1-2023

Technology-enabled active learning in gen ed courses

Emily Faulconer
Embry-Riddle Aeronautical University, faulcone@erau.edu

Technology-Enabled Active Learning in Gen Ed Courses

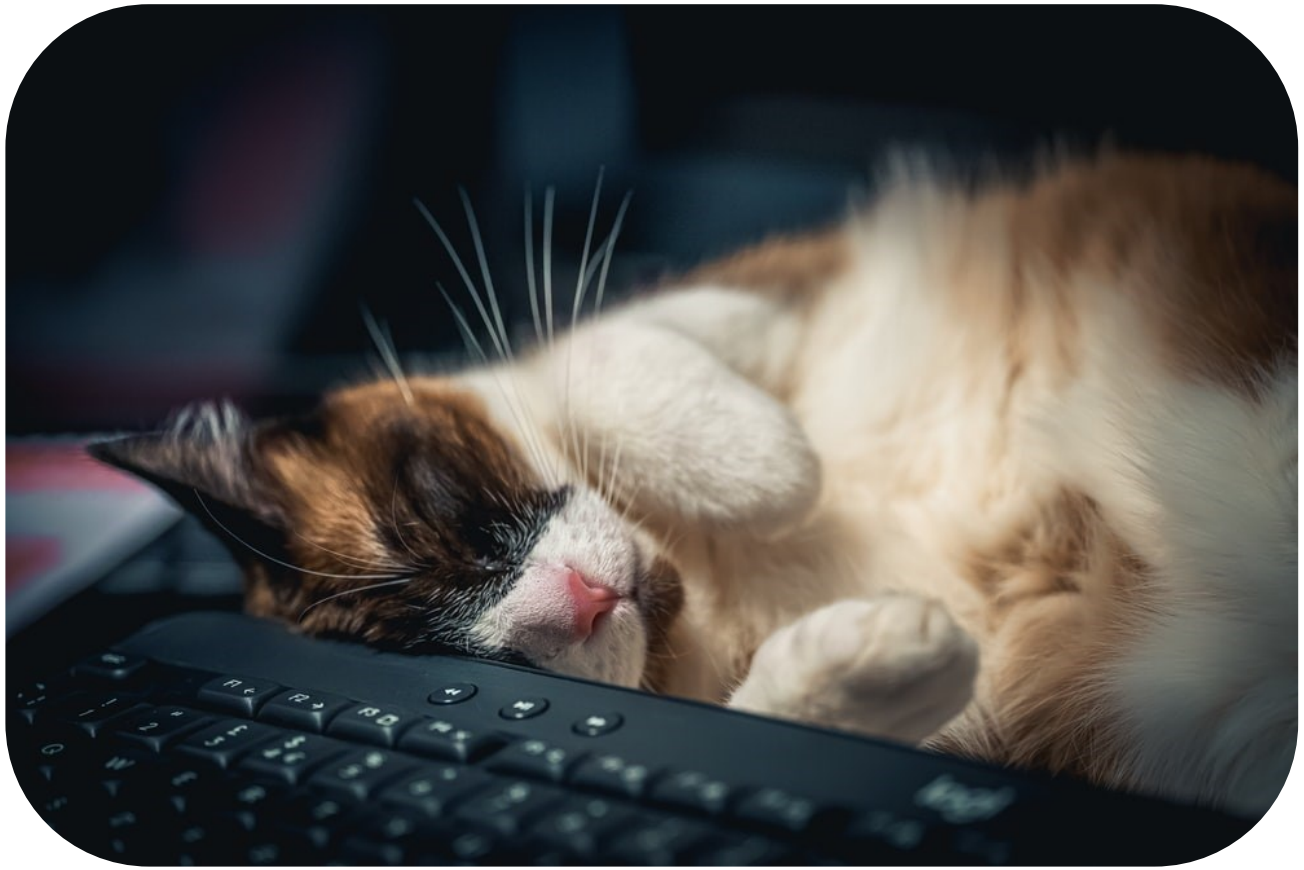
Emily Faulconer, Ph.D.

Embry-Riddle Aeronautical University

Asynchronous online courses tend to lack a true “lecture”.

