Essential Elements of Effective Teaching

Karl A. Smith
Engineering Education – Purdue University
STEM Education Center/Civil Eng - University of Minnesota
ksmith@umn.edu - http://www.ce.umn.edu/~smith

Effective Teaching: Moving to a Student-Centered Paradigm with the Adoption of Criterion-Referenced Assessment

Hong Kong Baptist University
Centre for Holistic Teaching and Learning

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Reflection and Dialogue

• Individually reflect on your mental image of effective teaching. Write for about 1 minute.
  – Jot down words or phrases
  – Construct a figure or diagram
• Discuss with your neighbor for about 2 minutes
  – Describe your mental image and talk about similarities and differences
  – Select one Element, Image, Comment, Story, etc. that you would like to present to the whole group if you are randomly selected
• Whole group discussion
### Teacher Mental Images About Teaching - Axelrod (1973)

<table>
<thead>
<tr>
<th>Mental Image</th>
<th>Motto</th>
<th>Characteristics</th>
<th>Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>I teach what I know</td>
<td>Pour it in, Lecture</td>
<td>Science, Math</td>
</tr>
<tr>
<td>Instructor</td>
<td>I teach what I am</td>
<td>Modeling, Demonstration</td>
<td>Many</td>
</tr>
<tr>
<td>Student – Cognitive Development</td>
<td>I train minds</td>
<td>Active Learning, Discussion</td>
<td>English, Humanities</td>
</tr>
<tr>
<td>Student – Development of Whole Person</td>
<td>I work with students as people</td>
<td>Motivation, Self-esteem</td>
<td>Basic Skills Teachers</td>
</tr>
</tbody>
</table>

Pedago-pathologies

Amnesia

Fantasia

Inertia

Lee Shulman – MSU Med School – PBL Approach (late 60s – early 70s), President Emeritus of the Carnegie Foundation for the Advancement of College Teaching


What do we do about these pathologies?

- **Activity** – Engage learners in meaningful and purposeful activities
- **Reflection** – Provide opportunities
- **Collaboration** – Design interaction
- **Passion** – Connect with things learners care about

Cooperative Learning is instruction that involves people working in teams to accomplish a common goal, under conditions that involve both positive interdependence (all members must cooperate to complete the task) and individual and group accountability (each member is accountable for the complete final outcome).

**Key Concepts**

- Positive Interdependence
- Individual and Group Accountability
- Face-to-Face Promotive Interaction
- Teamwork Skills
- Group Processing
Session Objectives

• Participants will be able to:
  – Describe key differences between Teacher Centered and Learner Centered Paradigms
  – List features of effective, interactive strategies for facilitating learning
  – Describe key features of the Understanding by Design (UbD) process – Content (outcomes) – Assessment – Pedagogy
  – Explain key features of and rationale for Cooperative Learning
  – Identify connections between cooperative learning and desired outcomes of courses and programs

• Participants will begin applying key elements to the design on a course, class session or learning module

Seven Principles for Good Practice in Undergraduate Education

• Good practice in undergraduate education:
  – Encourages student-faculty contact
  – Encourages cooperation among students
  – Encourages active learning
  – Gives prompt feedback
  – Emphasizes time on task
  – Communicates high expectations
  – Respects diverse talents and ways of learning

Chickering & Gamson, June, 1987
Comparison of Old and New Paradigm of Teaching (Johnson, Johnson & Smith, 1991)

<table>
<thead>
<tr>
<th></th>
<th>Old Paradigm</th>
<th>New Paradigm</th>
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<tbody>
<tr>
<td>Knowledge</td>
<td>Transferred from Faculty to Students</td>
<td>Jointly Constructed by Students and Faculty</td>
</tr>
<tr>
<td>Students</td>
<td>Passive Vessel to be Filled by Faculty's Knowledge</td>
<td>Active Constructor, Discoverer, Transformer of Knowledge</td>
</tr>
<tr>
<td>Faculty Purpose</td>
<td>Classify and Sort Students</td>
<td>Develop Students' Competencies and Talents</td>
</tr>
<tr>
<td>Relationships</td>
<td>Impersonal Relationship Among Students and Between Faculty and Students</td>
<td>Personal Transaction Among Students and Between Faculty and Students</td>
</tr>
<tr>
<td>Context</td>
<td>Competitive/Individualistic</td>
<td>Cooperative Learning in Classroom and Cooperative Teams Among Faculty</td>
</tr>
<tr>
<td>Teaching Assumption</td>
<td>Any Expert can Teach</td>
<td>Teaching is Complex and Requires Considerable Training</td>
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### Old Paradigm vs. New Paradigm

