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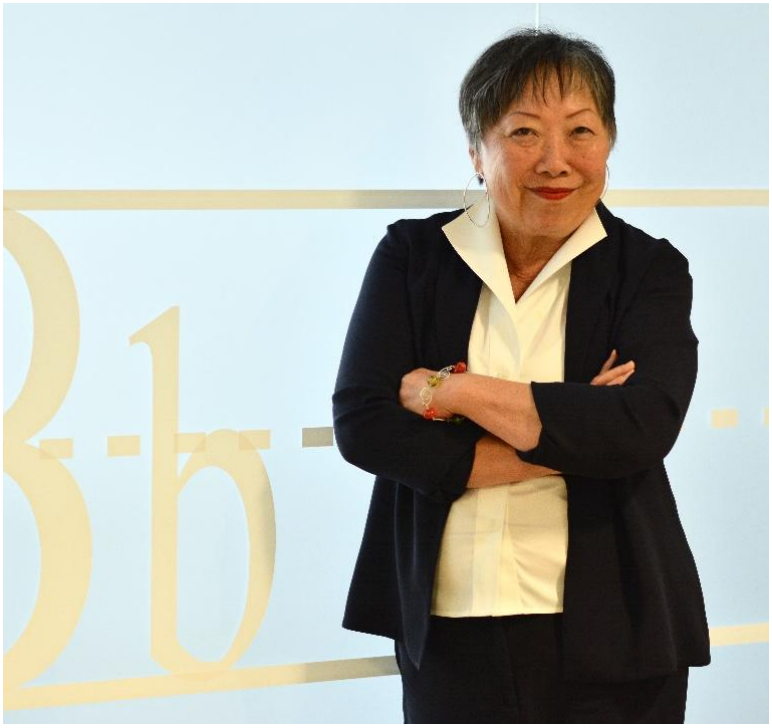
Game change: The theory, practice, and possibilities of competency-based education

October 12, 2016
WCET Annual Meeting



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Agenda

- Theory
- Practice
- What will it take?
- Questions and Discussions
- Resources

In theory

In theory . . .

"Transitioning away from seat time, in favor of a structure that creates **flexibility**, allows students to progress as they **demonstrate mastery** of academic content, **regardless of time, place, or pace** of learning. Competency-based strategies provide flexibility in the way that credit can be earned or awarded, and provide students with **personalized learning** opportunities."

U.S. Dept. of Education

Theory that aligns with CBE

The instruction paradigm		The learning paradigm
Provide/deliver instruction	→	Produce learning
Transfer knowledge from faculty to students	→	Elicit learner discovery and construction of knowledge
Time held constant; learning varies	→	Learning held constant; time varies
Classes start/end at same time	→	Environment is ready when learner is
Covering material	→	Specified learning results
End of course assessment	→	Pre/during/post assessments
Degree equals accumulated credit hours	→	Degree equals demonstrated knowledge and skills

Note: Adapted from "From Teaching to Learning – A New Paradigm for Undergraduate Education" by Robert B. Barr and John Tagg, 1995, Change

Drive towards andragogy

The instruction paradigm

Provide/deliver instruction

Transfer knowledge from faculty to students

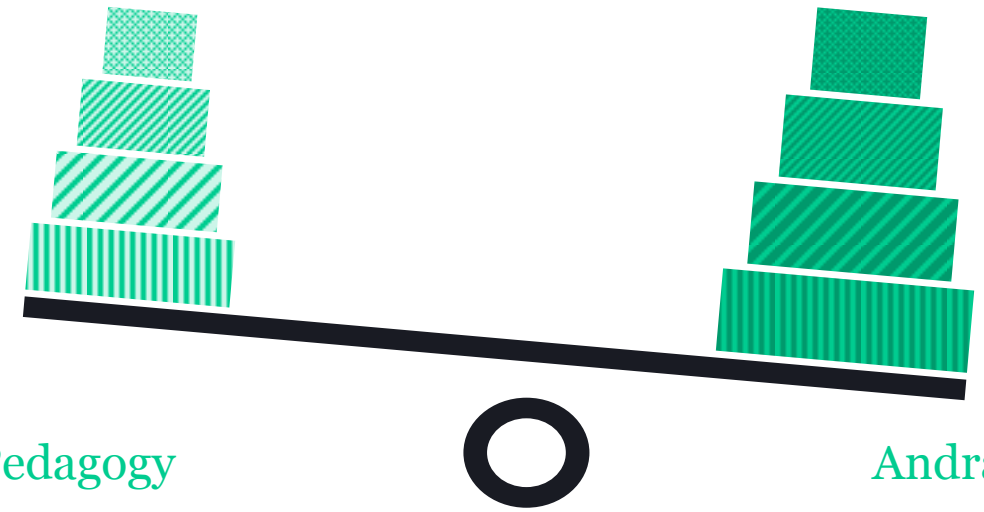
Time held constant; learning varies

Classes start/end at same time

Covering material

End of course assessment

Degree equals accumulated credit hours



The learning paradigm

Produce learning

Elicit learner discovery and construction of knowledge

Learning held constant; time varies

Environment is ready when learner is

Specified learning results

Pre/during/post assessments

Degree equals demonstrated knowledge and skills

Pedagogy

- Teacher-dependent
- Purpose broad
- Externally motivated
- Relevance independent