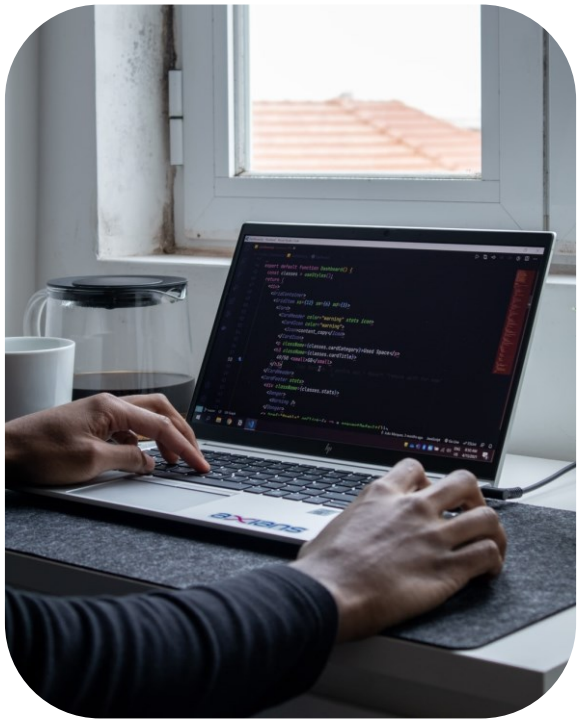
Textbook reading

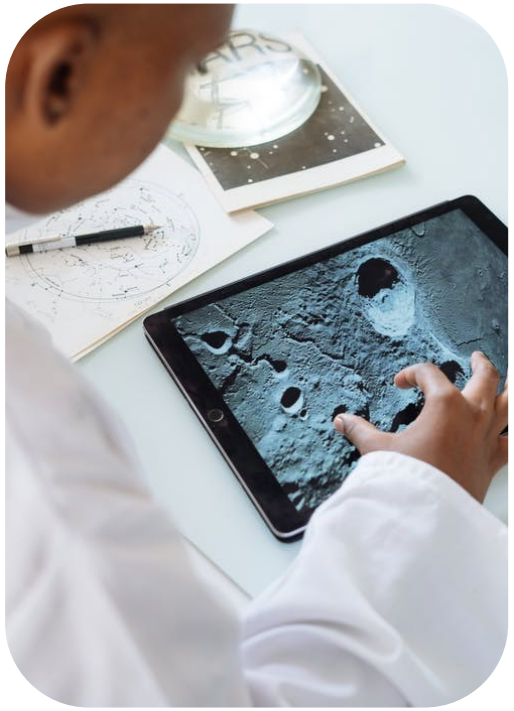
Videos



In STEM, when communication of content engages students, learning is more effective.

Bada & Olusegun (2015) Cotner et al. (2013) Freeman et al. (2014)





Engagement can take several forms.

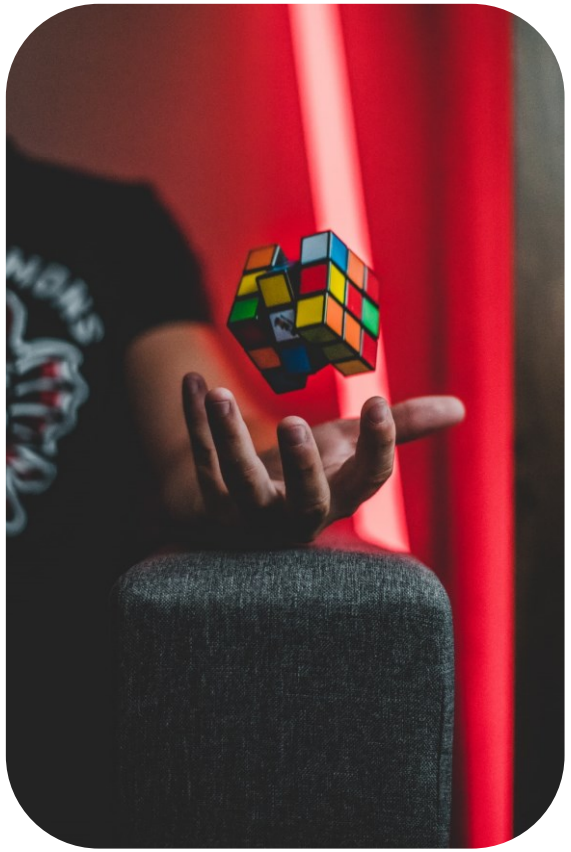
Active – students interact with content but do not generate new material or information

Constructive – students generate material based on information received

Interactive – students exchange ideas with all contributing

Personalization and engagement must be intentionally created. Online courses offer unique opportunities.

