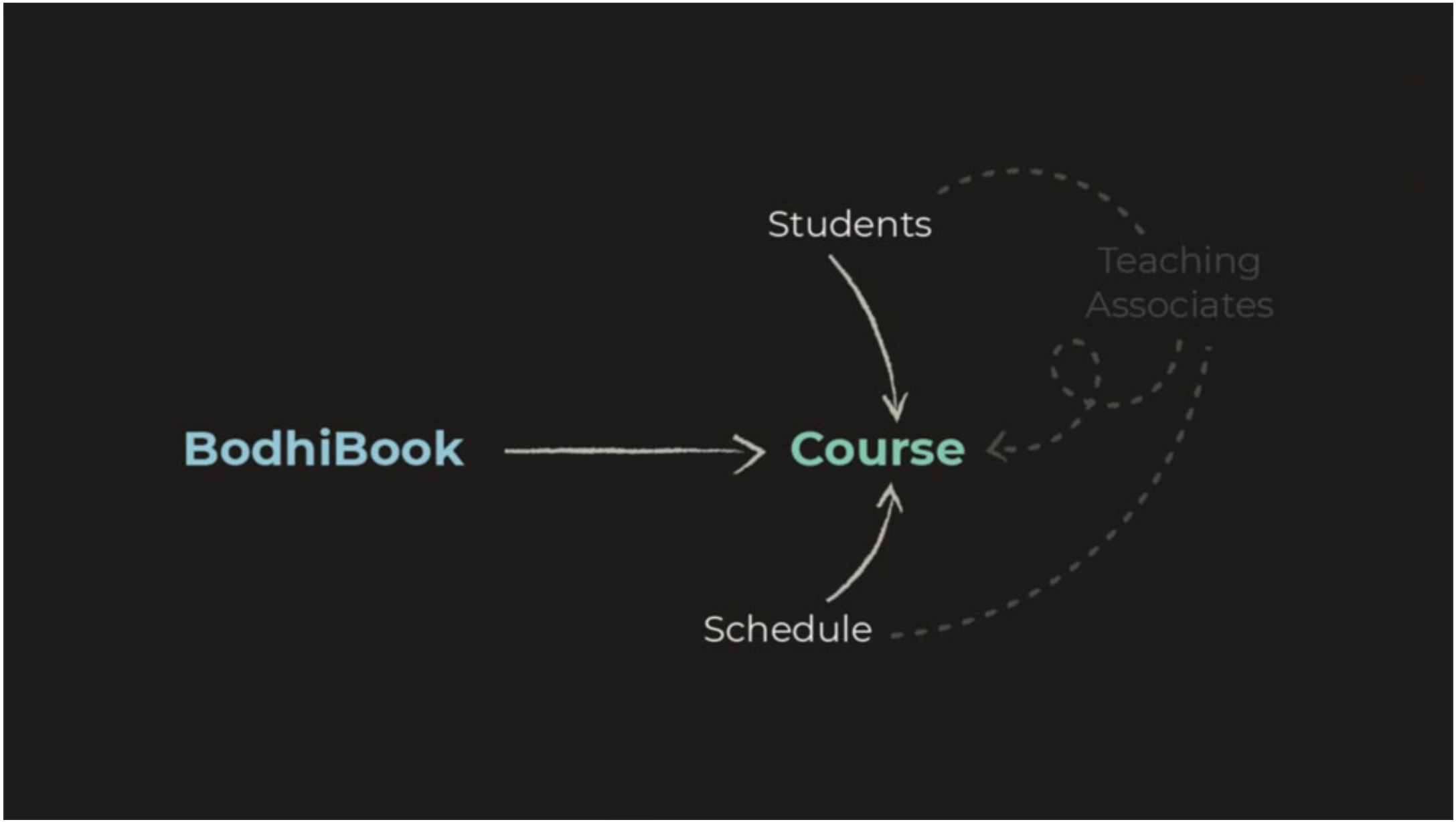
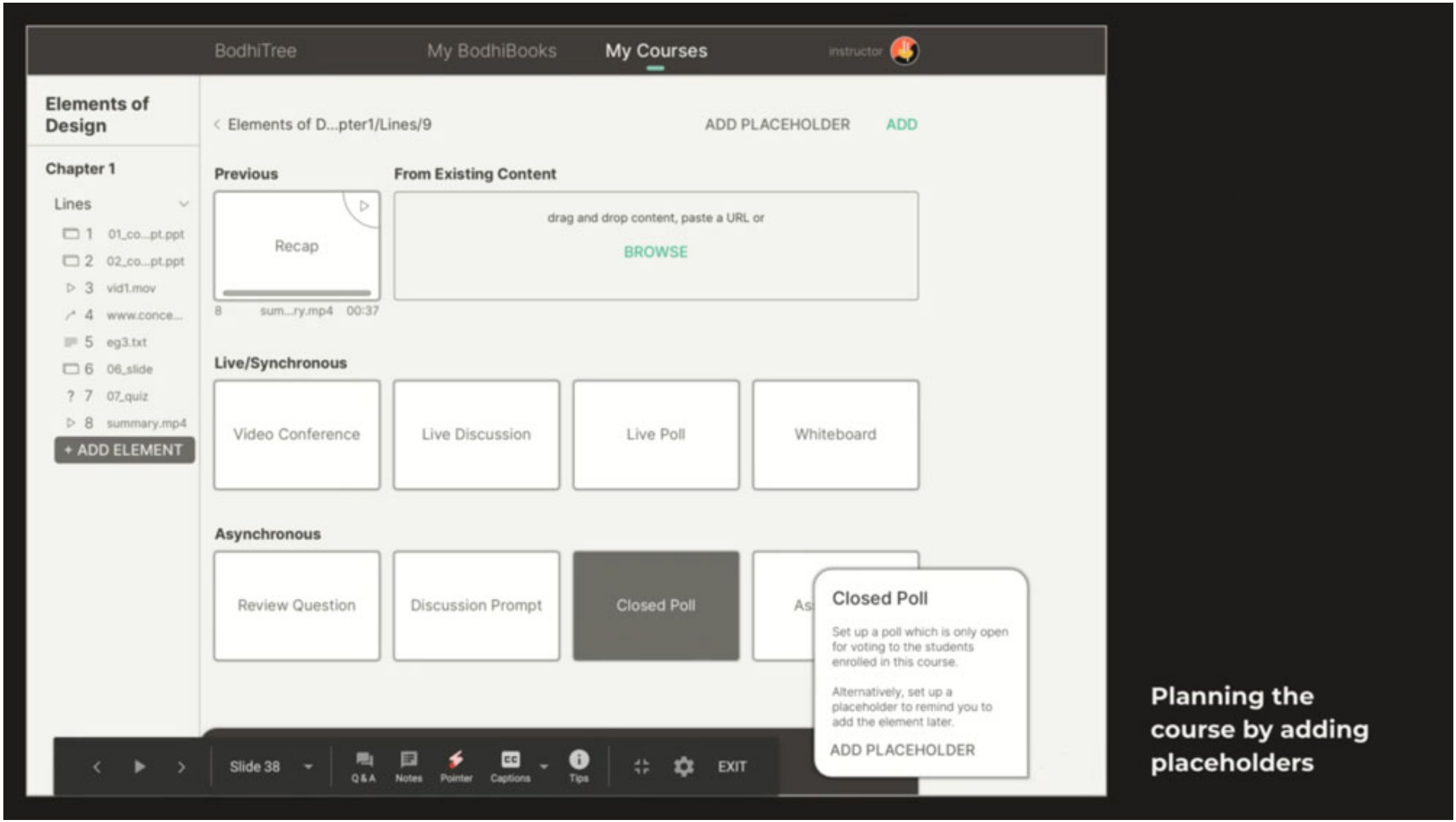


