



Ensuring that assessment reflects our goals

St. Mary's College
2/2006

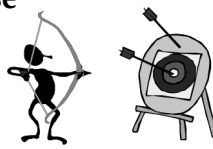
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Core Premise (1):


▪ *No one* can achieve complex learning goals without lots of feedback and opportunities to use it, in a risk-supportive environment



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Core Premise (2):

▪ *No one* can achieve complex learning goals without lots of formative feedback on the key transfer tasks that define the discipline (vs. mere scores on quizzes, tests and papers)



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Core premises (3):

- The primary aim of assessment is to **improve** student performance on the key transfer tasks, not merely measure content mastery “precisely” (i.e. validity is often sacrificed for reliability)



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Assessment Reform Principles

key ideas:

- Helping everyone improve and achieve excellence is the primary goal of student assessment. A secondary goal is to give grades & audit programs.
- There is a moral imperative: the student is entitled to tests that teach – thus, greater transparency, authenticity & feedback opportunities in assessment
- Transfer Tasks must anchor the assessment system and our course syllabi since our most vital goals involve evidence of student ability to apply and connect prior learning on tasks at the heart of the discipline.
- Course design must optimize feedback and its use in class, since learning depends upon such coaching

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Some implications

- Unless the evidence is credible and the feedback is user-friendly, there will be no improvement over time
- “Secret major tests of achievement” is a contradiction. Secrecy and last-day finals must be *minimized* to achieve the purpose of assessment, namely, excellence.
- Tests of discrete knowledge and skill are of *secondary* importance since they do not embody the goals of learning, namely, *intelligent and effective use of content* - transfer. They are like the drills, not the game.

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Some implications (2)

- Formative assessment is more important than summative assessment. The syllabus *must* make room for the use of assessment results and other feedback, if goals are to be met.
- Program audits should not unwittingly subvert learning goals or fixate on precision at the expense of valid, credible, useful information.

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Reform mantra, in sum:

***“Assess what we value,
and value what we assess”***

THUS, Moving beyond -

- “Test what is merely easy and uncontroversial to test and grade”
- “Teach, test, and hope for the best”

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Confusing “testing” with “feedback”

*We tend to teach and test too much,
and provide too little robust feedback
and opportunities to use it*

- We often fail to make room in our classes for feedback use - we overplan and overdo the “teaching”
- Consider how all coaches use time to cause transfer: cycles of model, practice, feedback, adjust - mindful of transfer goals

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feedback and its use is key to great gains

Black & Wiliam meta-analysis:

“There is a body of firm evidence that formative assessment is essential... We know of no other way of raising standards for which such a strong *prima facie* case can be made.”

- Black and Wiliam (1998) “**Inside the Black Box: Raising Standards through Classroom Assessment,**” *Phi Delta Kappan*, volume 80, 2 (October), pp. 139 ff.
- ***Cf. Working Inside the Black Box: Assessment for Learning in the Classroom,*** by Paul Black, Christine Harrison, Clare Lee, Bethan Marshall, and Dylan Wiliam *Phi Delta Kappan*, Volume 86, #1 (September, 2004)

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Feedback: Harvard’s “most effective” courses

from Making the Most of College:

- “The big point – it comes up over and over again as crucial – is the importance of quick and detailed feedback. Students overwhelmingly report that the single most important ingredient for making a course effective is getting rapid response on assignments and quizzes.
- “Students suggest that it should be possible in certain courses to get immediate feedback. They suggest that the professor should hand out an example of an excellent answer.

- Richard Light

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Feedback as key (cont.):

- “Secondly... an overwhelming majority are convinced that their best learning takes place when they have a chance to submit an early version of their work, get detailed feedback and criticism, and then hand in a final revised version...
- Many students observe that their most memorable learning experiences have come from courses where such opportunities are routine policy.”

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Feedback is vital to all design work

- “Faculty members at Harvard were asked what single change most improved their teaching. Two ideas swamped all others. One is enhancing student awareness of the big picture, ‘the big point of it all’. The second is the importance of helpful and regular feedback from students so a professor can make midcourse corrections.”