Andragogy

- Self-directed
- Purpose-oriented
- Internally motivated
- Relevance dependent

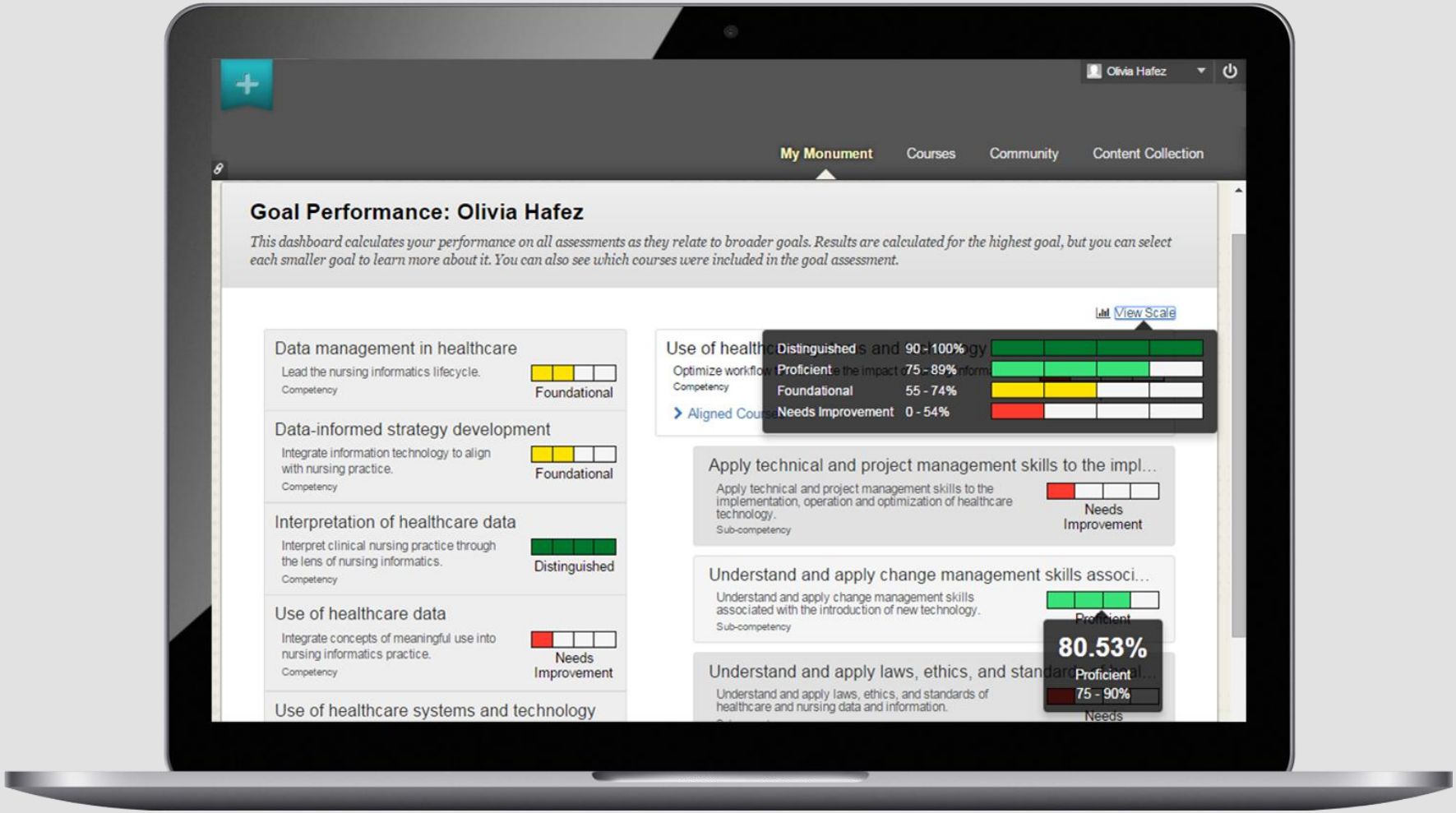
Learning content visibility

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

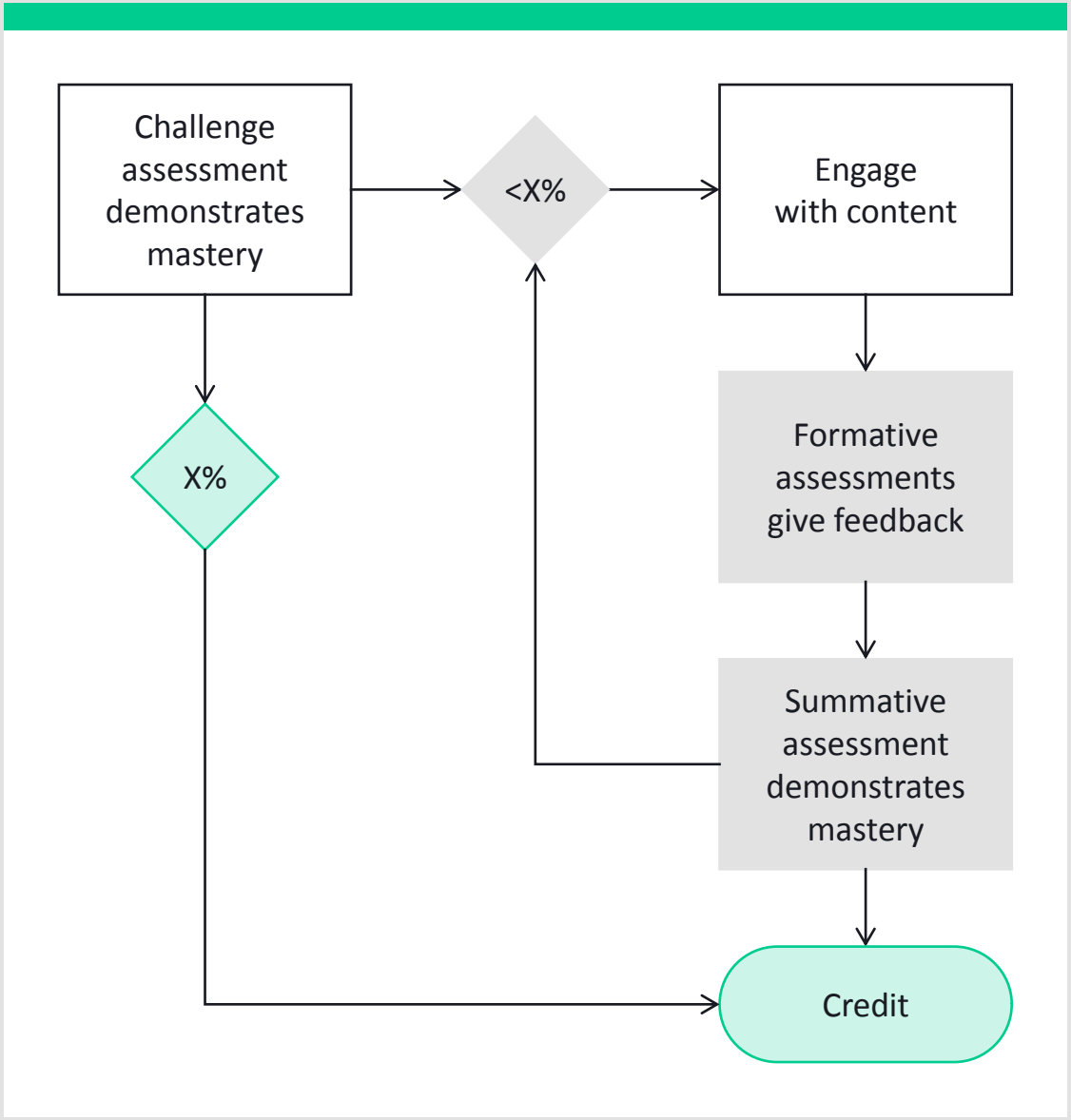
- Describe the differences between relational and hierarchical databases.
- Describe the general organization of a relational database and explain the functions of the basic relational operators.
- Given a list of data elements, code the data description specifications and create the physical files.
- Apply normalization techniques.
- Explain how choices made in defining and creating database files affect disk space requirements and computer performance.
- Plan, design, create and modify a database.
- Document a database.
- Create database objects using SQL commands.
- Retrieve and manipulate data using SQL commands.
- Identify data integrity and security requirements.
- Discuss the meaning and use of BIG Data, data warehousing, and data mining.