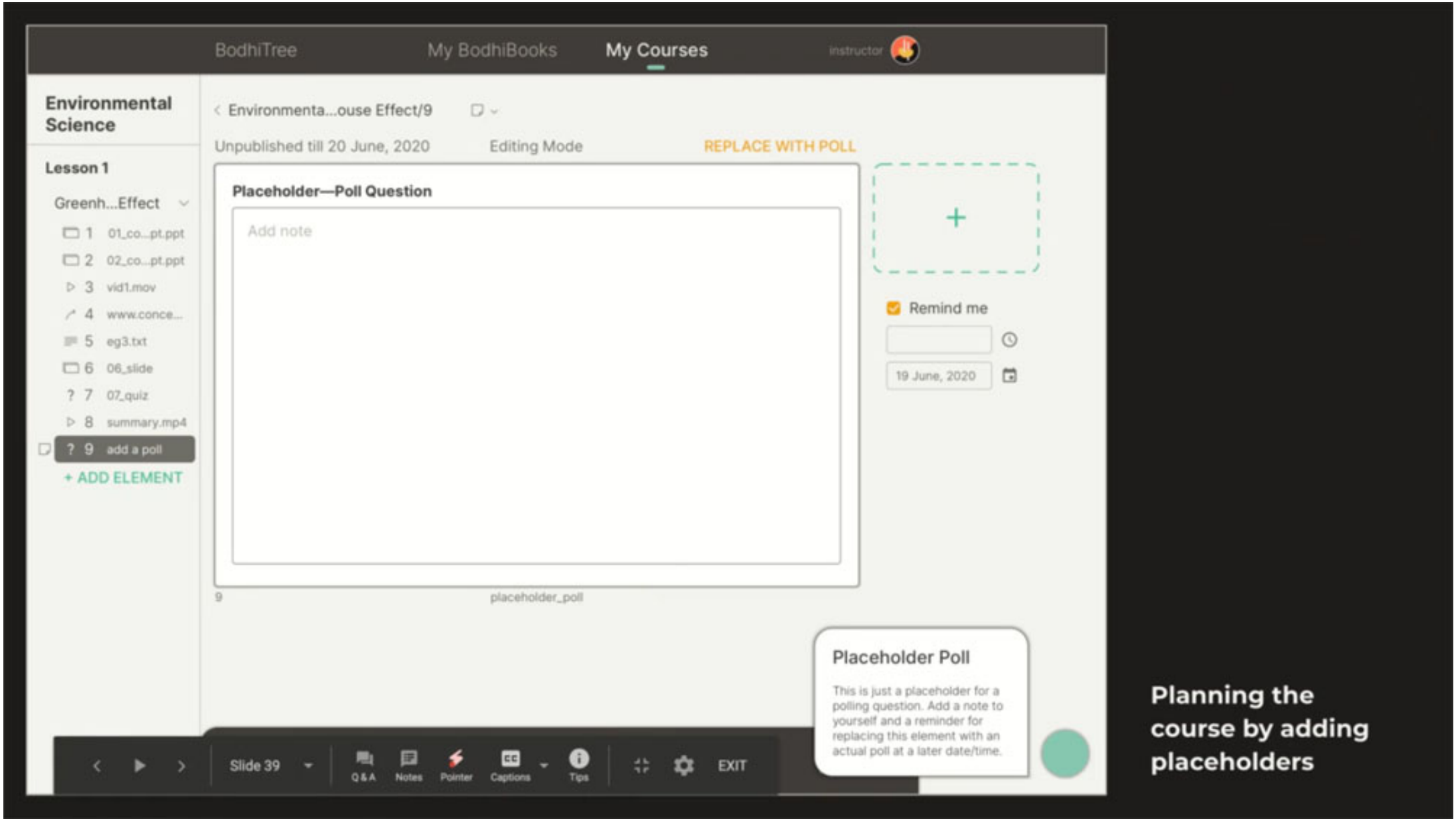
Using BodhiBook to run a course

Setting up a course with the content


Students
Teaching
Associates
BodhiBook
Course
Schedule



Planning the course by adding placeholders



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