



National Energy Center of Excellence



**Higher Education Committee
Rep. Bob Skarphol, Chairman**



BISMARCK
STATE COLLEGE



Babson Survey Research Group & The Sloan Consortium

- **A 2009 study demonstrates that:**

- “Online enrollments have continued to grow at rates far in excess of the total higher education student population, with the most recent data demonstrating no signs of slowing” (Allen and Seaman 1).
 - “The 17 percent growth rate for online enrollments far exceeds the 1.2 percent growth of the overall higher education student population” (1).
- “Over 4.6 million students were taking at least one online course during the fall 2008 term; a 17 percent increase over the number reported the previous year” (1).
 - “More than one in four higher education students now take at least one course online” (1).

Allen, I. Elaine and Seaman, Jack, *Learning on Demand: Online Education in the United States, 2009*, Babson Survey Research Group, 2010.

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U.S. Department of Education Meta-Analysis

- **Overview:**

- Research literature from 1996 through July 2008 identified more than a thousand empirical studies of online learning
- Studies screened to find those that:
 - Contrasted an online to a face-to-face condition.
 - Measured student learning outcomes.
 - Used a rigorous research design.
 - Provided adequate information to calculate an effect size.
- As a result of this screening, 99 studies were identified that could be subjected to meta-analysis.

U.S. Department of Education Meta-Analysis

- **According to the key findings of a 2009 study,**
 - “Students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction” (xiv).
 - “Online learning can be enhanced by giving learners control of their interactions with media and prompting learner reflection” (xvi).

U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, Washington, D.C., 2009.

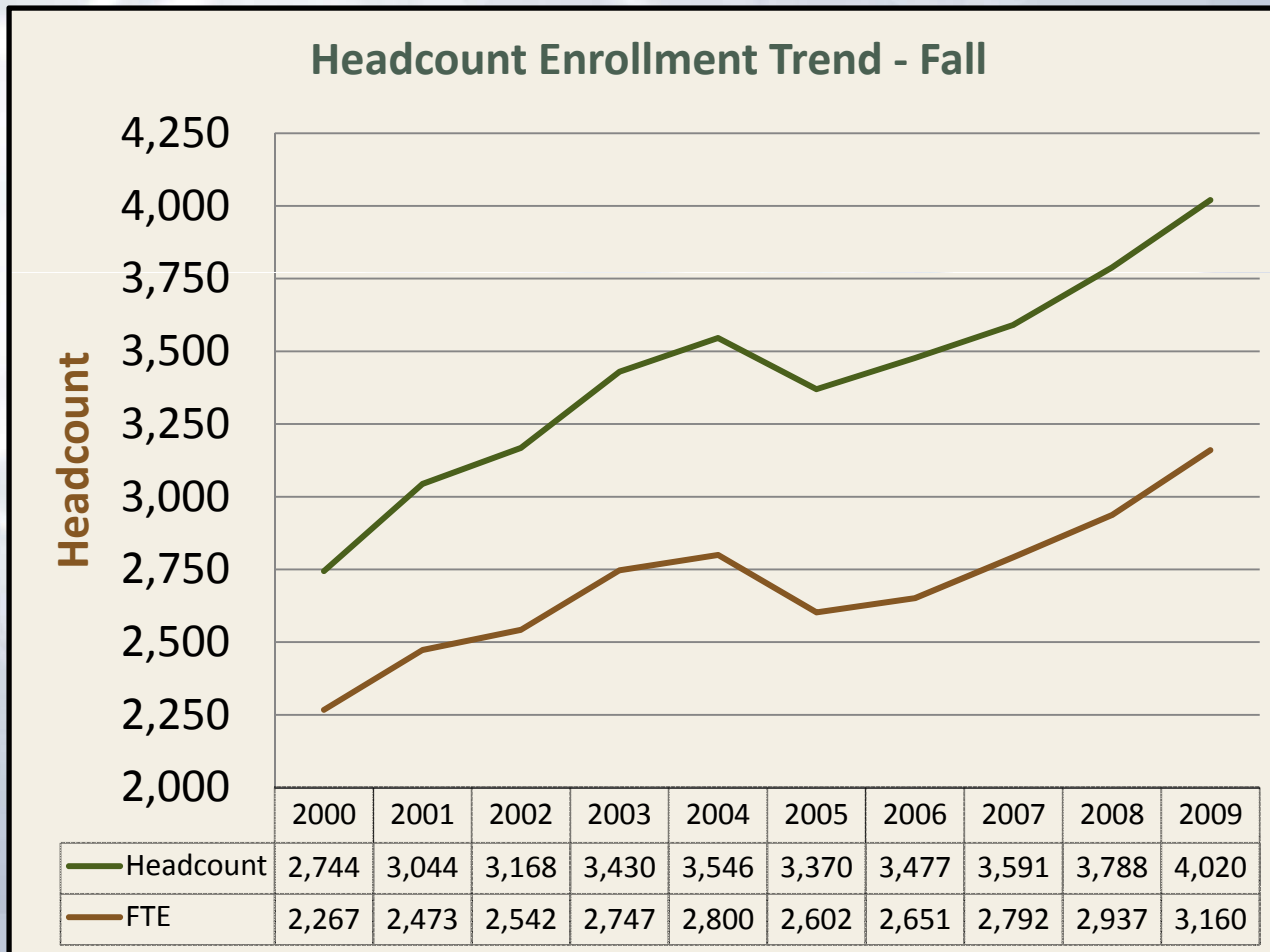
Bismarck State College Online Education Strategies

