ADAPTIVE LEARNING = Success for Students

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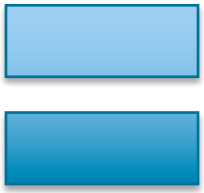
Objectives:

1. Evaluate the ways in which adaptive learning systems can impact student outcomes.

2. Examine teaching and learning strategies that use adaptive learning in higher education.

Evolution of the Teaching-Learning Process



Scenario: Intro Nursing Course

Faculty Member: Professor Spencer is an excellent instructor, competent as a nurse and able to empathize with her students. She has always been able to assess how well students were able to interact with the course material by observing them in class and responding to their individual needs. Now, with the push for an increased enrollment and graduation to address the on-going nursing shortage, her class size has tripled.

She is aware that students in her class have different needs, but meeting these multiple needs has become more difficult as the class has expanded.

Let's meet some students who represent different motivational level and academic skills in Professor Spencer's classroom

Students in Professor Spencer's Class

Juan Perez:

Juan is highly motivated to better himself, and he does very well when the test questions requires knowledge to answer correctly. However, English is not his first language, and abstract thinking and activities that require clinical judgment are difficult for him.

Latisha Pruitt:

Latisha is an excellent student, currently holding a 3.8 cumulative GPA. She learns very quickly with reading and homework assignments, but does not pay attention or participate in class. She spends most of her time in class, texting or engaged in social media.

Mary Green:

Mary is very motivated to become a nurse. She transferred to your program from a small town, where she went to a high school that had limited programming and resources. She took her pre-requisite courses at a community college in her home area. She had the lowest GPA of all students admitted in this cohort. She recognizes that she is a slow learner and describes feeling "like she will never catch up!"

What is Professor Spencer to do?

Personalized Learning Is Necessary

Remediation

Flipped Classroom

Group Work

STUDENT ENGAGEMENT

individualized coaching

Diverse students =

Multiple Needs

TUTORING:

Blooms, B. (1984) The two sigma problem: The search for methods of group instruction that is as effective as one-to-one tutoring. *Educational Research 13:6 (4-16)*

- ***Personalized learning –*** An umbrella term describing a range of approaches:

  - competency-based learning
  - differentiated instruction
  - tutorial models
  - adaptive learning

What are the Principles of Personalized Instruction?

Student centered:

Designed to meet the **diverse** learning needs of each student every day

High expectations:

Committed to ensuring that every student will meet clearly defined,

rigorous standards that will prepare him or her for success

Self-pacing and mastery-based credit:

Enables students to move at their **own pace** and receive credit when they can demonstrate mastery of the material

Student ownership:

Empowers students with the skills, information, and tools they need to manage their own learning

HOW REASONABLE IS THIS?

Blended Learning: Multimodal

Blends different methods of instruction to improve student learning.

Reorients the teaching learning system around the learner. Changes the way:

- Students experience learning
- Teachers and students interact

Advantages of Blended Learning

1. More lessons at the right level
2. Improved student engagement, motivation, and persistence
3. Better diagnosis of learning difficulties and gaps
4. More time for teachers to provide information to small group instruction
5. The opportunity for teachers to work together in a more professional, collaborative, data-driven environment

With Technology…

Technology isn't actually required for personalization, but it is required to personalize at scale

Benefits to the shift to digital learning

1. Engagement that boosts persistence **(Motivation)**

2. Calibrated content providing lessons at the right level boosts learning progress **(Customization)**

3. Access to the Internet, additional devices, and the expanded availability of great teachers and smart content extends learning and opportunity **(Equalization)**

