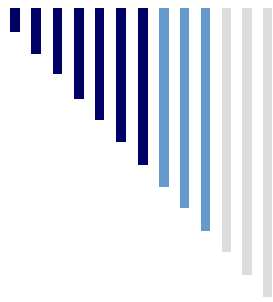


# Planning Assessment Backwards to Close the Loop

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# Inquiry into the Practices that Do or Do Not Foster Student Learning

- Behind every outcome statement there should be a study or research question about what, when, how, and how well students learn along the chronology of their studies.
- Aligned assessment methods and criteria and standards of judgment provide the means for you to learn about the efficacy of your educational practices in fostering sustained learning.

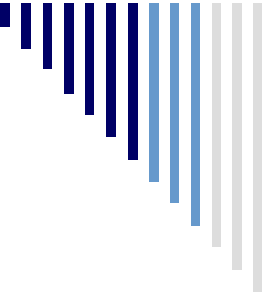
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# How well do your students...

- Integrate
- Transfer
- Apply or re-apply
- Re-use
- Synthesize
- Re-position their understanding of their GE outcomes or outcomes in their major program of study?

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# Questions about Pedagogy or Other Educational Practices in promoting....

- Recall and recognition
  - Transfer
  - Integration
  - Synthesis
  - Application and re-application
  - Use and re-use
  - Change in perspective or understanding
  - Sustained learning
  -
-

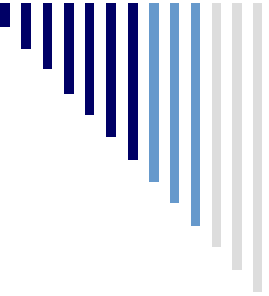
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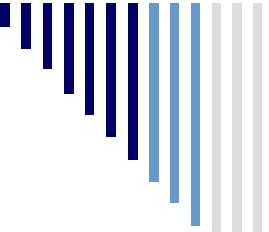



# What Do You Want to Discover about Teaching and Learning?

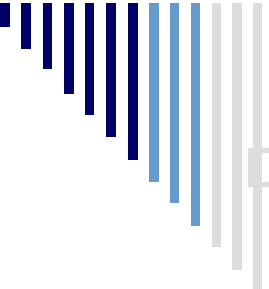
## Discovery Questions


- Efficacy of kinds of pedagogy (problem-based, experiential, didactic)
- Efficacy of theory behind your teaching and instructional design
- Efficacy of curricular or relevant course(s) design or co-curricular design
- Efficacy of instructional design (computer-based, for example)

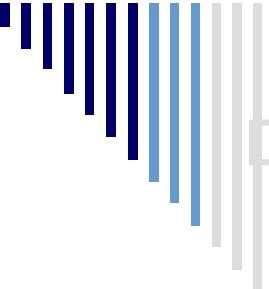
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- Efficacy of intentional scaffolding through on-line or face-to-face instruction along the curriculum
  - Efficacy of the use of out-of-course assistance, such as tutorials or software programs
  - Efficacy of strategies to improve students' abilities to develop strong conclusions (use of graphic organizers, for example)
  - Use of educational experiences


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- Efficacy of representational models to develop complex conceptual understanding (physics)
  - What are the relationships between students' study habits and deep learning?
  - How well do interactive discussions help students construct knowledge?

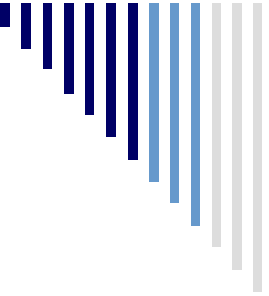
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- What's the extent to which students engage and develop higher order thinking skills and critical reflection in a discipline or across GE?
  - How ready are students for capstone projects once they are assigned near the end of their studies? What are their weaknesses that need early intervention? Plan backwards.
  - What strategies enable students to transition from thinking arithmetically to thinking algebraically?
-

- 
- How do students' beliefs affect conceptual development?
  - How well do certain strategies enable students to overcome learning barriers or obstacles (Philosophy)
  - How do students' levels of cognition affect their conceptual development?
  - How do educators' epistemological views in X, translated into instructional design, foster enduring student learning?
-

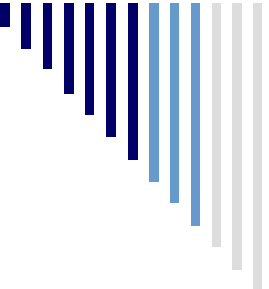
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- 
- How well do students transfer their early learning in a discipline or profession into their later learning?
  