- Accessibility
- Flexibility
- Responsiveness

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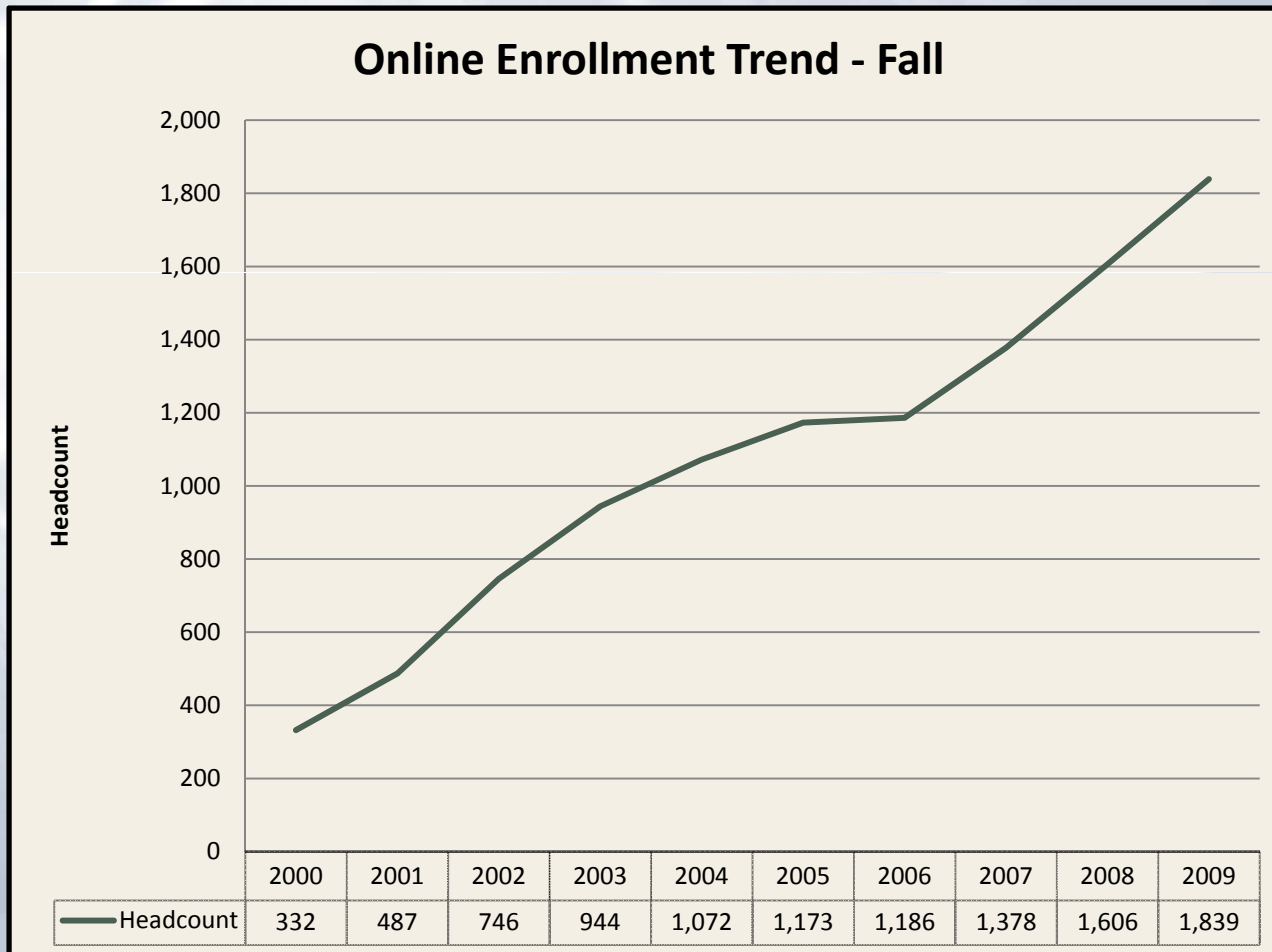


Headcount Enrollment



- 47% headcount increase in enrollments in the last 10 years
- 3rd largest enrollment in North Dakota University