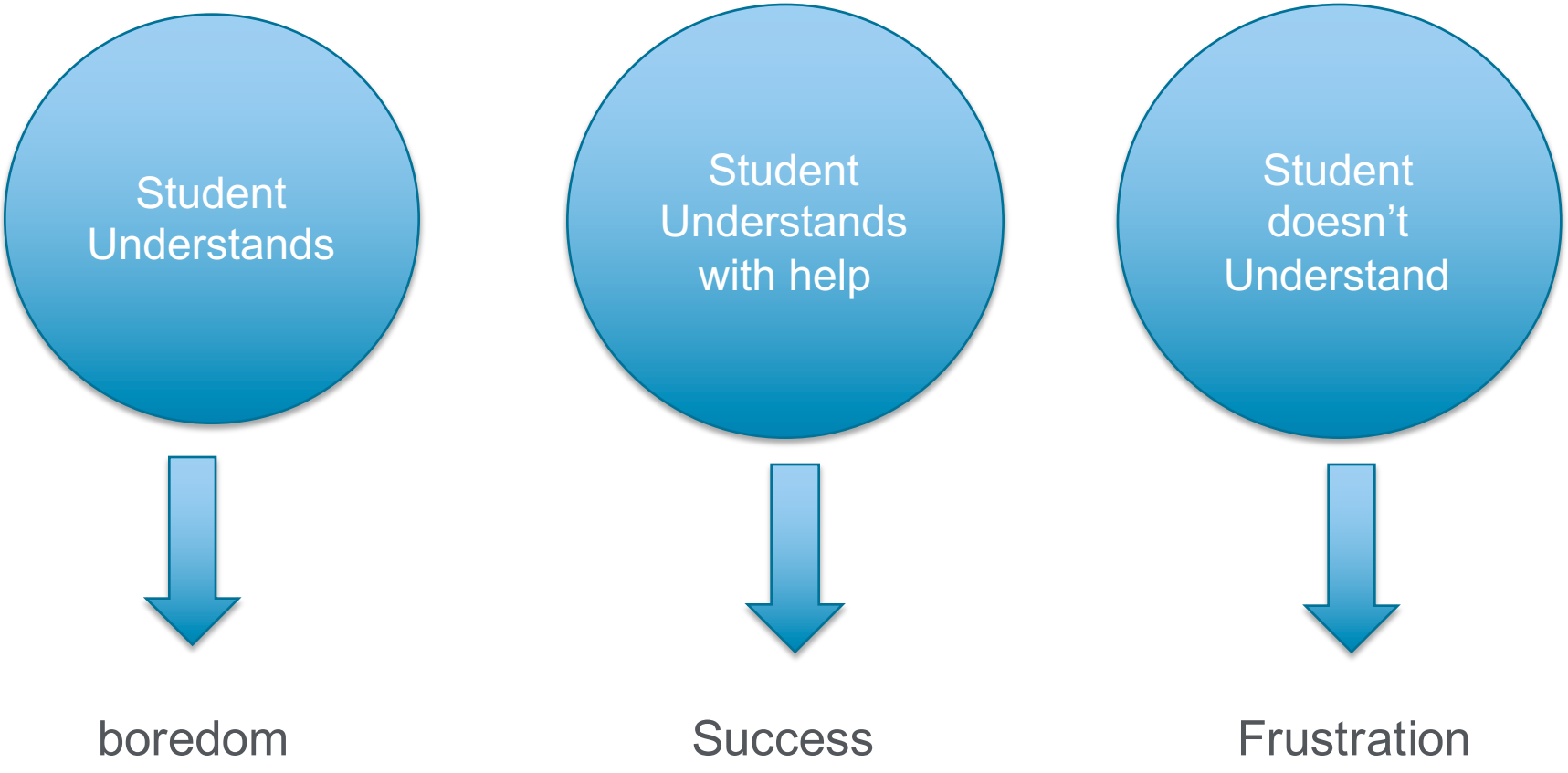
ADAPTIVE LEARNING

Adaptive Learning™ is a next generation education technology that:

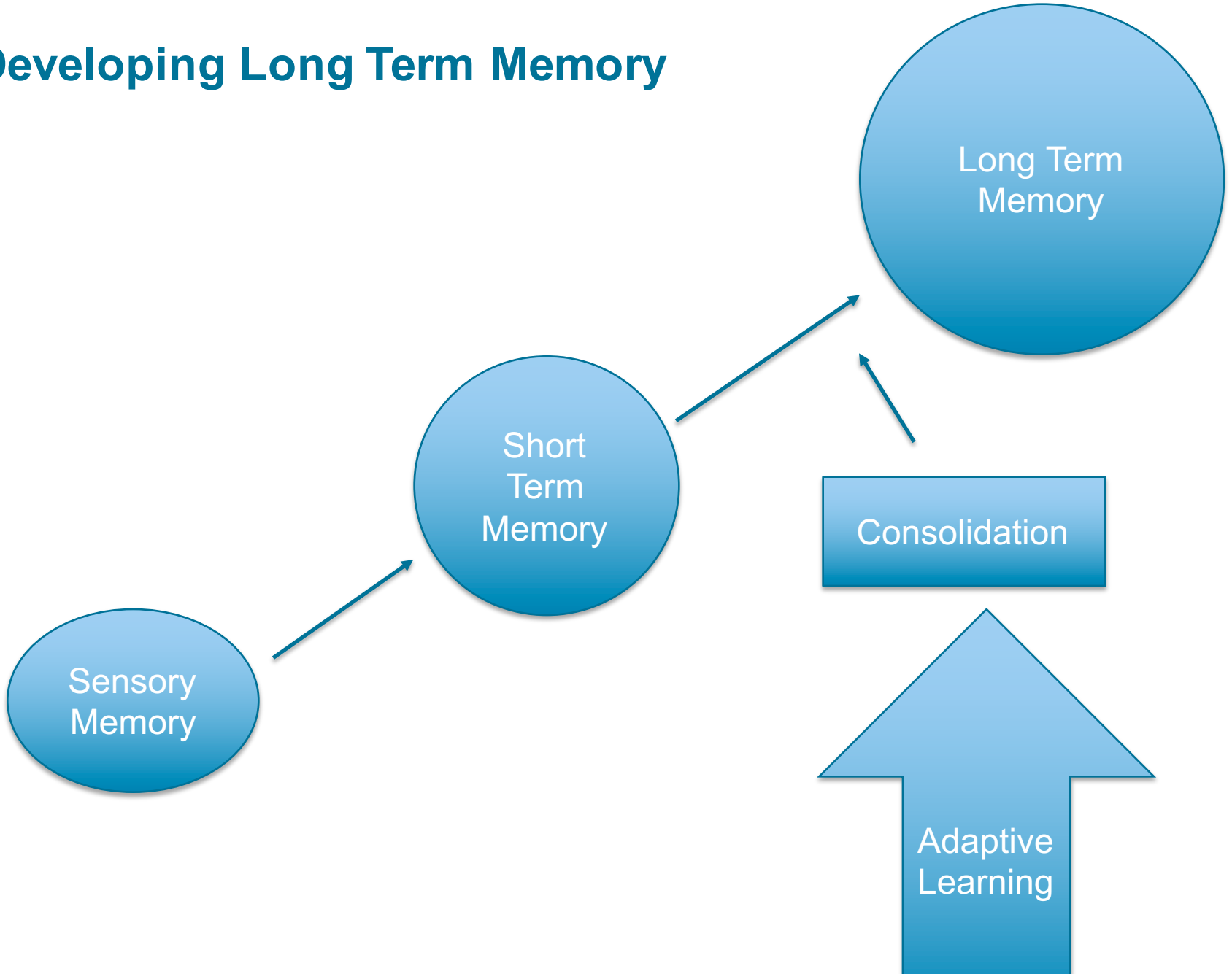
- enables independent learning
- Focuses on knowledge; allows faculty to focus on application and analysis
- adjusts path and pace to stay within the students' zone of optimized learning
- provides formative and summative data for a more personalized experience in the classroom
- https://thejournal.com/articles/2014/05/14/adaptive-learning-are-we-there-yet.aspx

How Does Adaptive Learning work cognitively?

Zone of Proximal Development (Ygotsky, 1978)



Developing Long Term Memory



Adaptive Learning = Teacher's Assistant

Intelligent analysis of a student's solutions: The system analyzes data as student solves problems or makes decisions

Interactive problem solving support: Prompts encourages students to rethink errors

What are the Potential Functions of an Adaptive Learning System?

