Active Learning for Critical Thinking

Frequently Asked Questions

What is the Active Learning Initiative?
The Active Learning Initiative is a multi-year project that seeks to encourage meaningful change in how UT Arlington faculty teach and how UT Arlington students learn. The core premise:

> *By engaging students in a learning process that compels them to be more active participants, we are more likely to help them develop higher-order thinking skills (a.k.a. "critical thinking").*

What's "Higher-Order Thinking"?
The skills at issue are those originally identified by Benjamin Bloom in the 1950's: See over for details→

- *APPLICATION .... Using acquired knowledge to solve problems in new situations*
- *ANALYSIS .... Extracting constituents of and relationships among elements, thereby yielding relevant generalizations and reasonable inferences*
- *SYNTHESIS .... Combining elements to create new structures and/or alternative solutions to problems*
- *EVALUATION .... Constructing well-reasoned arguments to defend a position; judging a work's validity or quality based on principled criteria*

But don't college students *already* know how to do all this?
In most cases, no. More importantly, we ought not to assume that they will acquire these skills by simply reading important texts and attending our brilliant lectures. To improve the chances that our students learn how to think at these higher levels, we must devote time in our classes to showing them *how* people in discipline "X" go about applying, analyzing, synthesizing, and evaluating.

How is UT Arlington promoting Active Learning for Higher Order Thinking?

THE QUALITY ENHANCEMENT PLAN (QEP) – Institutional Research on Active Learning
The QEP is a project mandated by our regional accrediting agency (the Southern Association of Colleges and Schools), which has required that its members engage in on-going assessment. Several years ago, we here at UT Arlington decided to focus *our* QEP on the possible links between Active Learning and Higher Order Thinking. It's a project of our own choosing, our own design, and our own implementation. We're current engaged in the QEP's second (and final) phase.

PROFESSIONAL DEVELOPMENT – Faculty Support for Active Learning
There are several ways in which UT Arlington supports faculty efforts in the area of teaching.

Teaching Circles provide informal, peer-to-peer support for development in a variety of areas, including active learning. **Join a teaching circle.**

Active Learning Events, scheduled throughout the year, offer faculty a chance to acquire valuable knowledge and skills to aid in transforming their teaching. **Attend this fall's "Engaging Students" conference on October 14.**

Innovative Teaching Grants make available funds for faculty members to develop and implement new pedagogical techniques in their courses. Look for the official Call for Proposals during the fall semester and **apply for support.**

THE UNIVERSITY-WIDE COMMITTEE ON ACTIVE LEARNING – Faculty and Staff Input
To ensure that faculty and academic staff play a role in the initiative, the President and Provost have established a university-wide committee with representation from across the UT Arlington community. To learn more, visit **http://activelearning.uta.edu**.

More questions? Contact David J. Silva, Vice Provost for Academic Affairs (djsilva@uta.edu)

Bloom's Taxonomy for the Cognitive Domain

(setting aside the Affective and Psychomotor domains)

Bloom's *cognitive domain* subsumes knowledge and the development of intellectual skills, including the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six major categories, listed in order below, starting from the simplest to the most complex. The categories can be thought of as degrees of difficulties on an implicational scale: in theory, the first one must be mastered before the next can take place.

Category	Examples and Key Words
Knowledge **Recall data or information**	**Examples**: Recite a policy. Quote prices from memory to a customer. Know the safety rules. **Key Words**: *define, describe, identify, label, list, match, name, outline, recall, recognize, reproduce, select, state.*
Comprehension **Understand the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.**	**Examples**: Rewrite the principles of test writing. Explain in one's own words the steps for performing a complex task. Translate an equation into a computer spreadsheet. **Key Words**: *comprehend, convert, defend, distinguish, estimate, explain, extend, generalize, give/identify an example, interpret, paraphrase, rewrite, summarize, translate.*
Application **Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situations.**	**Examples**: Use a manual to calculate an employee's vacation time. Apply laws of statistics to evaluate the reliability of a written test. **Key Words**: *apply, change, compute, construct, demonstrate, discover, manipulate, modify, operate, predict, prepare, produce, relate, show, solve, use.*
Analysis **Separate material or concepts into component parts so that its organizational structure may be understood. Distinguish between facts and inferences.**	**Examples**: Troubleshoot a piece of equipment by using logical deduction. Recognize logical fallacies in reasoning. Gather information from a department and select the required tasks for training. **Key Words**: *analyze, break down, compare, contrast, diagram, deconstruct, differentiate, discriminate, distinguish, identify, illustrate, infer, outline, relate, select, separate.*
Synthesis **Build a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.**	**Examples**: Write a company operations or process manual. Design a machine to perform a specific task. Integrate training from several sources to solve a problem. Revise a process to improve the outcome. **Key Words**: *categorize, combine, compile, compose, create, devise, design, explain, generates, modify, organize, plan, rearrange, reconstruct, relate, reorganize, revise, rewrite, summarize, tell, write.*
Evaluation **Make judgments about the value of ideas or materials.**	**Examples**: Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget. **Key Words**: *appraise, compare, conclude, contrast, criticize, critique, defend, describe, discriminate, evaluate, explain, interpret, justify, relate, summarize, support.*

Adapted from material accessed at http://www.nwlink.com/~donclark/hrd/bloom.html