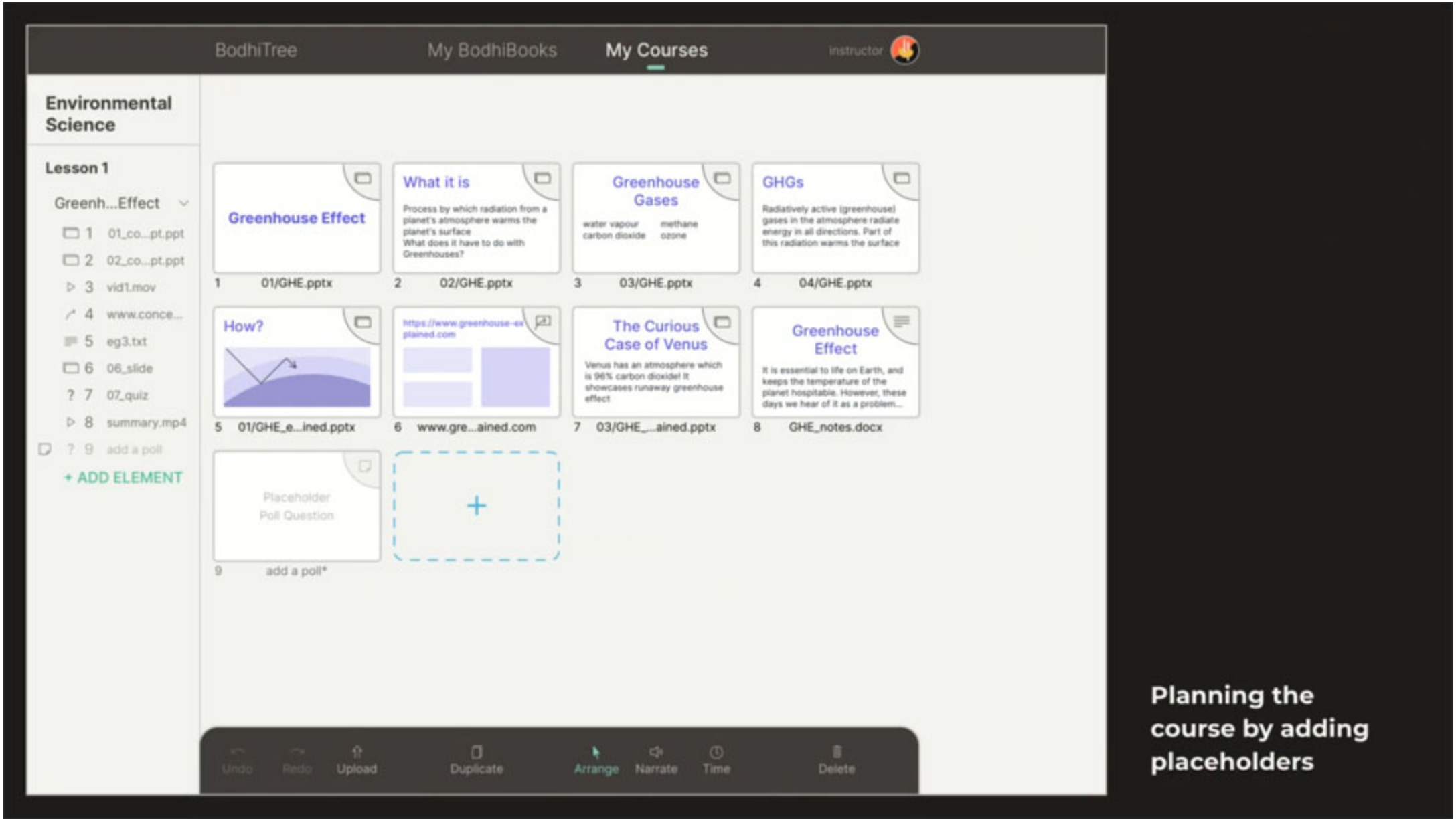

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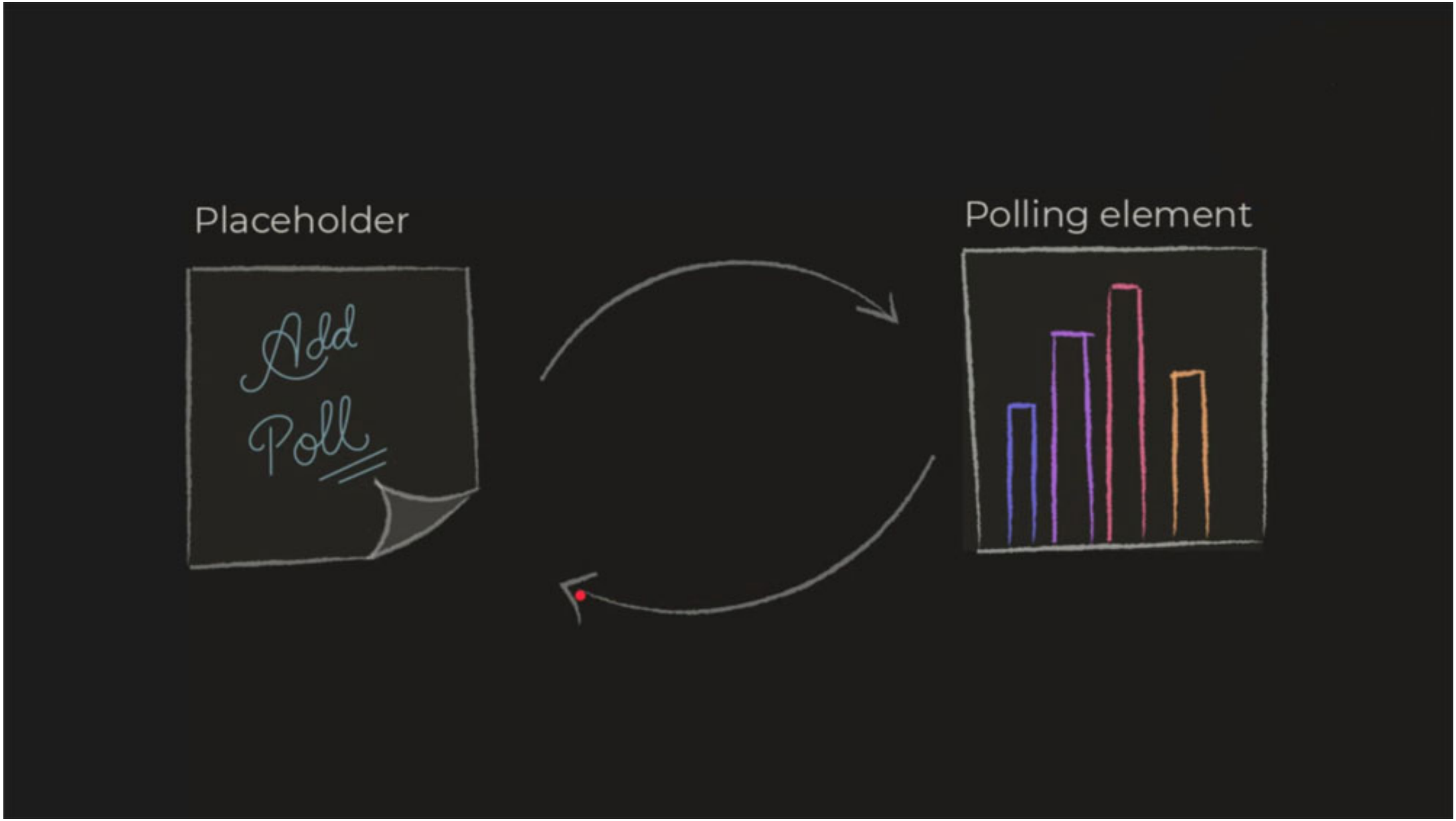
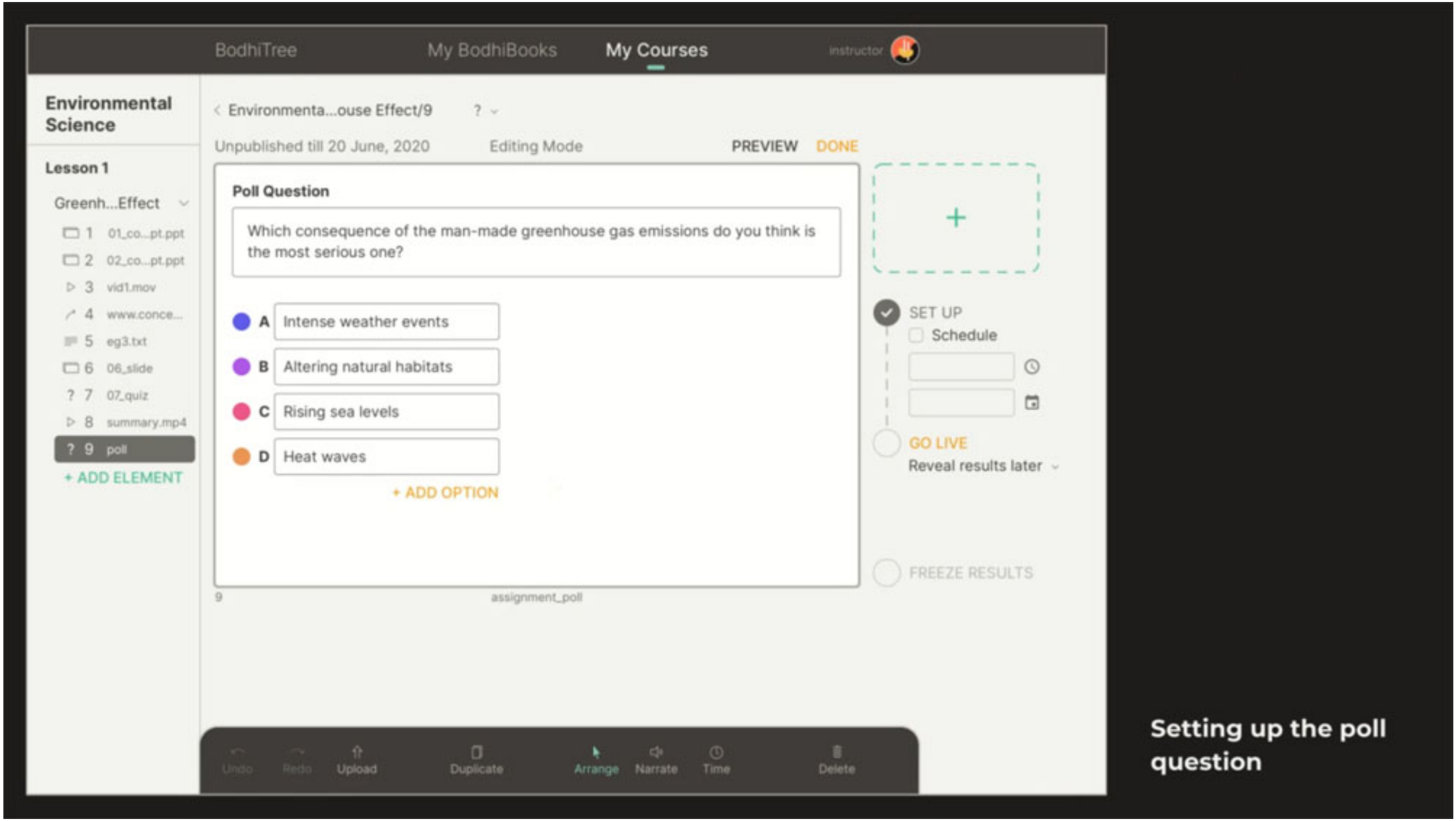
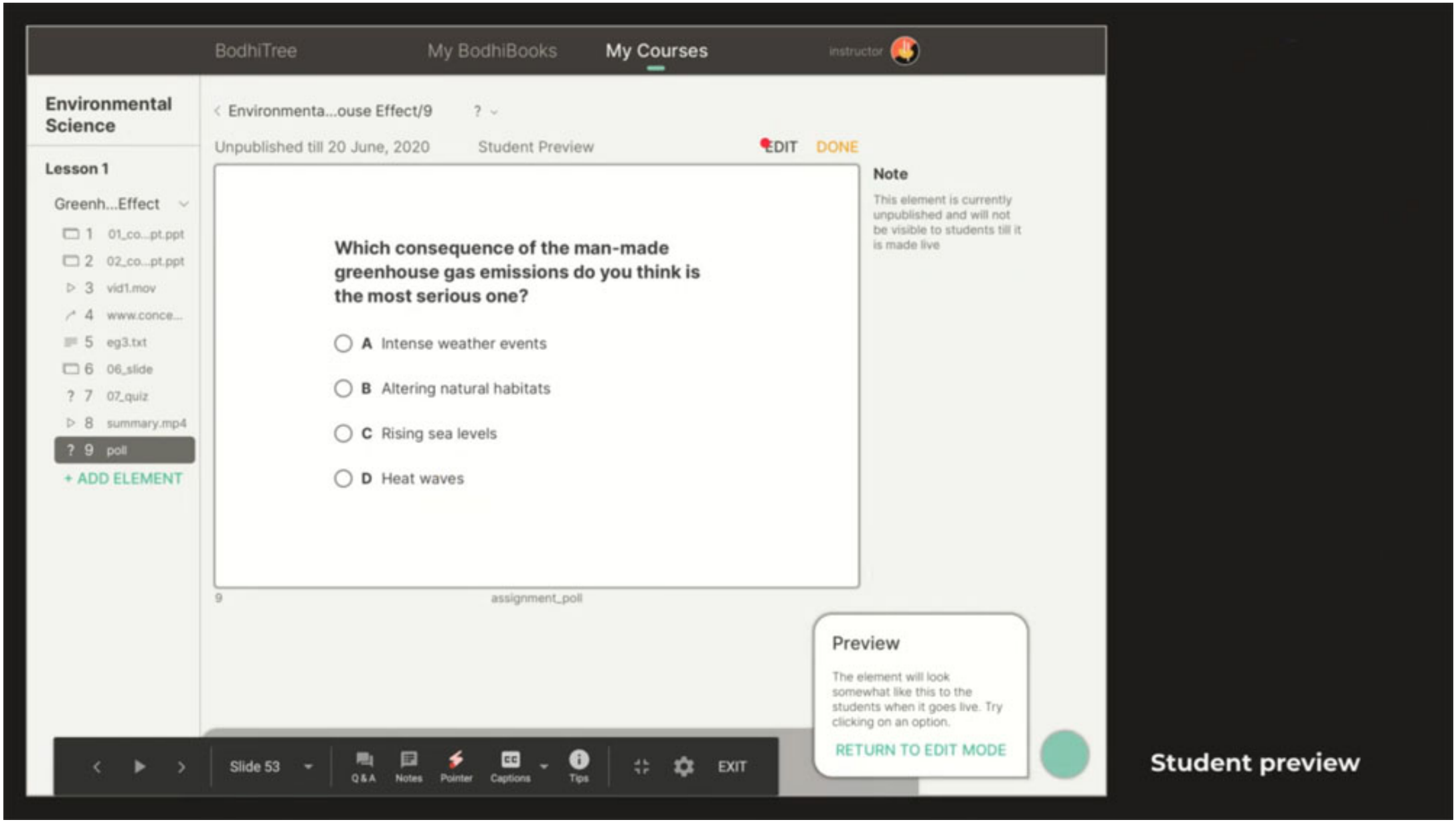
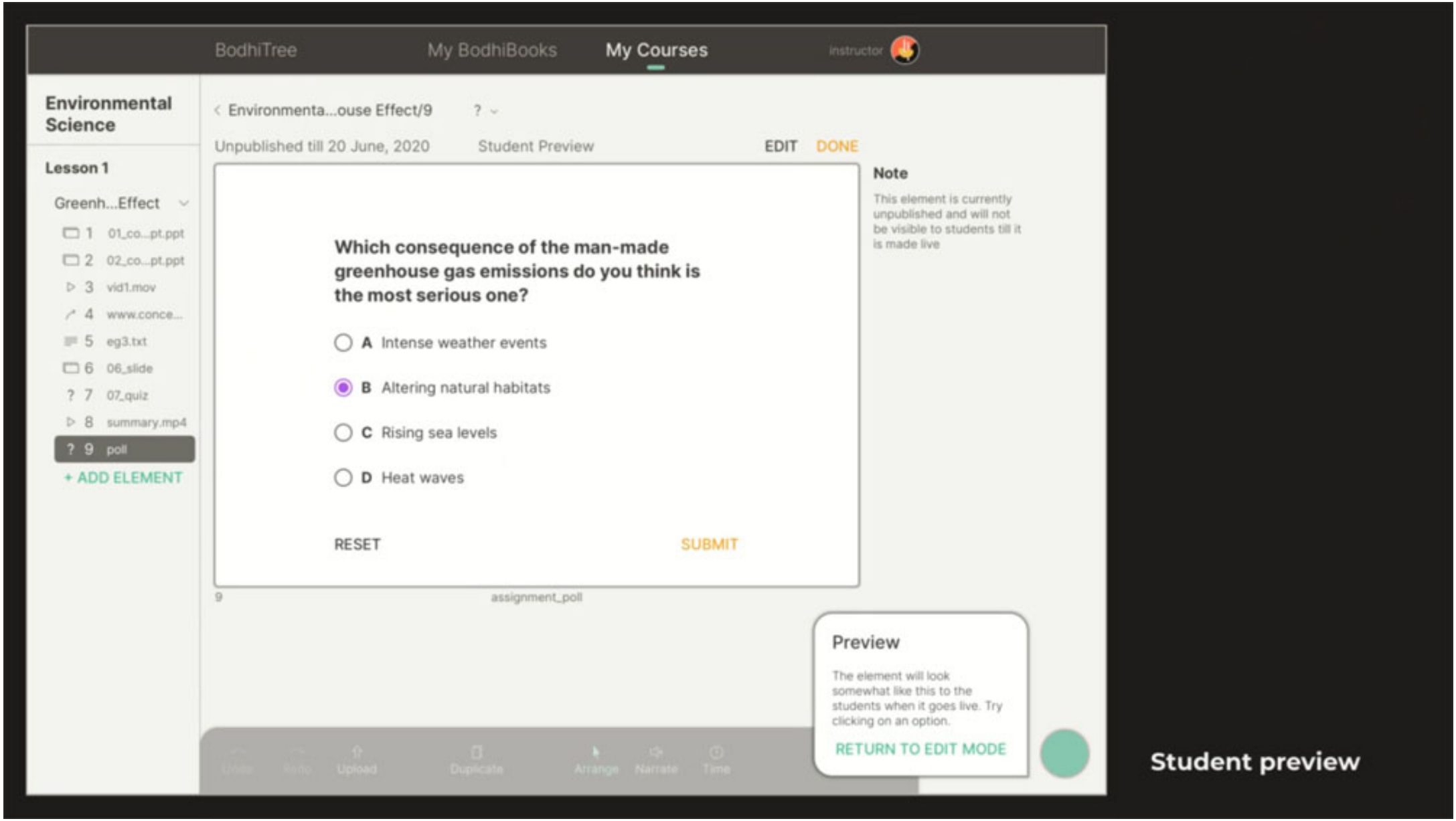