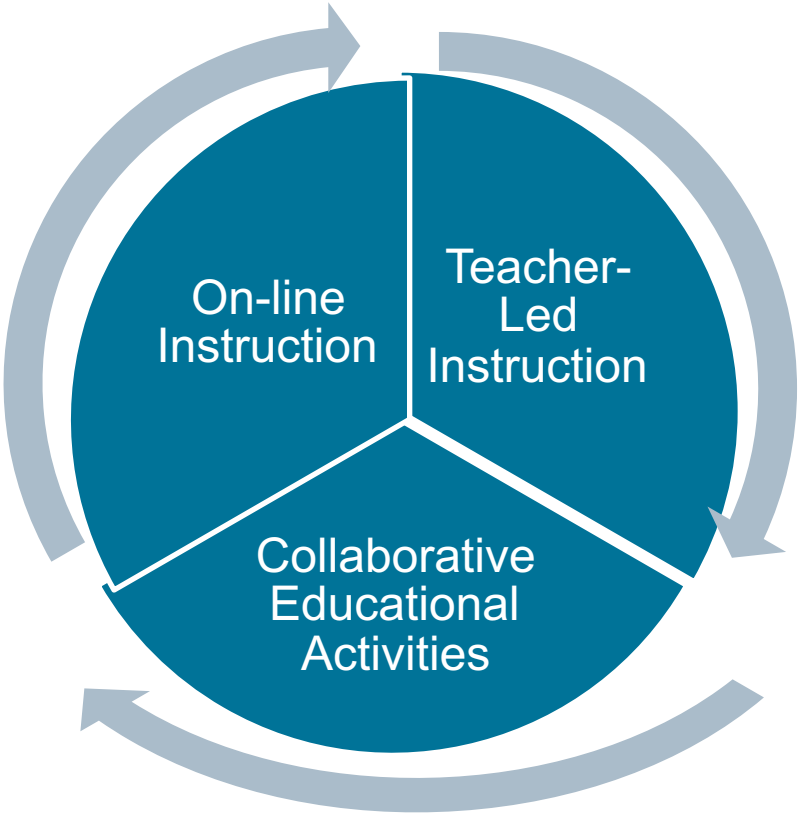
- Delivers Content: primarily knowledge
- Provides quizzes over material
- Provides feedback related to quiz questions

Based on Student's response:

- Provides remediation— "I am confused"
- Provides in-depth information about a topic of interest

Diagrams, Pictures, Texts

The Future of Learning: Personalized, Adaptive, and Competency Based Education (Vander Ark, 2011)



