Seven Levers for Deeper Learning
Research-based Guidelines and Strategies for Improving Teaching, Assessment, and Learning

An Interactive Keynote in the 2016 Assessment Forum on Enhancing Innovation in Learning, Teaching and Assessment: Using Research-Based Strategies
Sponsored by the University of Oklahoma Office of Academic Assessment

9:00-10:15 AM on Friday 16 September 2016

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On the lines below, jot down 2 or 3 educational/professional values you hold that motivate you to invest time and energy in efforts like today’s Assessment Forum.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________


What specifically do you hope to learn/gain through participating in the 2016 Assessment Forum? On the lines below, please list two or three specific learning goals you hope to achieve and/or questions you hope to answer through this experience.

Your Learning Goals/Burning Questions for the Assessment Forum

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

First ‘Balcony’ Question

Are there any ways in which having assessment data on your students’ learning-related values and or goals might help you and your colleagues achieve your goals?

1. Of 1st-year students at 4-year US colleges in Fall 2015, what percentage . . .

A. Graduated from a public school (not charter or magnet)? ___ %
B. Graduated from a charter/magnet public school? ___ %
C. Graduated from a private religious/parochial school? ___ %
D. Graduated from a private, independent college-prep school ___ %
E. Were home schooled? ___ %

2. Of those same students, about what percentage rated the following reasons as “very important” in deciding to go to college . . .

A. To be able to get a better job? ___ %
B. To learn more about things that interest me? ___ %
C. To get training for a specific career? ___ %
D. To gain a general education and appreciation for ideas? ___ %
E. To be able to make more money? ___ %
F. To prepare myself for graduate/professional school? ___ %
G. To make me a more cultured person? ___ %

3. Of those same students, what percentage thought they had a “very good chance” of doing the following in college . . .

A. Socializing w/someone of different racial/ethnic group ___ %
B. Earning at least a B average? ___ %
C. Communicating regularly with professors? ___ %
D. Participating in student protests or demonstrations? ___ %

4. About what percentage of those 2015 FYs had a . . .

A. First parent with at least a 4-year degree? ___ %
B. Second parent with at least a 4-year degree? ___ %

Second ‘Balcony’ Question
SIX DIMENSIONS OF HIGHER LEARNING OUTCOMES [1, 2 & 4]

Approximate percentage of the assessment & grading you received during your own undergraduate degree program that focused on . . .

FACTUAL LEARNING
Learning What (Level 1)
Learning facts and principles

CONCEPTUAL LEARNING
Learning What (Level 2)
Learning concepts and theories

PROCEDURAL LEARNING
Learning How
Learning skills and procedures

CONDITIONAL LEARNING
Learning When and Where
Learning applications

METACOGNITIVE LEARNING
Learning How to Learn
Learning to direct and manage one’s own learning

REFLECTIVE LEARNING
Learning Why (and Why Not)
Developing self-knowledge, cultural awareness, ethics, etc.

100% 100%

Third ‘Balcony’ Question

Seven Levers for Deeper Learning

Research-based Guidelines for Effective Teaching and Learning

*Overall, research suggests that virtually all students can learn more – and more deeply – when we help them to . . .*

1. Become explicitly aware of their own relevant prior knowledge, beliefs, preconceptions, and values – and *unlearn*, as needed
2. Set and maintain realistically high and personally meaningful learning goals and *expectations* for academic success
3. Learn *how* to learn effectively – given their own individual histories, talents, preferences, and goals – so they become increasingly self-directed and independent learners
4. Understand the criteria, standards, and methods used in assessing and evaluating their learning and get *useful*, *timely* feedback on their performance against those standards
5. Seek and find connections to and real-world applications of concepts and skills they are learning in class
6. Collaborate regularly and effectively with other learners and with teachers to achieve meaningful, shared learning goals
7. Invest as much actively engaged time and high-quality effort as possible in their academic work
Bloom's Cognitive Domain Taxonomy (Revised)  Anderson, & Krathwohl (2001)

(6) CREATE
Generate, Plan, Synthesize, Produce the New

(5) EVALUATE
Critique or Judge based on Explicit Standards/Criteria

(4) ANALYSE
Break Down, Relate Parts and Whole, Organize

(3) APPLY
Follow Procedures to Solve Problems or Carry Out Tasks

(2) UNDERSTAND
Connect New Learning to Prior Knowledge by Interpreting, Classifying, Comparing, Summarizing, etc.

(1) REMEMBER
Elaborate, Encode, and Retrieve Information from Long-term Memory


Directions: Using the numbers 1-6 to represent the levels of Bloom’s revised taxonomy (above), please identify the level of each question below.