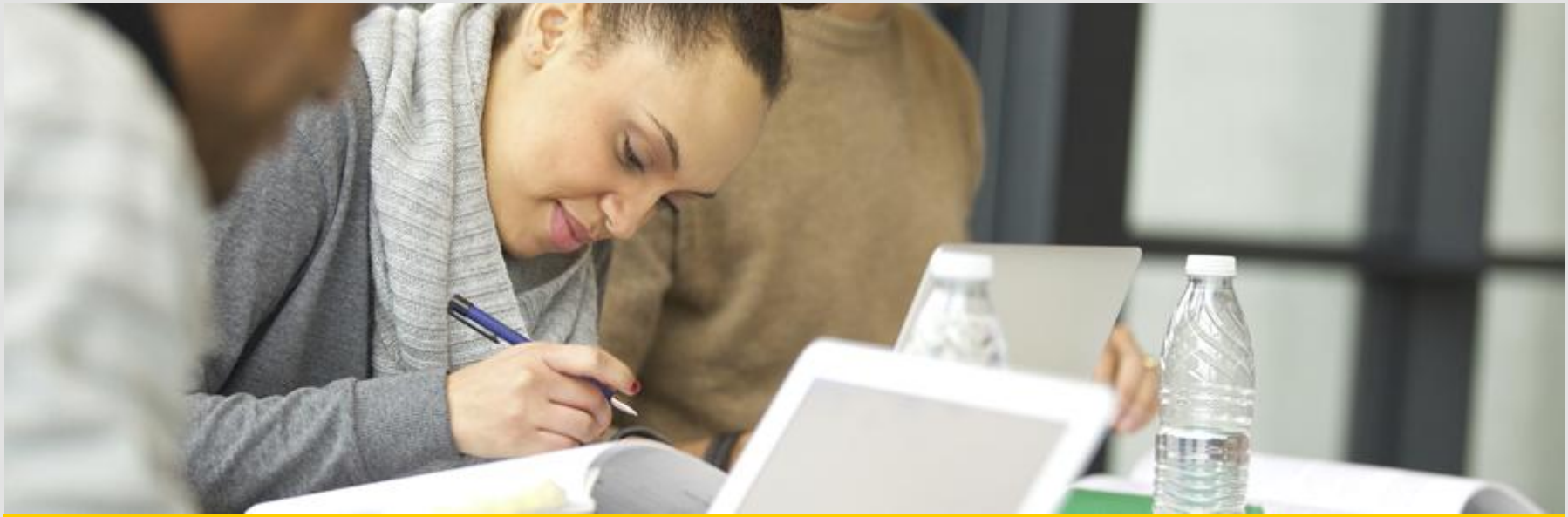
Competency Name	Competency Definition	Subcompetency
Knowledge of database purpose and structure	Identifies, defines, of describes the types and nature of databases in a business setting	Relational database
		Hierarchical database
		Relational operators
		Data elements
		Data specifications
Knowledge of database technology	Understands and applies technology of database usage	Database manipulation language
		Database definition language
		Database control language
		DBMS functions
		ANSI standard structured query language
Analysis of database interference with technology	Analyzes the impact of database size and performance on technology	Disc space requirements
		Computer performance
		Database objects
		Data integrity
		Data security requirements
Application of database operations	Understands and applies the processes of creating and maintaining databases	Database administration
		Database design methodology
		Database design normalization
		Database back-up
		Database recover
Application of database content	Evaluates data needed to inform decision-making in a business setting	Data creation
		Table query
		Forms and subforms
		Reporting

Learner progress visibility



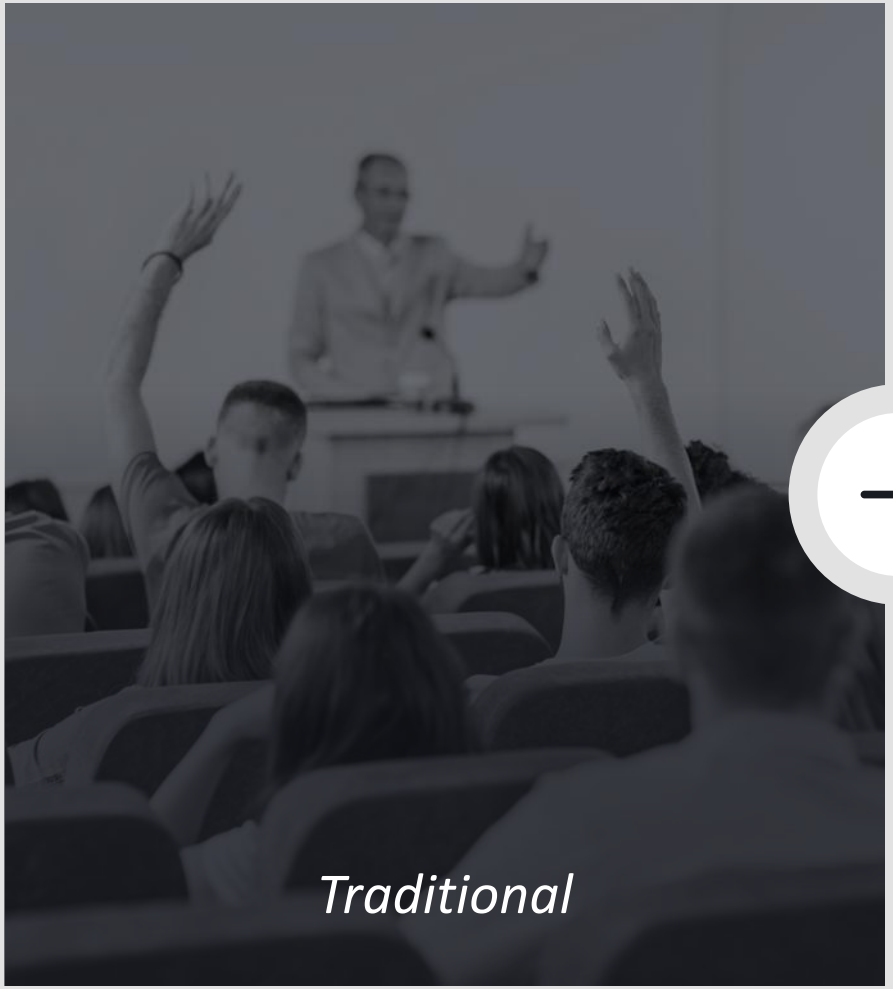
Personalization through self-pacing and coaching





In practice

Shift in delivery



Shift in curricular framework

Major Course Learning Objectives

Upon successful completion of this course the student will be expected to:

1. Describe the differences between relational and hierarchical databases
2. Describe the general organization of a relational database and explain the functions of the basic relational operators
3. Given a list of data elements, code the data description specifications and create the physical files
4. Apply normalization techniques
5. Explain how choices made in defining and creating database files affect disk space requirements and computer performance
6. Plan, design, create and modify a database
7. Document a database
8. Create database objects using SQL commands
9. Retrieve and manipulate data using SQL commands
10. Identify data integrity and security requirements
11. Discuss the meaning and use of BIG Data, data warehousing, and data mining