Placeholder
Add
Poll
Polling element



Setting up the poll question


BodhiTree
My BodhiBooks
My Courses
instructor
Environmental Science
Lesson 1
Greenh...Effect
1 01_co...pt.ppt
2 02_co...pt.ppt
3 vid1.mov
4 www.conce...
5 eg3.txt
6 06_slide
7 07_quiz
8 summary.mp4
9 poll
+ ADD ELEMENT
Environmenta...ouse Effect/9
Unpublished till 20 June, 2020
Student Preview
EDIT
DONE
Which consequence of the man-made greenhouse gas emissions do you think is the most serious one?
A Intense weather events
B Altering natural habitats
C Rising sea levels
D Heat waves
9
assignment_poll
Note
This element is currently unpublished and will not be visible to students till it is made live
Preview
The element will look somewhat like this to the students when it goes live. Try clicking on an option.
RETURN TO EDIT MODE
Slide 53
Q & A
Notes
Pointer
Captions
Tips
EXIT
Student preview


BodhiTree
My BodhiBooks
My Courses
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1 01_co...pt.ppt
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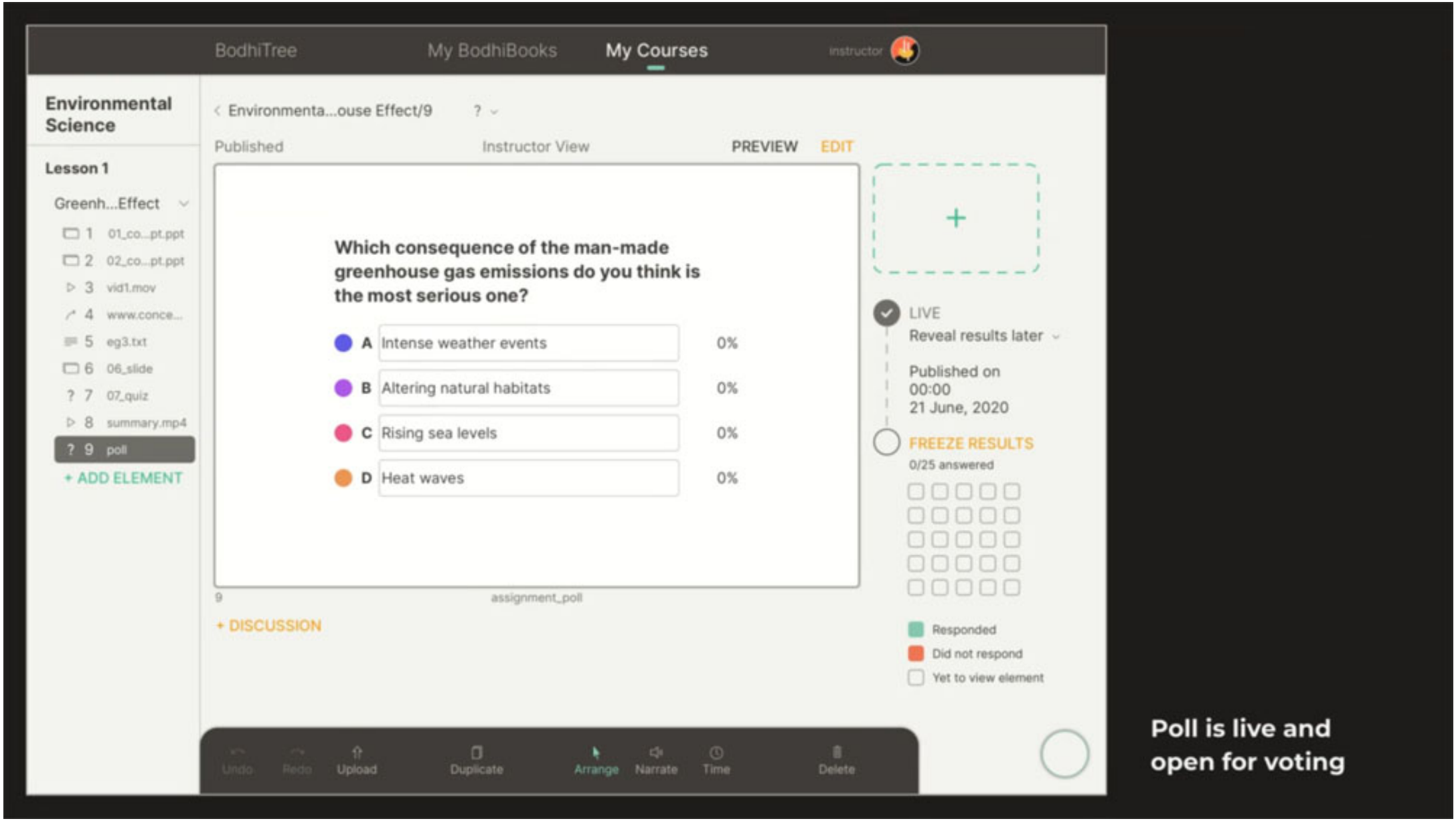
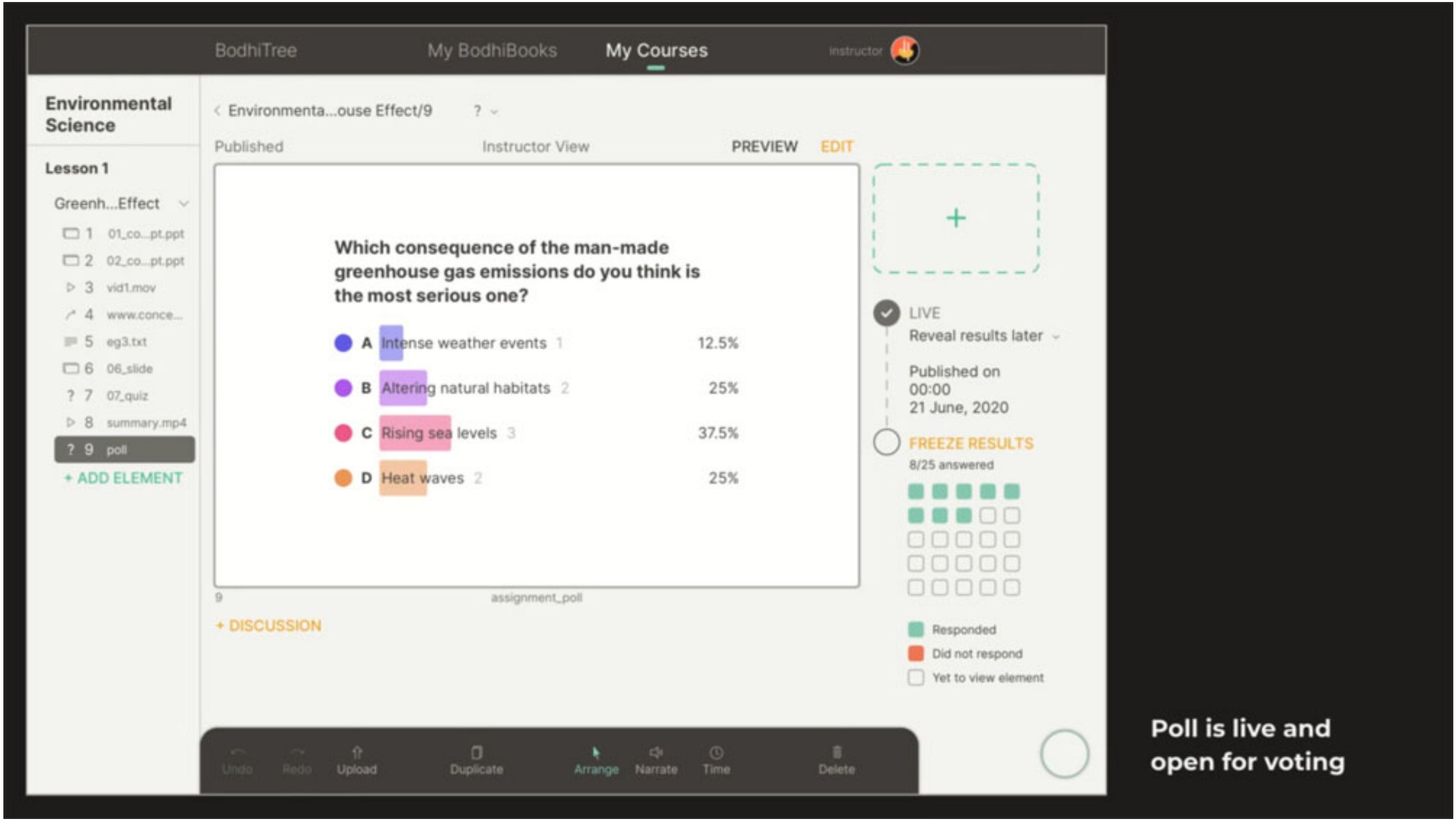
5 eg3.txt
6 06_slide
7 07_quiz
8 summary.mp4
9 poll
+ ADD ELEMENT
Environmenta...ouse Effect/9
Unpublished till 20 June, 2020
Student Preview
EDIT
DONE
Which consequence of the man-made greenhouse gas emissions do you think is the most serious one?
A Intense weather events
B Altering natural habitats
C Rising sea levels
D Heat waves
RESET
SUBMIT
9
assignment_poll
Note
This element is currently unpublished and will not be visible to students till it is made live
Preview
The element will look somewhat like this to the students when it goes live. Try clicking on an option.
RETURN TO EDIT MODE
Undo
Redo
Upload
Duplicate
Arrange
Narrate
Time
Student preview

Asynchronous Interaction



Poll is live and open for voting



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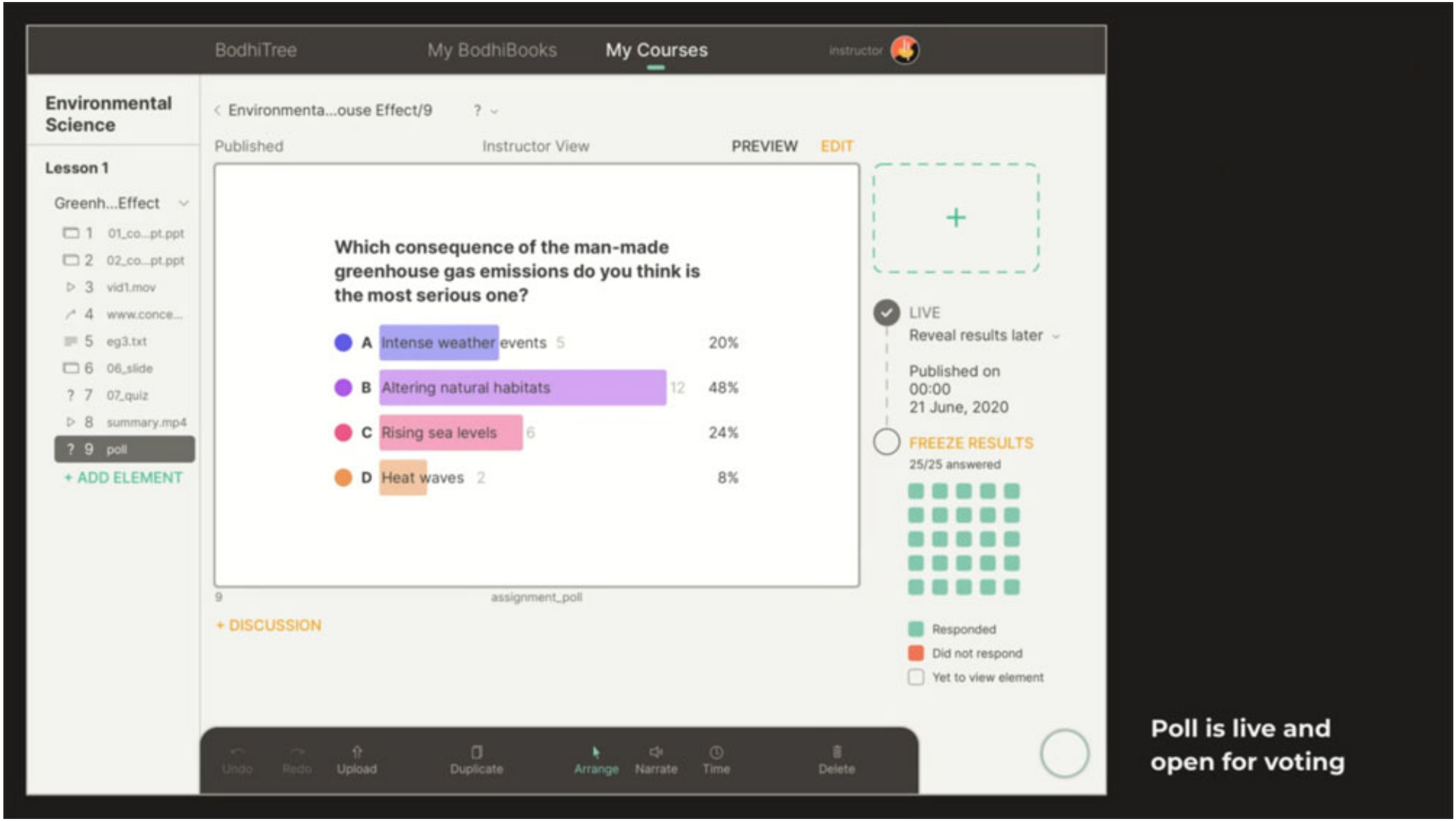