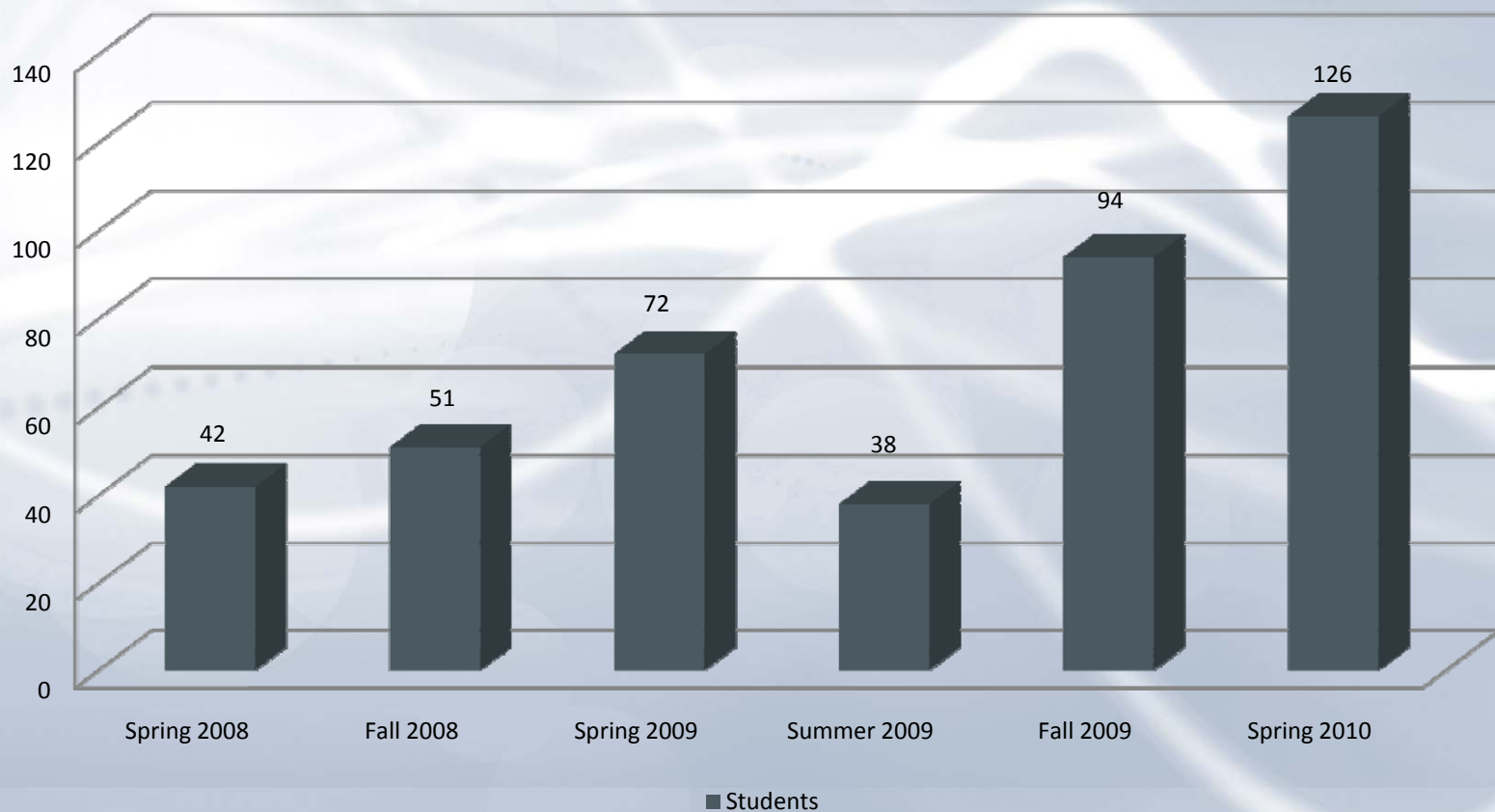
Online Enrollment



- Significant increases are expected with new partnerships
- Provide primary sector economic development

BAS in Energy Management

BAS in Energy Management



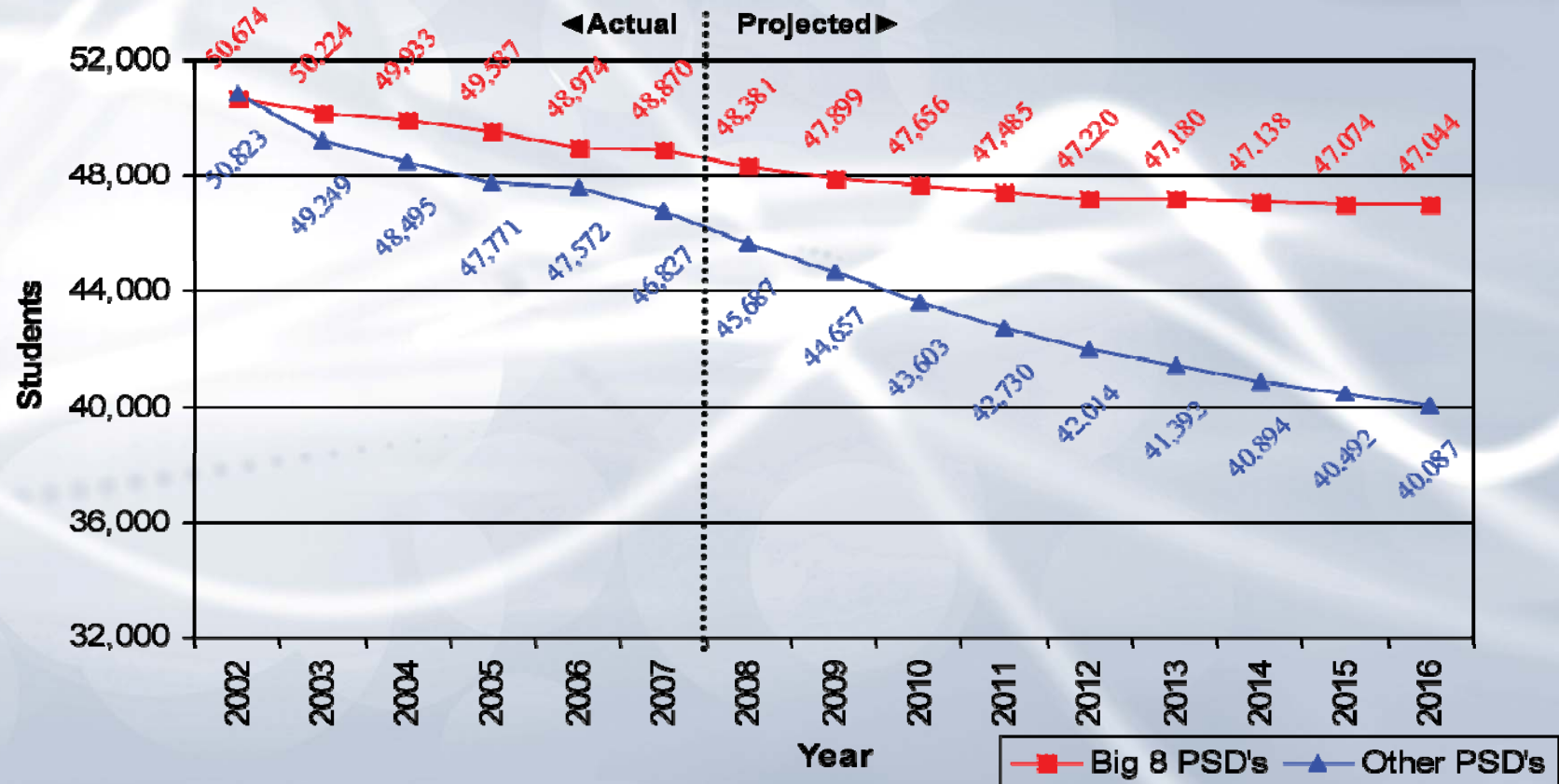
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ND Public K-12 Enrollment: Actual & Projected

NORTH DAKOTA DEPARTMENT OF PUBLIC INSTRUCTION
OFFICE OF SCHOOL FINANCE AND ORGANIZATION

Big 8 PSD's: Fargo, Bismarck, Grand Forks, Minot, West Fargo, Mandan, Dickinson, and Jamestown Public School Districts (as of 2006).