Course Content

Topical areas of study include:

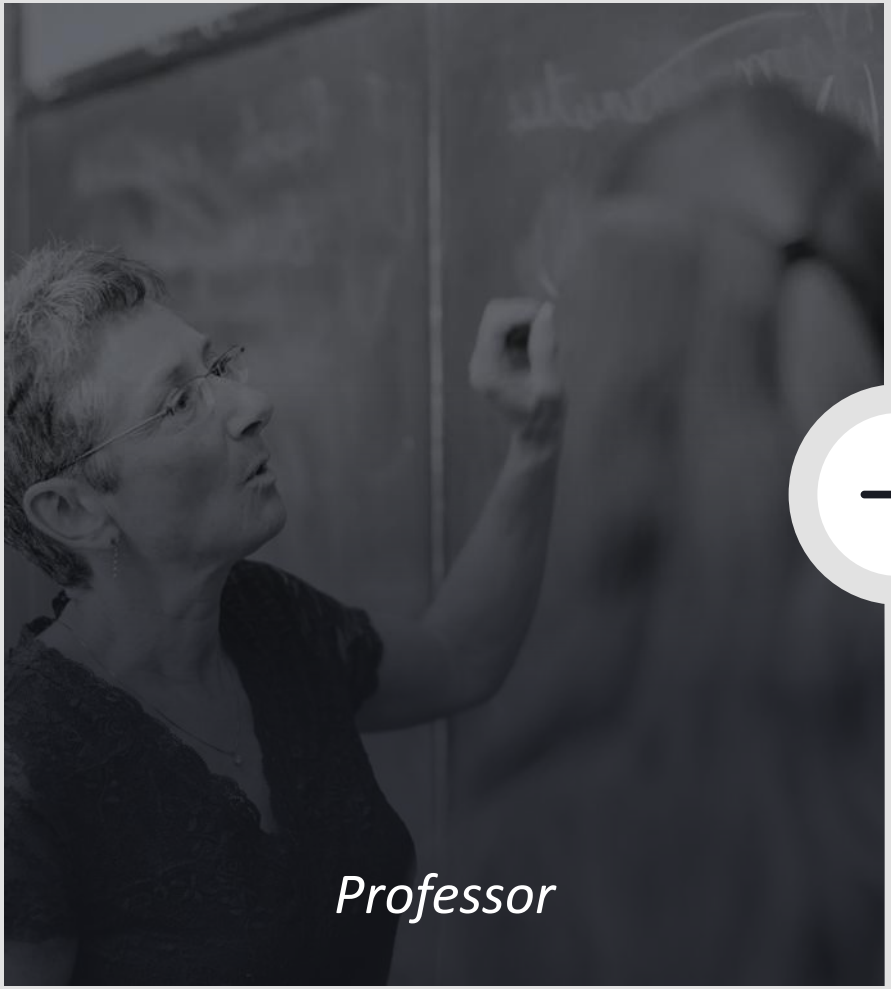
- Creating and managing data
- Multiple table queries
- Developing forms and sub-forms
- Complex reports
- Introduction to Database Management
- Database Administration
- Database Design Methodology
- Database Design Normalization
- Database backup and recovery
- Database administration and security
- ANSI Standard Structured query language (SQL)

Competency Name/Definition	Subcompetency
Knowledge of database purpose and structure *Identifies, defines or describes the types and nature of databases in a business setting*	• Relational database • Hierarchical database • Relational operators • Data elements • Data specifications
Knowledge of database terminology *Understands and applies the terminology of database usage*	• Database Manipulation Language • Database Definition Language • Database Control Language • DBMS Functions • ANSI Std. Str. query Language
Analysis of database interface with technology *Analyzes the impact of database size and performance on technology*	• Disc space requirements • Computer performance • Database objects • Data integrity • Data security requirements
Application of database operations *Applies the processes of creating and maintaining databases*	• Database Administration • Database Design Methodology • Database Design Normalization • Database back-up • Database recovery
Evaluation of database content *Evaluates data needed to inform decision-making in a business setting*	• Data creation • Table query • Forms and subforms • Reporting

Shifts in assessment practice

Competency Name/Description	Subcompetency Description	Assessed	
		Formative Assessment	Summative Assessment
Analysis and classification of disease factors *Analyzes and classifies patient behaviors in order to manage proximal, medial, and distal pro-inflammatory factors*	Analysis of proximal pro-inflammatory factors	A. _____ is a condition that results when a person ingests a substance.	Effectively analyzes patient behaviors and identifies proximal pro-inflammatory factors including: smoking, diet, inactivity, obesity, alcohol/drugs, pollution.
		A. Which of the following is NOT true?	
		A. About ____ of the adult American population smokes tobacco.	
		A. Which of the following statements is NOT true?	
		A. True or False: Most of the people who have an alcohol addiction, seek…	
		A. Excessive alcohol use increases the risk of ____.	
	Analysis of medial pro-inflammatory factors	A. If you are working with someone as a wellness coach, and they start to…	Effectively analyzes patient behaviors and identifies medial pro-inflammatory factors including: stress, anxiety, depression, social or peer pressure, psychological factors, occupation, boredom, technology, genetics.
		A. What are some lifestyle behaviors that often worsen anxiety?	
		A. One of the best lifestyle behaviors to help mental health is _____.	
	Analysis of distal pro-inflammatory factors	C. The local _____ is often a good source of information regarding…	Effectively analyzes patient behaviors and identifies distal pro-inflammatory factors including: industrialization, modernity, economic growth
		C. _____ is a chemical often used in plastic water bottles, that appears to …	

