Aligning Learning Goals & Measures of Learning Outcomes

David McConnell
Sheila Roberts
Suki Smaglik


Backward Course Design

1. Learning Goals
2. Teaching and Learning Activities
3. Feedback and Assessment

Linking Goals, Assessment, Activities

- Identify clear learning goals
  1. Goals should focus on the work of the students, not the teacher
  2. What will students learn and be able to do? (SWBAT)
  3. Goals should clearly demonstrate student learning.
  4. For major goals, focus on higher order thinking skills and/or authentic tasks
- Create tasks (assessments) associated with learning objectives.
- Provide students opportunity to practice tasks or task components during class (formative assessment, active learning).
- Match measurable summative assessments to learning goals as directly as possible.

Feedback & Assessment

Assessment - activities that are undertaken to provide information to be used as feedback to modify teaching and learning practices

Formative assessment - evidence used to measure student learning to identify how well they are learning and to help the teacher to improve ongoing instruction

Summative assessment - the use of data, assembled at the end of particular sequence of activities, to provide an overview of learning

"When the cook tastes the soup, that’s formative; when the guests taste the soup, that’s summative."

Feedback & Assessment

“FIDEility” Feedback

- Frequent – where possible give (formative) feedback daily or weekly
- Immediate – provide summative feedback soon after student work is completed
- Discriminating – clearly explain differences between high/low scoring work
- Empathy – show empathy for students when delivering feedback

Assessment for Intellectual Growth

Teaching and learning goals can be ordered using Bloom’s Taxonomy

Bloom’s Taxonomy Comprehension Survey

A. I have heard of BT but can’t explain much about it.
B. I can name the six categories of BT.
C. I can classify exercises into the six BT categories.
D. I can make up questions representative of the six categories of BT.
Setting Learning Goals

Learning goals can be ordered using Bloom’s Taxonomy – but how do you assess student work?

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Memorization and recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>Understanding</td>
</tr>
<tr>
<td>Application</td>
<td>Using knowledge</td>
</tr>
<tr>
<td>Analysis</td>
<td>Taking apart information</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Reorganizing information</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Making judgments</td>
</tr>
</tbody>
</table>

Open-ended questions can be used for all categories.

Scaffolding Student Learning

Plate Tectonics Comprehension Survey: Review the following statements and identify which best describe your understanding of the material in this section.

Level 1: I can identify how many plates are present on a map showing plate boundaries.
Level 2: I can sketch and label a cross section to illustrate the characteristics of a plate boundary.
Level 3: I can compare and contrast the features associated with divergent and convergent plate boundaries.
Level 4: I can interpret how plate configurations change over time.

Monitor Student Learning

A and B are traveling at 5 cm/yr; C is traveling west at 2 cm/yr.

1. How many plates are present in the central figure?
2. Sketch and label a cross section along X-Y.
3. Fill in the upper and lower templates to show past and future plate configurations.

Complete the table below by circling the abbreviation of the appropriate taxonomy class.

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Bloom’s Taxonomy Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venn Diagram A (Hurricanes vs. Tornadoes)</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Venn Diagram B (Coal vs. Oil resources)</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Evaluation Rubric (Groundwater Resources)</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Student Answer Analysis A (Global Warming)</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Student Answer Analysis B (Atmosphere)</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Concept Map</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Concept Sketches</td>
<td>K  C  Ap  An  S  E</td>
</tr>
<tr>
<td>Online Discussions</td>
<td>K  C  Ap  An  S  E</td>
</tr>
</tbody>
</table>
GEOL 1470  Exam 3  FA2011

• Sketch and describe the role that gravity plays in slope stability, including the concept of the angle of repose and its landscape expressions. What are some factors that control slope stability, and events that trigger slope failure? OR

• Sketch, label, and describe how flow velocity and channel profile vary in a meandering river, and what features form along different parts of bends. In addition, use a series of sketches to describe how meanders in a river form and move.

Concept Sketches

Concept Sketches Grading Rubric

Online Discussions

Learning outcomes
1. Utilize geological concepts to evaluate relevant societal issues
2. Find and evaluate relevant geological information
3. Communicate clearly, in writing, to an identified audience

Online Discussions

Criteria | Unacceptable 1 Point | Acceptable 2 Points | Good 3 Points | Excellent 3 Points | Posts factorial, reflective and substantive contribution; advances discussion.
---|---|---|---|---|---
Frequency & Weight: | Participates not at all. | Participates 1-2 times on the same day. Postings may not be made in time for others to read and respond. | Participates 3-4 times but postings not distributed throughout week. Postings are made in time for others to read and respond. | Participates 4-5 times throughout the week. Postings are made in time for others to read and respond. | Posts information that is factually correct and fully addresses all aspects of the task.
Initial Assignment Posting | Posts no assignment. | Posts adequate assignment with superficial thought and preparation; doesn’t address all aspects of the task. | Posts well developed assignment that fully addresses all aspects of the task; lacks full development of concepts. | Posts well developed assignment that fully addresses all aspects of the task. | Posts information that is factually correct, reflective and substantive contribution; advances discussion.
Follow-Up Postings | Posts no follow-up responses to others. | Posts shallow contribution to discussion (e.g., agrees or disagrees) does not enrich discussion. | Elaborates on an existing posting with further comment or observation. | Demonstrates analysis of others’ posts; extends meaningful discussion by building on previous posts. | Contributes valuable information to discussion with minor clarity and/or mechanics errors.
General | Posts long, unorganized and/or rude content. | Communicates in friendly, courteous and helpful manner with some errors in clarity and/or mechanics. | Communicates in friendly, courteous and helpful manner with full development of concept or thought. | Participates in discussion with clear, concise comments formatted in an easy to read style. | Participates in discussion with clear, concise comments formatted in an easy to read style.
Your Examples