

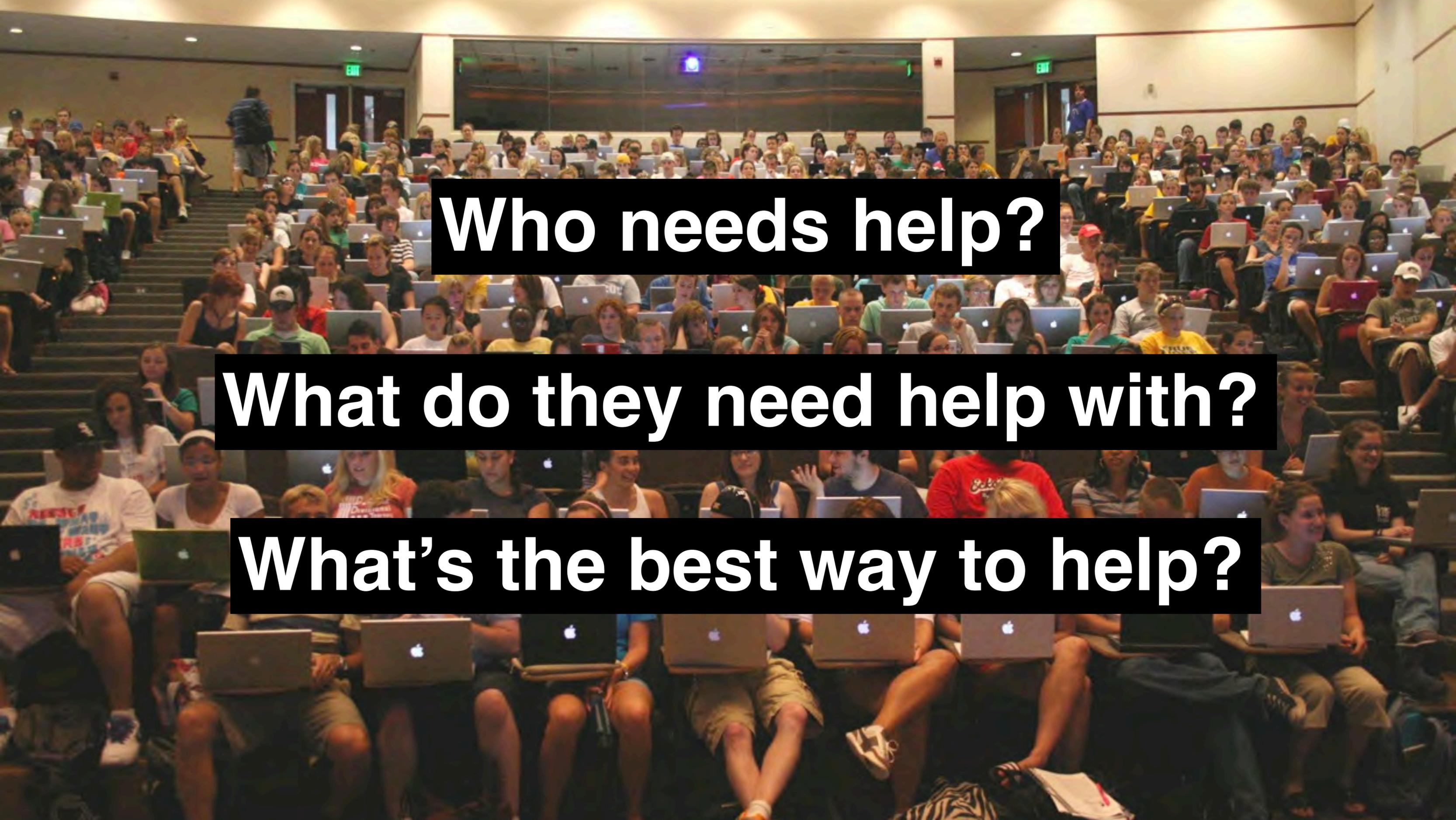


Designing for Student Success in Times of Uncertainty: Adaptive / Active Learning

Peter van Leusen, Ph.D.

ASU Charter

ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves.