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<td>Active Constructor, Discoverer, Transformer of Knowledge</td>
</tr>
<tr>
<td>Mode of Learning</td>
<td>Memorizing</td>
<td>Relating</td>
</tr>
<tr>
<td>Faculty Purpose</td>
<td>Classify and Sort Students</td>
<td>Develop Students’ Competencies and Talents</td>
</tr>
<tr>
<td>Student Goals</td>
<td>Complete Requirements, Achieve Certification within a Discipline</td>
<td>Grow, Focus on Continual Lifelong Learning within a Broader System</td>
</tr>
<tr>
<td>Relationships</td>
<td>Impersonal Relationship Among Students and Between Faculty and Students</td>
<td>Personal Transaction Among Students and Between Faculty and Students</td>
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<td>Context</td>
<td>Competitive/Individualistic</td>
<td>Cooperative Learning in Classroom and Cooperative Teams Among Faculty</td>
</tr>
<tr>
<td>Climate</td>
<td>Conformity/Cultural Uniformity</td>
<td>Diversity and Personal Esteem/ Cultural Diversity and Commonality</td>
</tr>
<tr>
<td>Power</td>
<td>Faculty Holds and Exercises Power, Authority, and Control</td>
<td>Students are Empowered; Power is Shared Among Students and Between Students and Faculty</td>
</tr>
<tr>
<td>Assessment</td>
<td>Norm-Referenced (i.e., Graded “On the Curve”); Typically Multiple Choice Items; Student rating of instruction at end of course</td>
<td>Criterion-Referenced; Typically Performances and Portfolios; Continual Assessment of Instruction</td>
</tr>
<tr>
<td>Ways of Knowing</td>
<td>Logico-Scientific</td>
<td>Narrative</td>
</tr>
<tr>
<td>Technology Use</td>
<td>Drill and Practice, Textbook Substitute, Chalk and Talk Substitute</td>
<td>Problem Solving, Communication, Collaboration, Information Access, Expression</td>
</tr>
<tr>
<td>Teaching Assumption</td>
<td>Any Expert can Teach</td>
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### Assessment

- **Old Paradigm (Teacher Centered)**
  - **Norm-Referenced** (i.e., Graded "On the Curve"); Typically Multiple Choice Items; Student rating of instruction at end of course

- **New Paradigm (Learner Centered)**
  - **Criterion-Referenced**; Typically Performances and Portfolios; Continual Assessment of Instruction
It could well be that faculty members of the twenty-first century college or university will find it necessary to set aside their roles as teachers and instead become designers of learning experiences, processes, and environments.

James Duderstadt, 1999 [Nuclear Engineering Professor; Dean, Provost and President of the University of Michigan]
Foundational Document

- Bransford, Vye and Bateman – Creating High Quality Learning Environments

Designing Learning Environments Based on HPL (How People Learn)
Understanding by Design

Stage 1. Identify Desired Results
- **Enduring understanding**
- Important to know and do
- Worth being familiar with

Stage 2. Determine Acceptable Evidence

Stage 3. Plan Learning Experiences and Instruction

Overall: *Are the desired results, assessments, and learning activities ALIGNED?*


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**Content-Assessment-Pedagogy (CAP) Design Process Flowchart**

**Understanding by Design (Wiggins & McTighe, 2005)**

<table>
<thead>
<tr>
<th>Start</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Content</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
</tr>
<tr>
<td></td>
<td>Pedagogy</td>
</tr>
<tr>
<td><strong>C &amp; A &amp; P Alignment?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>No</strong></td>
<td></td>
</tr>
<tr>
<td>End</td>
<td></td>
</tr>
</tbody>
</table>

**UdB – 3 Stages of Backward Design**

- Identify the Desired Results
- Determine Acceptable Evidence
- Plan Learning Experiences

**UbD Filters for Curricular Priorities**

- Are the topics enduring and transferable big ideas having value beyond the classroom?
- Are the topics big ideas and core processes at the heart of the discipline?
- Are the topics abstract, counterintuitive, often misunderstood, or easily misunderstood ideas requiring coverage?
- Are the topics big ideas embedded in facts, skills and activities?

Streveler, Smith & Pilotte (2011)
Student Engagement Research Evidence

• Perhaps the strongest conclusion that can be made is the least surprising. Simply put, the greater the student’s involvement or engagement in academic work or in the academic experience of college, the greater his or her level of knowledge acquisition and general cognitive development ...(Pascarella and Terenzini, 2005).

• Active and collaborative instruction coupled with various means to encourage student engagement invariably lead to better student learning outcomes irrespective of academic discipline (Kuh et al., 2005, 2007).

Pedagogies of Engagement

Cooperative Learning

- **Research** – Randomized Design Field Experiments
- **Practice** – Formal Teams/Professor’s Role
Cooperative Learning is instruction that involves people working in teams to accomplish a common goal, under conditions that involve both positive interdependence (all members must cooperate to complete the task) and individual and group accountability (each member is accountable for the complete final outcome).