Shift in faculty roles and practice



Shift in faculty roles

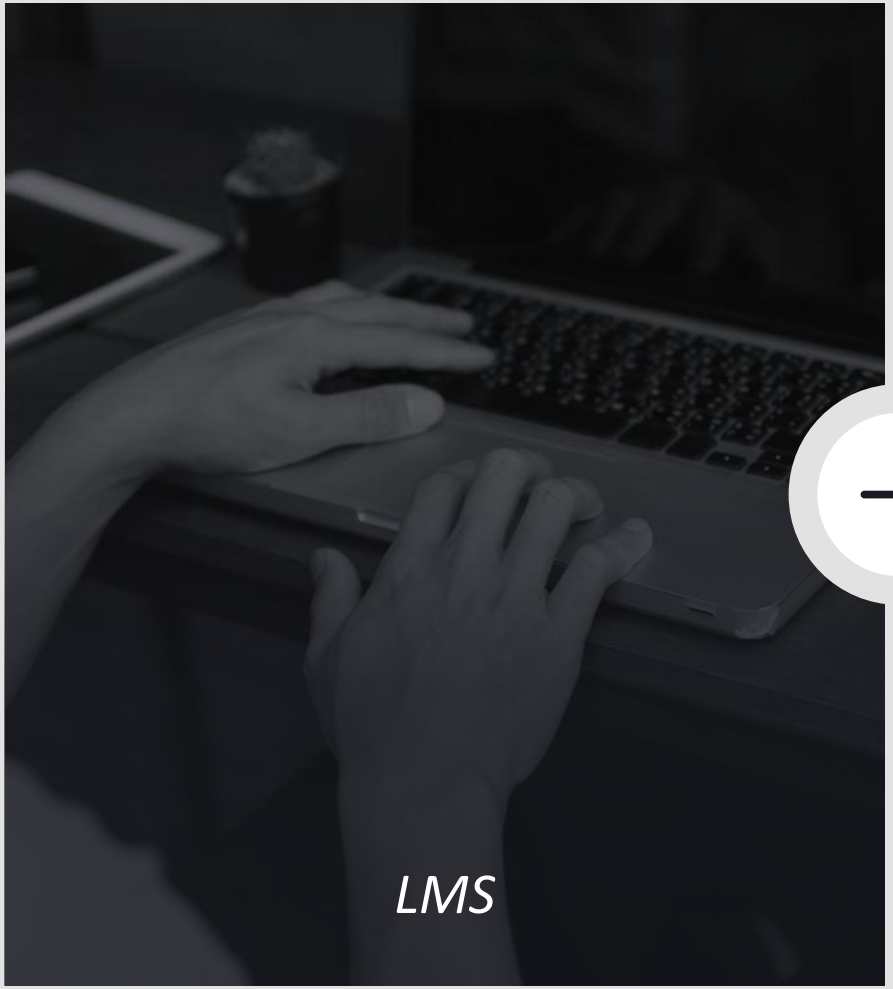
Faculty and coach needs

- Has the student logged into the course?
- How is the student performing on formative assessments?
- Is the student spending adequate time on task in the course?
- How is the student progressing through the summative assessments?
- How is the student progressing through the program?
- What additional help does the student need?
- How can I work with the student to improve their success?

Student needs

- How did I perform on the formative assessment?
- What areas do I need to brush up on in order to be ready for the summative assessment?
- How far along am I in the formative assessments?
- How far along am I in the summative assessments?
- How far along am I in the program? How many competencies have I completed, and how many do I have left?
- How many times have I taken the summative assessment?
- What tool do I use to engage with my coach or faculty?