A large lecture hall filled with students sitting on tiered seats. Many students are using laptops, and the room is brightly lit. The text is overlaid on the image in three horizontal black boxes with white text.

Who needs help?

What do they need help with?

What's the best way to help?

Goal

90% Retention

Do active learning in every class

Help 90% of students get C or better

Reduce withdrawal rate to under 5%

Identify struggling students by week 2

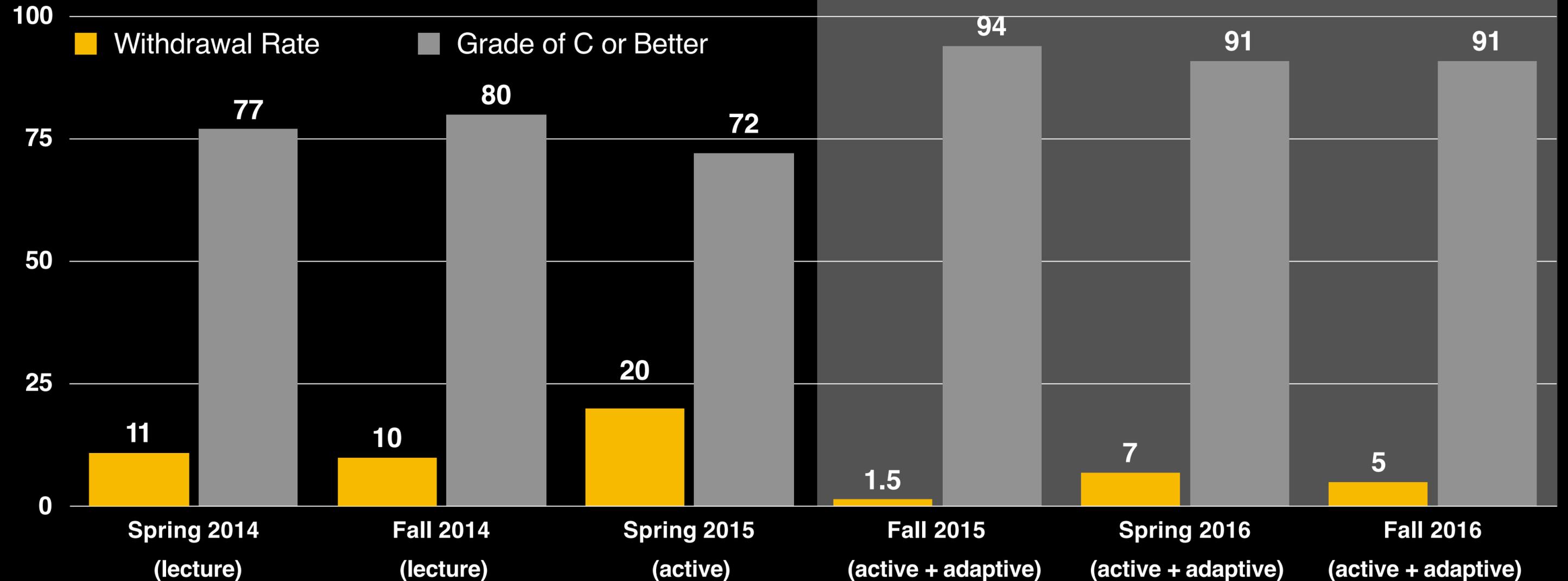
Outcomes

Adaptive / Active Learning

Introduction to Biology (~850 non-majors)