→ Harvard Assessment Seminar

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The increasing use of hand-held “clickers”

Large courses now often build in student feedback and its analysis numerous times in each lecture

- All student answers shown in a pie chart
- Answers are anonymous, but professor has a private record of each student’s answer
- Feedback and its use becomes central to even a large lecture course - 2-3 times *each lecture* instead of quiz results only after 6 or more classes

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From Good to Great, by Jim Collins

“All good-to-great organizations began the process of finding a path to greatness by confronting the brutal facts of their current reality.”

- “When you start with an honest and diligent effort to determine the truth of your situations, the right decisions often become self-evident.
- A primary task in taking an organization from good to great is to create a culture wherein people have a tremendous opportunity to be heard and, ultimately, for the truth to be heard.”

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Feedback/Self-assessment System - Healthy

- Performers seek feedback on their own and know that it is in their interest - even if the news is bad
- Performance improves at all levels; there is obvious "value added"
- Improved performance occurs more rapidly than is typical or expected
- Few quarrels about the results
- Feedback use opportunities are central to the curriculum and assessment
- Norms and standards rise over time: what was once considered extraordinary performance becomes more common

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Feedback/Self-assessment System - Unhealthy

- Learners fear, resist, do not seek, or ignore feedback
- Learner performance rarely improves much beyond what is typical
- Novices struggle to improve; they do not know "what you want." Their self-assessment is very inaccurate
- Many quarrels about the credibility and meaning of the results; anecdotes and effort trusted more than data
- Teaching is too linear and prone to coverage of content and activities, with little opportunity to get feedback and use it repeatedly for core tasks and big ideas
- Norms stay the same, standards rise - and expectations are thus lowered

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Transfer is the goal for most college courses

What is 'transfer of learning'?

- 'Transfer of learning' is the use of knowledge and skills (acquired in an earlier context) in a new context. It occurs when a person's learning in one situation influences that person's learning and performance in other situations.
- When transfer of learning occurs, it is in the form of meanings, expectations, generalizations, concepts, or insights that are developed in one learning situation being employed in others

- Bigge & Shermis, 1992.

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A sixty-year-old quote:

- Successful teaching is teaching that brings about effective learning. The decisive question is not what methods or procedures are employed, and whether they are old-fashioned or modern, time-tested or experimental, conventional or progressive. All such considerations may be important but none of them is ultimate, for they have to do with means, not ends. The ultimate criterion for success in teaching is – results!

- Mursell 1946, p. 1

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But which results?

Too many teachers at all levels confuse “learning the content” with the real goal: using the content - transfer

- The research on transfer shows that few courses cause it to a significant degree:
 - “In summary, diverse empirical research on transfer has shown that transfer often does not occur. When transfer fails, many things might have gone wrong. The most discouraging explanation is that knowledge may be too “local” to allow for the expectations and aspirations that educators have held.
- Perkins & Salomon 1988

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Understanding is transfer-ability:

- Understanding reveals itself as transfer: a wise use of knowledge and skill, on one’s own; using good judgment, with minimal cues and prompting, in various important situations, about *which* content is needed *when* and *why*.
- Without such understanding, we see Shulman’s 3 “pathologies”:
 - rigid knowledge – Whitehead’s “inert” ideas
 - Surprisingly bad student amnesia
 - Persistent misunderstanding of key ideas

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This is what a “discipline” means, after all

Key transfer tasks and habits of mind

- We aim to develop a sophisticated “discipline” in how the learner thinks and acts
- Learning must focus on making the learner self “disciplined” not just learned
- The aim is an effective repertoire in handling the key tasks and issues

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Liberal Education Outcomes from AACU

- KNOWLEDGE of Human Culture and the Natural World: • Science • Social sciences • Mathematics • Humanities • Arts
- INTELLECTUAL AND PRACTICAL SKILLS: • Written and oral communication • Inquiry, critical and creative thinking • Quantitative literacy • Information literacy • Teamwork • Integration of learning
- INDIVIDUAL AND SOCIAL RESPONSIBILITY: • Civic responsibility and engagement • Ethical reasoning • Intercultural knowledge and actions • Propensity for lifelong learning

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How people learn, for transfer

“Students develop flexible understanding of when, where, why, and how to use their knowledge to solve new problems if they learn how to extract underlying principles and themes from their learning exercises.”