___A. Give an example of “seasonal change”
___B. Why do the Earth’s seasons change?
___C. What causes the Earth’s seasons to change? (Explain how it works.)
___D. When it is winter in Middlebury, Vermont, what season is it in Melbourne, Victoria (Australia)?
___E. Where on Earth would you predict the greatest seasonal variation occurs? Why?
___F. What contribution, if any, will global warming likely make to seasonal change? Explain your reasoning.
___G. What would happen to seasonal change in Middlebury, VT if the Earth’s degree of tilt on its axis
changed to:
   i. 45 degrees?
   ii. 90 degrees?
   iii. 180 degrees?
   iv. 0 degrees?
___H. If the Earth’s orbit moved it significantly further away from the Sun, what difference, if any, would you predict that increased distance would make to seasonal change? Explain your answer.
___I. If you were teaching how and why the seasons change to a 5-year-old, how would you explain it?
___J. If astronomers discovered an Earth-like planet with no seasonal variation, what would you predict about that planet's orbit, etc.? Explain your reasoning.
Bondy’s Clinical Performance (Skills) Rating Scale

Bondy, K.N. (1983)

(6) EXPERT INSTRUCTOR *
Safe – Very Proficient – Capable of assessing, demonstrating, instructing & supporting learners in levels 1-5

(5) INDEPENDENT
Safe – Very Proficient – Requires no support

(4) SUPERVISED
Safe – Proficient – Requires only occasional support and direction

(3) ASSISTED
Safe – Mostly Proficient – Requires frequent support and direction

(2) MARGINAL
Safe only when supervised – Unskilled – Requires continuous support and direction

(1) DEPENDENT
Unsafe & Unaware – Unable to demonstrate skill – Requires direct instruction and continuous support

* Level Six is not in the original Bondy Scale, but is implicit in its use as a criterion-based assessment tool.

Skills Self-Assessment Exercise – [ 1, 3 & 4 ]

Using the Bondy Scale above, and thinking of skills you already possess and your current levels of competence, confidence and independence in those skills: Identify at least one of your skills in which you are currently “Dependent,” another skill(s) in which you are “Marginal,” and so on all the way up.

**Bondy Levels**

<table>
<thead>
<tr>
<th>Levels</th>
<th>My Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Instructor (6)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Independent (5)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Supervised (4)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Assisted (3)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Marginal (2)</td>
<td>____________________________</td>
</tr>
<tr>
<td>Dependent (1)</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

Tom Angelo – thomas.a.angelo@gmail.com – 16 September 2016
Macroeconomics Essay Grading Grid

**Assignment:** Write a well-structured, enlightened critical essay about current economic conditions that demonstrates command of existing economic knowledge, appropriate interpretation and application of that knowledge, and demonstrates appropriate use of data and argumentation to support well-reasoned policy recommendations.

**Basic Questions:**
- What is the current macroeconomic situation in the U.S.?
- What is the likely prognosis for the next 12 to 24 months?
- What are your economic policy recommendations?

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Distinguished</th>
<th>Exceeds Expectations</th>
<th>Meets all Expectations</th>
<th>Meets some Expectations</th>
<th>Unsatisfactory</th>
<th>Missing or fails minimum req.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Meets all minimum requirements</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Executive summary is effective &amp; concise</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Introduction clearly lays out a roadmap for the paper and places the information in context</td>
<td></td>
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</tr>
<tr>
<td>Body addresses all the Basic Questions, includes the argumentation and data</td>
<td></td>
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<tr>
<td>Conclusion provides summary and closure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>30</td>
<td>24</td>
<td>18</td>
<td>12</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Command of existing economic knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of terms, theories, and data are informed judgment demonstrated by selection of terms, theories and data (shown by the exclusion irrelevant and inclusion of)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argumentation</td>
<td>40</td>
<td>32</td>
<td>24</td>
<td>16</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Argument flows logically so that early statements lay the foundation for later statements and the reader is guided through the arguments</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Appropriate application of theory is used to make argument; clearly links theory and data to conclusions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arguments are persuasive focuses on key points, does not wonder, uses no unnecessary verbiage</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Alternative policies, arguments, conclusions and generalizations are noted where they exist and addressed; differences of opinion, supported by evidence, are also discussed</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Data used is reliable, valid, and pertinent; it provides effective support; no superficial information or tangential data muddies the argument</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Striving for Excellence and Creativity</td>
<td>20</td>
<td>16</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Presentation is neat and professional; all visuals used are well labeled, clear, and effective conveying information better than words; text contains no errors and is easy to read &amp; understand</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Creativity – the paper clearly holds the imprint of the author. Original thought is demonstrated by innovative organization, the integration of concepts and ideas, the use of new approaches, the novel use of visuals, or</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Thanks to Dr. Richard Stratton of the University of Akron for permission to use this example.