Same instructor, curriculum, and assessment

Active + Adaptive Learning Initiative

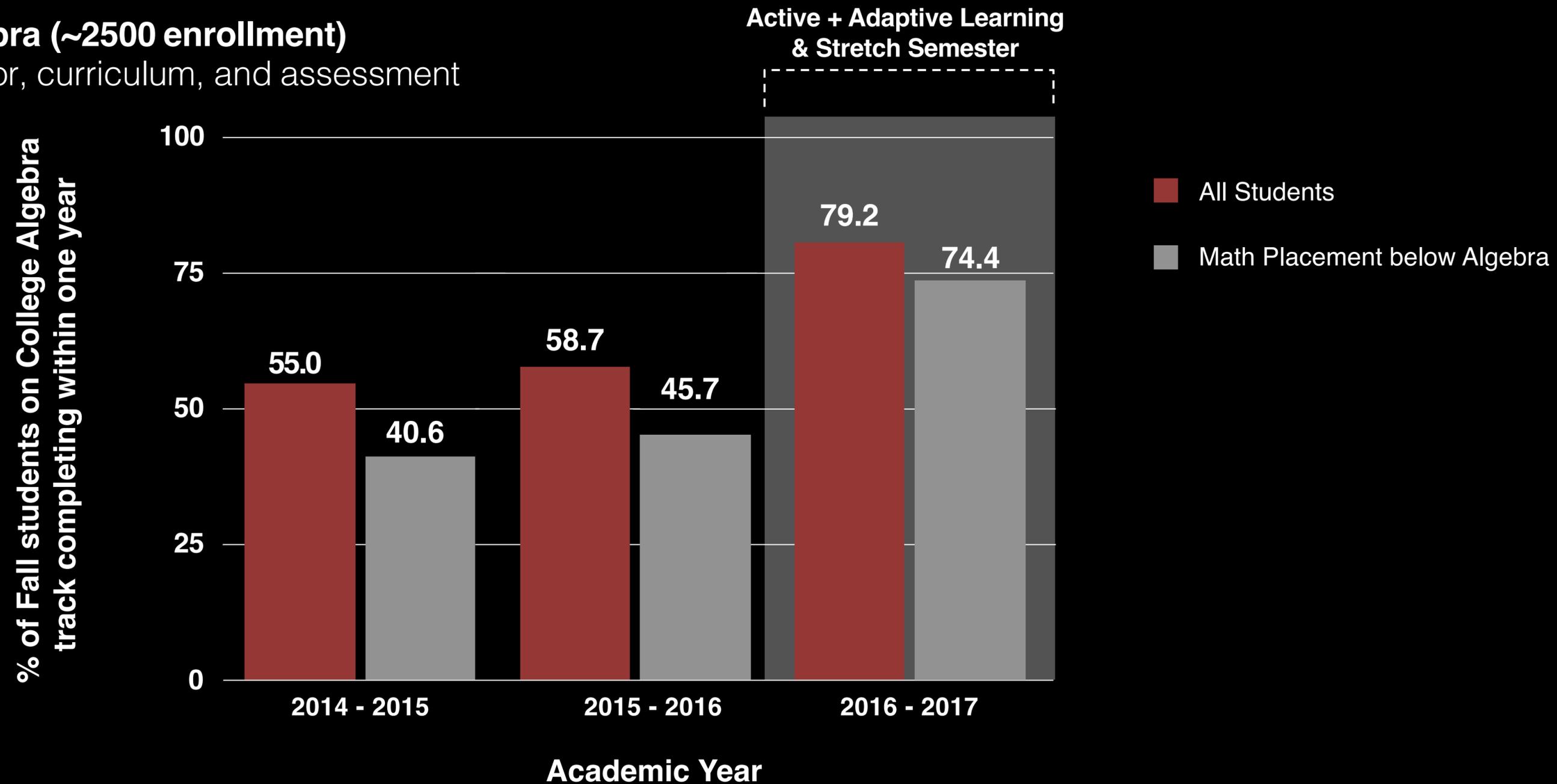


Outcomes

Adaptive / Active Learning

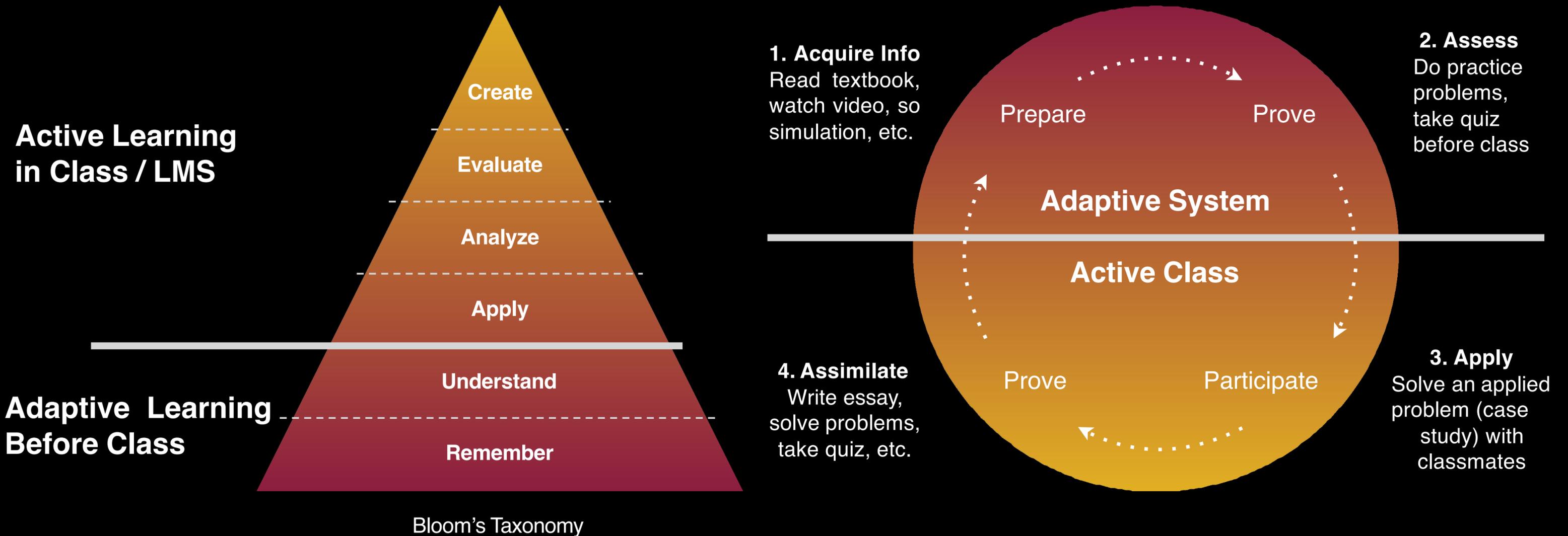
College Algebra (~2500 enrollment)

Same instructor, curriculum, and assessment



Implementation

Adaptive / Active Learning



Implementation

Adaptive Courseware

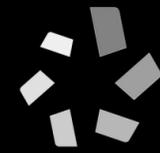
The goal of adaptive courseware is to provide the **right lesson** to the **right student** at the **right time**.

Since 2011

Adaptive Courseware



ALEKS[®]



CENGAGE
Learning[®]



KHANACADEMY

LEARNSMART[®]



SMART
SPARROW



KNEWTON

CogBooks[™]
Adaptive Learning

Cengage (Learning Objects)
Psychology and Economics

CogBooks
Biology and US History

Khan Academy
Remedial math

Knewton
Remedial math

McGraw Hill ALEKS
College Algebra

McGraw Hill (LearnSmart Master)
Remedial math

McGraw Hill (LearnSmart Connect)
Chemistry

Pearson MyMathLab with Knewton
College algebra

Pearson Mastering with Knewton
Physics

SmartSparrow
Habitable Worlds custom science course

Definition

What is adapting to the learner?

- **Lesson sequence**
- **Content selection**

What is guiding the adaptivity?

- **Assessment** – rapid remediation
- **Association** – lesson relationships
- **Agency** – student chooses
- **Algorithm (analytics)** – recommendations

