Developing Assessments that Inform the Teaching and Learning Process

Jim Pellegrino

A seemingly reasonable question?

3. Find x.

Be careful about your assumptions and how you pose your question!!!

Overview

• The Where, What & Why of Assessment
  • Issues of Theory
    – Assessment as Reasoning from Evidence
  • Issues of Design
    – Evidence-Centered Design Process
  • Illustration through Application
    – Redesign of AP Physics, Biology, Chemistry
    – Multiple Source Comprehension
  • Starting to Use these Ideas:
    – Applying the ECD Approach to Courses, Programs, & Existing Assessments
  • Technology and the Instruction-Assessment Process

The Where of Assessment: Part of a Coordinated System

Questions & Comments
What & Why of Assessment

• Assessment is a process of gathering information for the purpose of making judgments about a current state of affairs.
• In educational assessment, the information collected is designed to help instructors, administrators, accrediting agencies, policy makers, and the public infer what students know and how well they know it, presumably for the purpose of enhancing future outcomes.
• Some of these outcomes are more immediate such as the use of assessment in the classroom to improve learning and others are more delayed such as the use of assessment for program evaluation.

Contexts and Purposes: Distinctions That Make a Difference

• Contexts:
  – small scale: individual classrooms
  – intermediate scale: departments, colleges
  – large scale: university systems, states, nations
• Purposes:
  – assist learning (formative)
  – measure individual achievement (summative)
  – evaluate programs (accountability)
• Problem: One size does not fit all
  – Educators at different levels need different information
  – Differing priorities, constraints, & tradeoffs

Why Focus on the Formative Functions of Assessment?

• As instruction is occurring, teachers need information to evaluate whether their strategies are working.
• They need information about the current understanding of individual students and groups of students so they can identify the most appropriate next steps for instruction.
• Students need feedback to monitor their own learning success and to know how to improve.
• Black & Wiliam (1998) reviewed impact of formative assessment practices on learning outcomes -- effect sizes ranging from .5 - .7
• Does this work in higher education????

Types of Feedback Used in Higher Education Studies

• Weaker feedback only
  – Knowledge of results (KoR)
• Feedback only
  – KoR + clear goals or knowledge of correct results (KCR)
• Weak formative assessment
  – KCR explanation (KCR+e)
• Moderate formative assessment
  – (KCR+e) + specific actions for gap reduction
• Strong formative assessment
  – (KCR+e) + activity

Nyquist (2003) Meta-analysis of Results in Higher Education

<table>
<thead>
<tr>
<th>Type of Feedback</th>
<th>N</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaker feedback only</td>
<td>31</td>
<td>0.16</td>
</tr>
<tr>
<td>Feedback only</td>
<td>48</td>
<td>0.23</td>
</tr>
<tr>
<td>Weaker formative assessment</td>
<td>49</td>
<td>0.30</td>
</tr>
<tr>
<td>Moderate formative assessment</td>
<td>41</td>
<td>0.33</td>
</tr>
<tr>
<td>Strong formative assessment</td>
<td>16</td>
<td>0.51</td>
</tr>
</tbody>
</table>
Assessment as a Process of Reasoning from Evidence

- **cognition**
  - theory or model of how students represent knowledge & develop competence in the domain
- **observations**
  - tasks or situations that allow one to observe students’ performance
- **interpretation**
  - method for making sense of the data

Must be coordinated!

Scientific Foundations of Educational Assessment

- Advances in the Sciences of Thinking and Learning -- the cognition vertex
  - informs us about what observations are important and sensible to make
- Contributions of Measurement and Statistical Modeling -- the interpretation vertex
  - informs us about how to make sense of the observations we have made

Generalizations About Performance

- Competence & Expertise
  - performance develops in communities that value certain forms of knowledge and activity, like modeling in science or design in engineering.
  - knowledge is tuned to specific patterns of activity, like solving certain kinds of problems or designing classes of objects and tools.
  - performance increases in scope and precision with multiple, contextualized experiences.
  - no magic levers: practice, disciplined inquiry.
- Implication -- Assessments must be designed to capture the complexity of expertise and competent performance, ranging from mental processes to participation in forms of practice

Generalizations About Knowledge

- Disciplinary Knowledge
  - is organized in ensembles that facilitate its use.
  - is amplified by processes of self regulation, or "metacognition," where learners spontaneously evaluate their knowledge and its limits.
  - is developed in communities that foster identity and interest.
- Implications for Assessment -- multiple "questions."
  - Knowledge Issues - Specific Facts, Procedures, Schemas
  - Reflection Issues - Articulation, Evaluation
  - Practice Issues - Why prove? Model?
Why Models of Development of Domain Knowledge are Critical