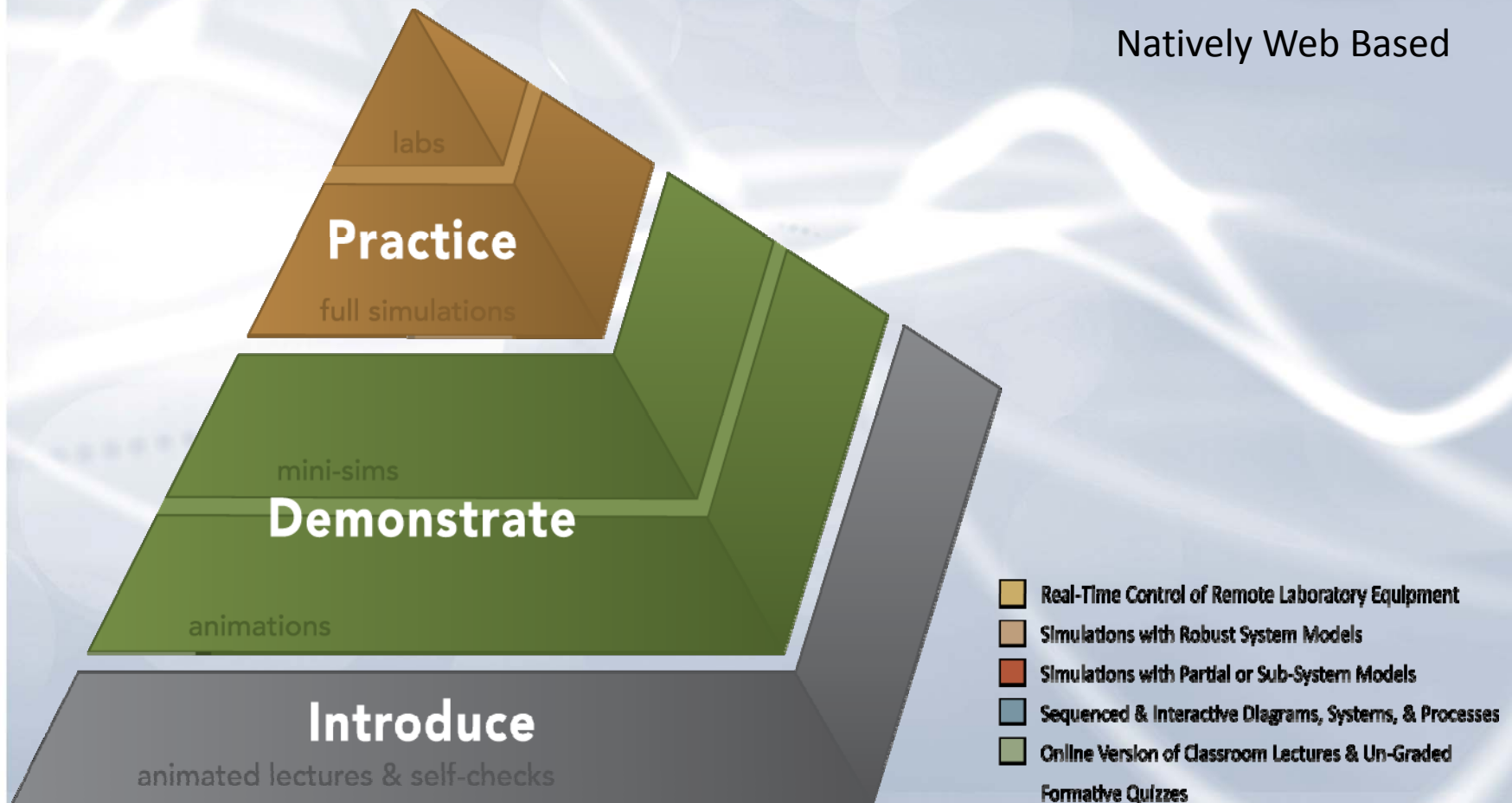
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Enrollment	102,229	100,198	98,098	97,983	97,079	95,386	93,903	92,286	90,817	88,840	86,308	87,399	88,027	88,837	88,087

BSC Online History

- Mid 1970s:
 - BSC Starts Power Plant Technology Program
- Early 1980s:
 - BSC Starts Process Plant Technology Program
- Mid 1990s:
 - Industry Presents Demand for Onsite Training
- Late 1990s:
 - Onsite Resources Limited
 - Online Initiative Started
 - Power Plant & Process Plant Converted to Online
- 2000 - 2004:
 - Online Offering Expanded
 - BSC Starts Electric Power Technology (ELPW) Program
 - BSC Starts Electrical Transmission Systems Technology (ETST) Program
 - BSC Starts Nuclear Power Technology (NUPT) Program
 - Interactive Learning Tools (ILT) Concept Implemented
- 2004 - 2006:
 - Online Laboratories Added to ILT Concept
- 2006 - 2009:
 - Online Laboratory Initiative Augmented
 - BSC Starts Bachelor of Applied Science in Energy Management Program