Shift in technology



Goal Performance Dashboard

Retention Center and Analytics

Portfolio

Tests, Rubrics

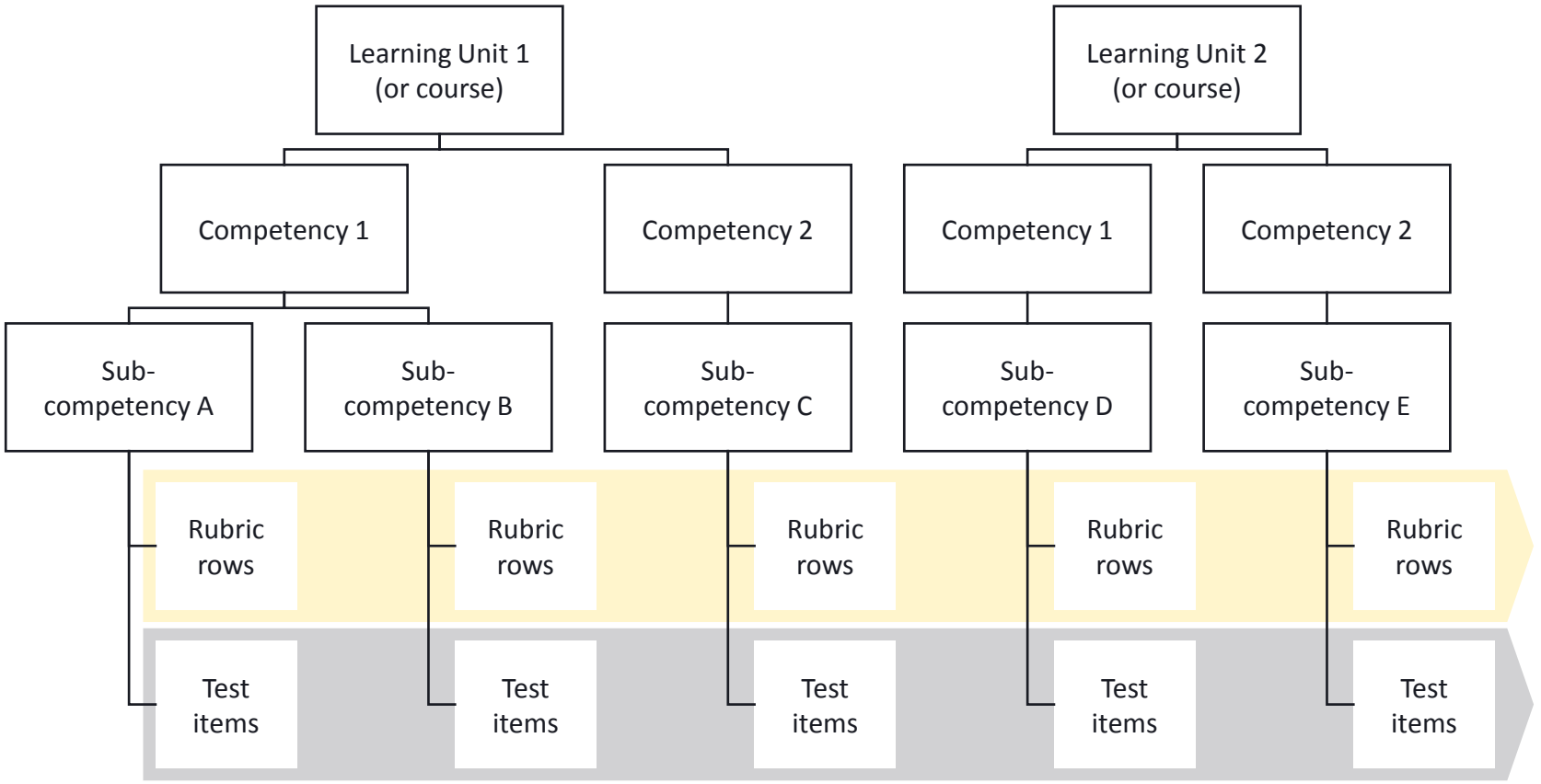
Blackboard Collaborate

xPlor, Publisher Integrations

Blackboard Achievements

Goals Management Infrastructure

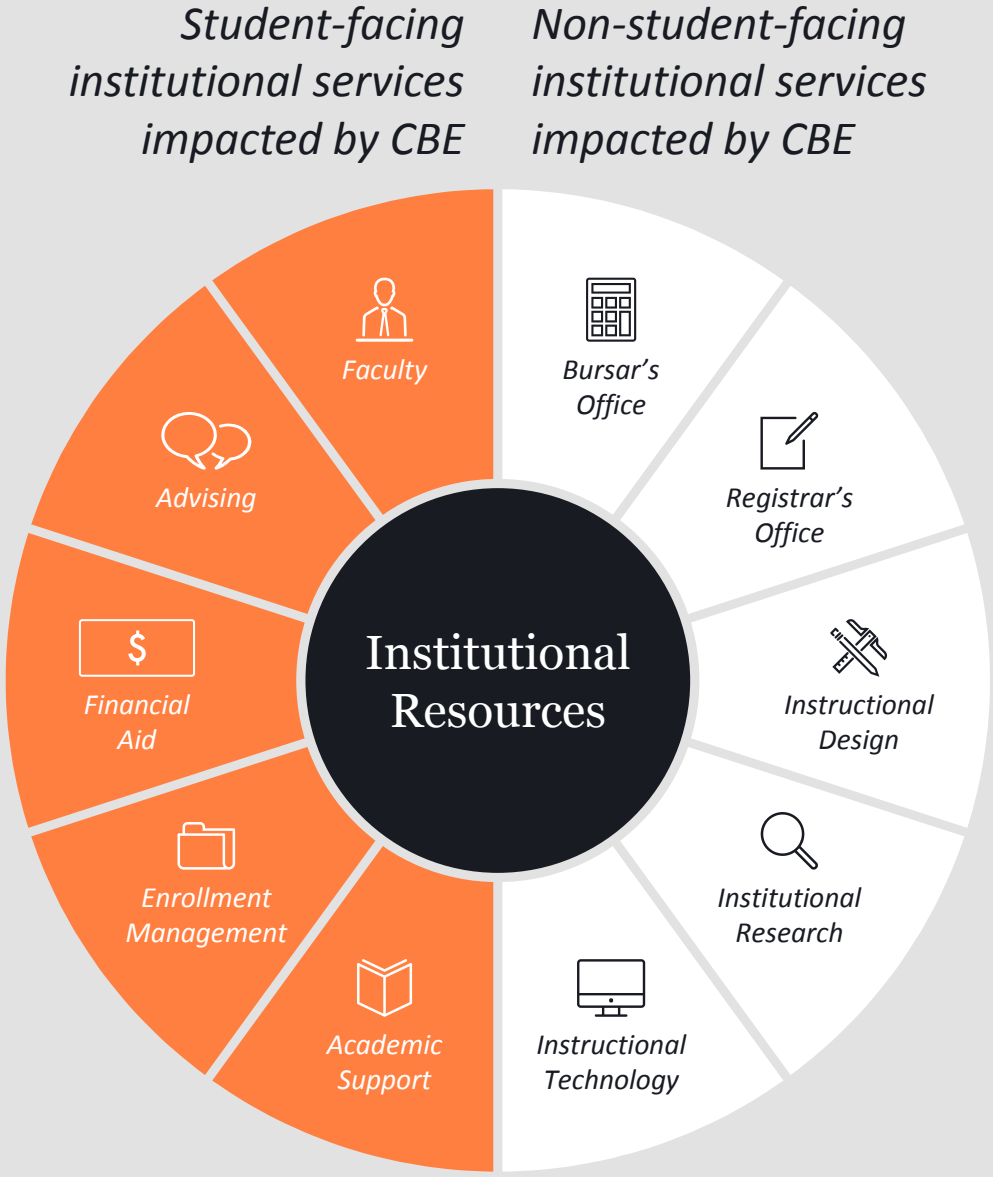
Shift in use of assessment technology



What will it take?

Beyond the course . . .

CBE impacts every section of an institution



Comprehensive approach to CBE

Planning

- Academic program demand
- CBE financial model
- Operational process and quality improvement

Preparing

- Regulatory authorization
- Administrative and academic policy
- Staffing model

Orienting

- Faculty and staff ownership
- Competency definition and development
- Assessment design and development

Delivering

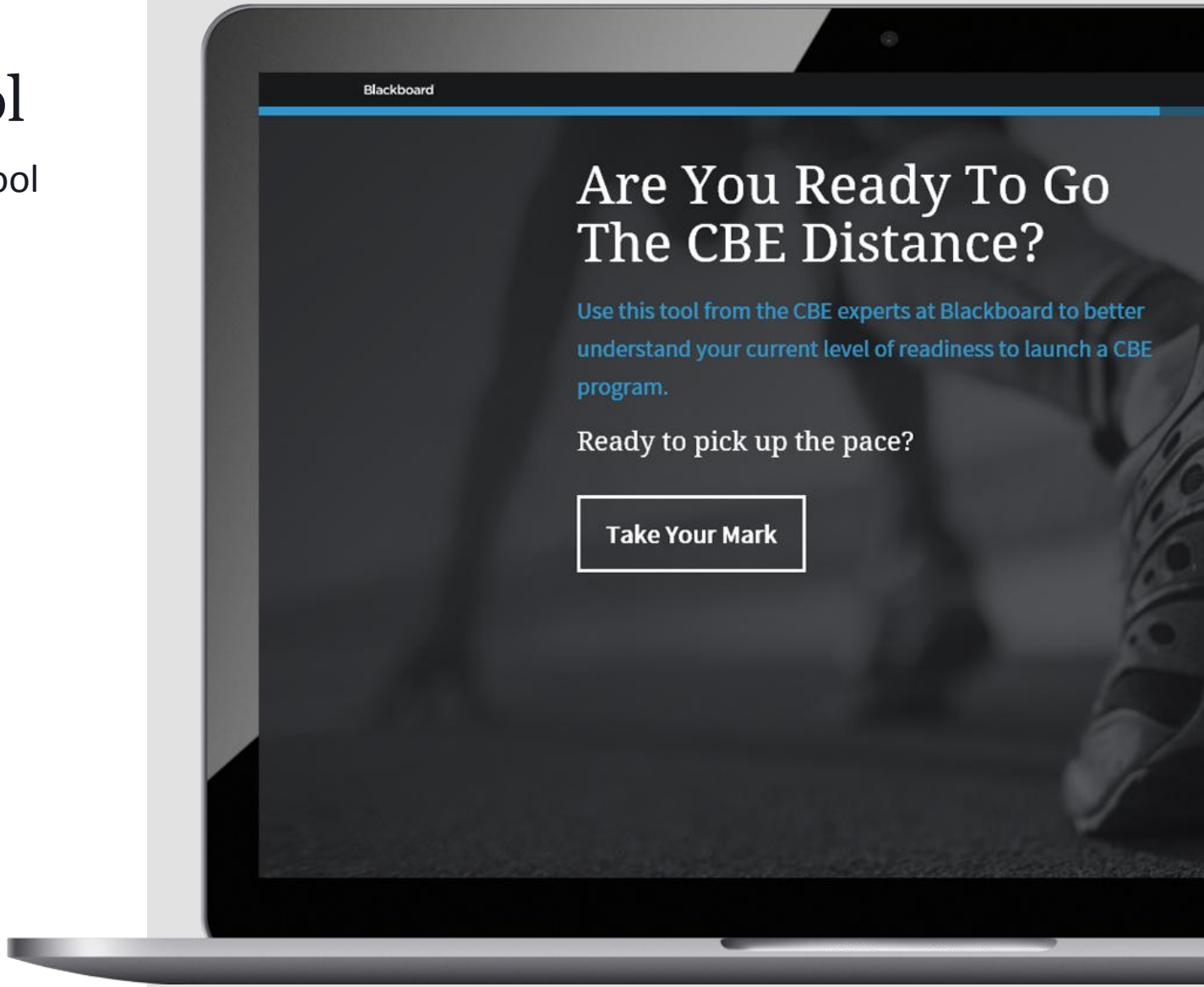
- Learning module design
- Quality and accessibility framework
- Technology and platform systems