ADVANTAGES for FACULTY

- Formative Evaluation

- Summative Evaluation

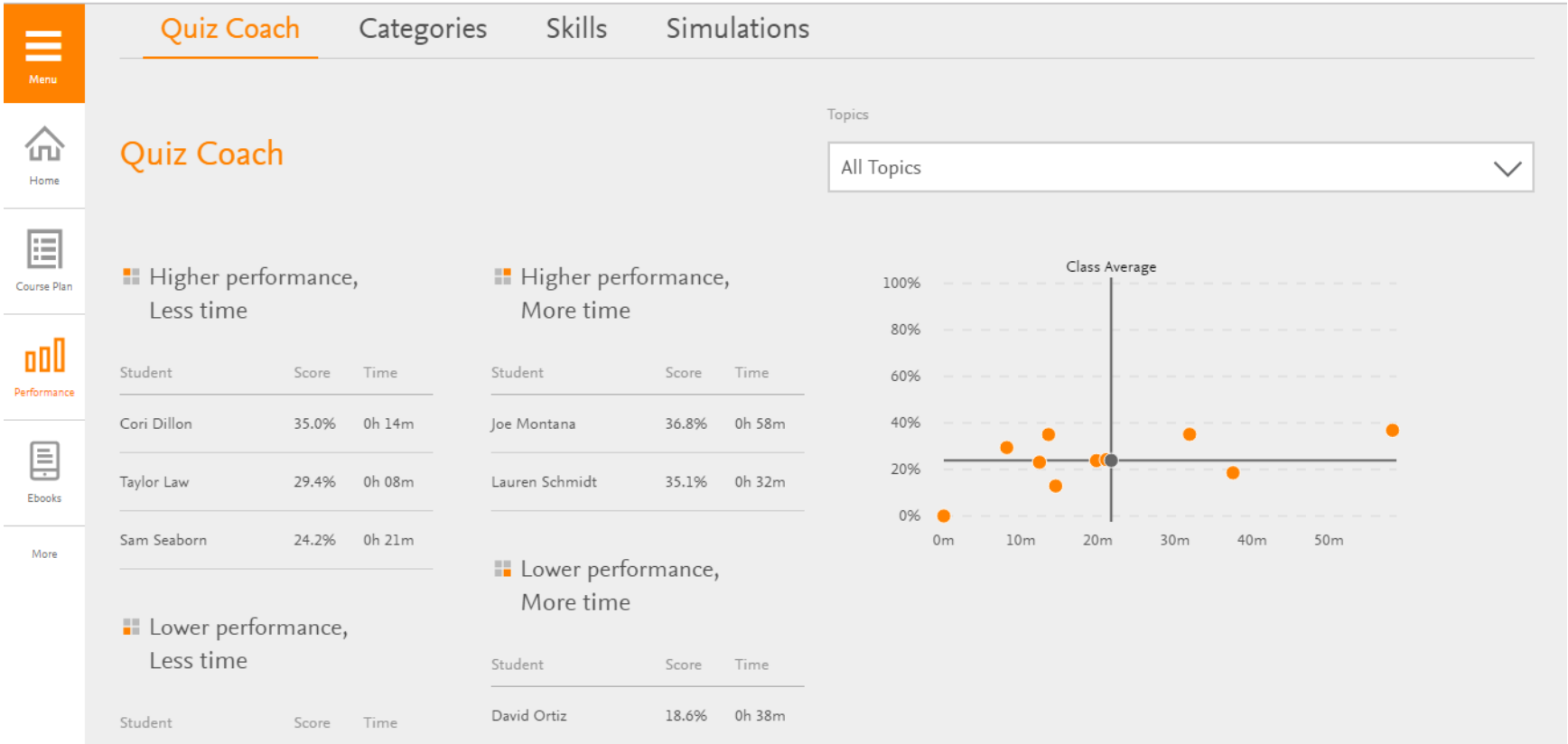
How Can Faculty use these dashboard?