&

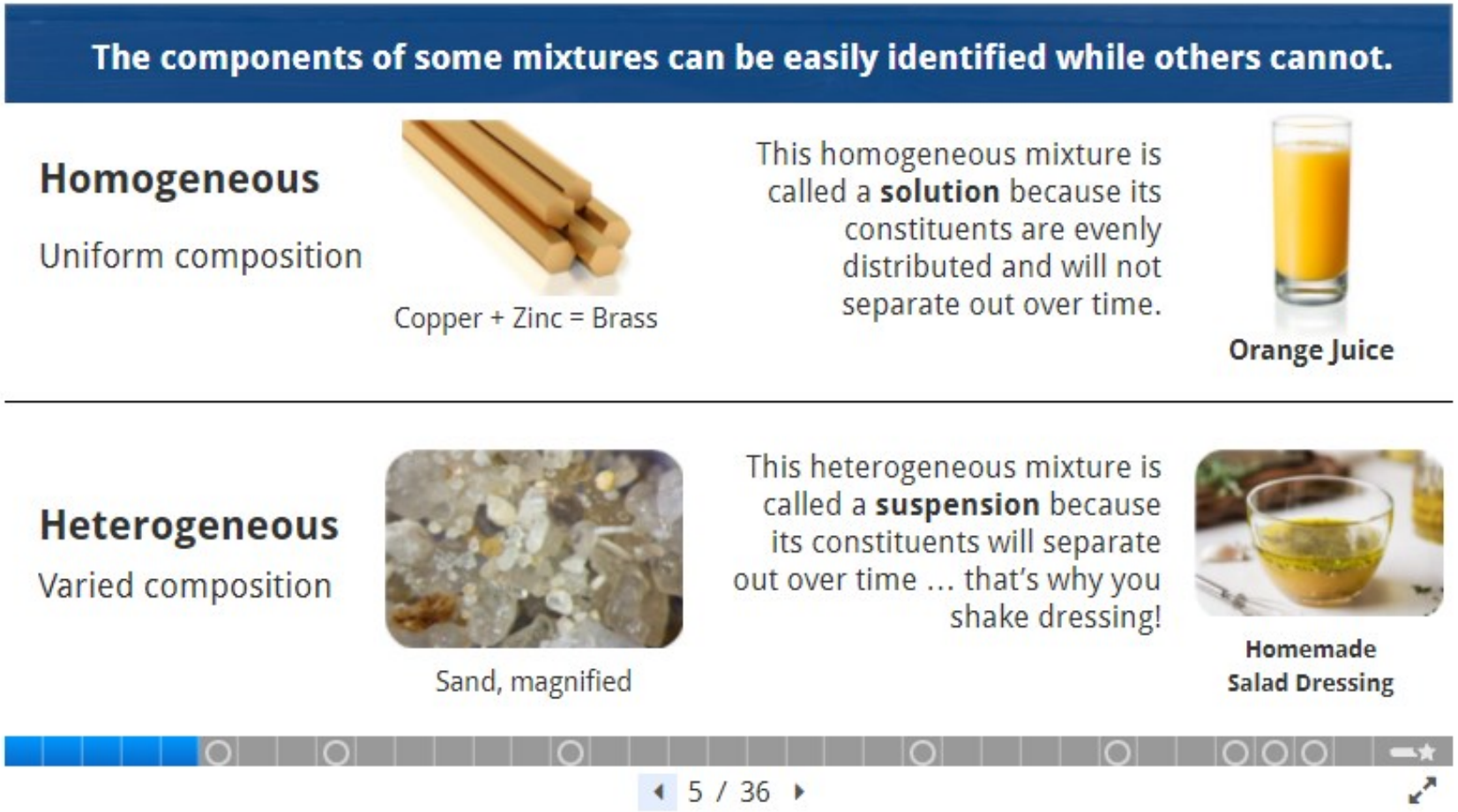


H5P is an ed tech tool that can help!

Instructor-generated HTML5 assets to promote self-paced, self-directed active learning.

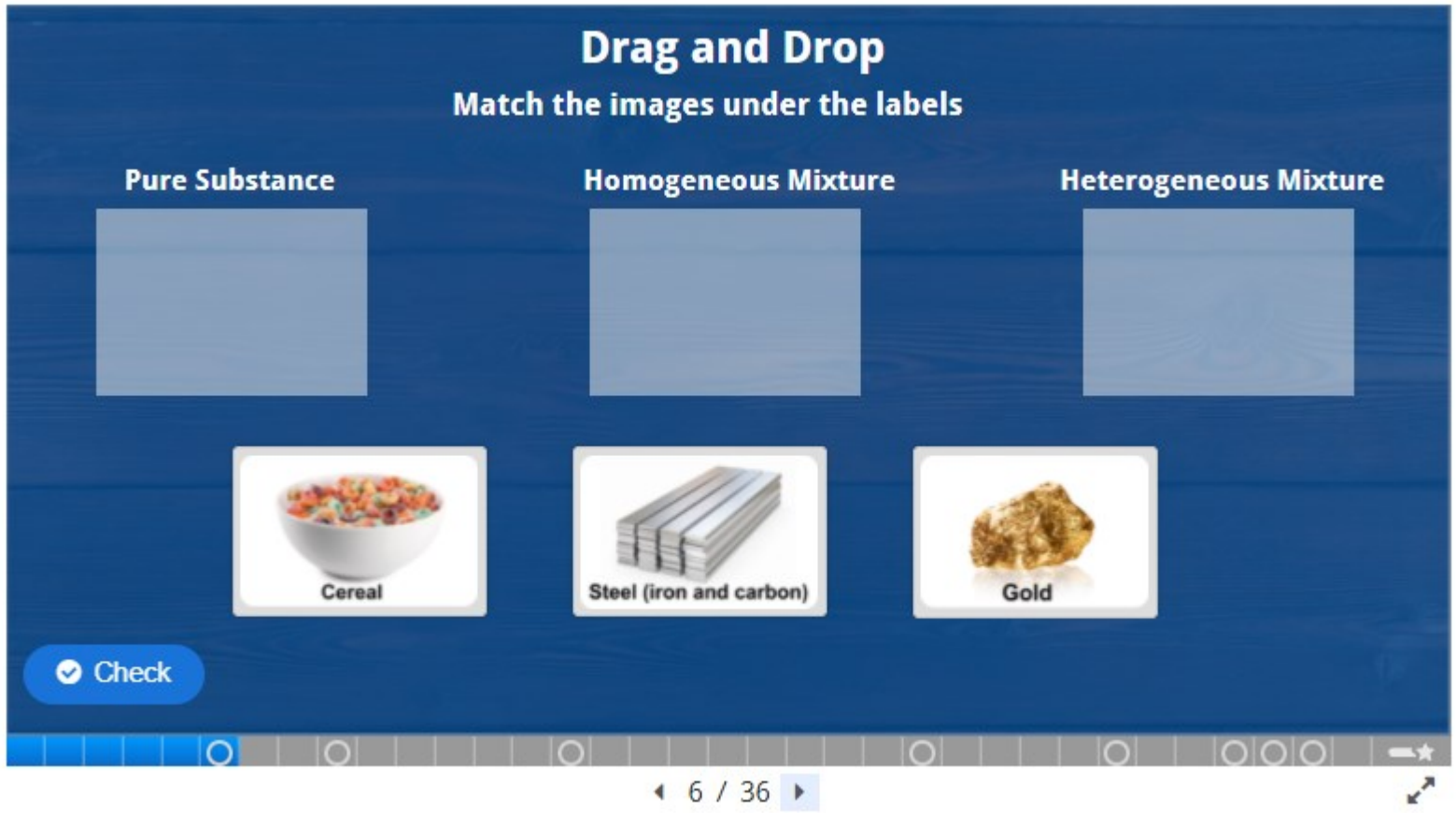
You can still present ***your*** content.