Supporting

- Academic support services
- Student preparedness development
- Non-academic services

CBE readiness tool

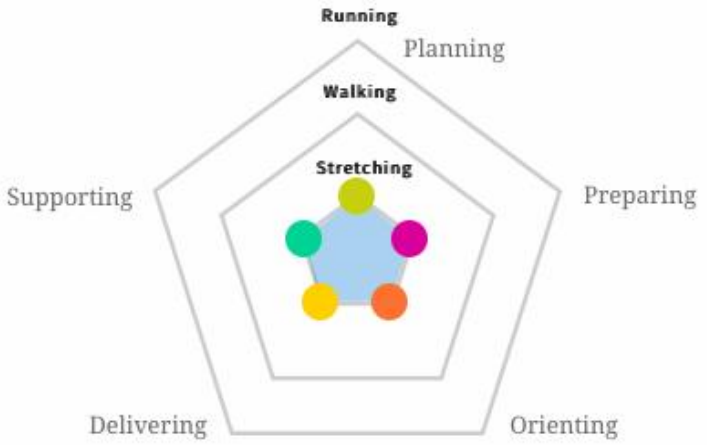
blackboard.com/cbetool



Scenario 1: Starting to Stretch

Great! You're Starting to Stretch Your Legs

You are ready to begin - determine where you need help to start developing a strong CBE program.



This is a great first step! Now is the time to make sure that all of your major stakeholders are involved in these conversations. It's not too early to think about what key aspects of your CBE program will look like, such as the financia and staffing models, faculty and staff ownership, and learning module design.

Scenario 2: Starting to Walk

Great! It Looks Like You're Starting To Walk

You are making good ground - focus on areas where you have more challenges to come up to speed.

You've moved past those early exploratory converations about the role of CBE at your institution and have made a commitment to move forward with program development. Congratulations! Now is the time to make sure that you have your CBE team assembled and everyone knows the game plan.

Lessons learned

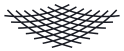
- The right leaders matter
- Managed growth
- Use external facilitators
- Rolling implementation
- Leave room for fear and questions
- Automate processes from the start
- Provide ongoing and just-in-time professional development
- Leverage instructional designers
- Faculty-driven with the right mix of junior and senior faculty
- Clarity, consistency, granularity of competencies

Leadership matters

Having the right leaders at every level of the program is critical. It creates buy-in, it means there is an institutional champion, and it greases squeaky wheels

Lead by example

Providing advocacy



Creating safe spaces to fail

Creating buy-in

Greasing squeaky wheels

Providing external cover

Hard work but big payoffs

"[This is] the most visible aspect of a revolution occurring in education at all levels: **the shift to learning outcomes and learner-centered education**.

Every institution of higher education will have to make this shift, and the time to plan for it is now."

Arthur Levine

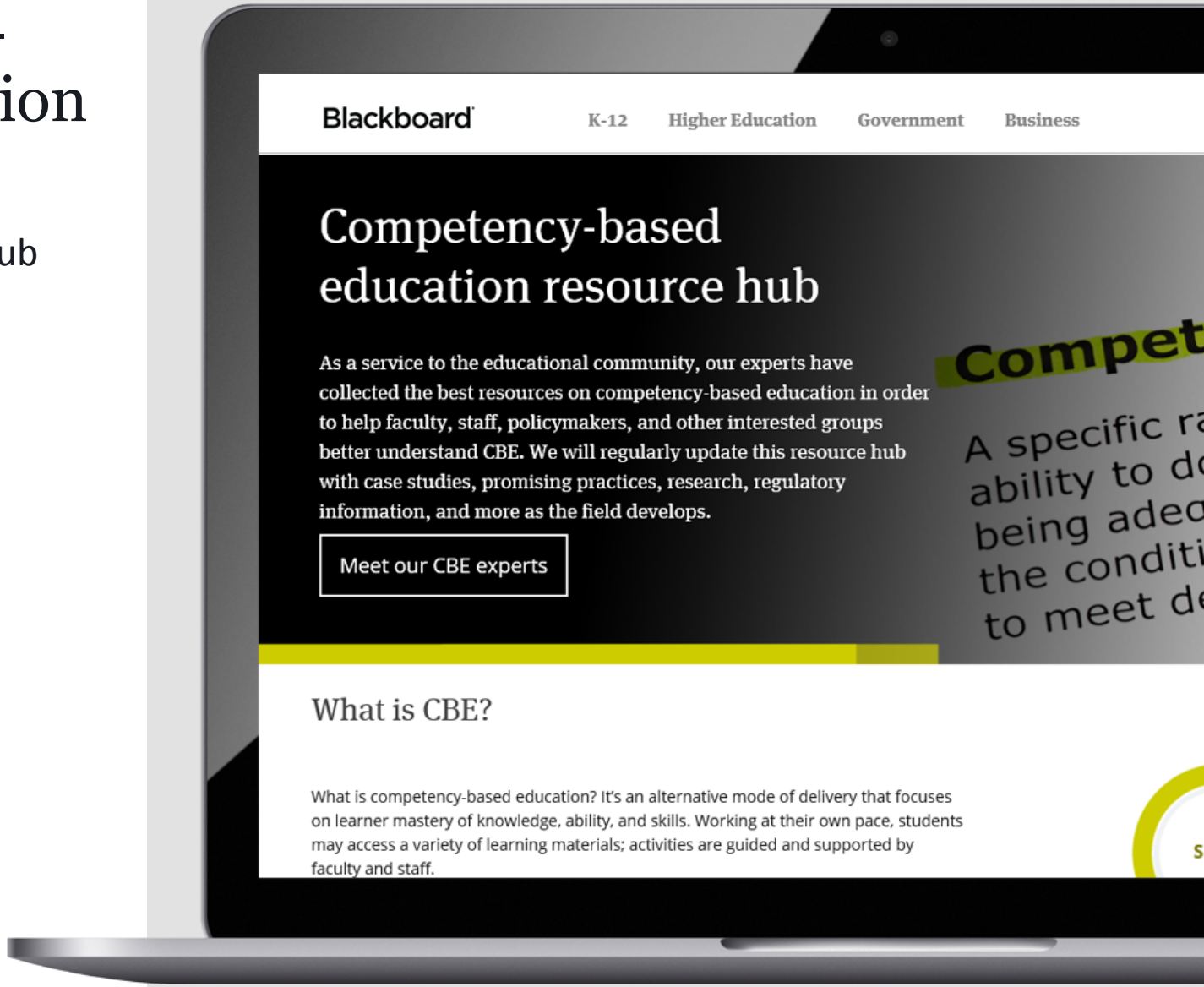
President of the Woodrow Wilson National Fellowship Foundation and past president of Teachers College of Columbia University

