Our Process for Building a CBE Degree

Lauren Cifuentes
Alexandra Janney
Rinki Suryavanshi
Lauran Guerra

Supported by the Texas Affordable Baccalaureate Expansion Project
Paul LeBlanc on Adult Students and Competency-Based Education (CBE)

Paul LeBlanc
President
Southern New Hampshire University
Grant mission-

• Build a CBE, affordable baccalaureate program in Mechanical Engineering Technology that could take three years to complete and cost a student $15,000.
What we will share with you today--

• Our development processes for building a competency-based online degree in Mechanical Engineering Technology

• How we develop prior learning assessments, and

• How we apply Blackboard tools to align competencies to courses and track student progress.
Our Development Processes for Building a Competency-based Online Degree in Mechanical Engineering Technology
Our Process-- Knowledge Gathering

• Why & how CBE? CBE conferences, workshops, & literature, guest speakers,

• Do they approve? Campus logistics team, faculty, and administrative leaders.

• Is this possible on our campus? Constraints: 3 credit hr. courses, financial aid, terms, pretesting for course credit, etc.
Our Process-- Contributors

Internal Logistics Team-
• Provost, Dean, Department Head, Associate Provost for Academic Affairs,
• Compliance Officer,
• Registrar & Bursar,
• Financial Aid,
• MarComm,
• Planning & Institutional Research,
• Recruitment and Enrollment,
• Advising,
• Undergraduate Studies.

External
• Leaders in the workforce
  • Identify competencies needed
• Educators in 2-year college
  • Articulation
Our Process—Preliminary Tasks

• Meet weekly.
• Find funds to support faculty in course development and pay for closed-captioning of videos.
• Write catalog copy for new program approval. Takes at least a year.
• Gain approval from SACS and the U.S. Department of Education.
• Structure the year such that courses can be offered in 7-week terms.
• Create a contract that faculty must sign & fulfill to receive a stipend.
Our Process:
Course Design Development
Course Design & Development

• Generate competencies and enter them in each course: Use national standards (ABET), local course objectives, & workforce leaders’ input.

• Conduct goal analysis of each competency to build the learning objectives required for mastery.

• Develop template for modules and name each module according to topics that describe the competency.
  • Rationale,
  • Objectives,
  • Foundations,
  • Assignments and Activities, and
  • Assessments.

• Distribute learning objectives across modules.
Competency 1 - Conductive and Convective Heat Transfer

Be able to determine the material properties, apply knowledge of geometry involved, select the right thermal resistance formulas, and perform calculations to solve conductive and convective heat transfer problems.

Pretest for competency

Module - Material Properties

Module - Applied Geometry

Module - Thermal Resistance Formulas

Module - Conductive and Convective Heat Transfer Problems to Solve

Posttest
Course Design & Development (cont’)

• Develop pretests and posttests for each competency.

• Develop assessments for each module (aligned to module objectives).

• Align assignments and assessments (any graded performance) to competencies.

• Build content
Course Design & Development (cont’)

• Work with local 2-year colleges and lower division instructors on the 4-year campus to put first two years of courses online.

• Identify open-educational-resources (OERs) to free students from having to purchase textbooks.
Our Process—Implementation

• Determine fees and administration protocols for prior learning assessments (PLA).

• Market to and recruit learners.

• Enroll and educate students.

• Evaluate the program’s effectiveness.
How We Develop Prior Learning Assessments
Example Prior Learning Assessment

Competency

• Be able to determine the material properties, apply knowledge of geometry involved, select the right thermal resistance formulas, and perform calculations to solve conductive and convective heat transfer problems.

Assessment

• Given a thermal conductivity problem, determine the material properties, apply knowledge of geometry involved, select the right thermal resistance formulas, and perform calculations to solve conductive and convective heat transfer problems.
With Prior Learning Assessment (PLAs) Students Will Be Able to--

• Test out of entire courses by passing a pretest on all of the course competencies.