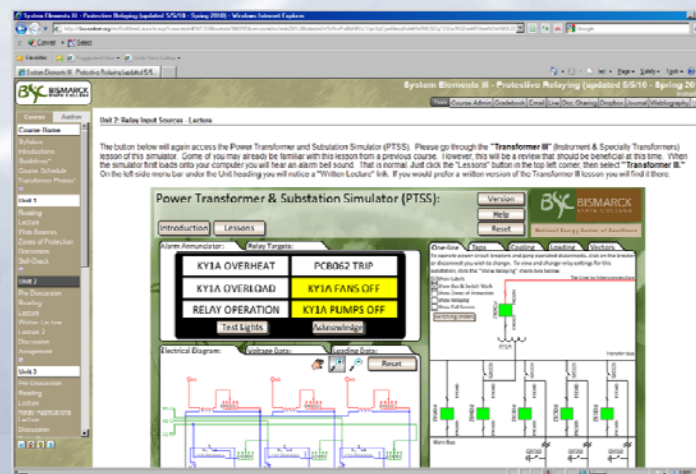
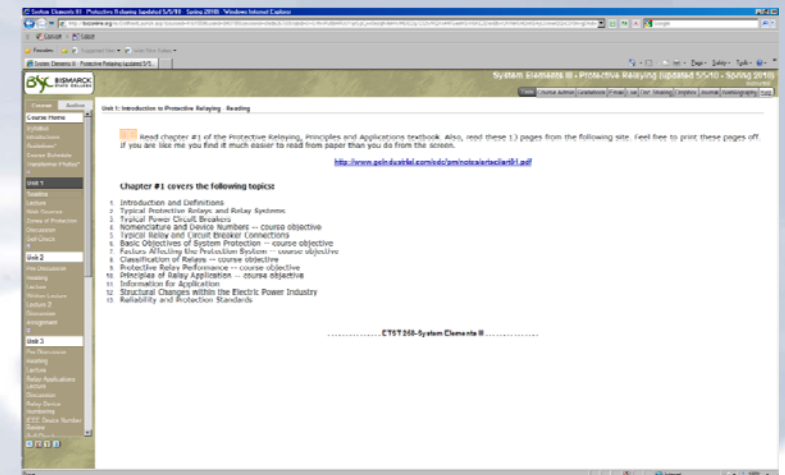
Online Education & Interactivity

Natively Web Based



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Course Examples



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Exercise & Self-Check Examples

Interactive Quiz / Exercise Demonstration:

Version

The purpose of this project is to demonstration the different type of quiz or interactive exercises that can be developed by the NEECE's Curriculum Development Center (CDC) in addition to animations, mini-simulations, and simulations. Please contact your program manager for more information.

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Interactive Schematic

Next

Interactive Quiz / Exercise Demonstration:

Version

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Drag and Drop Question

Below is a diagram of an electrical circuit. With your mouse, drag the labels of Current, Resistance, and Voltage to their correct positions in the diagram. When finished, click Check to view results.

Current Resistance Voltage

Stop Audio Check

Next

Interactive Quiz / Exercise Demonstration:

Version

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Paint Question

Below is a picture of a Power Grid. Listed to the right are the three major components of a Power Grid. With your mouse, select a component's color on the right, then click on the corresponding part in the picture. The picture will become highlighted with that color. When finished, click Check to view results.

Stop Audio

Generation

Transmission

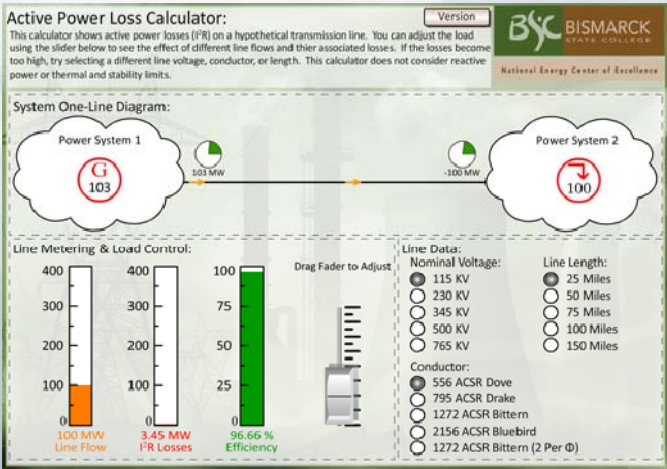
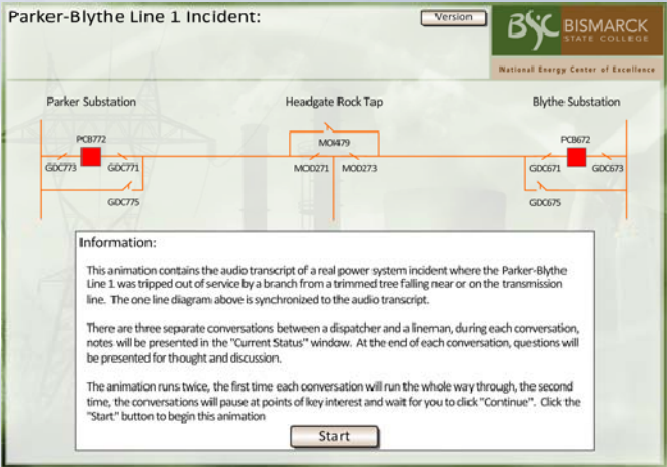
Distribution

Current Selection

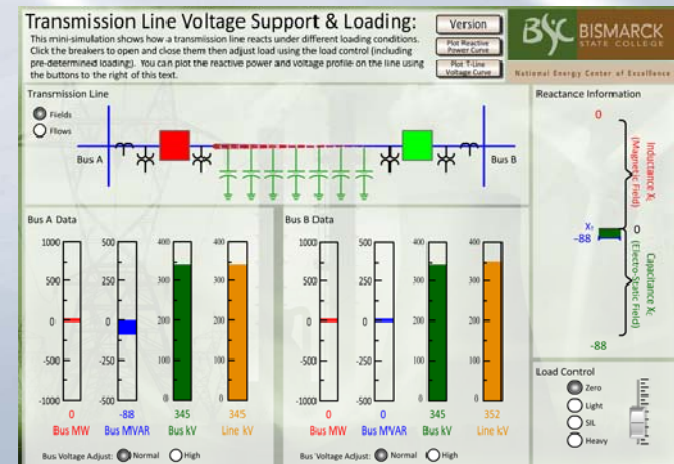
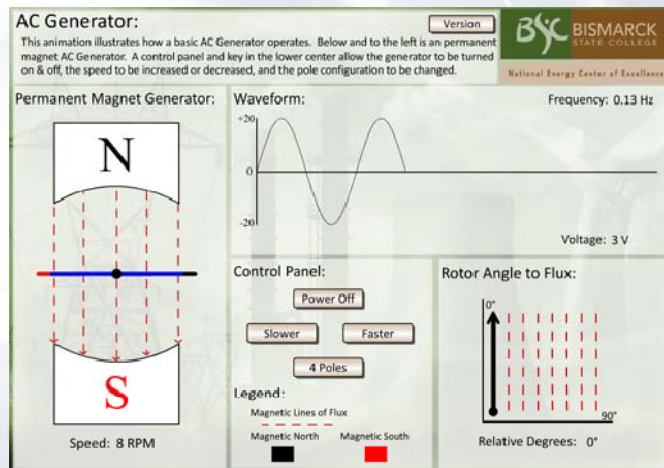
Check