Chronicle of Higher Education September 15, 2015

Resources

Competency-based education resource hub

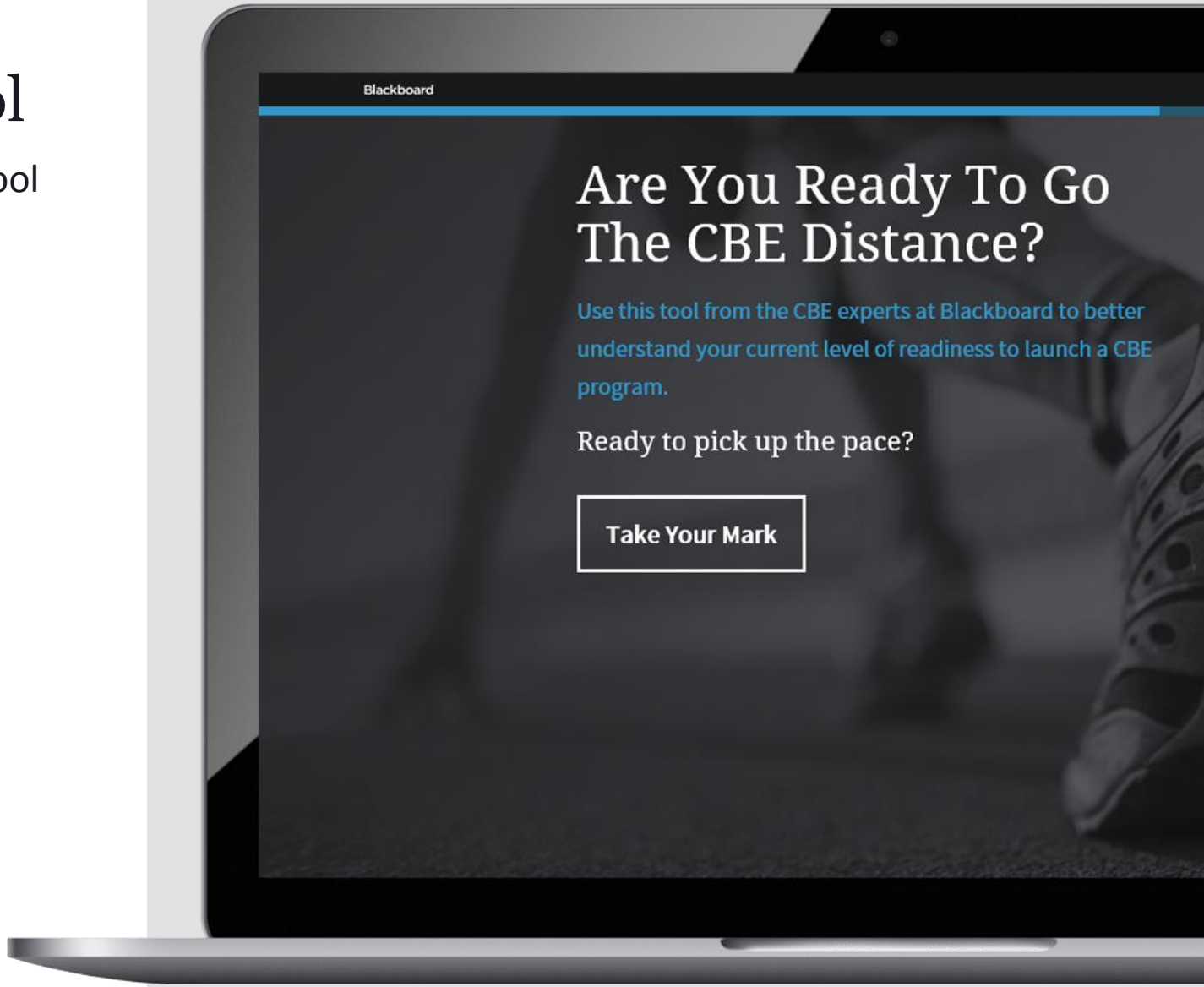
blackboard.com/cbehub



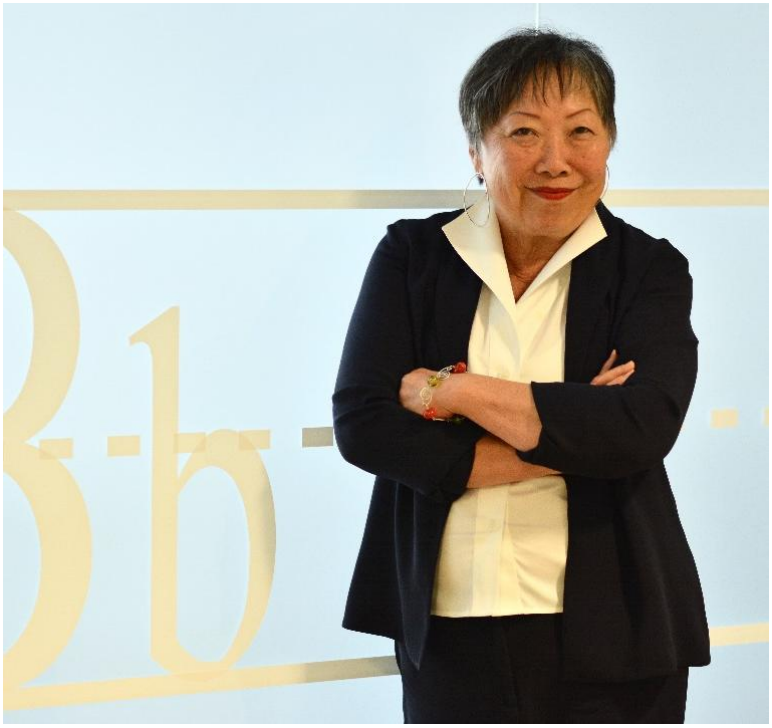
NCHEMS competency-based education cost modeling

CBE readiness tool

blackboard.com/cbetool



Questions and discussion



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CBE continuum