- Tell us what are the important aspects of knowledge that we should be assessing.
- Give us strong clues as to how such knowledge can be assessed.
- Can lead to assessments that yield more instructionally useful information
  - diagnostic & prescriptive
- Can guide the development of systems of assessments
  - work across contexts & time

Beyond Issues of Theory to Issues of Design & Use

- Assessment design spaces vary tremendously & involve multiple dimensions
  - Type of knowledge and skill and levels of sophistication
  - Time period over which knowledge is acquired
  - Intended use and users of the information
  - Availability of detailed theories & data
  - Distance from instruction and assessment purpose
- Need a principled process that can help structure going from theory, data and/or speculation to an operational assessment
  - Evidence-Centered Design

Stages in the Assessment Development Enterprise

- Unpacking the domain
- Conceptual Assessment Framework
- Assessment Implementation
- Assessment Delivery

Evidence-Centered Design

- Exactly what knowledge do you want students to have and how do you want them to know it?
- What will you accept as evidence that a student has the desired knowledge?
- How will you analyze and interpret the evidence?
- What task(s) will the students perform to communicate their knowledge?

A Synopsis of the AP Science “Redesign” Project

- Why a “Redesign” of AP science?
- The Framework & Timeline for AP Redesign
- Explicating Domain Models of Learning & Knowing
  - Identifying & unpacking the “Big Ideas”
  - Developing sets of claims-evidence pairs
- Creating an Operational C-I-A System
- Impact and Implications of the Redesign
A 2002 NRC Report identified ways to improve advanced study of math and science in the U.S. The Report’s recommendations are applicable to all AP course subjects:

- Emphasize deep understanding rather than comprehensive coverage -- avoid “mile wide & inch deep” syndrome
- Reflect current understanding of how students learn in a discipline
- Reflect current research directions within the disciplines
- Emphasize the development of inquiry and reasoning skills

Why an AP Science Redesign?

Conceptual Framework for the AP Redesign

Identify the enduring understandings and apply backwards design to obtain exam and course specifications
Use a visualization of the domain to arrive at a description of integrated knowledge in the domain
Design and development of the AP exam requires elaboration of this knowledge to a grain size that allows exam specification -- evidence-centered design

Collaboration with Jeanne Pemberton, Mark Reckase, Meryl Bertenthal, John Eggbrecht, & Kristen Huff
Supported by NSF and the College Board

Conceptual Approach Builds Upon Work of Others:


Components & Timeline

Unpacking the Domain

Identifying & Elaborating Critical Elements of Integrated Knowledge
Unpacking the Domain

THE DOMAIN ≠ THE DISCIPLINE
THE DOMAIN = AP COVERAGE OF THE DISCIPLINE

Peer Review by Science Experts

Most scientists regarded the new streamlined peer-review process as "quite an improvement."

Multipart Framework for the Domain Analysis

AP Science Reasoning: Level 1

1. Use representations and models to communicate scientific phenomena and solve scientific problems.
2. Use mathematics appropriately.
3. Engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course.
4. Plan and implement data collection strategies in relation to a particular scientific question.
5. Perform data analysis and evaluation of evidence.
7. Connect and relate knowledge across various scales, concepts, and representations in and across domains.
AP Science Reasoning: Level 2

Level 1: work with scientific explanations & theories
Level 2:
1. justify claims with evidence
2. construct explanations of phenomena based on evidence produced through scientific practices
3. articulate the reasons that scientific explanations and theories are refined or replaced
4. make claims and predictions about natural phenomena based on scientific theories & models.
5. evaluate alternative scientific explanations

Science Reasoning: Level 3

Examples of Evidence Found in Students’ Work

- Robustness of evidence (from investigations, theories, or models) mustered in support of claim
- Appropriateness of reasoning behind selection and exclusion of evidence
- Appropriateness of model incorporated
- Consideration of data from multiple sources (e.g., investigations, scientific observations, the findings of others, historic reconstruction, and/or archived data historical experiments)
- Differentiation between a claim and the evidence that supports it
- Differentiation between evidence and explanation
- Inclusion and reasonableness of a statement of prediction or existence of a phenomena

Developing the Assessment Argument

Identifying & Elaborating Critical Elements of Integrated Knowledge

Applying Evidence-Centered Design Principles (ECD)

Evidence-Centered Design

- What task(s) will the students perform to communicate their knowledge?
- How will you analyze and interpret the evidence?
- What will you accept as evidence that a student has the desired knowledge?
- Exactly what knowledge do you want students to have and how do you want them to know it?