Next

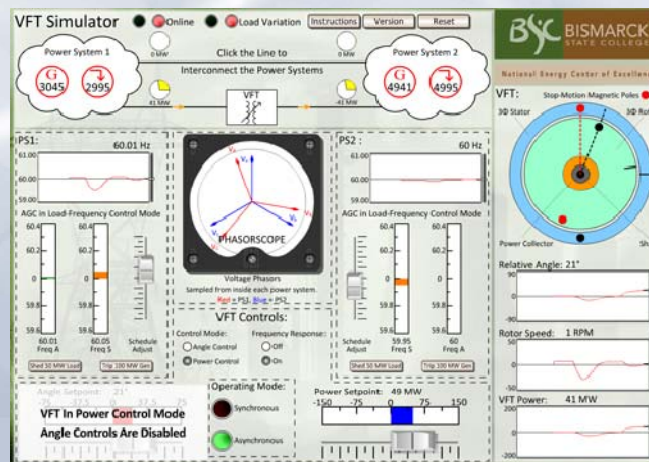
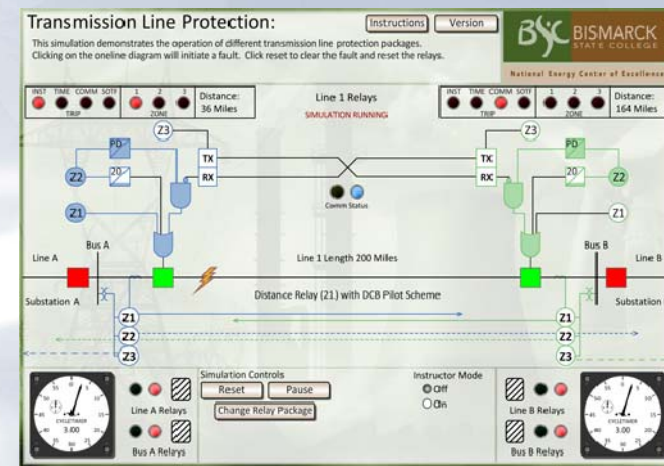
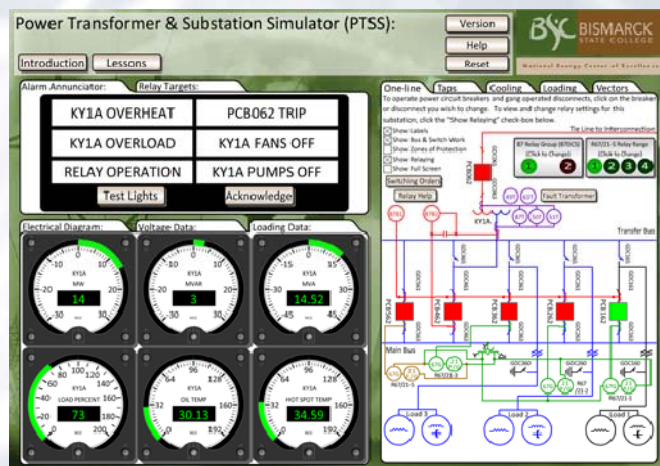
Animation Examples