- Relevant assignments for students before class

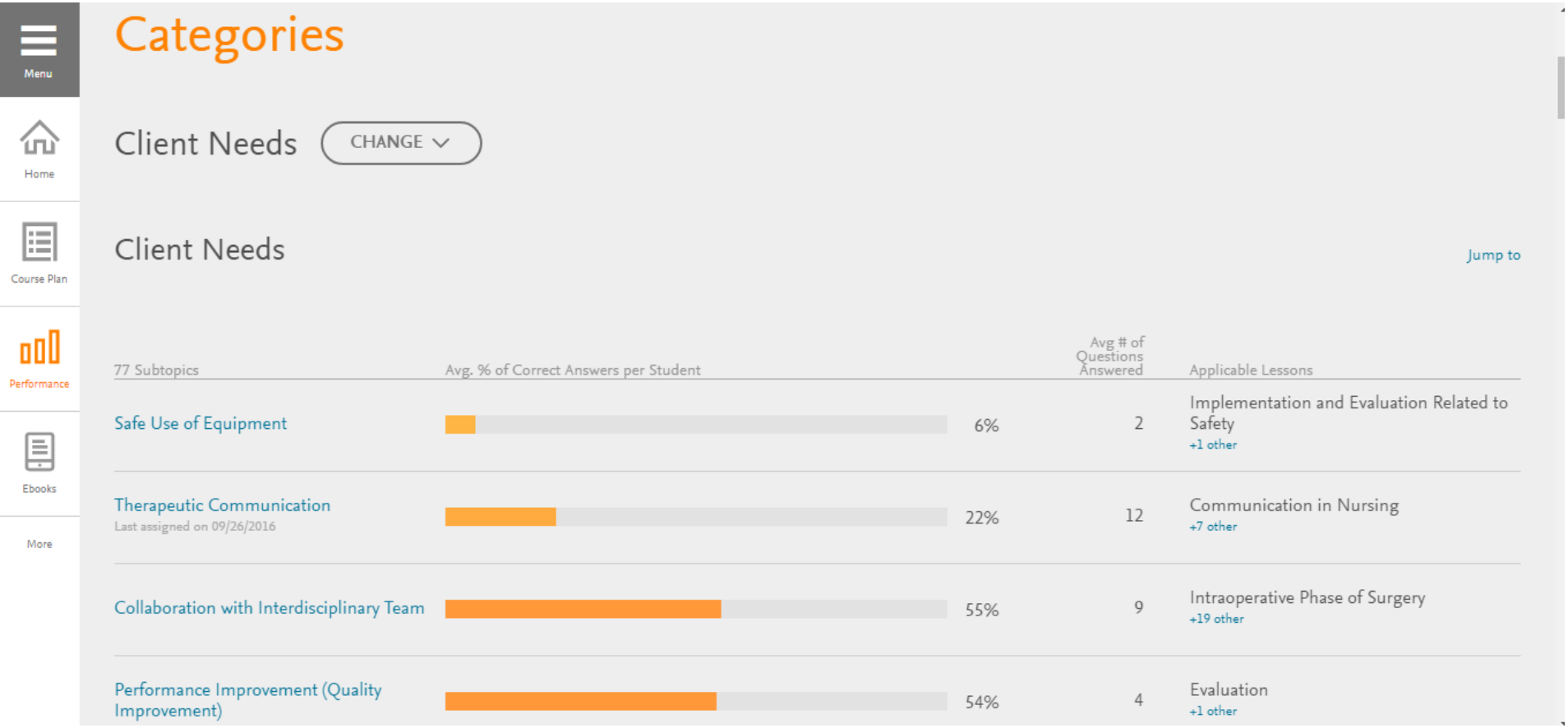
- Review dashboard of student performance and plan activities for class
  - What points will the Instructor emphasize in the following class?
  - What type of learning activity will reinforce content and provide the context for application
  - Pop quiz as a ticket to class

