Large Class IT Strategies

Columbia Center for New Media Teaching & Learning

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The Goal

Faculty will design and evaluate a large-class, IT exercise based on a proven educational strategy

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An Overview

1. Examine three illustrative cases
2. Characterize their capabilities and requirements
3. Identify needs for *your course*
4. Design a strategy and assessment tool for *your course*
5. Evaluate one another's designs

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Crying Out Loud

What are your problems?

What are your experiences?

What are your expectations?

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Introduction to the Cases

- **Harvard** - *peer instruction* by out-of-class Web-based discussions / assignments and in-class concept tests
- **University of Michigan** - interdisciplinary course "activated" and focused by Web-site
- **Dartmouth** - modules integrate and contextualize math across curriculum

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Rationale for each Case

- **Harvard -** *practice* rather than *recall* by active, student-centered, concept-based learning process
- **University of Michigan -** currency and research base prepares for *open-endedness* of global change process
- **Dartmouth -** integrative, context-based math to increase *outreach* and achievement

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Rationale for all Cases

- Activate the passive
- Extend range of learning resources
- Build learning community to reflect and discuss
- Achieve "economies" of scale

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Case 1: Harvard

Introductory *Physics 1*

Peer Instruction: When memorization is not enough

Goal: Practice of working with laws, not the literal laws themselves

Objectives:

- Exploit student interaction during/after lectures
- Use student assessment and feedback

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Case 2: University of Michigan

Introduction to Global Change

Introductory course sequence: investigate causes and potential impacts of environmental changes

Goal: Preparation to deal with global problems not yet fully understood

Objectives:

- ➢Build on contemporary issues
- ➢Draw faculty expertise from many areas
- ➢Treat physical and human aspects

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Case 3: Dartmouth

Mathematics across the Curriculum

Institution-wide, 5-year NSF project - broad mathematical literacy

Goal: Mathematics study integrated into other courses

Objectives:

- Create self-contained, application-driven modules
- Collaborate to improve dissemination suitability
- Include support materials to develop faculty: ideas for classroom work, software, on-line materials

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Explore the Cases

You might try think about …

- ➢Large-class problem being addressed
- ➢Measureable educational objective
- ➢Educational strategy
- ➢Technology support the strategy
- ➢Values and costs (*all* kinds)

But for each case, cite what is:

most obviously **applicable** to your course

most clearly **interesting** or **intriguing**

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Discuss the Cases

What's appropriate? What's intriguing?

Technology in service of education or *vice versa*?

What relates to your own course?

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Your Educational Priorities

Community brainstorming:

1. Revisit your priorities - pick an educational **goal**.
2. Chose an **approach** that seems most promising.
3. How should we **organize** our application exercise development **work**?

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Designing your Strategy

Design a prototype **design** that serves your educational goal.

A design should specify:

- What's your objective/purpose?
- What IT to use and your rationale?
- How will you know if its working as intended?

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Educational Issues

Identify educational objective(s) and educational strategy to achieve it.

Estimate the resources / level of effort required to adapt curriculum.

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Technology Issues

Identify a technological strategy to be used:

- a method
- a rationale
- the likely level of investment (learning time and support) required

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Evaluation Issues

What tool to **assess** the educational achievement?

What criterion to **evaluate** the assessment results?

What method of **feedback** to use?

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Evaluation of the Designs

Reconvene as a whole to present results and discuss them.

Critique and evaluate one another's exercises.

Alternatively, draw some generalizations.

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Our own Summary ...

Each case had a different scope.

IT used to:

interact, contemporize, integrate.

Level of effort to develop any *one* of the examples was considerable.

Information technology infrastructures: comparable to those at *Columbia*.

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