  - How well do students transfer learning from GE courses into their major program of study?
  
  - How well do students transfer their GE or major program of learning into the life outside of the class such as in community service?

- 
- How well do digital dialogue games or other forms of technology stimulate students' reasoning or conceptual change?
  - When students reposition their understanding, is it based on a belief revision or conceptual change and restructured knowledge (talk alouds)?
  - How effective are hypermedia technologies in fostering complex problem solving?

- 
- 
- What strategies do students use to restructure naïve or intuitive theories?
  - How well do students build their own knowledge based on the use of instructional multi-media designs?
  - What strategies do successful students use to read and interpret texts, visuals, maps?  
(Philosophy example)

- 
- 
- What barriers do students face when they read and interpret texts, etc. What strategies help them overcome those barriers (vocabulary, discourse organization, comprehension, math?)
  - What assumptions is a department or program making about students' learning when they enter a course?
-

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# What Is the Question You Want to Answer about one of Your GE or Program-level Outcomes?

What's your study question?

Or

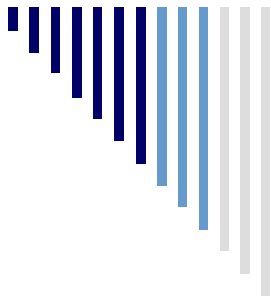
What's your research question?



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# What Other Data Might You Need to Answer Your Question?

- National surveys
- Maps or inventories of practice
- Scores on standardized tests
- Surveys or interviews with students about their learning
- Any intake data, such as a writing sample or portfolio



- Institutional sources (NSSE, CCSSE, Noel-Levitz...)
- Transcript analyses of course-taking patterns
- Participation in co-curricular programs
- Educator interviews
- Syllabi analyses about kinds of in-class assessments or methods of teaching/learning
- Other?



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# How Will You Get Data?

- Provided by registrar
- Provided by institutional research
- Provided by student filled out on a cover sheet or in material student has, such as portfolio
- Provided by computer system and coding
- Provided by faculty (such as grades or narrative remarks about students)



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## Tasks that Prompt Students' to Represent Their Learning

“Every assessment is also based on a set of beliefs about the kinds of tasks or situations that will prompt students to say, do, or create something that demonstrates important knowledge and skills. The tasks to which students are asked to respond on an assessment are not arbitrary.”

*National Research Council. Knowing what students know: The science and design of educational assessment . Washington, D.C.: National Academy Press, 2001, p. 47.*

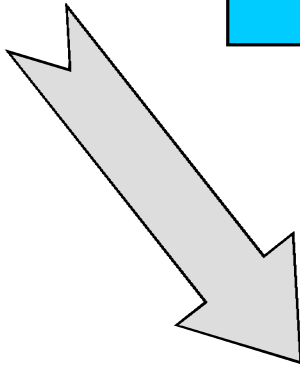
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Assumptions Underlying  
Teaching

Actual Practices

Assumptions Underlying  
Assessment Tasks

Actual Tasks



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# What Tasks Elicit Learning You Desire?

- Tasks that require students to select among possible answers (multiple choice test)?
  
- Tasks that require students to construct answers (students' problem-solving and multi-disciplinary thinking abilities)?



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# When Will or Do You Seek Evidence?

- **Formative**—along the way?  
*For example, to ascertain progress or development*
- **Summative**—at the end?  
*For example, to ascertain mastery level of achievement*

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# What Methods Enable You to Answer Your Question?

- See attached list of methods



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## What Criteria Will Be Applied to Student Achievement so That You can Answer the Question You Have Raised?