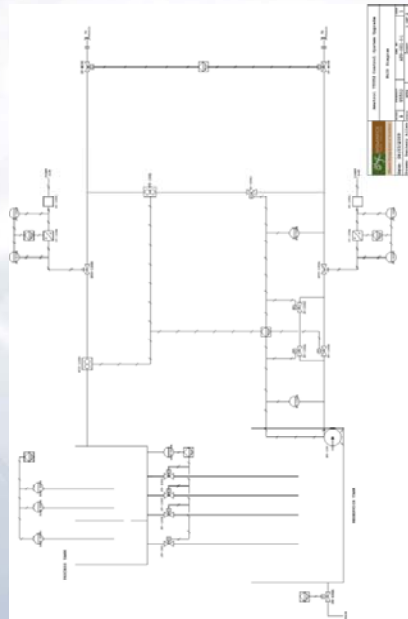
Mini-Sim Examples



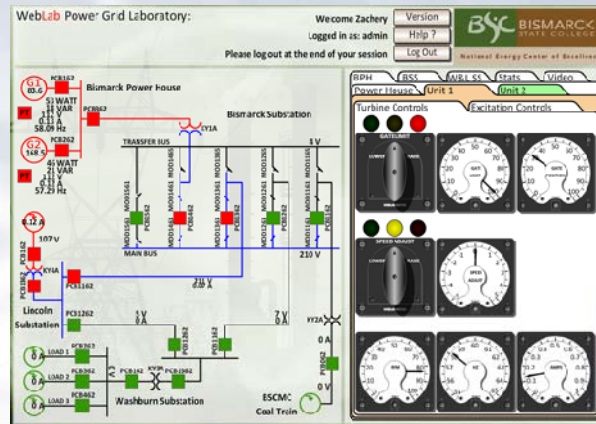
Simulation Examples



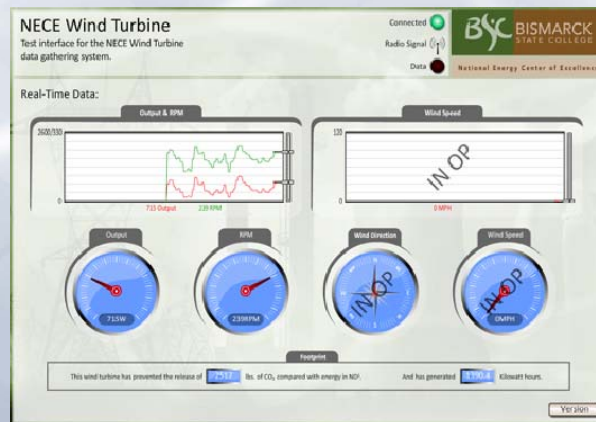
Online Laboratory Examples



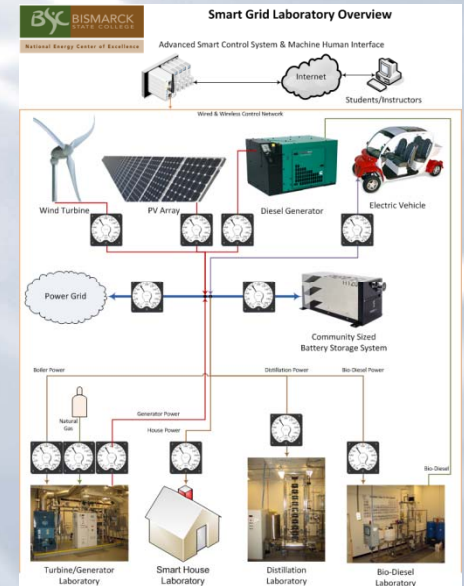
Process Laboratory



Power Grid Laboratory



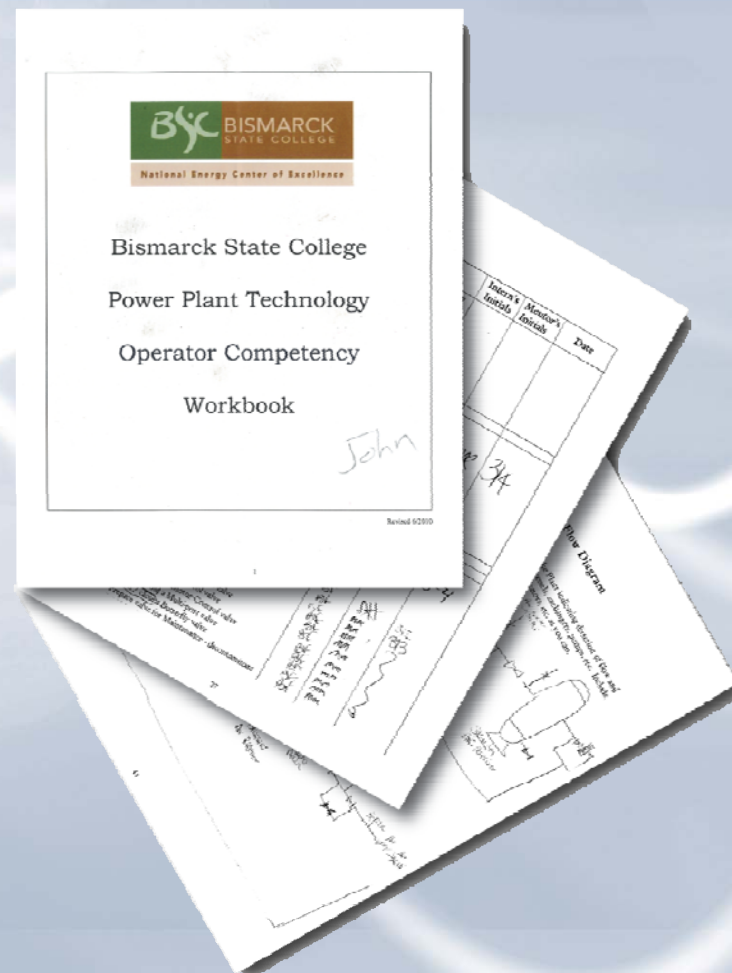
Wind Laboratory



Smart Grid Laboratory

Online Laboratory Examples

- Operator Competency Workbook



Online Laboratory Examples

- Integration of Math eBooks, tutorial, and interactive exercises in the online environment.

5.2 Exponential Functions and Graphs Overview

Objective: Graph exponential equations and exponential functions.

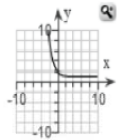
Question 5.2.25

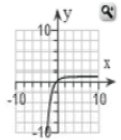
0 correct | 0 of 50 complete

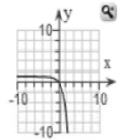
Graph the function.

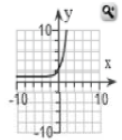
$f(x) = 1 + e^{-x}$

Choose the correct graph below.

☐ A. 

☐ B. 