- *How People Learn*, p.224

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Key findings: “How People Learn”

- “1. Students come to the classroom with preconceptions. If their initial understanding is not engaged, they may fail to grasp the new concepts and information.
- “2. To develop competence, students must:
 - Have a deep foundation of factual knowledge
 - Understand facts and ideas in a conceptual framework
 - Organize knowledge in ways that facilitate retrieval and application

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Key findings: “How People Learn”

- “3. A metacognitive approach to instruction can help students learn to take control of their learning:
 - The teaching of metacognitive activities must be incorporated into the subject matter.
- “A key finding is that organizing information into a *conceptual framework* allows for greater transfer”

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A great challenge: “design of learning” vs. “instruction of content”

You must separate the design of learning from the structure of the content

- The question is: in what ways does the learner need to learn it, to truly understand it (I.e. successfully use it)
- The question is NOT: in what order is the knowledge of the expert (“content”) best laid out?
 - This distinction is at the heart of the decade-old discussion on moving from the “teaching” to the “learning” college (cf. Barr & Tagg)

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Big ideas and transfer tasks are key to the shift

*Ideas framed as Questions, and goals framed as transfer tasks enable all the knowledge and skill to be grouped, integrated, and **PRIORITIZED** for learning it*

- Big Ideas and tasks are the synthesizers needed, given the list-like nature of typical goals and “Outcomes” –
 - > make learning goals concrete
 - > help avoid aimless “coverage”

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The design and instructional challenge

Make big ideas and transfer tasks not only clear but central to achieving course goals

- The learner needs to experience the “idea” as both “real” and powerful, both for making sense of old learning and making new learning possible
- The course must head toward transfer and provide training for students in how to transfer their learning to key situations and realistic contexts
 - > See sample business course syllabus

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Implications for Syllabus: Backward Design

Frame by transfer goals and transfer tasks, not content

- What are the transfer goals?
- How will those goals be made concrete and valid in the assessment?
- What activities and resources will make achievement of the goals likely?

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The “big ideas” of good design

- “Backward design” - designing with clarity about the desired learnings, and on evidence of real learning (understanding/transfer)
- a sharper focus on learning *priorities*: the focus is on “big ideas” & “core tasks” of transfer, to frame curricula
- Focus on anticipating student misunderstandings (and learning rough spots)
- Making assessment central to curriculum design, not an afterthought

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Good design - by design...

What was the best-designed learning experience you ever had?

- ‘Best’ here means: it resulted in highly engaged and effective learning.
- We seek replicable lessons about good design
- We have asked this question with every group we have worked with, over an 8-year period

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Good design - by design...(2)

- What do the best-designed lessons have in common? Against what criteria should all our designs be judged?

Share stories with a neighbor, and generalize: “The best designs....”

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Summary - Most common answers (7000+ responses):

- Clear goals and explicit performance requirements
- Models and modeling provided
- The bigger picture - the 'why?' - is made clear via working back and forth from whole/part
- A genuine challenge/problem frames the design that stretches you - real, meaningful work
- Work culminates in real or realistic application
- Trial and error, reflection and adjustment are expected, and designed into the work
- Constant helpful feedback opportunities and many chances to adjust in time

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Summary - most common answers (7000+ responses):

- Immersion, active, multi-sensory experience - get doing. Much less 'frontloading' of content than typical in class
- The teacher is more of a facilitator, coach
- There is a safe, supportive environment for risk-taking
- Variety, choice, and attention to student difference is clearly anticipated in the design of the work - without compromising goals
- A good mix of collaboration/solo work