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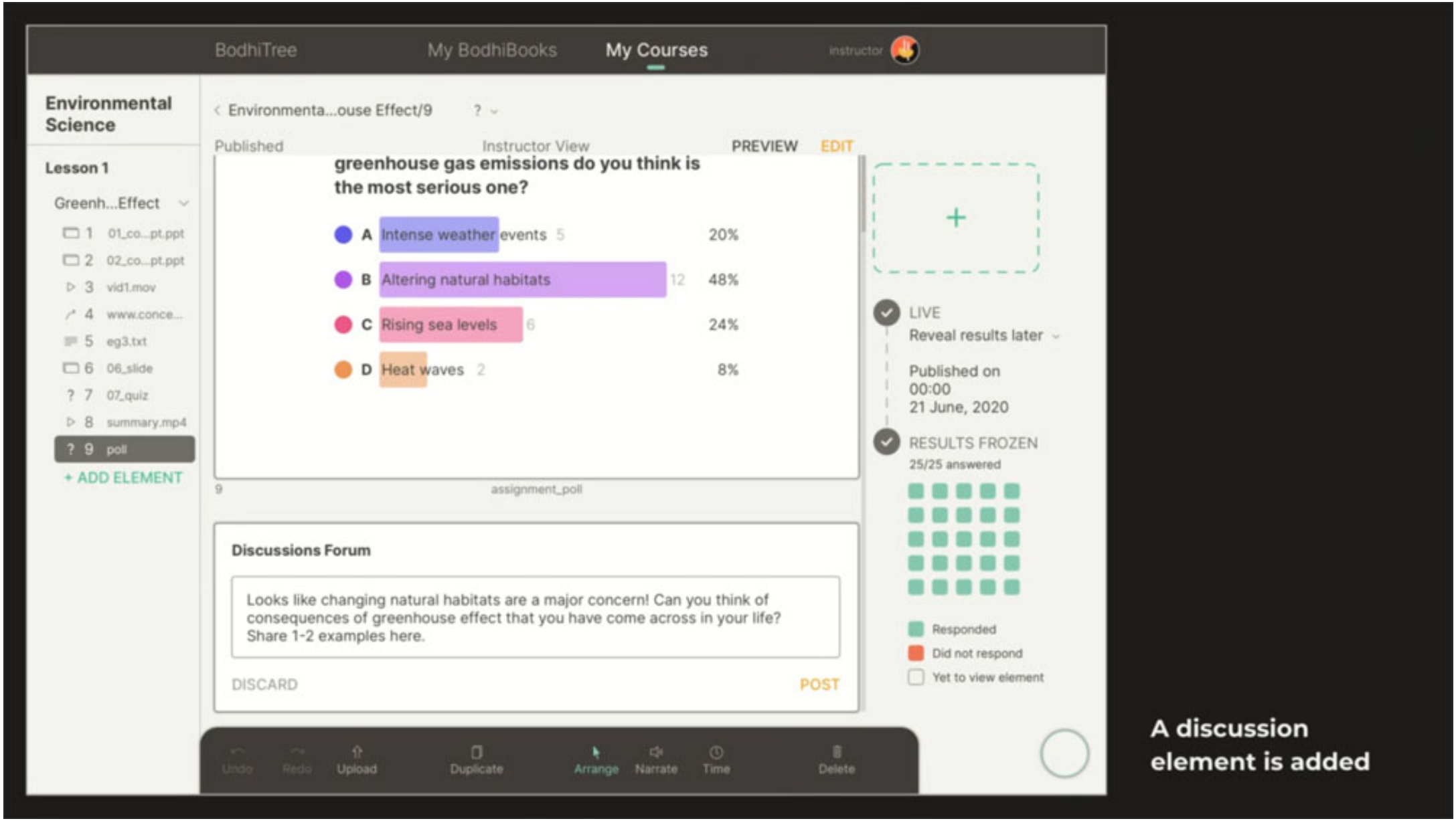
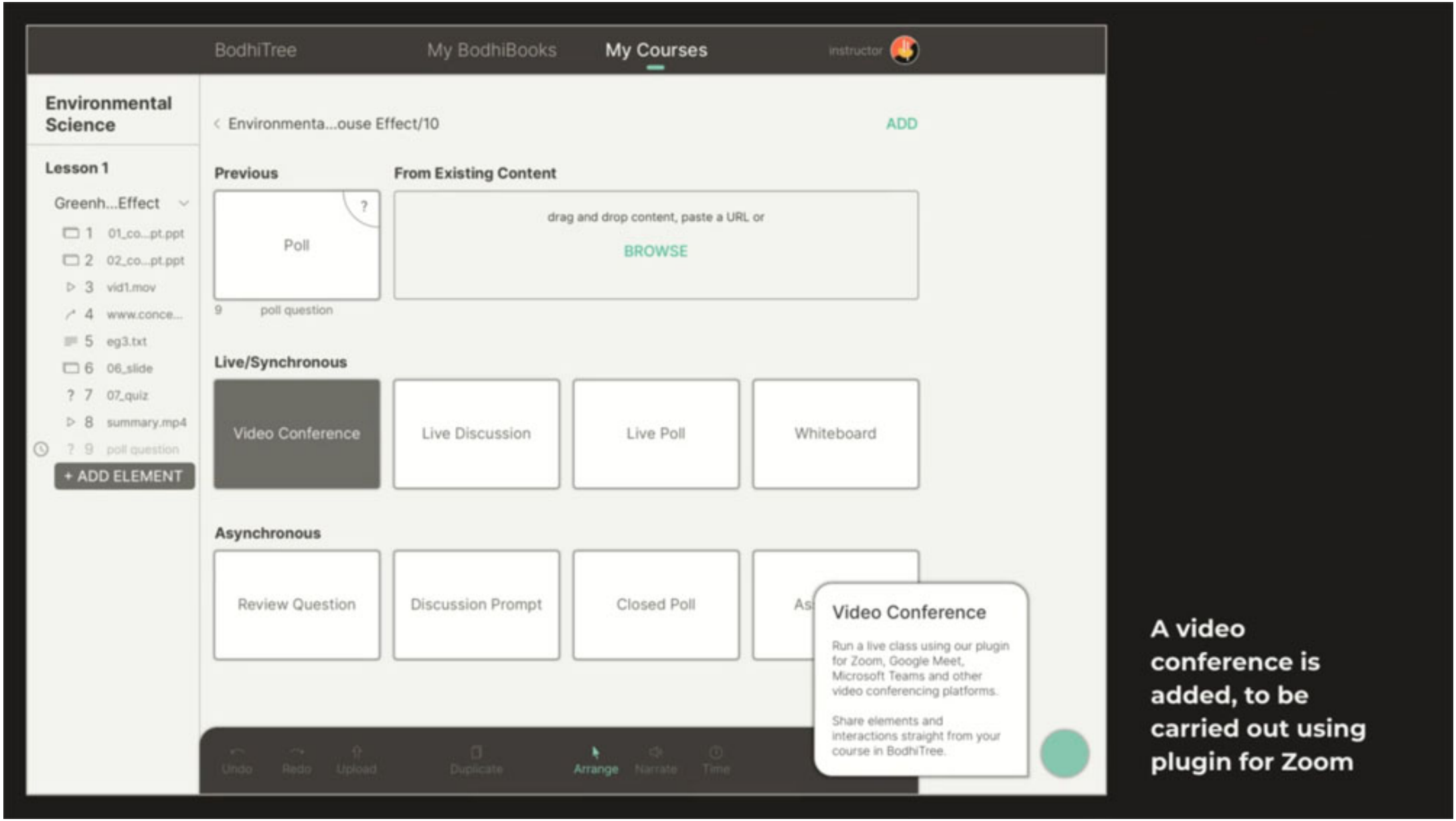


A discussion element is added

Synchronous Interaction



A video conference is added, to be carried out using plugin for Zoom

Teacher's interface

UN SDGs - 17 goals - 2030 Agenda for Sustainable Development - combatting poverty, hunger... economic, environmental, social growth
new whiteboard
Me
This brings us to the next topic. Before starting let's run a quick check... any doubts?
rosie_paul
harshvardhan
Shreya Iyer
Imad shaikh
kevin
a dutta
Revathi
asees
jignesh.p
Priya
kiran ravi
tejasvini
Introduction to
Sustainable Development
Any
RESET
Any doubts?
Any questions?
Yes
No
Yet to reply
YES/NO
POLL
END CLASS