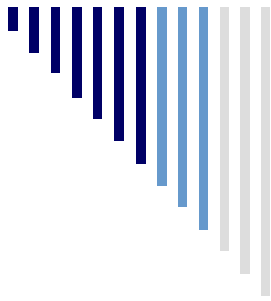
- Skills
- Knowledge
- Habits of mind (disciplinary habits of mind)
- Ways of knowing
- Ways of problem solving
- Dispositions
- Conventions

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# How Well Do These Criteria Align with...

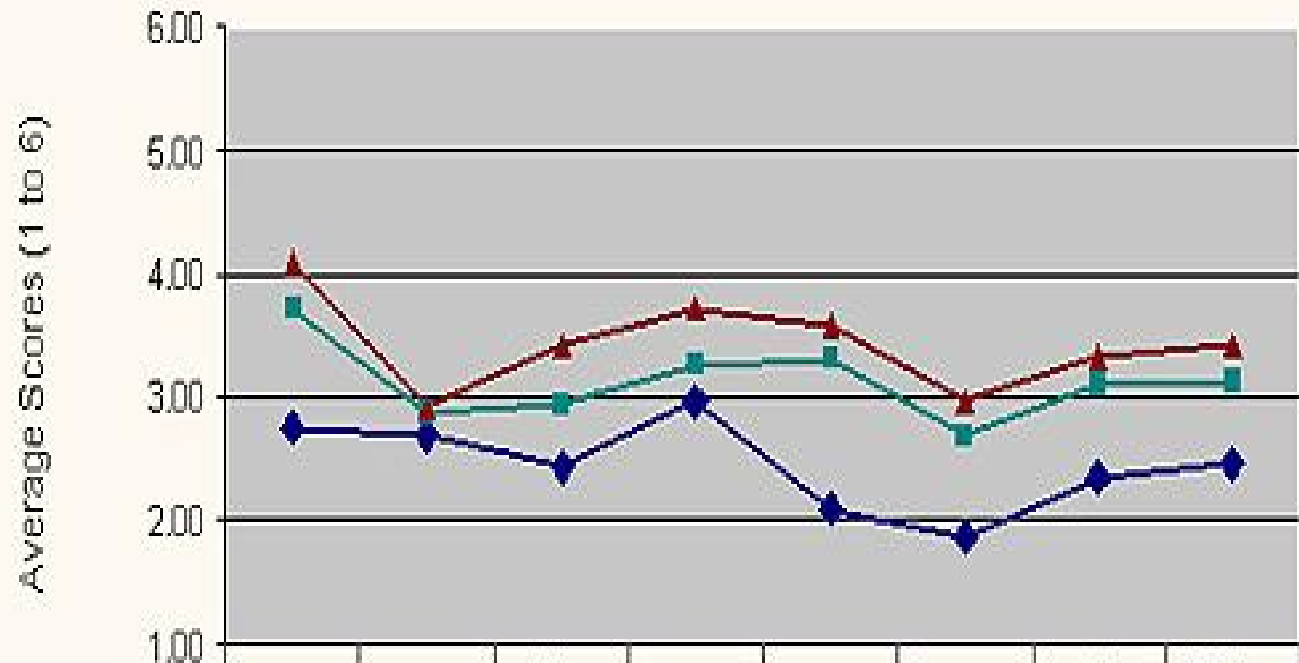
- Teaching practices
- Learning practices (how we position students to learn)
- Frequency of feedback
- Students' Learning Histories
- Design and coherence of curriculum and co-curriculum  
(multiple and diverse opportunities to learn)



- Request student performance analysis that can be aggregated and disaggregated according to demographics or other important criteria or characteristics, such as students' course taking patterns
  
- Request narrative interpretation of student performance

# CT Score Comparison in Fall 2000

Critical Thinking Scores - 4 Classes w/ the Rubric vs. 4 Classes w/o the Rubric



	Problem	Position	Other Views	Context	Evidence	Assumptions	Implications	CT Avg Score
◆ No rubric - four classes	2.76	2.68	2.43	2.96	2.10	1.86	2.35	2.45
■ Lower div Gen Ed GH & Phys 102	3.71	2.88	2.95	3.26	3.30	2.69	3.10	3.12
▲ Upper div Entom 401 & Soils 415	4.09	2.91	3.41	3.71	3.59	2.96	3.34	3.43

Dimensions of the CTR