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KEY: 3 Stages of ("Backward") Design

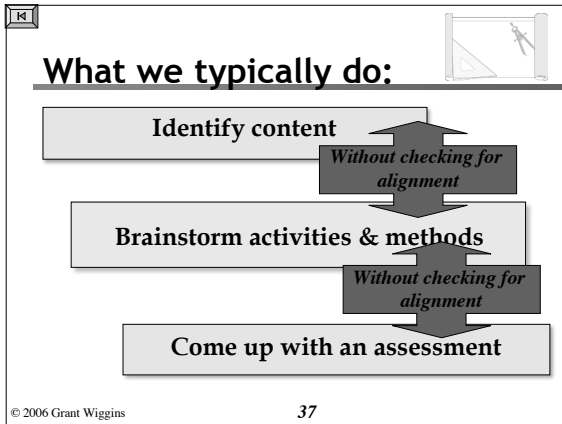
1. Identify desired transfer

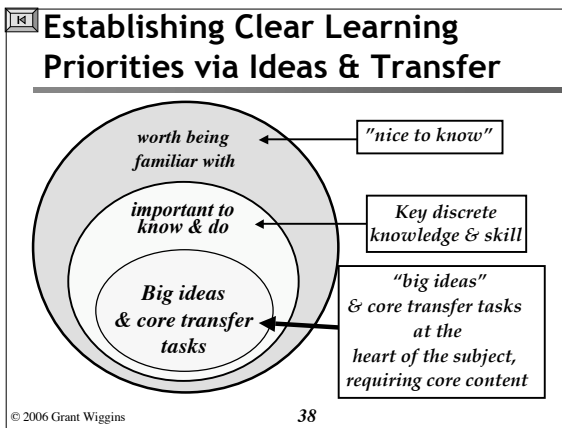
2. Determine valid evidence

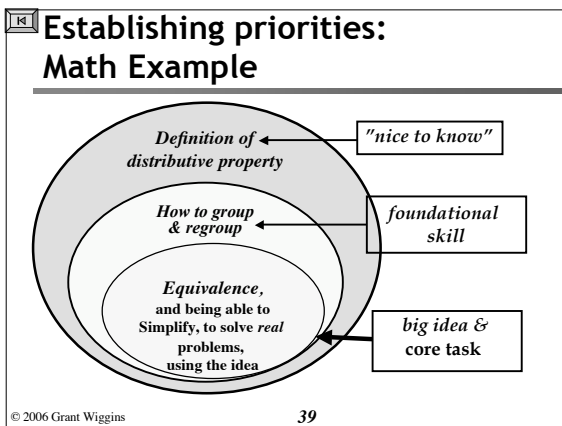
Then, and only then

3. Plan learning experiences & instruction accordingly

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**Establishing priorities:
Philosophy Example**

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Framing a course in World History by Questions:

1. 9/11 - How and why was it predictable, historically speaking?
2. To what extent is the history we know the history of the winners - with what consequences?
3. To what extent is world history the history of freedom? Great Men? Military power? Wealth? Religion? Commodities? New Ideas? Fear? Hope?
4. Why do cultures thrive, barely survive, or die?
5. Who are our global friends and enemies? Why? Why and in what ways has the answer changed over time?
6. How confident are we that we are looking in the right places - vs. looking only where the light is?