Instantiated through the Intersection of Course Content & Science Reasoning
Illustrating the Process of Elaborating Claims and Evidence

The Claim: The student is……

The Evidence:

Achievement Level:

Science Reasoning Practice

- Big Idea
- Enduring Understanding
- Supporting Understanding

Illustrative Claims and Evidence

AP Chemistry

The Claim:

The Evidence:

Achievement Level:

Connecting the Domain Model to Curriculum, Instruction, & Assessment

Aurora University
Assessment Seminar
Structure of the AP Biology Curriculum Framework

- **4 Big Ideas**
- **Enduring Understandings**
- **Essential Knowledge**
- **Learning Objectives**
- **Science Practices: science inquiry & reasoning**

Curriculum Framework: Big Ideas

The unifying concepts or Big Ideas increase coherence both within and across disciplines. A total of Four Big Ideas:

1. **BIG IDEA 1**
   - The process of evolution drives the diversity and unity of life.
   - Enduring Understanding 1.A: Change in the genetic makeup of a population over time is evolution
   - Enduring Understanding 1.B: Organisms are linked by lines of descent from common ancestry
   - Enduring Understanding 1.C: Life continues to evolve within a changing environment
   - Enduring Understanding 1.D: The origin of living systems is explained by natural processes

2. **BIG IDEA 2**
   - Biological systems utilize energy and molecular building blocks to grow, reproduce, and maintain homeostasis.

3. **BIG IDEA 3**
   - Living systems retrieve, transmit, and respond to information essential to life processes.

4. **BIG IDEA 4**
   - Biological systems interact, and these interactions possess complex properties.

Building Enduring Understandings

For each Big Idea, there are enduring understandings which incorporate core concepts that students should retain. Total of 17 enduring understandings across the four Big Ideas.

**BIG IDEA 1**
- The process of evolution drives the diversity and unity of life.

AP Integrating the Content and Science Practices

<table>
<thead>
<tr>
<th>Content</th>
<th>Science Practice</th>
<th>Learning Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential Knowledge 1.B.2</td>
<td>Science Practice 5.3</td>
<td>Learning Objective (1.B.2 &amp; 5.3)</td>
</tr>
<tr>
<td>Phylogenetic trees and cladograms are graphical representations (models) of evolutionary history that can be tested</td>
<td>The student connects phenomena and models across spatial and temporal scales</td>
<td>The student is able to evaluate evidence provided by a data set in conjunction with a phylogenetic tree or a simple cladogram to determine evolutionary history and speciation</td>
</tr>
</tbody>
</table>

Teacher Choice of Illustrative Examples

Rather than trying to cover all topics, teachers have flexibility to focus on one specific example for in-depth study, linking example to concept and Big Idea.

**Example from Big Idea 3: Genetics**

3A3c: Certain human genetic disorders can be attributed to the inheritance of single gene traits or specific chromosomal changes, such as nondisjunction.

To foster student understanding of this concept, instructors can choose an illustrative example such as:
- Sickle cell anemia
- Tay-Sachs disease
- Huntington’s disease
- X-linked color blindness
- Klinefelter’s syndrome
- Trisomy 21/Downsyndrome

The New AP Biology Course Emphasizes Inquiry-Based and Student-Directed Labs

<table>
<thead>
<tr>
<th>Topic</th>
<th>Previously</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Question</td>
<td>A primary question framed the lab</td>
<td>Students generate their own questions for investigation</td>
</tr>
<tr>
<td>Alignment to Big Ideas</td>
<td>Not as clearly tied to the curriculum</td>
<td>Labs are clearly tied to Big Ideas, enduring understandings, science practices, and the learning objectives</td>
</tr>
<tr>
<td>Experiments</td>
<td>Experiments were teacher-directed</td>
<td>Students design and conduct their own experiments, based on investigative questions they pose for themselves</td>
</tr>
<tr>
<td>Variables</td>
<td>Students are told which variables to investigate</td>
<td>Students choose which variables to investigate</td>
</tr>
<tr>
<td>Steps</td>
<td>Each lab provided clear steps to follow</td>
<td>Students design their own experimental procedures</td>
</tr>
<tr>
<td>Tables and Graphs</td>
<td>Tables and graphs were provided for the students to fill in</td>
<td>Students construct their own tables and graphs for presentations</td>
</tr>
<tr>
<td>Providing Conclusions</td>
<td>Students were given specific questions to answer</td>
<td>Students determine how to provide their conclusion</td>
</tr>
</tbody>
</table>
Connecting the Domain Model to Curriculum, Instruction, & Assessment