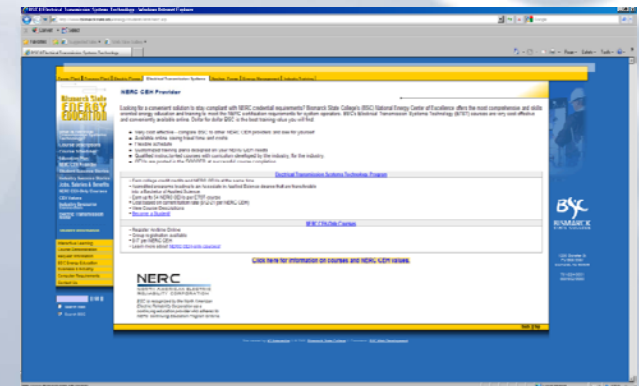
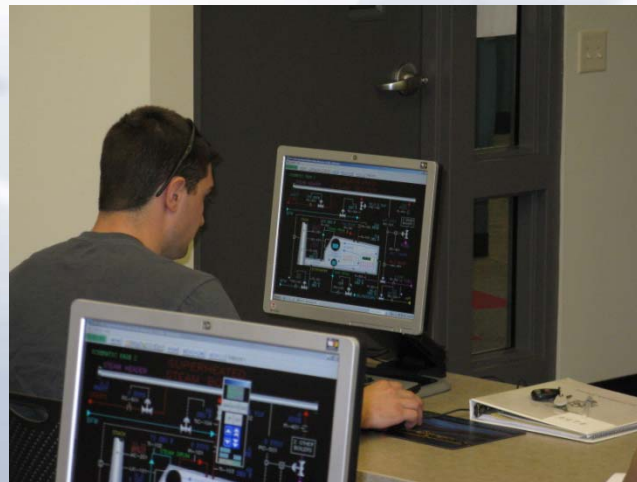
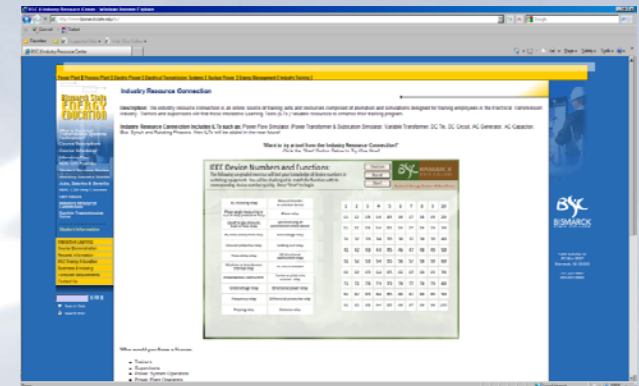
☐ C. 

☐ D. 

- Help Me Solve This
- View Another Example
- Textbook
- Video
- Animation
- Ask My Instructor
- Print

Synergetic Usage

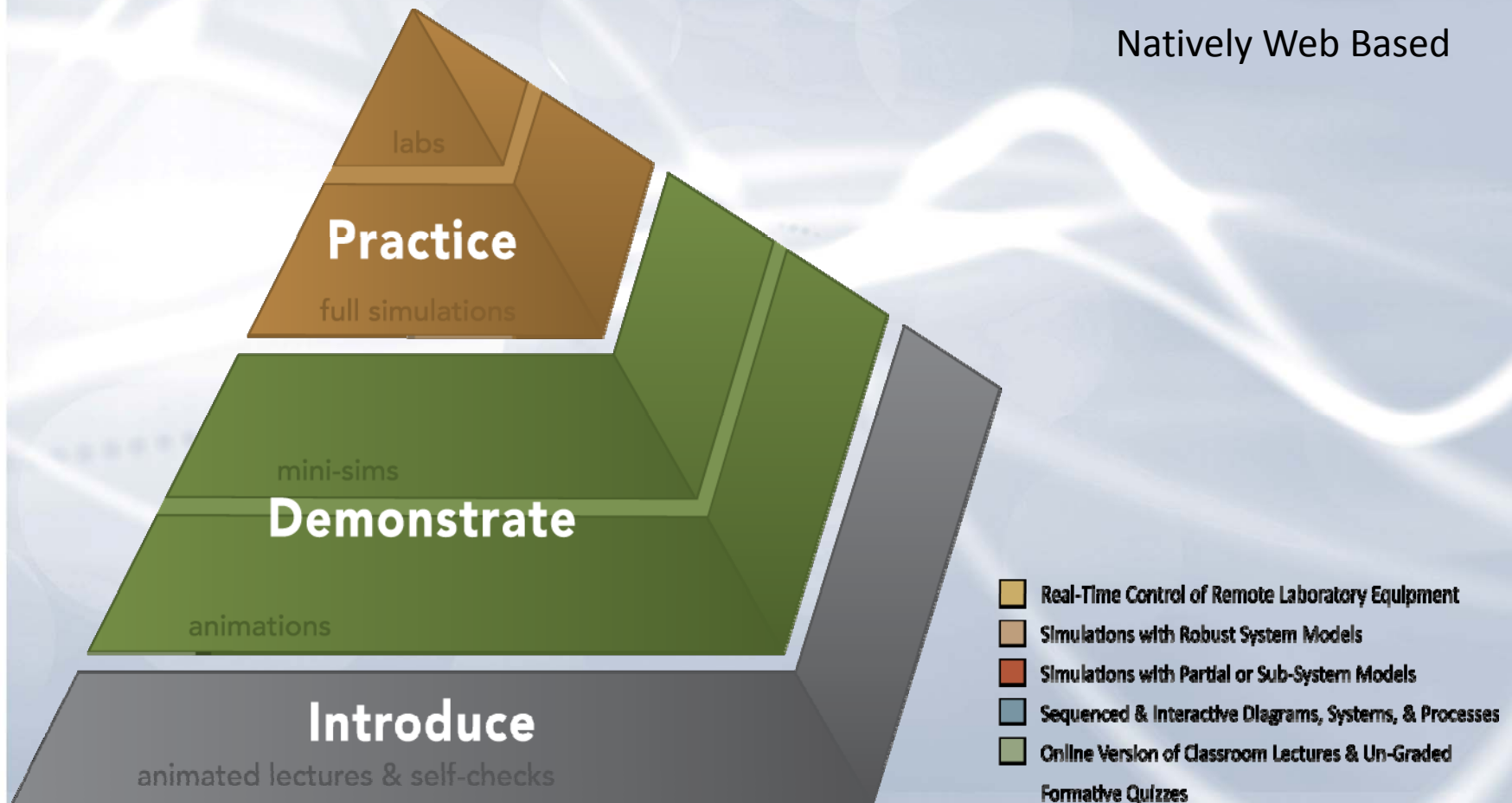
- Industry Resource Connection (IRC)
- Customized Training/NERC
- Classroom/Presentations



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