Quick acknowledgement

UN SDGs - 17 goals - 2030 Agenda for Sustainable Development - combatting poverty, hunger... economic, environmental, social growth
new whiteboard
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kiran ravi
tejasvini
Introduction to
Sustainable Development
Any doubts?
RESET
20/25 answered
Yes
No
Yet to reply
YES/NO
POLL
END CLASS
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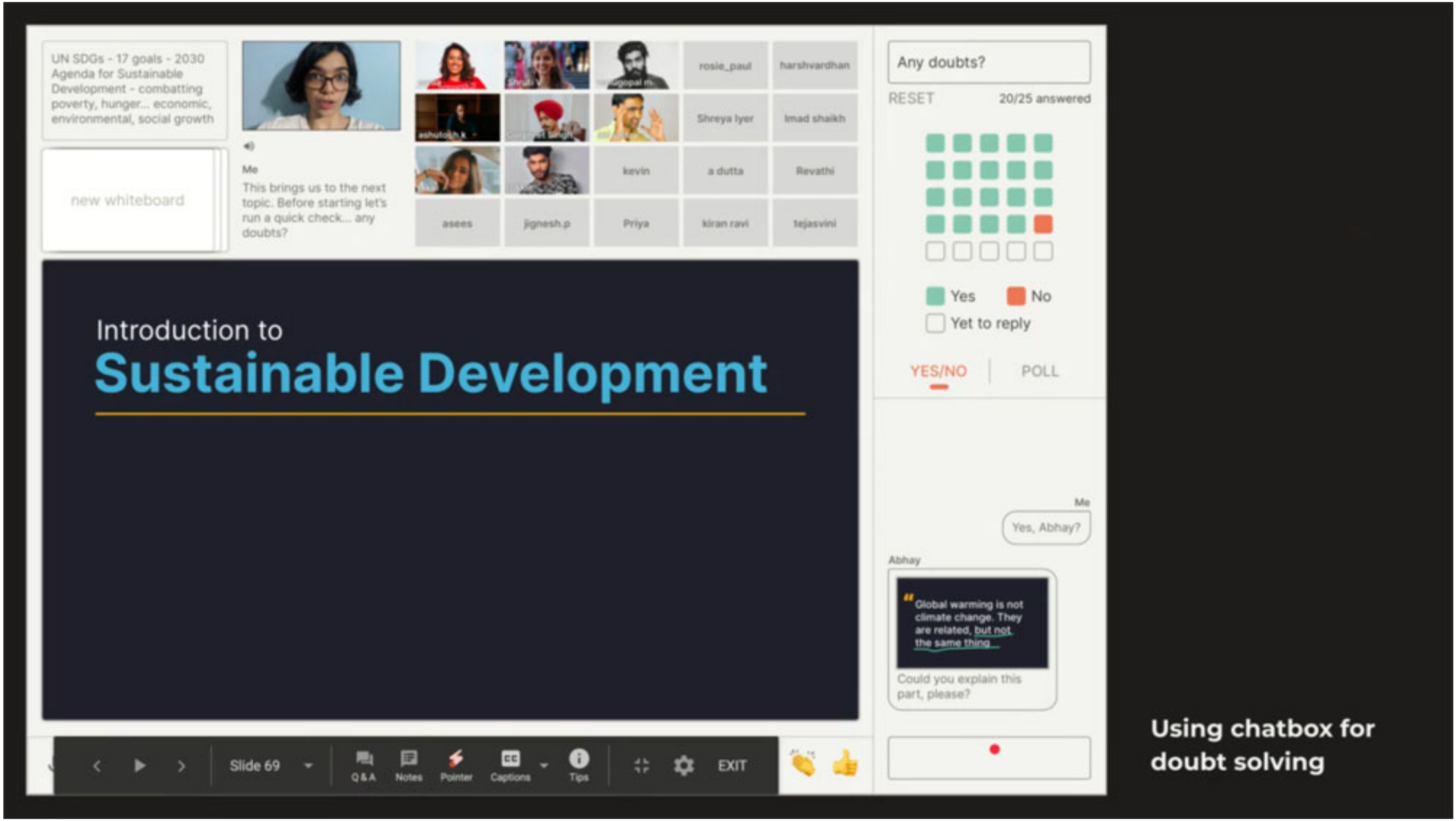
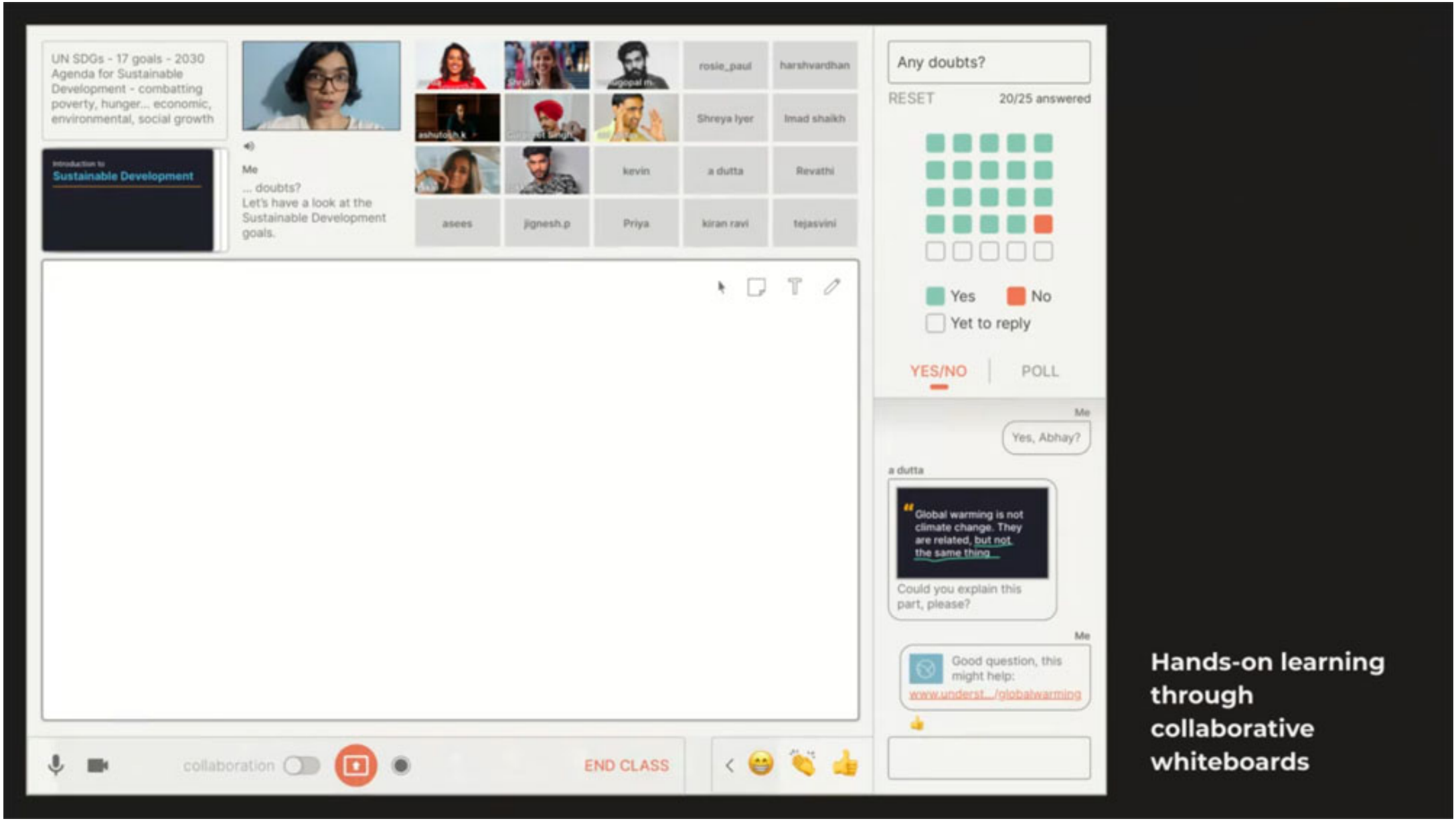
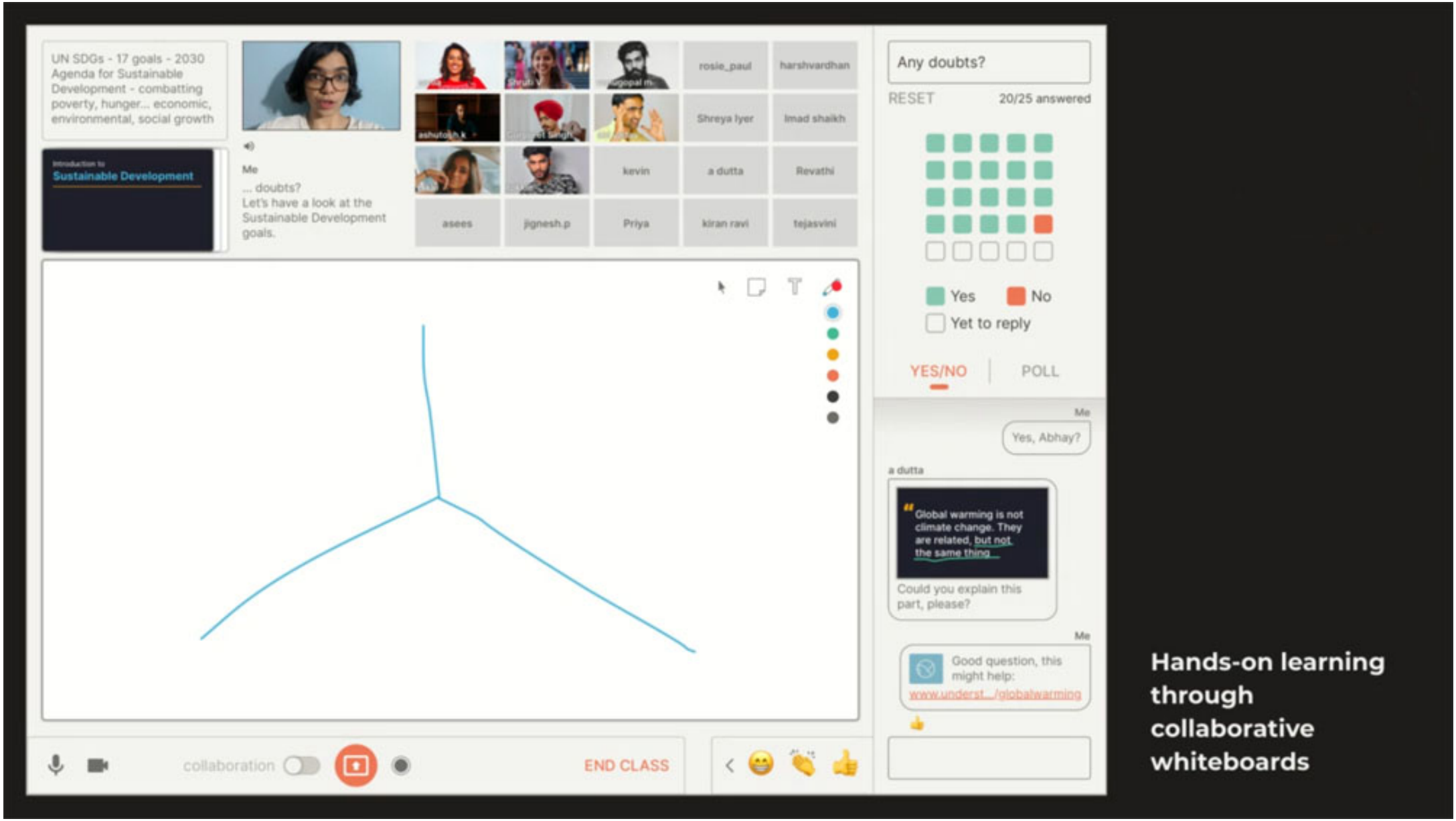
Imad shaikh
kevin
a dutta
Revathi
asees
jignesh.p
Priya
kiran ravi
tejasvini
Introduction to
Sustainable Development
Any doubts?
RESET
20/25 answered
a dutta
CHAT
Yes
No
Yet to reply
YES/NO
POLL
END CLASS
Quick acknowledgement