Key Concepts

• Positive Interdependence
• Individual and Group Accountability
• Face-to-Face Promotive Interaction
• Teamwork Skills
• Group Processing
Cooperative Learning Research Support


- Over 300 Experimental Studies
- First study conducted in 1924
- High Generalizability
- Multiple Outcomes

Outcomes

1. Achievement and retention
2. Critical thinking and higher-level reasoning
3. Differentiated views of others
4. Accurate understanding of others’ perspectives
5. Liking for classmates and teacher
6. Liking for subject areas
7. Teamwork skills

Active and Cooperative Learning

Calls for evidence-based promising practices
Book Ends on a Class Session


Cooperative Learning

At M.I.T., Large Lectures Are Going the Way of the Blackboard

The Massachusetts Institute of Technology has changed the way it teaches some introductory classes. Here, Graduate Student at a blackboard using flip charts and overheads.

The American College Teacher: National Norms for 2007-2008

<table>
<thead>
<tr>
<th>Methods Used in “All” or “Most”</th>
<th>All – 2005</th>
<th>All – 2008</th>
<th>Assistant – 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Learning</td>
<td>48</td>
<td>59</td>
<td>66</td>
</tr>
<tr>
<td>Group Projects</td>
<td>33</td>
<td>36</td>
<td>61</td>
</tr>
<tr>
<td>Grading on a curve</td>
<td>19</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Term/research papers</td>
<td>35</td>
<td>44</td>
<td>47</td>
</tr>
</tbody>
</table>

http://www.youtube.com/watch?v=lfT_hoiuY8w
http://www.heri.ucf.edu/index.php
Cooperative Learning and Assessing Student Learning

1. Use a criterion-referenced system for all assessment and evaluation
2. Use a wide variety of assessment formats
   - performance-based assessment
   - authentic assessment
   - total quality learning
3. Conduct assessment and evaluation in the context of learning teams
4. Directly involve students in assessing each other's level of learning
5. Assess, assess, assess, assess, and assess!

Normal Distribution = Failure

*It is not a symbol of rigor to have grades fall into a 'normal' distribution; rather, it is a symbol of failure – failure to teach well, to test well, and to have any influence at all of the intellectual lives of students* – Milton, et al. 1986, p 225

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### Bloom’s Distribution

If we are effective in our instruction, the distribution of achievement should be very different from the normal curve. In fact, we may even insist that our educational efforts have been unsuccessful to the extent that the distribution of achievement approximates the normal distribution.

(p. 52)


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### Types of Assessment

1. **Diagnostic Assessment**
   Conducted at the beginning of an instructional unit, course, semester. . . to determine the present level of knowledge, skill, interest. . . of a student, group or class.

2. **Formative Assessment**
   Conducted periodically throughout the instructional unit. . . to monitor progress and provide feedback toward learning goals.

3. **Summative Assessment**
   Conducted at the end of an instructional unit or semester to judge the quality and quantity of student achievement and/or the success of the instructional unit.
Assessment Formats

1. Performance-Based Assessment
   Students demonstrate what they know and can do by performing a procedure or skill

2. Authentic Assessment
   Students demonstrate a procedure of skill in "real life" context (See “approximations of practice”)

3. Total Quality Learning
   Continuous assessment of the process of learning (and teamwork) to improve it

Making Assessments Meaningful

1. To be meaningful, assessment has to have a purpose that is significant

2. Assessments are meaningful when students are involved in conducting the assessment.

3. Meaningful assessments provide a direction and road map for future efforts to learn.
Session Summary
(Minute Paper)

Reflect on the session:

1. Most interesting, valuable, useful thing you learned.
2. Things that helped you learn.
3. Question, comments, suggestions.
4. Pace: Too slow 1 . . . . 5 Too fast
5. Relevance: Little 1 . . . 5 Lots
6. Instructional Format: Ugh 1 . . . 5 Ah

MOT 8221 – Spring 2011 – Session 1 (3/25/11)

Q4 – Pace: Too slow 1 . . . . 5 Too fast (2.9)
Q5 – Relevance: Little 1 . . . 5 Lots (3.9)
Q6 – Format: Ugh 1 . . . 5 Ah (3.7)
Resources

- **Design Framework – How People Learn (HPL) & Understanding by Design Process**
  - Creating High Quality Learning Environments (Bransford, Vye & Bateman)

- **Content Resources**

- **Cooperative Learning - Instructional Format explanation and exercise to model format and to engage workshop participants**
  - Cooperative Learning (Johnson, Johnson & Smith)
  - Smith web site – [www.ce.umn.edu/~smith](http://www.ce.umn.edu/~smith)
  - Cooperative learning returns to college: What evidence is there that it works? Change, 1998, 30(4), 26-35. [http://search.library.umn.edu/bitstream/11299/107655/1/Smith_ReturnsToCollege.pdf](http://search.library.umn.edu/bitstream/11299/107655/1/Smith_ReturnsToCollege.pdf)

- **Other Resources**
  - University of Delaware PBL web site – [www.udel.edu/pbl](http://www.udel.edu/pbl)