ECD and the New AP Exam
No test items will focus on low cognitive level/declarative knowledge/recall
For each exam item, students will either produce the evidence (CR) or engage with the evidence (SR/MC)

- explain
- justify
- predict
- evaluate
- describe
- analyze
- pose scientific questions
- construct explanations
- construct models
- represent graphically
- solve problems
- select and apply mathematical routines

Organization of New AP Biology Exam
- Section 1 (90 min):
  - 63 Multiple Choice + 6 Grid-In questions
  - 50% of exam weight
- Section 2 (*90 min):
  - 8 Free Response questions
  - 6 Short free response questions (3-4 pts each)
  - 2 long free response questions (one lab based; 10 pts each)
  - 50% of exam weight
*10 minutes required reading time + 80 minutes response time

Sample MC Question
Two flasks with identical medium containing nutrients and glucose are inoculated with yeast cells that are capable of both anaerobic and aerobic respiration. Culture 1 is then sealed to prevent fresh air from reaching the culture; culture 2 is loosely capped to permit air to reach the culture. Both flasks are periodically shaken. Which of the following best predicts which culture will contain more yeast cells after one week, and most accurately justifies that prediction?

A. Culture 1, because fresh air is toxic to yeast cells and will inhibit their growth
B. Culture 1, because fermentation is a more efficient metabolic process than cellular respiration
C. Culture 2, because fresh air provides essential nitrogen nutrients to the culture
D. Culture 2, because oxidative cellular respiration is a more efficient metabolic process than fermentation

Sample Grid-In Question
The data below demonstrate the frequency of tasters and non-tasters in an isolated population at Hardy-Weinberg equilibrium. The allele for non-tasters is recessive. How many of the tasters in the population are heterozygous for tasting?

TASTERS: 8,235
NON-TASTERS: 4,328
Sample Short Free Response Question

What's The Impact Of Curriculum Changes On New AP Biology Exam?

Because of use of Big Ideas....in 2008, 12% of questions had something to do with evolution
In 2013 exam, 35% of questions have something to do with evolution
Because of emphasis on science practice and mathematical skills...new types of questions are being asked, e.g., grid-ins
Because of use of evidence...the number of Multiple Choice questions was reduced from 100 questions on last year’s exam to 63 on this year’s exam.

Immediate Impacts of AP Biology Changes

1. ~10,000-12,000 high school biology teachers across the country all changed the way they taught AP Biology...at the same time
2. For many teachers, they had to replace all their laboratory investigations. For all of them, they had to incorporate inquiry activities throughout the course, not just use inquiry in a few labs. For some, incorporation of mathematical skills is a challenge.
3. In May 2013 ~180,000 students took the new AP Biology exam

Lessons Learned from the AP Redesign Project

• No Pain -- No Gain!! -- this is hard work
• Backwards Design and Evidence Centered Design are challenging to execute & sustain
  - Requires multidisciplinary teams
  - Requires sustained effort and negotiation
  - Requires time, money & patience
• Value-added -- Validity is “designed in” from the start as opposed to “grafted on”
  - Elements of a validity argument are contained in the process and the products

AP Redesign Implications

For AP science teachers and students:
• AP instructors and students will have a well-defined set of learning objectives that support teaching for deeper understanding.
• The AP Exams will be congruent with these learning objectives.
• AP instructors will have tools and professional development opportunities that support teaching, learning and success on the AP Exam
• The post-secondary community and professional societies will have a better understanding of, and confidence in, the value of AP courses.

For science education generally:
• The emphasis on reasoning and inquiry, enforced by the exams, can influence school science in lower grades and in the universities.
• The development of a high-stakes exam based on evidence-centered design principles can influence state and national assessment designs.
• The redesigned courses will increase interest and success within a new population of students who can then contribute to both science education and the practice of science.