- Text
- Video or audio
- Images
- Hyperlinks



…while also embedding active engagement.

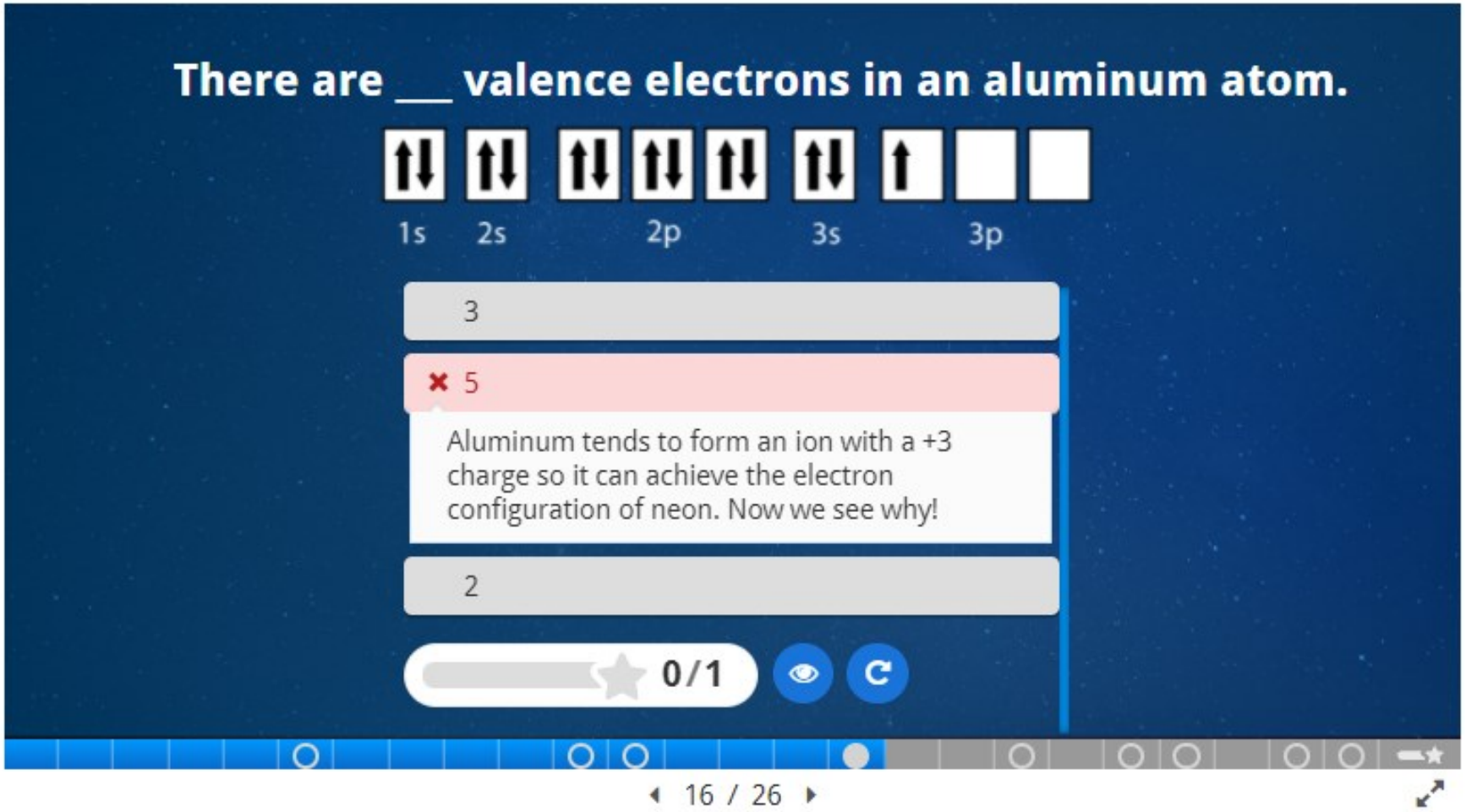
- Drag & Drop
- Drag the Word
- Multiple choice
- Image hotspot
- Fill in the blank (basic and advanced)
- T/F
- Image sequencing
- Mark the words
- Essay
- Image pairing



Drag the grey bullet to where there is a violation of Aufbau's Order of Filling.