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Framing a course in World History by tasks:

1. Map of our friends and enemies, with policy recommendations
2. The writing of a *Bill of Rights* for use in Afghanistan, Iraq, and other new democracies
3. Report on Latin America to the Sec. of State: Policy analysis and background report on a Latin American country. What should be our current policy, and how effective has recent policy been?
4. Collect and analyze media reports from the Internet on other countries' views of US policies in the Middle East. What don't we see if we lack disinterest or empathy?
5. Provide a briefing on the AIDS and poverty crisis in Africa and how American policy has unwittingly hurt the situation
6. Take part in a model UN on the issue of terrorism: you will be part of a group of 2-3, representing a country, and you will try to pass a Security Council resolution on terrorism

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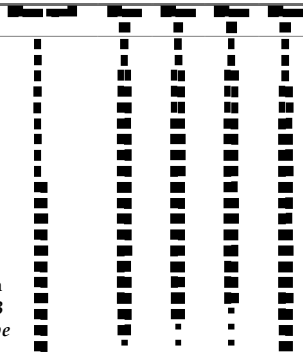
A unit outline for planning via questions/transfer

1. Start with an interesting question/problem to raise all the key issues and ideas related to this topic - establish interest and a "need to know"
2. Ensure that that the initial activity/discussion/ exploration leads "naturally" to an Essential Question
3. Make the "core content" needed, clearly *useful* in clarifying the problem/addressing the question
4. Address the question/problem from multiple perspectives to push the question/issues deeper
5. Keep making students develop, test, and modify their "theories"
6. Assess for final understanding via a transfer task - a performance requiring thoughtful application of key learnings and in-depth addressing of the question (supplement as needed with checks for discrete knowledge and skill)

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**Math example:
"What is Fair?
How might math
best help?"**

Intro problem: Four classes had a race. Devise as many ways as you can to determine a *fair* ranking of the 4 classes, given the individual runner results in the table. Summarize the 2-3 top ways you think would be most fair, and be prepared to discuss your answers...



Individual ranking of runners in a race by all 4 classes

Other question-framing activities/discussions

- What do we mean when we say that the rules of a game of chance are "not fair"? What role does math play in our judgment?
- Why is it fair to have one person cut the cake and the other person to choose the piece?
- When is straight majority voting "fair" and when is it "not fair"?
- When is it "fair" to consider an "average" in ranking performance (e.g. salaries, home prices, batting average) and when is it "unfair"?

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The content to be learned on the way, as a means

What mathematical tools are well suited to judging fairness?

- Measures of central tendency:
 - > Mean
 - > Median
 - > Mode
 - > Standard Deviation (range/ variance)

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Final task in the unit on mean/median/mode

So, what is a fair grade?

- Based on our study in this unit of various measures of central tendency, and the pros and cons of using "averages" (and other such measures) in various situations, Propose and defend a "fair" grading system for use in this course. How should everyone's grade be calculated? Why is your system more fair than the current system (or: why is the current system most fair?)
- Final reflection on the essential question about mathematics and its help in thinking through "fairness"

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The difference a big idea makes:

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The difference a transfer task makes:

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Transfer: don't confuse the drills with the game

<p>'Drill-tests' - test items/exercises</p> <ul style="list-style-type: none">▪ Out of context▪ Discrete, isolated element▪ Unrealistically set up and prompted▪ Doesn't transfer without practice adapting it to the game itself		<p>The 'game' - real task, problems</p> <ul style="list-style-type: none">▪ In context, with all its messiness and interest value▪ Requires a repertoire, used wisely▪ Not prompted: you judge what to do, when	
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"Core Transfer tasks" should frame learning

What do the discrete skills and facts enable?

- What is a credible answer to: "Why are we learning this? What does it help you do?"
- What *complex tasks* do people out in the world get called upon to do - on their own? What are the kinds of challenges and conditions they face in the field?
- What work in the field requires *transfer* - the thoughtful use of a *repertoire*, (as opposed to just cued, simple plug-in or rote response)?

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Bloom's "application" = transfer

'Taxonomy' said it 50 years ago:

- "Application is different from simple comprehension: the student is not prompted to give specific knowledge, nor is the problem old-hat."
- "The tests must involve situations new to the student... Ideally we are seeking a problem which will test the extent to which the individual has learned to apply an abstraction in a practical way."

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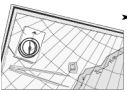
What Bloom said (2)...