Assessing Multiple Source Comprehension: Project Goals and Objectives

To address educational problems related to reading achievement and the new challenges associated with achieving widespread literacy in a knowledge society, the project is:
  - undertaking a multi-pronged approach to unpacking components of a student model of inter-textual comprehension and areas where readers struggle comprehending multiple text sources.
  - engaging in an evidence-centered assessment design process (Mislevy, Steinberg, & Almond, 2003) in order to construct a set of assessments that reflect the situated and cognitive demands of using multiple sources in content-area instruction and learning.
  - developing a set of assessments for multiple source comprehension that are reliable, valid, generalizable and useable across a range of students and task variations.
Contextual Variables

- 4-6th grade students
  - Learning to read versus reading to learn
  - Beginning to use information from many sources for learning
- Science and Social Studies
  - Domains where multiple source explorations are more prevalent
  - Explore differences in use of multiple sources within these domains

Project Foci

- Particular focus on multiple source comprehension in inquiry learning tasks
  - Targeting 5th - 8th grade
  - Science and social studies
- Two domains allows comparative analyses of processes of multiple source comprehension

Informative for classroom instruction - 2 ways
- Provide teachers with information about knowledge and skills students were demonstrating
- Introduce teachers to knowledge and skills needed for multiple source comprehension

How do we do this?
Principled Assessment Design

- What complex of knowledge, skills or other attributes should be assessed?
- What behaviors or performances should reveal those constructs, and what is the connection?
- What tasks or situations should elicit those behaviors?

What Did We Do?

- Student Model
  - Specified a preliminary student model - defined components and delineated competencies (AKA: Claim Space)
  - Delineate interconnections among competencies
- Evidence Model
  - Specified a set of preliminary evidence statements and rules concerning their importance
  - Initial work on the statistical/measurement model has been completed
- Task Model
  - Piloted task environments and examples -- computer-based
  - Created links between tasks and work products

Preliminary “Student” Model

- Interpreting the task, including posing appropriate questions.
- Gathering task-relevant information, including developing a search strategy.
- Evaluating information for accuracy and reliability.
- Synthesizing or integrating information within and across multiple texts.
- Applying information to formulate a response that addresses the task or question.
### Unpacking the Components

- **Applying**
- **Synthesizing**
- **Analyzing**
- **Selecting/Sourcing**

### Elaboration of “Sourcing”

<table>
<thead>
<tr>
<th>Subcomponent</th>
<th>Claim Statement</th>
<th>Evidence Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>Author makes use of...</td>
<td>about the credibility of the author or efforts to determine credibility of the author.</td>
</tr>
<tr>
<td>Venue</td>
<td>publishing location in the sourcing process.</td>
<td>about the credibility of the publication location or efforts to determine where something was published and its credibility.</td>
</tr>
<tr>
<td>Currency</td>
<td>publication relative to the context of the task in the sourcing process.</td>
<td>indicating attention to date of publication in relation to task.</td>
</tr>
<tr>
<td>Type</td>
<td>differences among kinds of resources (e.g. primary vs. secondary, fiction vs. nonfiction, opinion piece/official vs. news story) relevant to their utility for completing the task.</td>
<td>about differences among kinds of resources and their appropriateness for the task.</td>
</tr>
<tr>
<td>Purpose/Intent</td>
<td>initial intent and purpose in the sourcing process.</td>
<td>about possible goals or the nature and implications of those for appropriateness for the task.</td>
</tr>
</tbody>
</table>

### Sourcing/Selecting

- **Introduction to topic and then an inquiry question.** Task is to help figure out which of 8 sources would be useful to answer question.
- **8 sources vary in terms of relevance and reliability, defined as trustworthiness**
  - Title, brief summary
  - Source Attributes: author, date of publication, where published, type of publication
- **Two Steps: Relevance then Trustworthiness**

### Why Did So Many People Move to Chicago? (1830-1930)

#### Choosing Resources

- **Why Did So Many People Move to Chicago? (1830-1930)**
- **Chicago Tribune**
- **Chicago and Immigration 1900-1970**
- **Chicago Stockyards are the Perfect Job**
- **The Rise of Chicago as a Transportation Hub**
- **The Long Migrant Story: A Personal History of Exodus to Chicago**
- **Moving to Chicago**
- **Hundreds of How Chicago Jobs Ported Daily**

### Relevance Judgment

- Population of Chicago by Decades
- Chicago The Musical
- Chicago Immigration 1900-1970
- The Chicago Stockyards are the Perfect Job
- The Rise of Chicago as a Transportation Hub
- The Long Migrant Story: A Personal History of Exodus to Chicago
- Moving to Chicago
- Hundreds of How Chicago Jobs Ported Daily
Selection Task Data

- Collected data from approximately 800 students on this task
- Differences in how much differentiation students make between useful and not useful sources
- Higher differentiators differ from lower on relevance judgments but not trustworthiness.
  - Respond largely to content, with some attention paid to author.
- Performance not correlated with reading achievement scores on standardized tests.