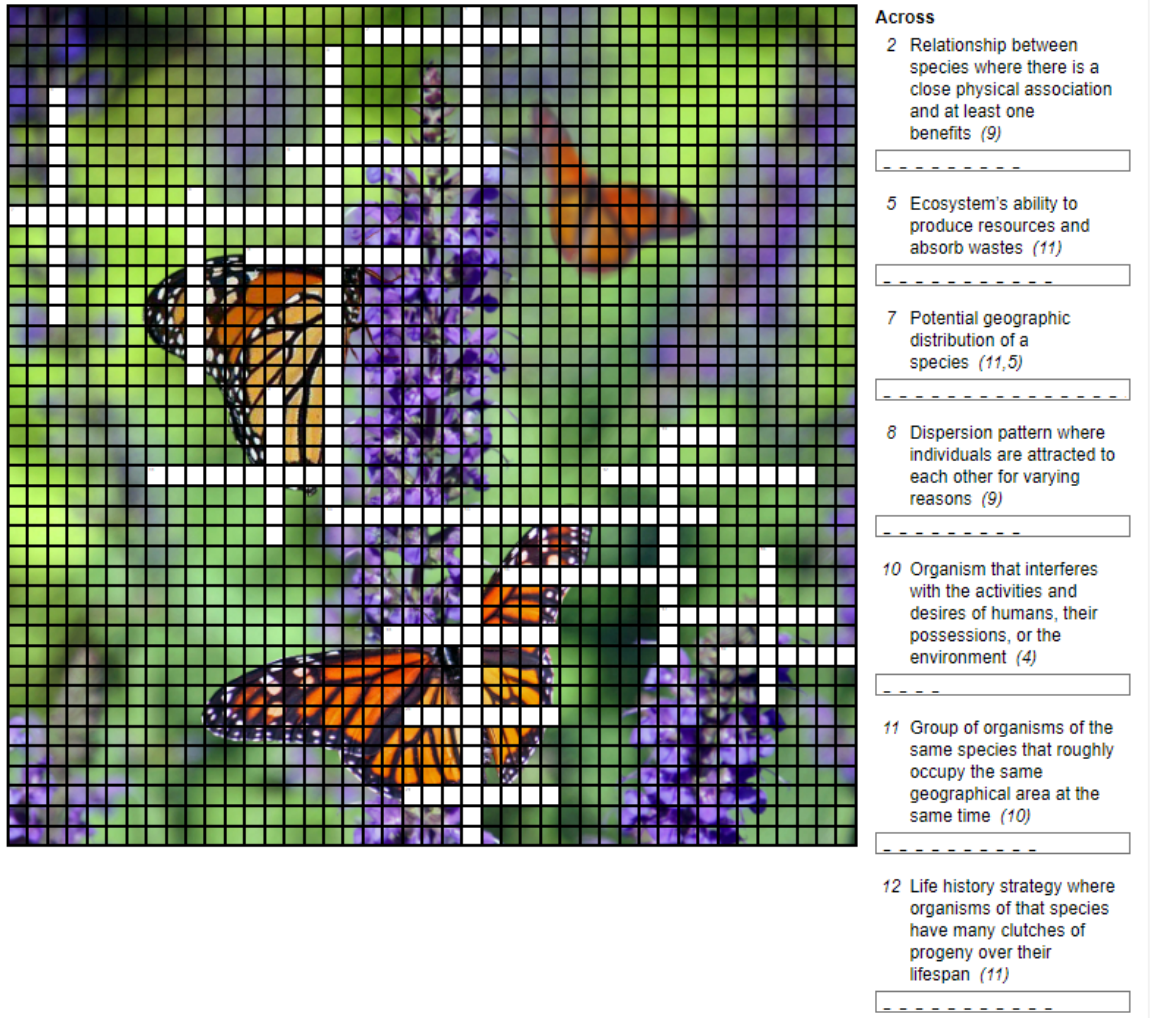
Check

Knowledge checks with immediate feedback and unlimited attempts provide constructive engagement.



H5P is versatile beyond content presentation.

- Vocab practice (crosswords)
- No-stakes practice (question set)
- Interactive instructions
- Branching scenarios
- Timelines




Taxonomy of Cheetahs

H5P is fairly simple to use, but there are tips to make it even easier.

Generate slides outside of H5P, upload image of each slide, then add interactivity.

Do not use the confusion indicator if you did not create the content.

Share your embed codes!

But do students like them?