- The evaluation of analysis abilities and skills requires that students demonstrate the appropriate behavior in a new problem or situation. Otherwise they would be doing no more than revealing their memory or knowledge.
- "In 'synthesis'...the performer wishes to achieve a given effect in some audience.... The student should have considerable freedom...to determine the materials or elements...and freedom to determine the specifications which the synthesis should meet."

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Core tasks, cont.

- Ask:
 - > What does it mean to *do* the subject, to have your abilities 'tested' in the world?
 - > What are authentic options, constraints, and opportunities when doing such work?
 - > What are the key genres of performance in your subject(s)?



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Sample transfer tasks

- World History: Advise the President on mideast policy for the next decade, propose a new "roadmap" for peace
- Business: take seed money and maximize profit, give profit to a not-for-profit org.
- Education: Audit the quality of the district curriculum, given state standards and issues of equity; develop an observation protocol for supervision
- Genetics: Make a policy recommendation on the use of genetic testing/cloning/stem cells etc.

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types of tasks at the heart of the "discipline"

- HISTORY: Construct a valid and insightful "story" from multiple (incomplete & conflicting) primary & secondary sources
- MATH/ECONOMICS: Find a pattern/relation/function in *real, messy* data (I.e. with outliers and "error")
- PHILOSOPHY: Analyze a significant current problem in terms of conceptual confusions and latent ideological bias.
- SCIENCE: Model complex phenomena, and test the model for both validity and usefulness

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Pointing to big ideas via essential questions



"How does one lead children to discover the powers and pleasures [of rethinking]? Through organizing questions. They serve two functions: they put perspective back in the particulars... and they often served as criteria for determining where students were getting, how well they were understanding, whether anything new was emerging."

- Jerome Bruner



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The Questions ARE the content, not the 'method'

We must frame curricula around questions

- Don't confuse 'teaching via questions' with a curriculum and assessment system based on penetrating and important questions in each field
- One of 2 key moves for escaping the tyranny of the textbook (the other: designing around core tasks).

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Essential Questions

What questions -

- are *important* to argue about?
- are at the heart of the subject?
- recur - and *should* recur?
- raise more questions - provoking and sustaining engaged inquiry?
- must become habits of mind when we face real problems?
- often raise important conceptual or strategic issues in the subject?
- can provide organizing purpose for meaningful & connected learning?

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Essential Questions

examples -


- What's the pattern? How do I know? Are the exceptions anomalies or clues that it's really a *different* pattern?
- Who is an American? Says who?
- What is commonsensical and what is counter-intuitive about this finding? When should I trust or be skeptical of common sense?
- What's the difference between a good read and a great book, if any? Does the question matter?
- Is the data sufficient?
- Who is a true friend? How can you be sure, and how sure can you be?

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Essential vs. "leading" Q's

Essential - STAGE 1 <ul style="list-style-type: none">▪ Asked to be argued▪ Designed to "uncover" new ideas, views, lines of argument▪ Set up inquiry, heading to new understandings	Leading - STAGE 3 <ul style="list-style-type: none">▪ Asked as a reminder, to prompt recall▪ Designed to "cover" knowledge▪ Point to a single, straightforward fact - a rhetorical question
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Misconceptions as another key way to identify big ideas 


"[What] an extensive research literature now documents is that an ordinary degree of understanding is routinely missing in many, perhaps most students. If, when the circumstances of testing are slightly altered, the sought-after competence can no longer be documented, then understanding - in any reasonable sense of the term - has simply not been achieved."

- Howard Gardner, *The Unschooled Mind*

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E.g. Misconceptions in science 

From 2061 Benchmarks (AAAS):

 Some students think that 'cold' is being transferred from a colder to warmer object...students often think that objects cool down or release heat spontaneously...