Using chatbox for doubt solving

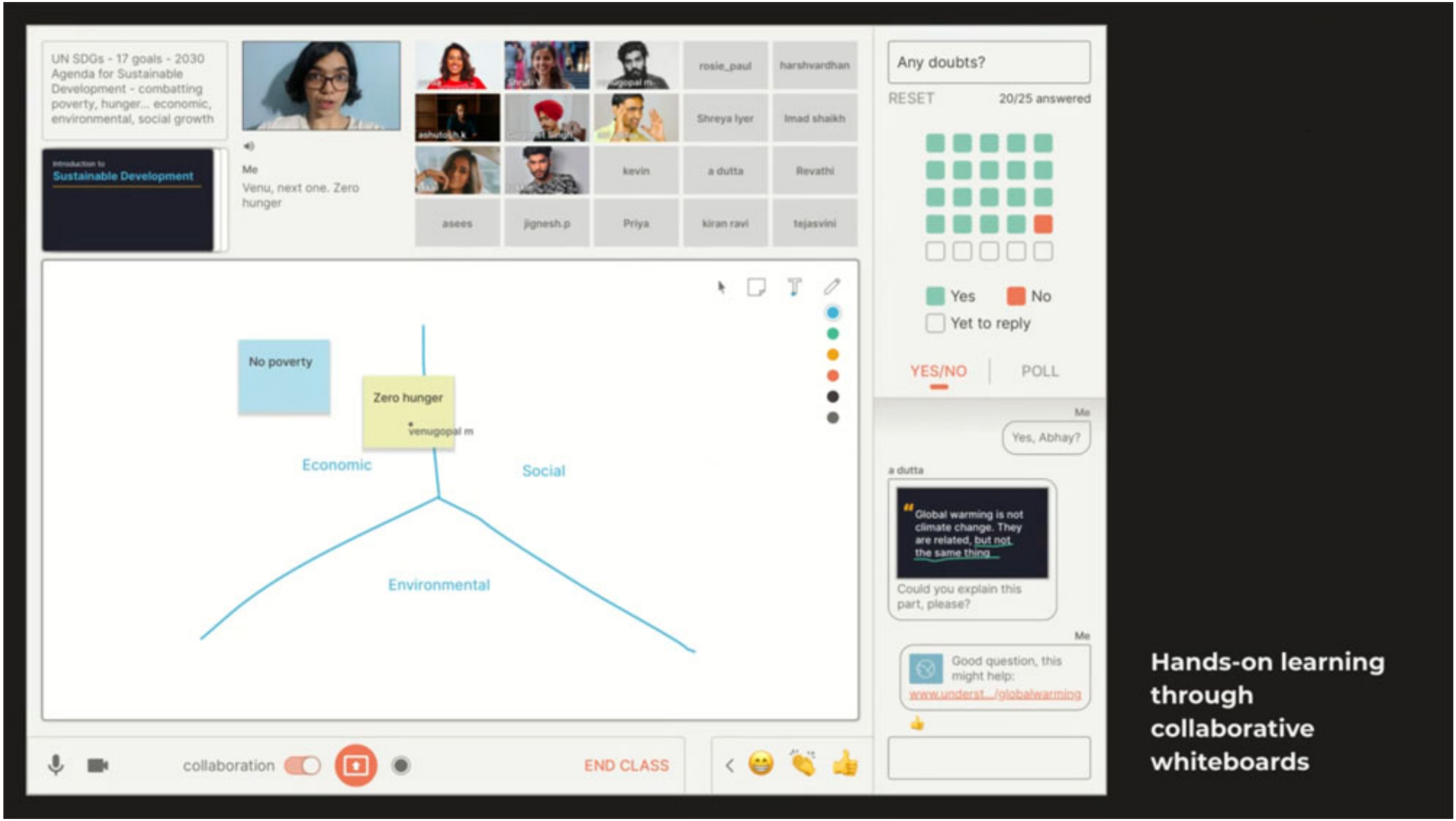


Hands-on learning through collaborative whiteboards

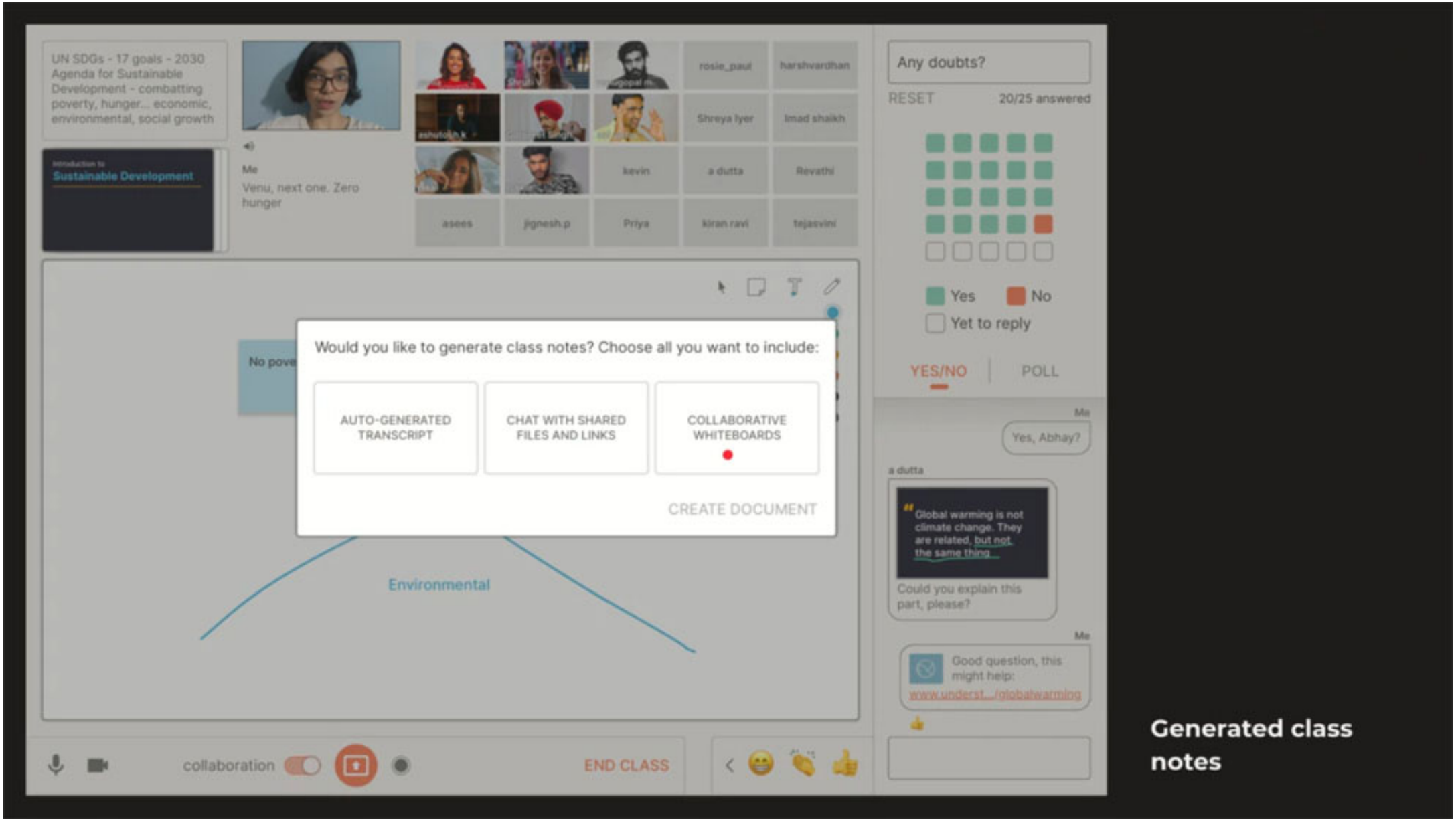


Hands-on learning through collaborative whiteboards

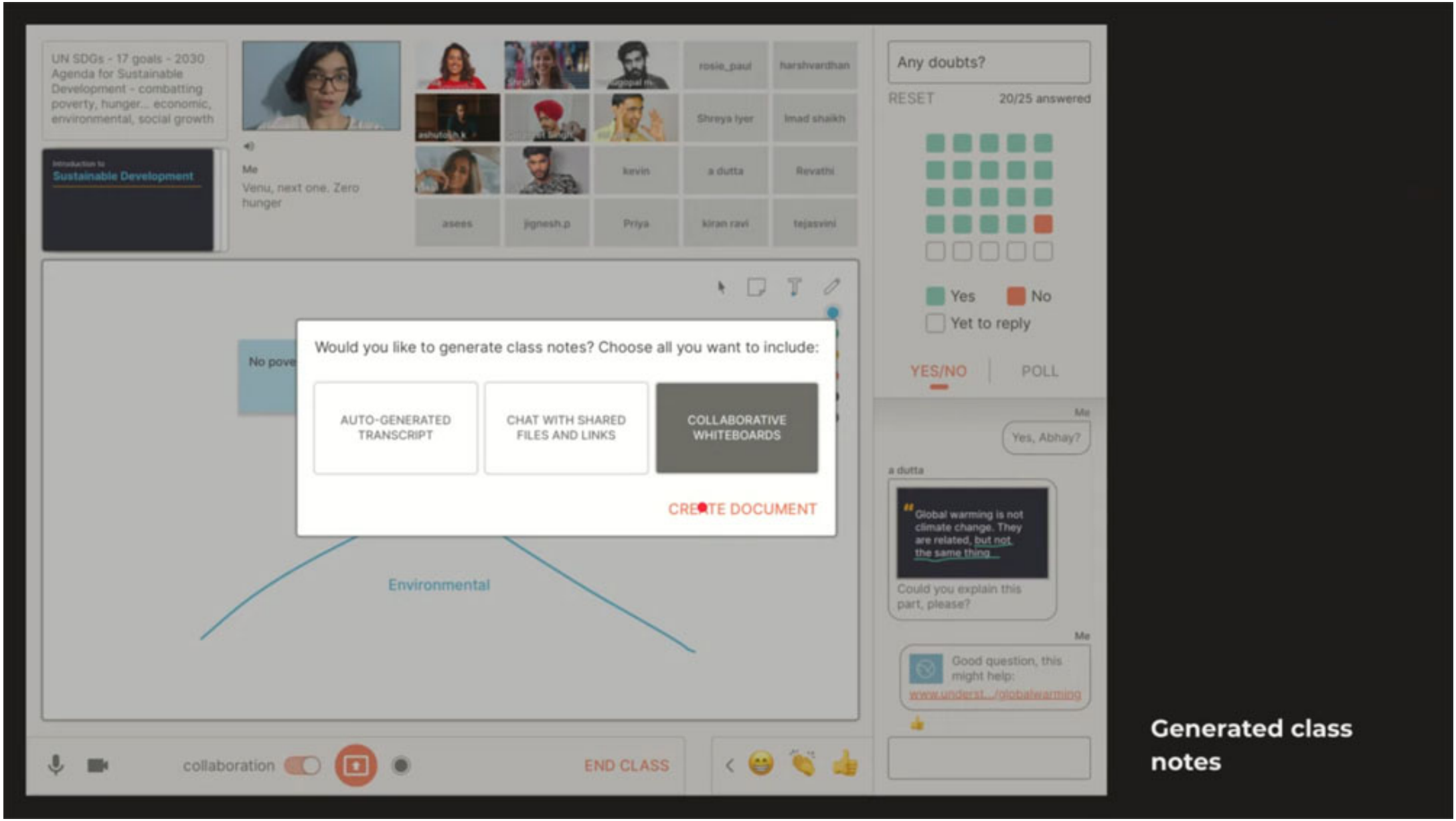
Hands-on learning through collaborative whiteboards



Hands-on learning through collaborative whiteboards



Generated class notes



Generated class notes

What are the different design ideas involved?

Featured, Unfeatured, Discarded
Useful + User-Friendly
Usage in pedagogy

SOME IDEAS WHICH FEATURED IN THE EXAMPLE...

PLACEHOLDER Elements

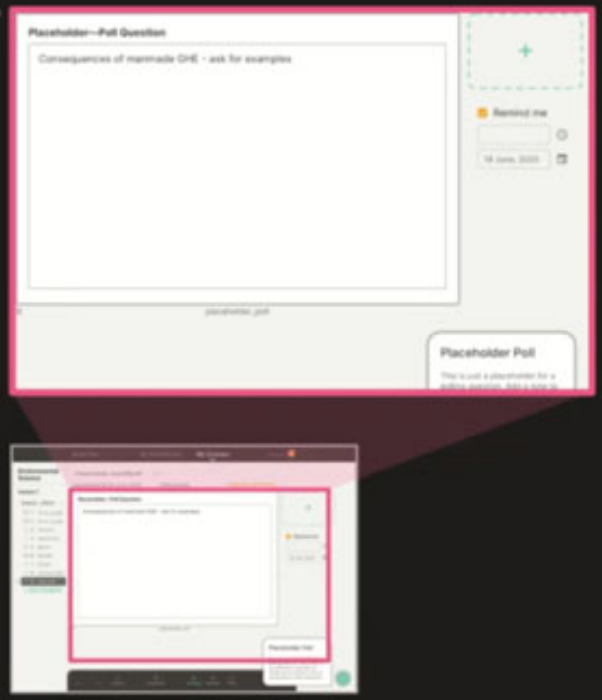
Planning lessons within BodhiTree by creating the basic structure using Placeholder elements

They are only visible to the teacher

These can subsequently be replaced by the actual content

And might be used for:

- Creating lesson plans
- Structuring a book/course
- Setting reminders



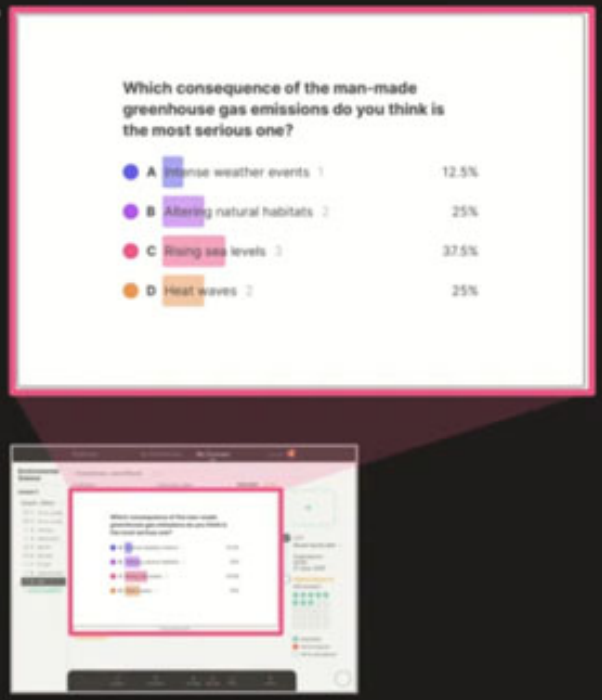
POLLING Question

Multiple choice questions

Interspersed between informational elements or placed towards the end of a module

These might be used to:

- directly gauge understanding/recall
- ask student to self-report if she/he has understood
- collect feedback



VIEWERSHIP Dashboard

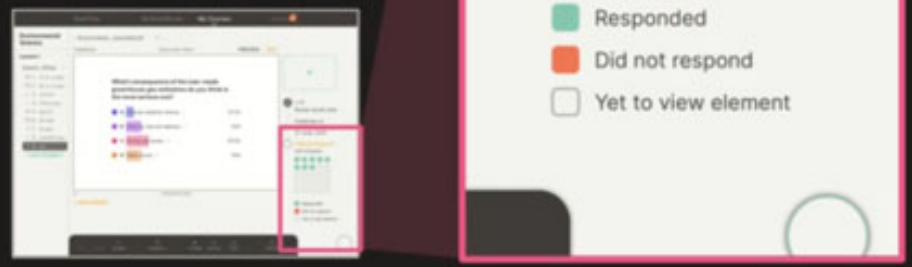
Linked to an element

Indicates if students have gone through a particular element yet

Hovering over each square reveals the name of the corresponding individual

Useful to gauge if some element is being missed

Following up with students who have not viewed/ engaged with an element



Live Dashboard
YAY/NAY

Raising hands, giving acknowledgements, for instant feedback

These might be used for:

- Quick yes/no questions
- Acknowledgements etc.

Powerpacked CHAT

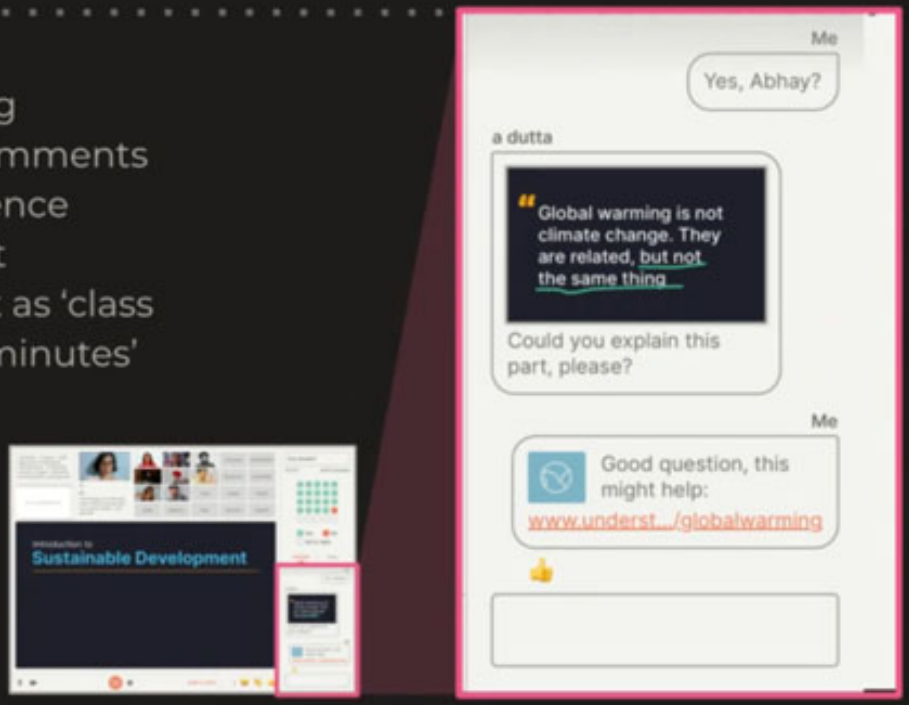
Using the chat pane for different engagement-based actions.