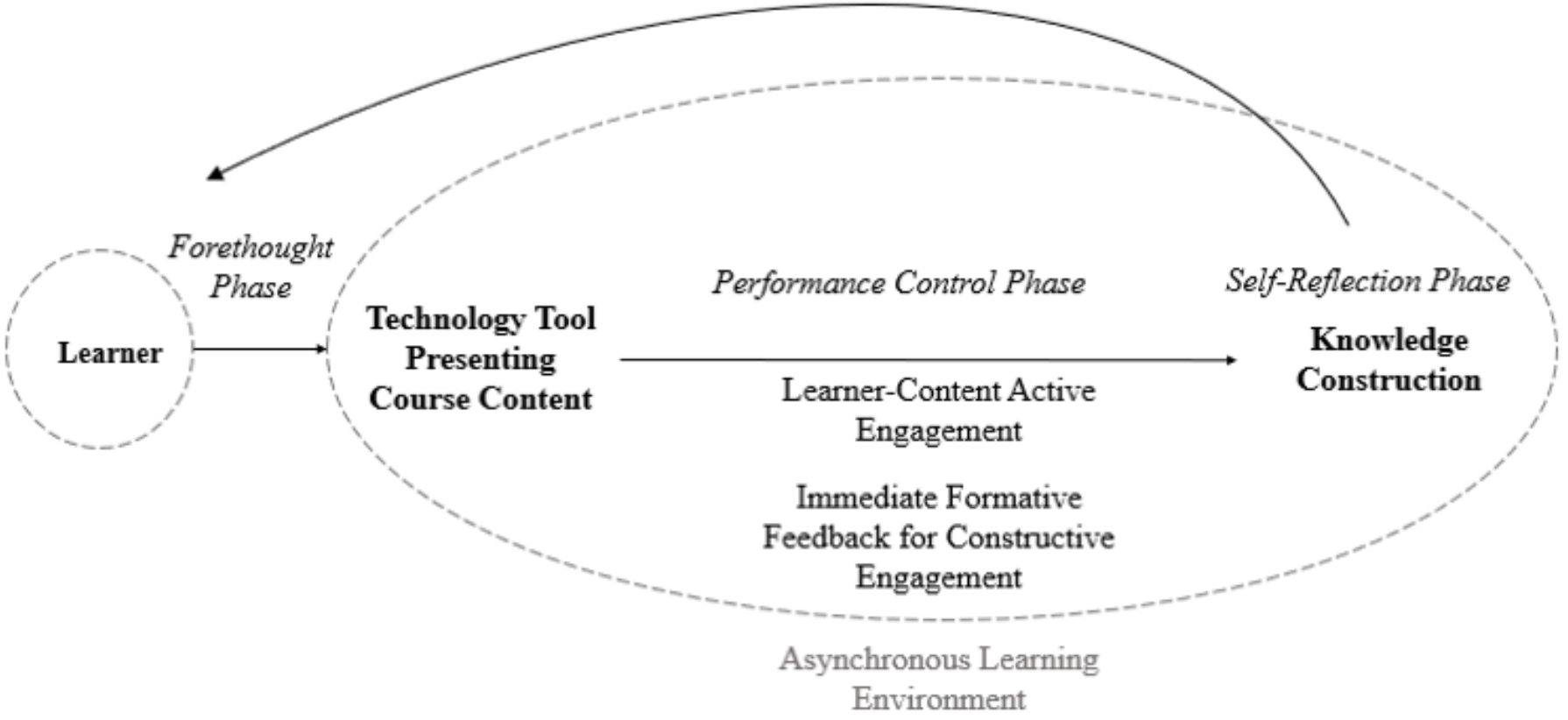
Other Studies

- ✓ 60% consistently use the resources
- ✓ Enhanced knowledge
- ✓ More time than traditional content delivery

Anecdotal evidence from my classes

How helpful have the following supports I have provided been?

Engaged learning allows students to refine self-regulated learning.



In STEM, students that demonstrate certain SRL behaviors perform better on summative assessments (Lawanto et al., 2017 and Jo et al., 2014)

This in-progress study is using the following methods:

H5P design

- Align with course learning outcomes
- Chunked information
- Modified assertion evidence style
- Interactive components and knowledge checks

LTI integration with Canvas

- Drill Down Report
- Embed *ungraded* participation in Canvas

IRB – Exempt (Approval #22-115)

Population, Sample, and Data Collection:

General Chemistry 1 (August & October 2022)

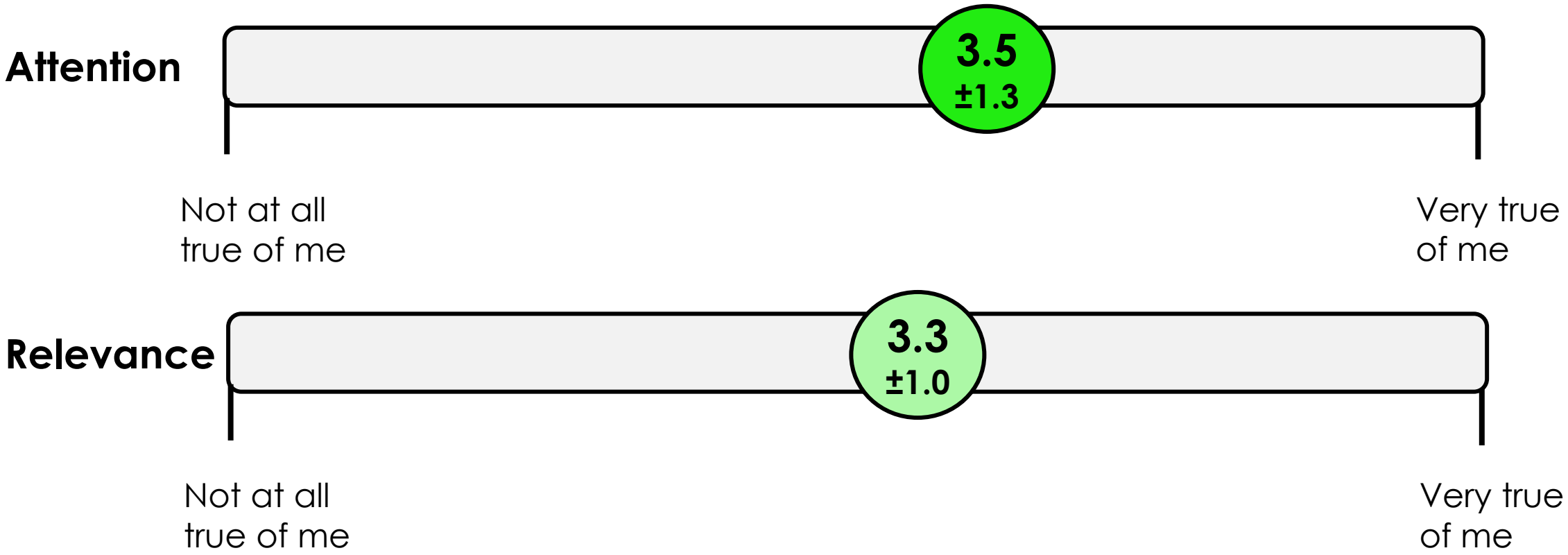
Learner Analytics:
- Canvas data (e.g. Drill Down Reports, course grades)

Survey
- Self-selection sampling
- One-time survey
- Confidential
- Incentivized ($5 Amazon e-card)
- Motivation and Self-Regulated Learning Questionnaire (MSLQ)
- Partial use of the Reduced Instructional Materials Motivation Survey (RIMMS)