• Shorten the amount of time they take to complete a course by testing out of one or more of the course competencies.
How We Apply Blackboard Tools to Align Competencies to Course Assignments and Assessments to Track Student Progress
Establishing Student Progress at the Course Level

Any Bb Graded Activity Can Be Aligned to Competencies (Goal-Performance Alignment Tool)

• Assessments
• Assignments
• Portfolio artifact
• Content and activities in a course content area
• Discussions
• Grade center columns

• Helps us align competencies and assessments.
• Makes it easy to track student progress as they master those competencies.
• Automates a record as students place out of a course and/or complete a course before the end of a term.
• Students, faculty, and administrators can see progress
4 Types of Reports

Goal Performance Alignment Tool
Course Coverage Report (accreditation)

Displays data on course items that have been aligned to goals.

Course Coverage Report

Course Name: [FALL-16] CNEP-5304-001 - INTRODUCTION TO COUNSELING
Goal/Goal Set: Counseling
Selected Goal Types: All Goal Types

Goals Comparison

Content Alignment Breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Covered</th>
<th>Not Covered</th>
<th>Not Used</th>
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<table>
<thead>
<tr>
<th>Category</th>
<th>Tests</th>
<th>Surveys</th>
<th>Questions</th>
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Course Performance

Course Name: [FALL-16] CNEP-5304-001 - INTRODUCTION TO COUNSELING
Number of Students: 33
Goal/Goal Set: Counseling
Included Categories: Counseling Common Core
Report Description: This report displays information showing how a single Blackboard Learn Course performs against a selected set of goals. Performance targets and a range of acceptable performance for the course can be determined when running the report. Data includes averages for the entire course as well as breakdowns for individual students and goals.

Course Overview

<table>
<thead>
<tr>
<th>Performance Target</th>
<th>Performance Range</th>
<th>Course Average</th>
<th>Median</th>
<th>Mode</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
<td>80.0%</td>
<td>+/- 5% (or 75% - 85%)</td>
<td>95.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>10.4%</td>
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</tbody>
</table>

Average Score (in %)

- Assignments: 98.0%
- Tests: 83.9%
- Journals: 98.6%
- Forums: 98.1%

Students Over/Under Avg

- No Submissions: 0
- Over Performing (or > 85.0%): 10
- Under Performing (or < 75.0%): 0
- Within Range (or 75.0% - 85.0%): 23

(for instructor, students, & department): Displays how students in a single course perform against a selected set of goals.
Course Performance Report (cont’)

(for instructor, students, & department): Displays how each student in a single course performs against a selected set of goals.
Learner Performance

Student Overview

<table>
<thead>
<tr>
<th>Performance Target</th>
<th>Performance Range</th>
<th>Course</th>
<th>Student</th>
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</thead>
<tbody>
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(Program evaluation and accreditation): Displays how each student in a single course performs against a selected set of goals.
Establishing Student Progress at the Program Level

Blackboard’s Analytics for Learn (A4L)

• Students, faculty, and administrators can see progress.

• A4L facilitates analysis of student progress through courses across the program.
  • Success rate- % of students who graduate
  • Retention rates- % of students enrolled after a specified terms
  • Completion rates- # of credits completed/# of credits attempted
  • Success of transfer vs 4 yr students, etc.
  • CBE students compared to traditional students
  • Trouble spots
As student across the Program Performance Report

This is a sample of a student activity report.

Lydia Crespi Compared to Course Average

(Program evaluation and accreditation): Analytics for Learn (A4L) gives a report on student progress through a program and program goal achievement.
Conclusions

• Delivering CBE is a complex task that involves institutional buy-in.

• Many challenges. FACULTY WITH TIME AND INTEREST.

• Design and development research (McKenney & Reeves, 2012; Richey & Klein, 2007) needs to be conducted to better understand
  • How to address constraints of higher ed conventions,
  • Attributes of effective CBE programs,
  • Impacts of CBE on students’ learning, college experience, demographics of graduates, cost of degree, and workforce contribution compared to those in traditional programs.
References


Thank you!