Existing:

- Comments
- Questions
- Link sharing
- Emoji reactions

Additionally:

- File sharing
- Doubts/comments with reference screenshot
- Using chat as 'class notes' or 'minutes'



SOME OTHER IDEAS WHICH ARE PART OF THE SOLUTION...

DISCUSSION
Threads

Anchored to an element instead of being separate

Could be initiated by student/teacher

Could be used for:

- Doubts
- Comments
- Indicating key points
- Flagging errors

For timed elements, could include a reference timestamp

Content LIFESPAN

Scheduling particular content to go live and/or to 'expire' at predefined points of time

The element is not accessible to students outside of the specified timeframe

These might be used for:

- Flipped classroom
- Submission links with deadlines
- Giving contemporary examples
- Announcements
- Sharing summary/revision notes a few days before exam, etc.

Live Dashboard
POLLS

1. Set up poll
2. Control visibility and time constraints
3. Decide what happens to the results

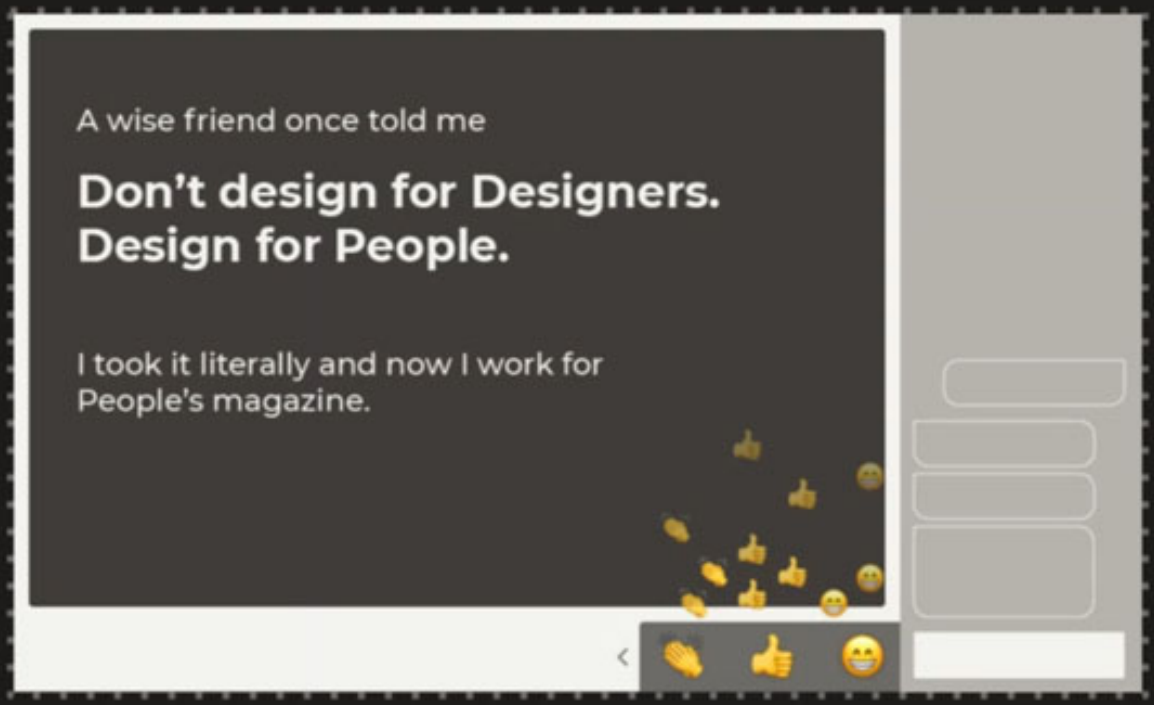
Polls might be used for:

- Demonstrating a point
- Gathering data/ common opinion for further examples
- To gather feedback

±IDEAS AFTER EVALUATION...

Live Reactions
EMOJI

Spontaneous non-verbal feedback



DISCUSSION Element

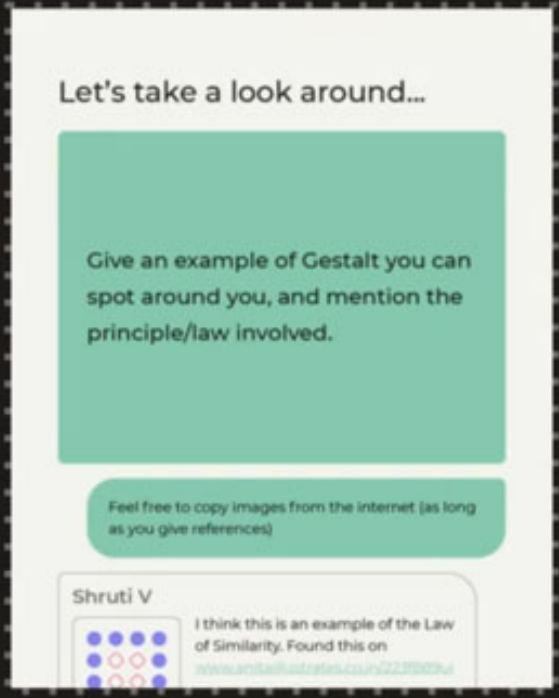
A separate element with a discussion prompt, with three main states:

- Setup
- Open for comments
- Closed/Frozen

Also allows sharing of links, images, files etc.

Could be used for:

- Cultivating different perspectives
- Provoking reflection
- Peer learning
- Collecting examples relevant to the batch



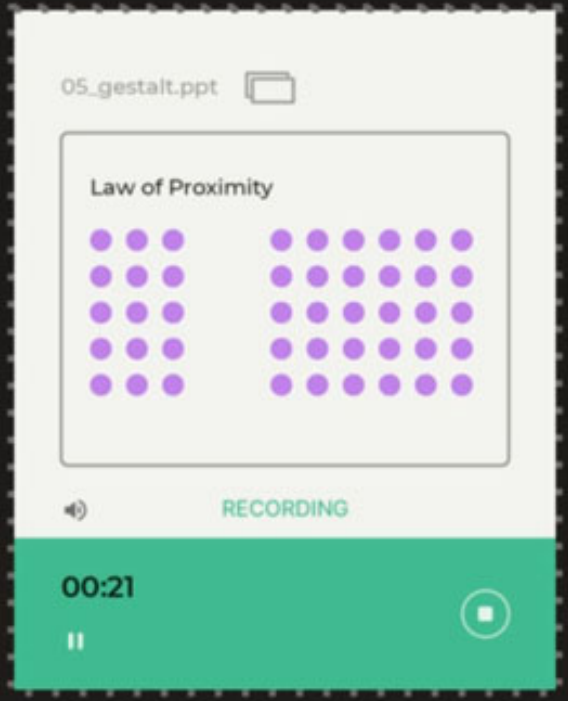
Audio & Video NARRATION

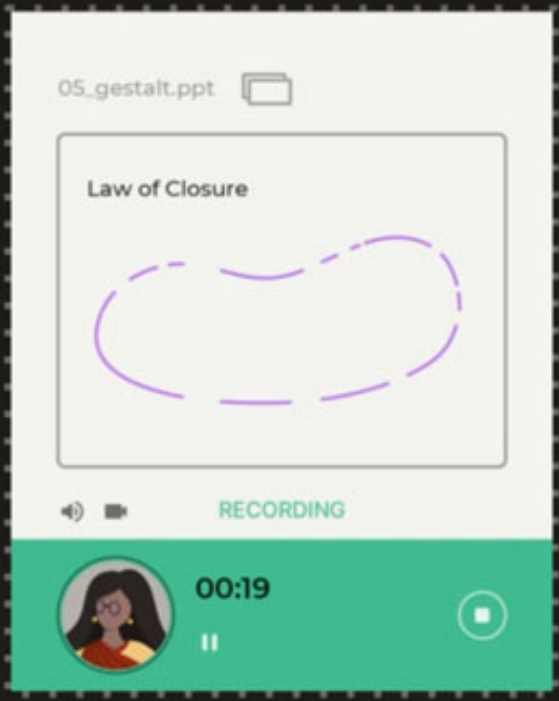
Narration tool allows:

- Recording audio voiceover file anchored to an element
- Grouping elements for continuous voice over

Helps estimate time spent on the element

Can incorporate “talking head” thumbnail





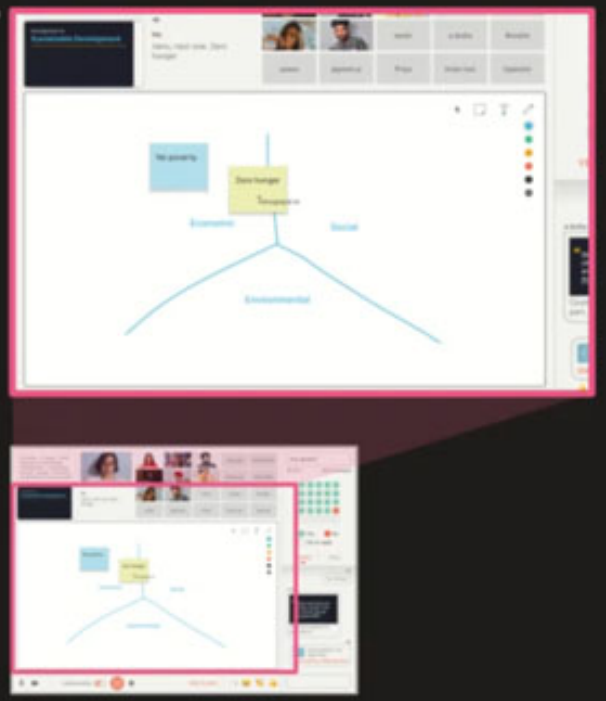
COLLABORATION
Whiteboards

Metaphorically similar to whiteboards, with added capabilities:

- Collaborate live or asynchronously
- Movable 'sticky-notes'

Could be used to facilitate hands-on activities and interactions.

In a synchronous setup, these can be switched with displayed elements, and saved as a part of class notes



Making Asha's life easier as an online teacher

Reusing Content

Asha doesn't need to make slides and elements from scratch

She can modify content she already has and simply drag and drop it online

Integrating Familiar Tools

Asha can continue to use PowerPoint, MS Word, Zoom... which are familiar

She does not need to learn an entirely new set of tools for every activity

Better Schedules and Planning

Elements scheduled to be published/unpublished let her run courses in time

Placeholders+reminders help to structure courses without having to populate all the content first

Enriching Asha's online teaching practice

Connecting with Students

Asha can feel closer to her students through sync and async interactions

The VC interface increases eye contact and live participation

Creating Artefacts

Collaborative sessions using whiteboards can host hands-on activities

Live sessions can now also be documented as class notes which can be accessed asynchronously

Flexibility and Control

Asha is free to use the capacities of BodhiTree to suit her teaching style

The content she uploads is entirely under her control, and BodhiTree is just a facilitating tool

How were they tested and evaluated?

Heuristic evaluation
One-one-one remote interviews → analysis
Hacked implementation

Testing and Evaluation

Heuristic Evaluation

1½ hour session with a group of students and professionals (part of the Monsoon HCI course)

Identifying initial issues and minor rectifications before testing at large

One-on-one Interviews

40-60 minute discussions with 12 experts (practicing teachers, educationists) followed by analysis and retrospective mapping

Validating appropriateness and implementation, suggested improvements

Hacked Implementation

Using existing tools in different ways to emulate the idea as far as possible

Idea validation through putting into action

Let's Discuss!

What worked, what didn't work, what could be done differently... future avenues

What I learned in the process and how it helped me as a designer

Any particular part of the project which you'd like to spend time discussing