Engaging Students in Postsecondary Classrooms

Dr. Roger Fisher
Fanshawe College
Western Science Education Conference
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I would like to hear, even occasionally, “Teach or Perish”
Ernest Boyer

Purpose/Focus of this Presentation:

Today’s Agenda:
I. Core Principles of Learning
II. Effective Teaching Strategies (Rich Learning Activities)
## I. Core Principles of Learning

### Traditional Paradigm vs. New Paradigm

<table>
<thead>
<tr>
<th>Traditional Paradigm</th>
<th>New Paradigm</th>
</tr>
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<tbody>
<tr>
<td>Teacher-centred</td>
<td>Student-centred</td>
</tr>
<tr>
<td>“Sage on the Stage”</td>
<td>“Guide on the Side”</td>
</tr>
<tr>
<td>Lecture format (teacher talk)</td>
<td>Interactive learning activities</td>
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<td>Student as passive recipient</td>
<td>Student as active participant</td>
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<tr>
<td>Memorize content</td>
<td>Explore, relate, question</td>
</tr>
<tr>
<td>Sit, listen, take notes</td>
<td>Discuss, question, engage</td>
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<tr>
<td>Surface learning (information)</td>
<td>Deep learning (patterns)</td>
</tr>
<tr>
<td>Individual learning</td>
<td>Shared collaborative learning</td>
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**Improvement** in attendance, retention, higher-order thinking, participation, engagement, and student success.

### Traditional “Passive” Learning

![Image showing traditional passive learning](image)

### Teacher-centred Learning

![Image showing teacher-centred learning](image)
The “Sage on the Stage”

Traditional PSE Lecture

Traditional PSE Lecture

Traditional PSE Lecture
Traditional PSE Lecture

The “Guide on the Side”

Student-centred Learning

Shared, Collaborative Learning
Exploratory Learning

I. Core Principles of Learning

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Increase in attendance, retention, higher-order thinking, participation, engagement, and student success.

(pause in lecture)

What do you think of this?

(pause in lecture)

What do you think of this?

- Any questions?
- Concerns?
- Issues?
- Problems?
- Disagreements?
- How does this relate to your own experience as a learner?
- As a teacher?
Today’s Agenda:
I. Core Principles of Learning
II. Effective Teaching Strategies (Rich Learning Activities)
II. Effective Teaching Strategies

The challenge is to present course material in ways that make students \textit{do something with the information, interact with it,} manipulate the ideas, and relate them to what they already know.

Alison King

Challenging questions:
- What is being \textit{assumed} here?
- Why is this \textit{important}? To you?
- How does this \textit{relate} to what we have previously discussed?
- How does this relate to your \textit{own experience}?
- How would you \textit{apply} this if . . . ?
- How can you \textit{verify} this information?
- What \textit{criteria} should be used to \textit{evaluate} this?
- What are some \textit{challenges} to implementing this?

Challenging questions (in Pharmacology):
- What other physiological processes might be impacted?
- How do you balance these conflicting reactions?
- How can one drug be healthy for one person and not for another?
- Should drugs be regulated? Why or why not? By whom?
- When might the needs of the customer conflict with the goals of the pharmacist?
- Who should determine the cost of drugs?
- Should costs be standardized or customized?
- What \textit{latitude} should a pharmacist have in \textit{interpreting physicians’ prescriptions}?
II. Effective Teaching Strategies

Challenging Questions:
Bloom’s Taxonomy

<table>
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<th>Bloom’s Hierarchy Learning Activities</th>
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<tbody>
<tr>
<td><strong>Learning Outcomes</strong></td>
</tr>
<tr>
<td><strong>Student Learning Activities</strong></td>
</tr>
<tr>
<td><strong>(stated as Verbs)</strong></td>
</tr>
<tr>
<td>Create</td>
</tr>
<tr>
<td>Combine, compose, design, integrate,</td>
</tr>
<tr>
<td>modify, synthesize, innovate, imagine</td>
</tr>
<tr>
<td>Evaluate</td>
</tr>
<tr>
<td>Appraise, defend, justify, validate,</td>
</tr>
<tr>
<td>predict, select &amp; justify criteria,</td>
</tr>
<tr>
<td>develop &amp; employ rubrics</td>
</tr>
<tr>
<td>Apply</td>
</tr>
<tr>
<td>Solve problems, employ in different</td>
</tr>
<tr>
<td>context, simulate, transfer,</td>
</tr>
<tr>
<td>demonstrate, adapt</td>
</tr>
<tr>
<td>Analyze</td>
</tr>
<tr>
<td>Compare/contrast, describe</td>
</tr>
<tr>
<td>relationships, correlate, discover</td>
</tr>
<tr>
<td>patterns, schematize</td>
</tr>
<tr>
<td>Understand</td>
</tr>
<tr>
<td>Explain, discuss, interpret,</td>
</tr>
<tr>
<td>summarize, classify</td>
</tr>
<tr>
<td>Remember</td>
</tr>
<tr>
<td>Memorize, define, recall, label,</td>
</tr>
<tr>
<td>recite, identify</td>
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Bloom’s Taxonomy

Experiential Learning

plus

Follow-up questions/Debriefing

*Hands-on activities must also pass the test of being minds-on.*

G. Hein
II. Effective Teaching Strategies

Small/Large Group Discussion Questions following an “experiential learning activity”:

- Most satisfying experience?
- Least satisfying experience?
- Most unexpected?
- Most disturbing?
- How did it relate to course material?
- What would you do differently?
- How would you rate it as a learning experience?
- Who else shared these reactions?

II. Effective Teaching Strategies

Think, Pair, Share

(pause in lecture)

Small group activity:
Based on your experiences, create a list of **challenges** and **obstacles** to implementing “interactive lectures”.

The Simplest Experiential Learning Cycle

- **DO IT.**
- **Now What?** What will I do differently next time?
- **What?** What happened? What were the results?
- **So What?** What do these results imply? How did I influence the outcome?

(created by Andrea Center)

www.change.org/2012-12-mathematics.aspx
Some challenges to “interactive lectures”:

- not enough time; need to cover the course
- “I’m paid to deliver content; it’s the students’ responsibility to learn it.”
- large classes; too many students to do it well
- losing control of lecture; dominant students
- lack of reward/recognition for effective teaching
- resistance from colleagues/administrators
- resistance from students

(pause in lecture)

Large group activity:
Based on your experiences, generate some suggestions/solutions to implementing “interactive lectures”.

Today’s Agenda:
I. Core Principles of Learning
- Student-centred
- Student as active participant
- Deep learning (patterns, relationships)
- Exploring, questioning
- Engaging, interacting with content
- Relating content to previous learning
- Relating content to personal experience
- Collaborative, shared learning

Today’s Agenda:
II. Effective Teaching Strategies (Rich Learning Activities)
- Interactive lecture
- Challenging questions
- Bloom’s Taxonomy
- Experiential Learning (plus debriefing)
- Think – Pair - Share
My message: shift the focus from “teaching” to “helping students learn”.

Eric Mazur
Dean Applied Physics, Harvard
Author: Confessions of a Converted Lecturer

“... helping students learn ...”

Selected Resources:

The last word ...
Thank You

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