Summary and Conclusions

- ECD is a principled approach to assessment that really forces the articulation of a theory or model of the domain.
  - Very useful for theory development
- Lack of relationship to standardized reading tests indicates that the two multiple source comprehension components are distinct from single source reading as currently measured
- Current developments
  - Refinement of evidence/measurement model
  - Automated coding of constructed responses

Advantages of Technology for Instruction & Assessment

- Present authentic, rich, dynamic environments
- Present phenomena difficult or impossible to observe and manipulate in classrooms
- Represent temporal, causal, dynamic relationships “in action”
- Allow multiple representations of stimuli and their simultaneous interactions (e.g., data generated during a process)
- Allow overlays of representations, symbols
- Allow student manipulations/investigations, multiple trials
- Allow student control of pacing, replay, reiterate
- Capture student responses during research, design, problem solving

Examples: OLI Lab Activities

- Proof Lab
- Biology Simulator
- Causality Lab
- Economics Experiments
- Chemistry virtual lab
Exercise #1: Developing a Domain Analysis for a Course

- With one or two partners pick a course that is a core part of the curriculum and that one or more of you currently teaches (or a part of such a course)
- Try to begin specifying the elements of a domain analysis for the course
  - 2-5 “big ideas” (i.e., core principles of the domain)
  - The related “enduring understandings” (i.e., major aspects of a “big idea” that students must understand)
  - The “practices” (i.e., major forms of reasoning expected of students with the domain knowledge)
- See if you can agree on some aspects of this beginning domain analysis and where you differ

Exercise #2: Developing a Domain Model for the Course

- With your partners use your beginning “domain analysis” to begin specifying aspects of a “domain model”
- Start by specifying claims you would want to make about what students should “know and be able to do” relative to combining “big ideas” and “practices”
  - Create a “learning performance”
- Specify the forms of evidence that would support the given claims
  - What observable features of the work should be present
- Describe one or more tasks that could provide the necessary evidence
  - What are the task features; how is it scored?

Report Back

- Take 20 minutes attempting this initial part of an ECD exercise
- Report back on the challenges and successes in attempting to do it.
  - What was difficult, unclear etc.?
  - What did you learn from the process?
  - What implications does this have for how you might take the next step in ECD – developing a Domain Model to guide the process of designing or choosing assessments for your course?
Step 1: Develop Claims

• A claim is about what the student “knows” and “understands” and how they do so
• Incorporates both content and cognitive skills/practices
• Uses descriptive and specific verbs to clarify learning performances. For example:
  • describe, analyze, compare and contrast, design
  • explain content using evidence and reasoning
  • build and describe models

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2. Define Evidence

• What will you accept as evidence in support of a claim that a learner has the desired knowledge?
• Specific learner performances and/or work products that you would accept as indicative that a claim has been satisfied.
• The features of the work products and performances that you expect to see and their value and importance in supporting a claim

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3. Design Situations or Tasks

• What particular tasks, questions or situations will bring about a response
  • provide sufficient evidence to support the student learning claim
• A single task or situation may provide evidence for more than one claim.
• Multiple tasks and performances may be necessary to provide evidence in support of a single claim.

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Report Back

• Take 20 minutes attempting this second part of the ECD exercise
• Report back on the challenges and successes in attempting to do it.
  – What was difficult, unclear etc.? 
  – What did you learn from the process?
  – What implications does this have for how you might go about the process of designing or choosing assessments in your program?

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Beyond Today: Applying These Ideas

• What are the big ideas in “my course”?
  – What claims about student knowledge and competence do I want to make as a result of my course?
  – What are my assessments assessing?
• What are the big ideas that run through our collection of courses and our program?
  – What claims do we want/need to make – for ourselves and our students?
  – What evidence do we have to support those claims?
• Given the assessments and data that we have now, what claims are they capable of supporting?
  – What’s missing? What should be changed?
A Final Comment on the Benefits of an ECD Approach

• Two ways to make use of an ECD approach regarding assessment activities
• **Forward Direction** – design new sets of assessment tasks/situations aligned with the goals of curriculum and instruction
• **Backward Direction** – reverse engineer existing assessments to determine what claims can be supported by the specific forms of evidence available from the tasks