- Development of faculty- made tests
- Group remediation sessions

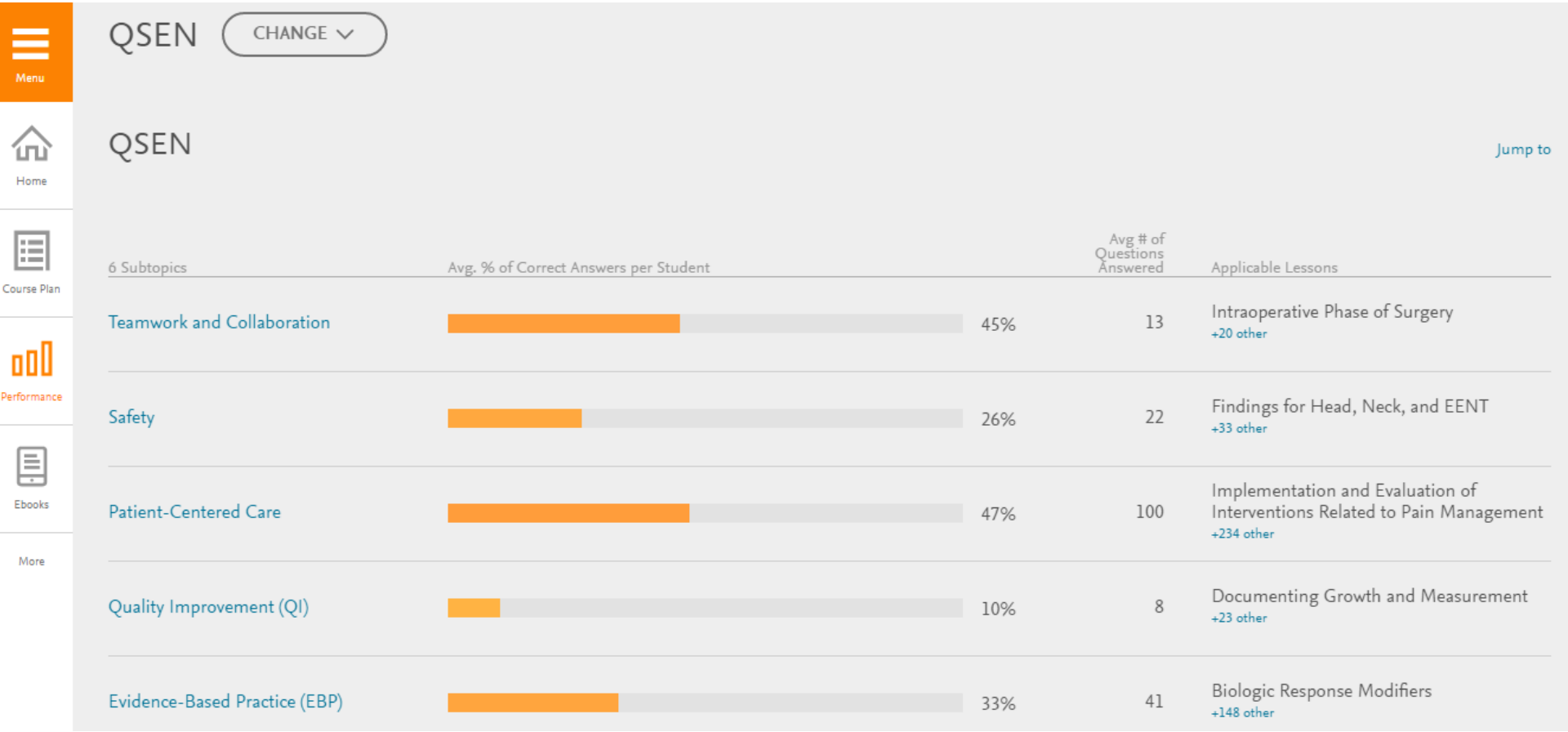
QuizCoach Dash



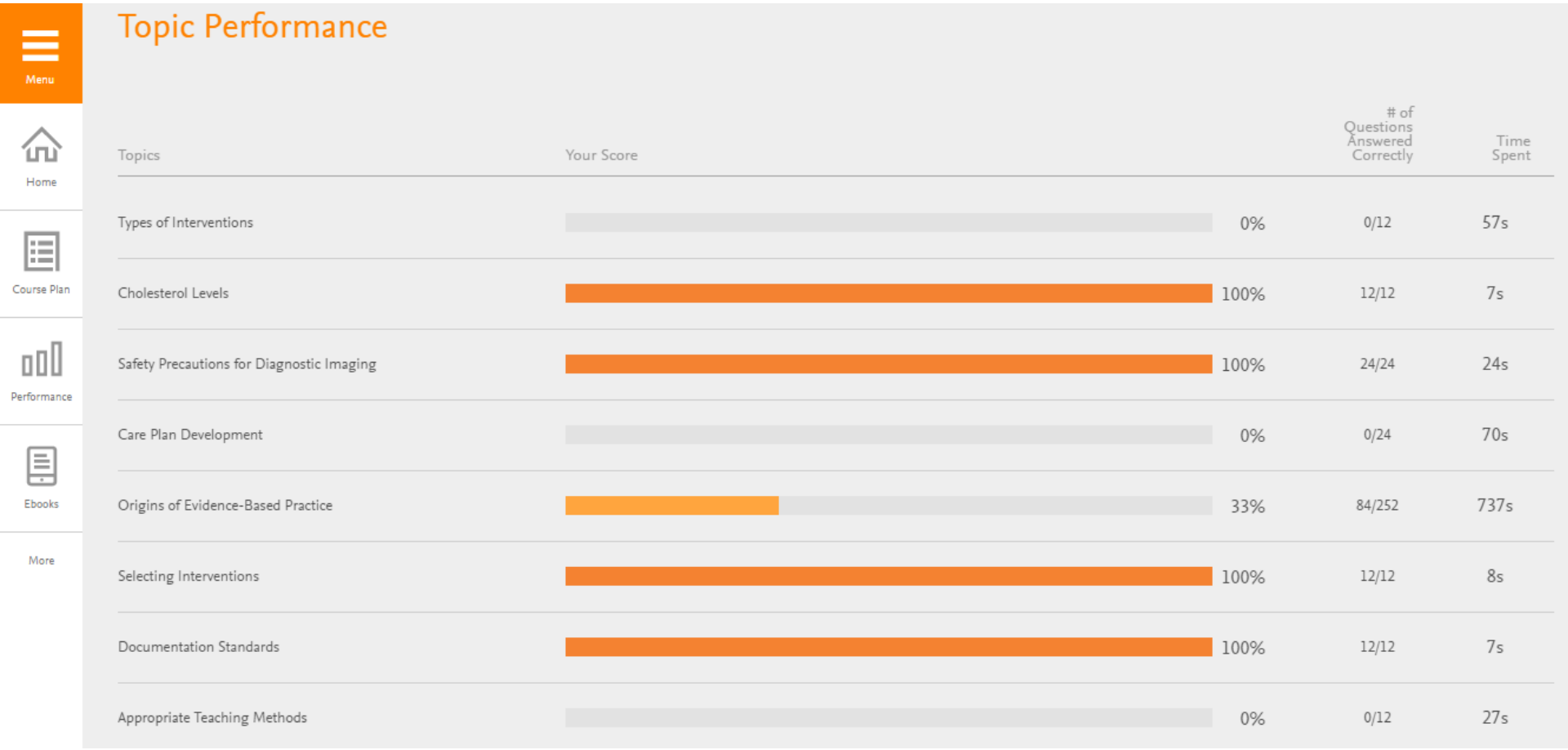
Aggregated Performance—Client Needs



Aggregated Performance—QSEN



Individual Student Performance



Individual Student Performance

ADVANTAGES for INSTITUTION

- Improved grades and passing rates
- Faster completion rates
- Focus on technology, which attracts students

Does this mean that faculty are irrelevant?

- A good education is NOT entirely quantifiable and manageable by a computer.
- Automated feedback and grading allows for increased faculty—student interaction that builds teaching and learning relationships
- Faculty training prior to implementation is EXTREMELY IMPORTANT!

Evidence of Effectiveness of Adaptive Learning

A 2014 Forbes article, Rethinking Higher Ed: A Case for Adaptive Learning, reported:

- Findings from a Gallup and *Inside Higher Ed* survey: Two in three college and university presidents believed adaptive learning would make a "positive impact on higher education."

- A white paper by Education Growth Advisors (EGA): a partnership between Arizona State University and Knewton described an 18 percent increase in pass rates and a 47 percent decrease in withdrawals in math courses using adaptive learning, saving the university an estimated $12 million.

- Tutorials presented by Smart Sparrow in an engineering course at the University of New South Wales led to a 55 percent decline in drop-out rate.

http://www.forbes.com/sites/ccap/2014/10/22/rethinking-higher-ed-a-case-for-adaptive-learning/#3440abdd6293

Moving Back to Professor Spencer's Problem…

How will adaptive learning help:

- Juan Perez , who is a highly motivated to better himself, and he does very well when the test questions requires knowledge to answer correctly? Remember, English is not his first language, and abstract thinking and activities that require clinical judgment are difficult for him.

- Latisha Pruitt, who is **an** excellent student, currently holding a 3.8 cumulative GPA? Remember, she learns very quickly with reading and homework assignments, but does not pay attention or participate in class. She spends most of her time in class, texting or engaged in social media.

- Mary Green, who is very motivated to become a nurse? Remember, she transferred to your program from a small town, where she went to a high school that had limited programming and resources. She took her pre-requisite courses at a community college in her home area. She had the lowest GPA of all students admitted in this cohort. She recognizes that she is a slow learner and describes feeling "like she will never catch up!"

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