Tom Angelo – thomas.a.angelo@gmail.com – 16 September 2016
**Why Give Learners Feedback?**

- To Improve Performance & Academic Success
- To Increase Interest & Motivation to Learn
- To Illuminate and Undermine Misconceptions
- To Promote Self-Assessment
- To Develop Independence

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**To Use Feedback Well, Learners Need M.O.M.**

- **Motivation – Reasons to Use It**
- **Opportunities – For Safe, Guided Practice**
- **Means – Knowledge & Skills for Improvement**

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**The Order in Which We Give Feedback Matters.**

Consider the following five steps:

1st - **Good News:** What was done well
2nd - **Bad News:** What still needs improvement
3rd - **Options:** What can be done to improve it
4th - **Plans:** What the learner intends to do
5th - **Commitments:** What both parties agree to do, how, to what standard, and by when
**Draft Questions for a Course/Teaching Feedback Form** [1, 3 & 4]

Questions about yourself  
(1= Always, 2=Usually, 3=Sometimes, 4=Rarely, 5=Never, NA= Not Applicable)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I was self-motivated to learn this course material</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>I was well-prepared for each class session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>I asked the instructor for help/guidance when I needed it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>I invested enough time and energy to meet/exceed course requirements</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>I participated actively and contributed thoughtfully in class sessions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>I attended class sessions and/or individual appointments</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Overall, I gave my best possible effort to learning in this course</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Questions about the course  
(1= Always, 2=Usually, 3=Sometimes, 4=Rarely, 5=Never, NA= Not Applicable)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>The course was well-organized to help students learn</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>The objectives and criteria for meeting them were made clear</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>The assignments contributed to my learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>The assessments/evaluations were clearly connected to the objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>The amount of work required was appropriate to the objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>The level of intellectual challenge was high</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Questions about the instructor  
(1= Always, 2=Usually, 3=Sometimes, 4=Rarely, 5=Never, NA= Not Applicable)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>The instructor clearly connected the course objectives/outcomes to course activities, assignments, and assessments</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>The instructor encouraged me to connect my experience to the course</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>The instructor provided clear and useful feedback to improve learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>The instructor inspired interest and excitement in the course material</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>The instructor was available and helpful when asked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>The instructor communicated ideas and information clearly and effectively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>The instructor evaluated and graded fairly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>The instructor treated students and their ideas with respect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>The instructor used required texts/other required materials effectively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Summary Questions: Compared w/ other courses/instructors: (1=extremely high, 2=high, 3=adequate, 4=low, 5=very low)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
<td>Overall, I would rate the instructor’s effectiveness as a teacher as</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>Overall, I would rate the amount I learned in this course as</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>Overall, I would rate the value of what I learned in this course as</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26.</td>
<td>Overall, I would rate the quality of this course as</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>My motivation to continue learning about this material in the future is</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>The likelihood I’d recommend this course to a good friend is</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Tom Angelo – **thomas.a.angelo@gmail.com** – 16 September 2016
Nearly 30 years ago, we had these powerful guidelines . . .

Arthur Chickering & Zelda Gamson’s (1987)

**Seven Principles for Good Practice in Undergraduate Education**

Good practice in undergraduate education:
1. Encourages contact between students and faculty
2. Develops reciprocity and cooperation among students.
5. Emphasizes time on task.
6. Communicates high expectations.
7. Respects diverse talents and ways of learning.

Twenty years later, we had powerful evidence supporting . . .

**High Impact Practices** (Kuh, 2008)

- First-Year Seminars and Experiences
- Learning Communities
- Writing-Intensive Courses
- Collaborative Assignments and Projects
- Undergraduate Research
- Diversity/Global Learning
- Service Learning/Community-Based Learning/Internships
- Capstone Courses and Projects

By 2016, I’d argue we’ve learned that . . .

I. What learners do matters much more than who they are
II. What learners do in college matters much more than where they go to college
III. What we believe about learning can powerfully promote or impede learning
IV. The less skilled one is, the less self-aware and more confident one is likely to be
V. Developing high levels of skill takes great amounts of time, effort, assessment and feedback
VI. How a learner practices/studies can powerfully promote or impede learning
VII. Our stated higher-order learning outcomes – e.g., critical thinking – require the explicit development of effective metacognitive and reflective thinking skills and habits
### Applications Card

**Interesting or promising IDEAS/TECHNIQUES from this session**

**Some possible, potential APPLICATIONS of those ideas/techniques to my work**

---

A FEW USEFUL REFERENCES ON TEACHING, ASSESSMENT AND LEARNING


Dunlosky, J., et al. (2013). Improving students’ learning with effective learning techniques: Promising directions from cognitive and educational psychology. Psychological Science in the Public Interest, 14(1), 4-58.


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