Even after instruction, students don't always give up their naive notion that some substances (e.g. flour) cannot heat up, or that metals get hot because they "attract heat" etc." (pp. 337-8)

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An implication for the nature of feedback given

We must ensure that students get feedback against the ultimate tasks of transfer, not primarily on our tests and quizzes of content

- Contrast arts & athletics with most classroom feedback: the performance, not the sum of the exercises



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Consider the Alverno Model

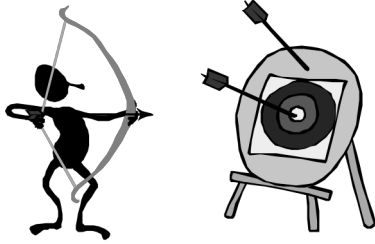
Each faculty member serves in both an academic department and a “competency” area

- The job of the competency committees is to design appropriate assessments and course guidelines for their area (e.g. critical thinking, effective communication, etc.)

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Formative & Self Assessment

Self-Adjustment is Key!



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13 tips for developing self-adjustment ability (1)

1. Ask students to self-assess all formal work before you or peers provide feedback.
2. Place an emphasis in self-assessment on the result of the work, not just the process and content: Was the audience engaged? Did the product work? Was the client satisfied? Did the paper achieve its purpose? Was the problem solved? etc.
3. Make sure that you carefully distinguish effort from achievement, and quality from quantity in working on self-assessment with students. They often conflate the two in their minds.

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13 Tips (2)

4. The anchors/samples/models are more important than a rubric. The rubric is an abstraction drawn from groups of samples. So, don't hide the samples: give students practice in self-assessing their work against models, not against only rubrics. (Like AP readers!!)
5. Provide diverse models, so that students don't merely copy. Ask them to generalize from the various models. Studying varied models at the different levels of quality opens the door to creativity rather than closing it: you make clear that creative excellence, not imitation, is the goal.
6. Help the student develop an increasingly accurate profile of their own strengths and weaknesses, likes and dislikes, talents and interests. Use self-reporting surveys and reflection prompts throughout the year.

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13 Tips (3)

7. Self-assessment may be more revealing of student understanding than the performance itself, especially if the students are relative novices. Reward them for their perception and honesty
8. To avoid simplistic reactions, require every self-assessment to refer to multiple specific criteria provided upfront.
9. Provide all rubrics & models right from the start, and design lessons around their meaning and use. But only highlight as many criteria/rubrics at a time as can reasonably be addressed.

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13 Tips (4)

10. Focus students on personal improvement over time, against specific and achievable goals, based on developmental rubrics.
11. Make clear that being extremely self-critical or self-praising have little to do with accurate self-assessment. The goal is *neutral analysis* against goals.
12. Make the thoughtfulness and accuracy of student self-assessment (prior to your feedback) part of the grade.
13. Make the quality of their self-adjustment, based on self-assessment (and feedback) part of the grade.

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The research jibes with this common sense:

To achieve any goal you must learn how to self-assess your learning and your performance

- One of 3 chief findings in *How People Learn*
- Even the youngest learners can (and must) learn to self-monitor & self-adjust
- Success means you can *self-assess on your own, and self-adjust*, with minimal prompting from others

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From the research: one of 3 chief findings -

- “The teaching of metacognitive skills should be integrated into the curriculum. Because metacognition often takes the form of an internal dialogue, many students may be unaware of its importance unless the processes are explicitly emphasized by teachers.
- “Research has demonstrated that children can be taught these strategies, including the ability to predict outcomes, explain to oneself, note failures to understand, activate background knowledge, plan ahead, and apportion time and memory...
> *How People Learn*, p. 14, 21

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**Research on metacognition,
part 2**

- The model for using the meta-cognitive strategies is provided initially by the teacher, and student practice and discuss the strategies as they learn to use them.
- Ultimately, students are able to prompt themselves and monitor their own comprehension without teacher support. [transfer]

- *How People Learn*, pp. 18-19

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**value-added assessment
research - postscript:**

“Research has found that variability in effectiveness within schools is 3 to 4 times greater than the variability across schools.”

- “Education Week” 11/17/2004

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for further information...

Contact me:

- grant@authenticeducation.org
- Check out Big Ideas, a monthly online newsletter:
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