Implementation

Active Learning

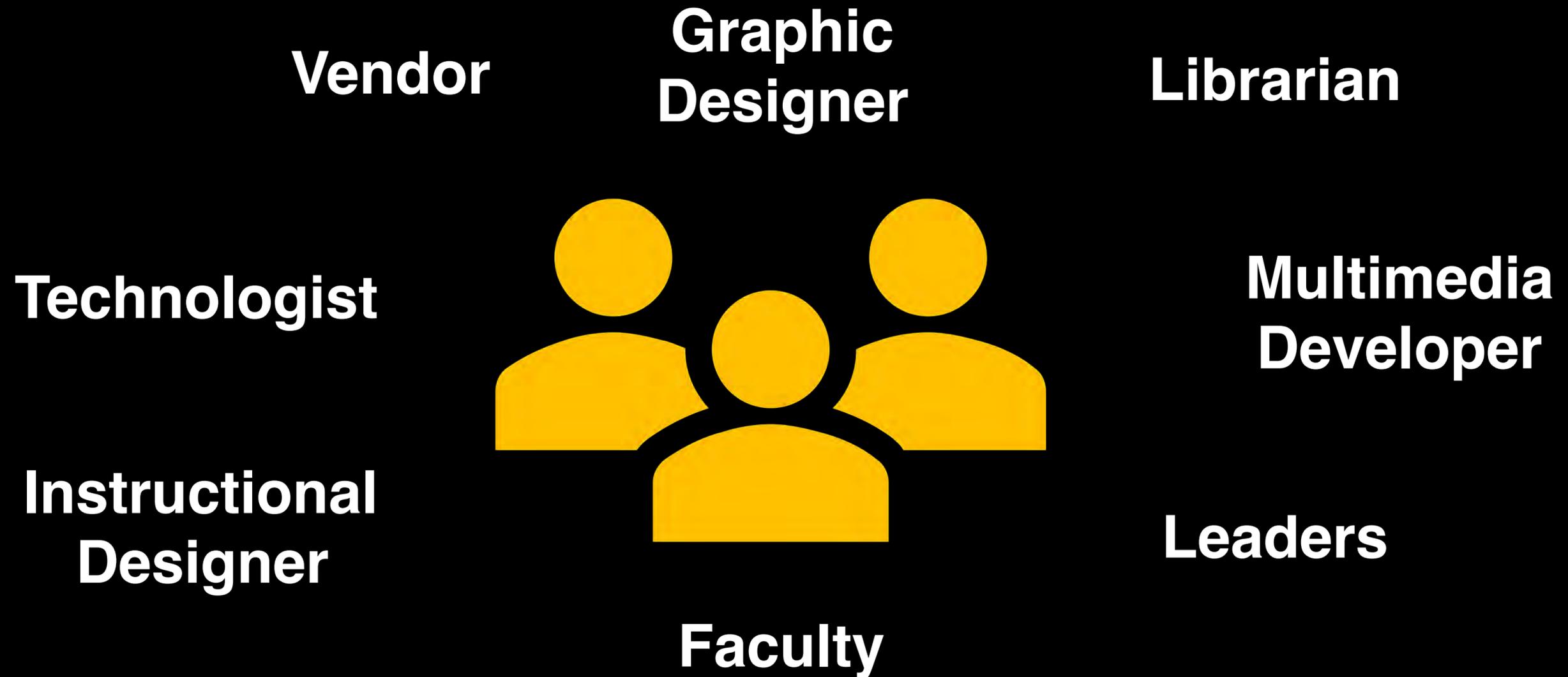
- constructs knowledge
- fosters higher order thinking
- includes metacognition

(Brame, 2016)



Strategies

Example: Course Development



Adaptive / Active is a team sport!

Summary

Benefits

Student benefits of adaptive / active learning

- Respects** their prior knowledge
- Responds** to their learning needs
- Reduces** gaps in their understanding