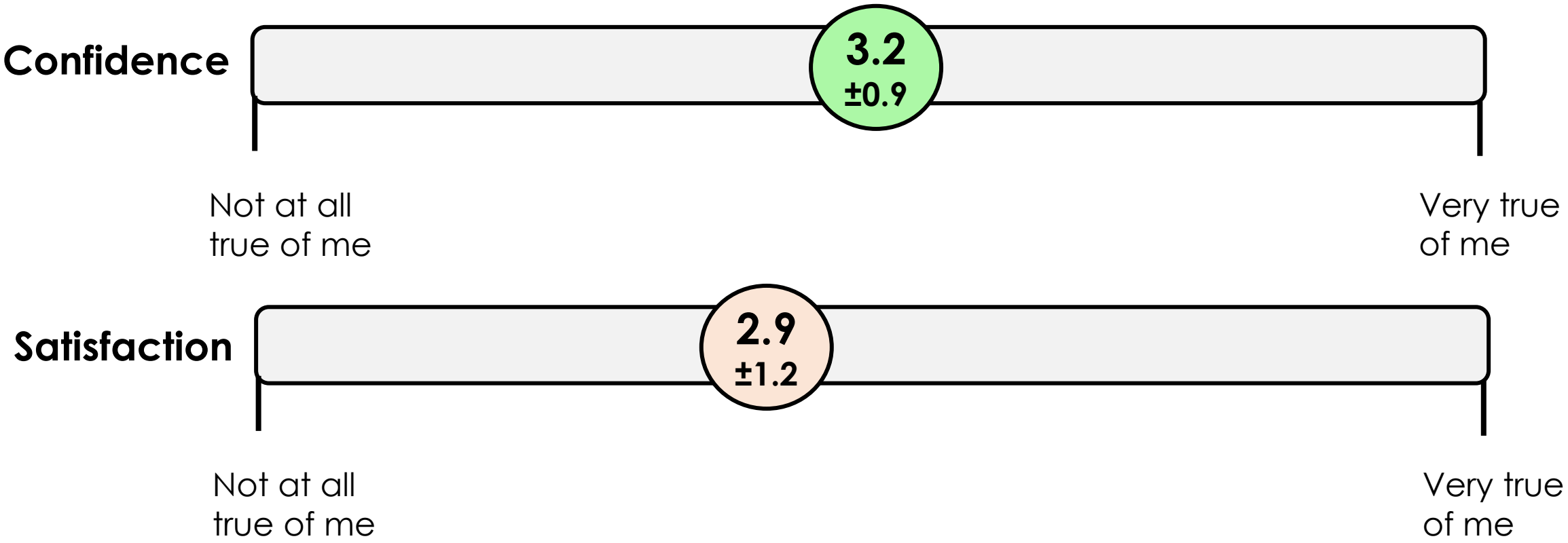
I don’t have answers to these questions yet …

1. Do students have a **positive opinion** of the H5P tool for presenting course content?
2. Do students using H5P resources **demonstrate self-regulated learning behavior(s)**?
3. Does a learner’s **perspectives** of their self-regulated learning predict measurable self-regulated learning **behaviors**?
4. How well do learner’s self-regulated learning perspectives and behaviors **predict performance**?

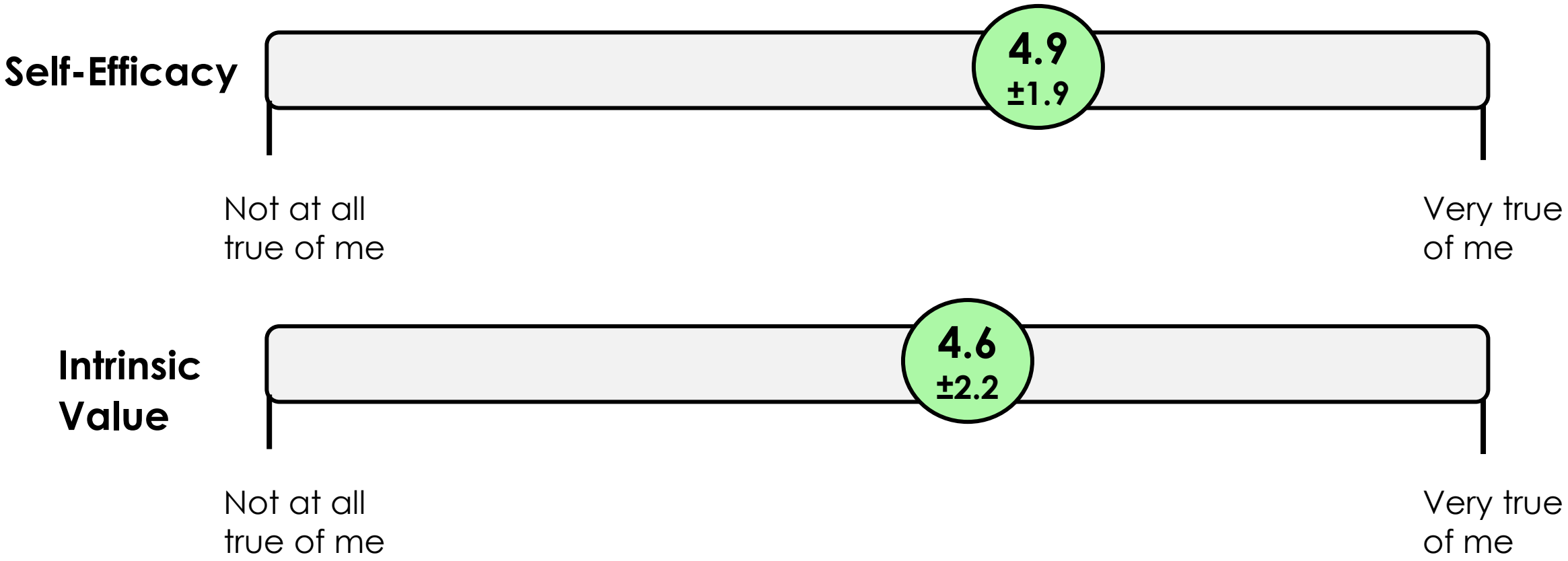
RQ: Do students have a **positive opinion** of the H5P tool for presenting course content? ***n* = 5**



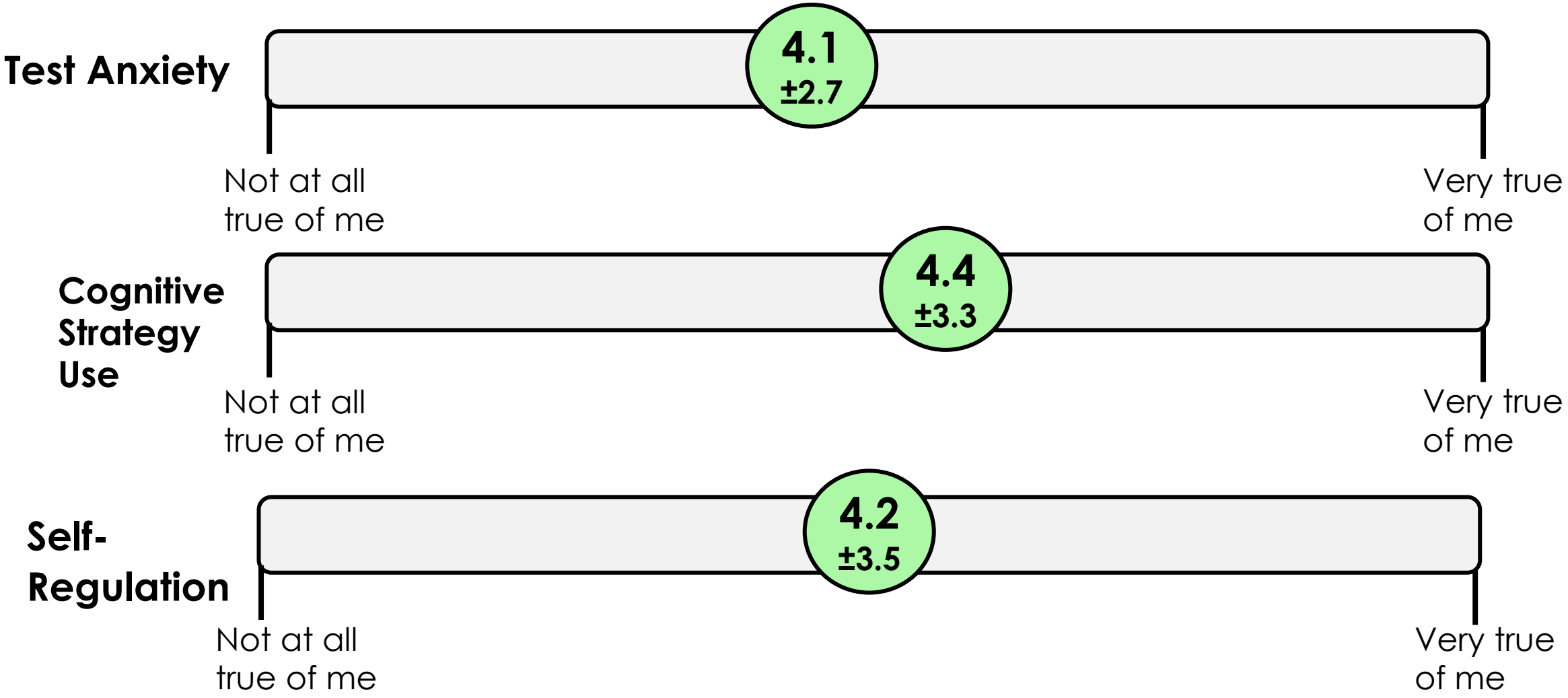
RQ: Do students have a **positive opinion** of the H5P tool for presenting course content? ***n* = 5**



RQ: Do students using H5P resources report strong perceived **self-regulated learning behavior(s)**?



RQ: Do students using H5P resources report strong perceived **self-regulated learning behavior(s)**?



It is early to explore correlations, but some hypothesized correlations are present in the preliminary data.

↑ Intrinsic Value ↓ Test Anxiety (-0.48)

↑ Self-Regulation ↓ Test Anxiety (-0.28)

All H5P question categories have moderate to strong positive correlations (Attention, Relevance, Confidence, Satisfaction)

Some interesting trends between MSLQ and RIMMS

↑ Self-Efficacy ↑ Confidence from H5P Use (0.88)

↑ Self-Efficacy ↑ Satisfaction with H5P (0.76)

↑ Intrinsic Value ↑ Attention, Relevance, Confidence, Satisfaction with H5P
(0.42) (0.68) (0.61) (0.62)

RQ: Do students using H5P resources **demonstrate self-regulated learning behavior(s)**?

Very little documented self-reflection behavior (access H5P after 1st attempt)

Let's take the temperature – what are your "warm" and "cool" thoughts on H5P and its support of active and self-regulated learning?

Mentimeter – collect open-ended "warm" and "cool" feedback on use of H5P as a tech tool to support student-directed active learning. Discuss.