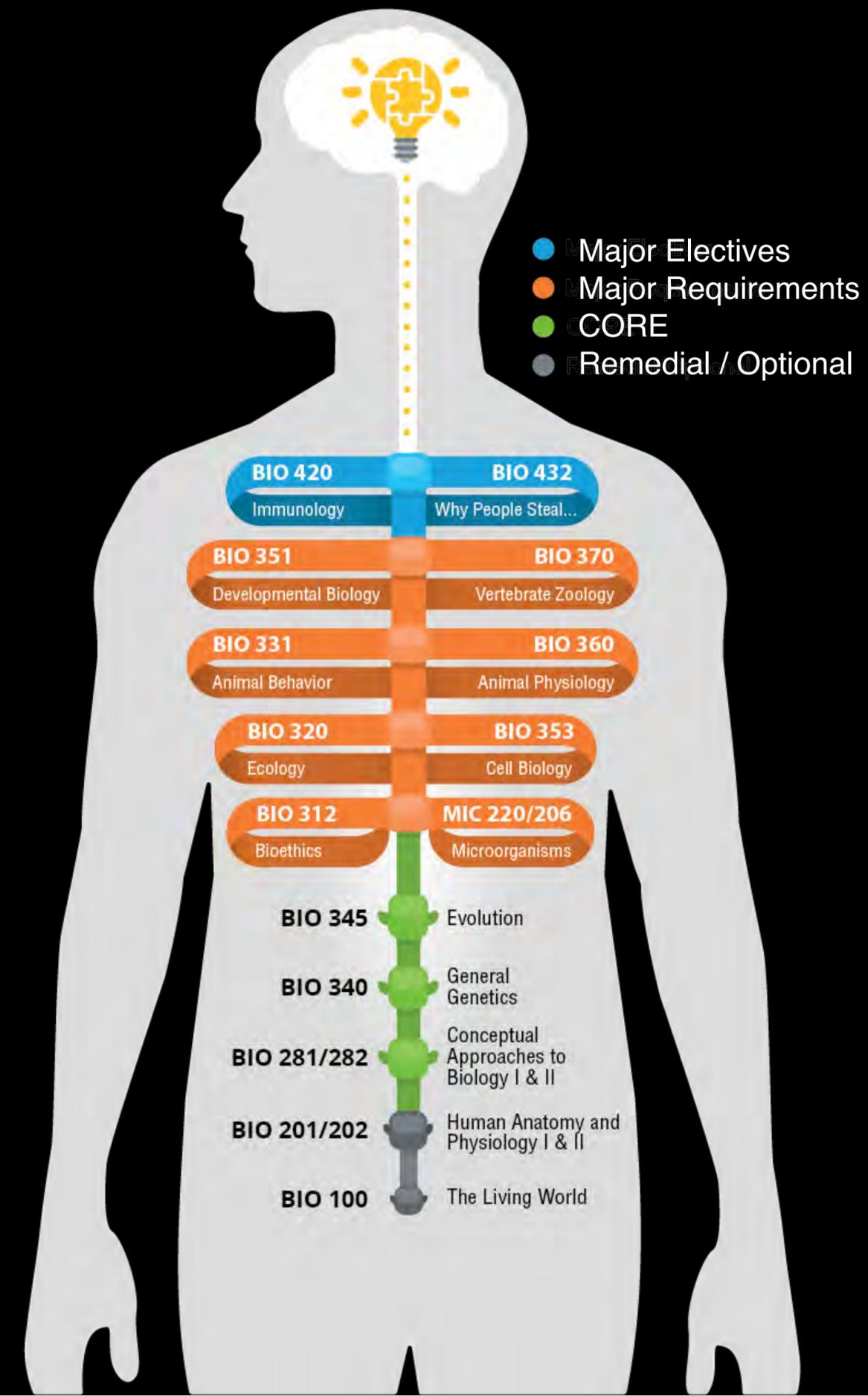
Faculty benefits of adaptive / active learning

- Monitors** which students need assistance
- Measures** curriculum performance
- Maximizes** course outcomes

Adaptive Program

The BioSpine Initiative

The BioSpine is a project in the School of Life Sciences (SOLS) to develop, implement, and evaluate **an integrated undergraduate curriculum in the biological science**. This project leverages **adaptive courseware** for engaging students in frequent formative activities and assessments. Instructors use **evidence-based methods of teaching** to engage students in real-world scenarios and problem-solving, helping students apply biological models in a collaborative setting.



Thank you.

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References

Brame, C. (2016). Active learning. *Vanderbilt University Center for Teaching*.

O'Neal, C., & Pinder-Grover, T. (2005). *How can you incorporate active learning into your classroom*. Ann Arbor, MI: Center for Research on Learning and Teaching (CRLT), University of Michigan.

Van Amburgh, J. A., Devlin, J. W., Kirwin, J. L., & Qualters, D. M. (2007). A tool for measuring active learning in the classroom. *American journal of pharmaceutical education*, 71(5), 85. Chicago