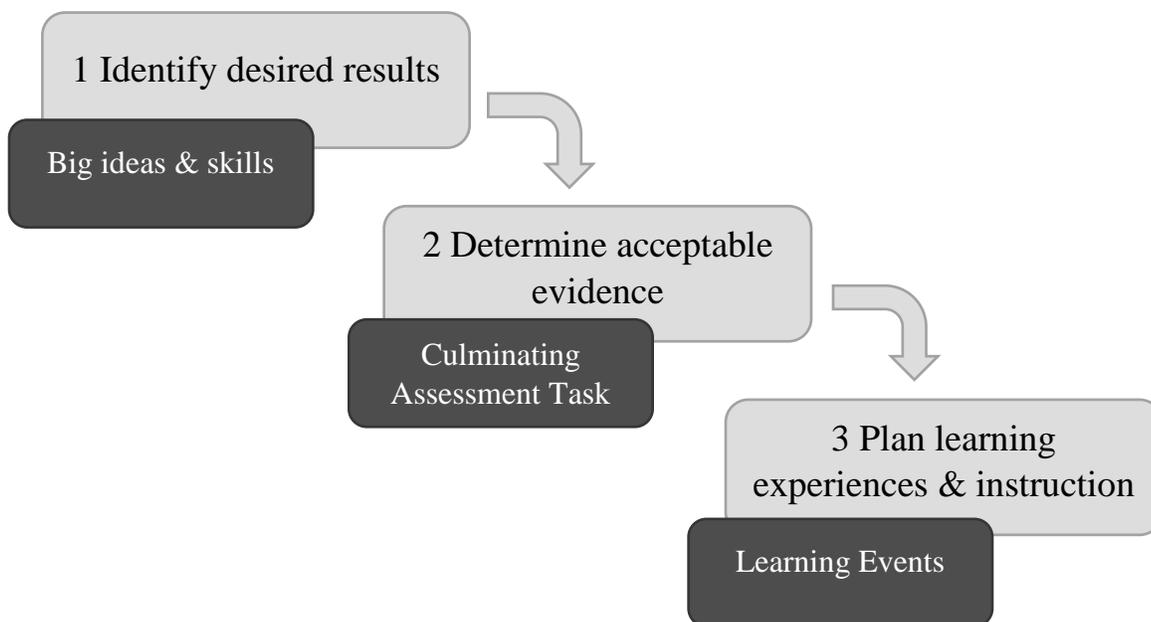


## INNOVATIVE INSTRUCTIONAL DESIGN

“Teachers are designers. An essential act of our profession is the crafting of curriculum and learning experiences to meet specified purposes.” -- (Wiggins & McTighe, 2006, p. 13)

Here at UNL, a well-designed course begins with a clear vision of what students will know and be able to do by the term’s end. Then, appropriate formative and summative assessments are created to inform instruction and measure the extent to which students attain desired outcomes. Finally, active learning techniques are incorporated to create significant learning experiences. This is called “backwards design.”



Wiggins, G. P., & McTighe, J. (2005). *Understanding by design*. Association for Supervision & Curriculum Development.

This packet contains the following resources:

- Action verbs from the Revised Bloom’s Taxonomy for writing measurable learning goals
- An assortment of classroom assessment techniques
- Active learning techniques
- Instructional design support contact list

For a list of other resources for improving teaching go to <http://go.unl.edu/teaching-resources>

## REVISED Bloom's Taxonomy Action Verbs

### Remembering

Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers

- Choose
- Define
- Find
- How
- Label
- List
- Match
- Name
- Omit
- Recall
- Relate
- Select
- Show
- Spell
- Tell
- What
- When
- Where
- Which
- Who
- Why

### Understanding

Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas

- Classify
- Compare
- Contrast
- Demonstrate
- Explain
- Extend
- Illustrate
- Infer
- Interpret
- Outline
- Relate
- Rephrase
- Show
- Summarize
- Translate

### Applying

Solve problems to new situations by applying acquired knowledge, facts, techniques, and rules in a different way.

- Apply
- Build
- Choose
- Construct
- Develop
- Experiment with
- Identify
- Interview
- Make use of
- Model
- Organize
- Plan
- Select
- Solve
- Utilize

### Analyzing

Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.

- Analyze
- Assume
- Categorize
- Classify
- Compare
- Conclusion
- Contrast
- Discover
- Dissect
- Distinguish
- Divide
- Examine
- Function
- Inference
- Inspect
- List
- Motive
- Relationships
- Simplify
- Survey
- Take part in
- Test for
- Theme

### Evaluating

Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.

- Agree
- Appraise
- Assess
- Award
- Choose
- Compare
- Conclude
- Criteria
- Criticize
- Decide
- Deduct
- Defend
- Determine
- Disprove
- Estimate
- Evaluate
- Explain
- Influence
- Interpret
- Judge
- Justify
- Mark
- Measure
- Perceive
- Prioritize
- Prove
- Rate
- Recommend
- Rule on
- Select
- Support
- Value

### Creating

Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.

- Adapt
- Build
- Change
- Choose
- Combine
- Compile
- Compose
- Construct
- Create
- Delete
- Design
- Develop
- Discuss
- Elaborate
- Estimate
- Formulate
- Happen
- Imagine
- Improve
- Invent
- Make up
- Maximize
- Minimize
- Modify
- Originate
- Plan
- Predict
- Propose
- Solve
- Suppose
- Test
- Theory

## Classroom Assessment Techniques

While quizzes are often the first low-stakes assessment technique that comes to mind, there are many other classroom assessment techniques that can give insight to students' understanding of concepts and allow teachers to adjust instruction before students face high-stakes assessments.

There are 50 tested assessment techniques from Angelo and Cross (1993). The table below describes eight techniques that can be easily adapted for and implemented in a classroom setting. For information on remaining techniques, please consult the Angelo and Cross book. Many of these techniques are easily adapted to online environments or may make use of technology to streamline their usage.

### Tips on implementation

- Start off simple by choosing a technique that easily fits your teaching style and classroom time limits.
- Conduct at least one CAT before the first major assignment, so that you can intercept any problems or questions before the fact.
- Don't feel obligated to do a CAT every day or every week. You'll create information overload for yourself and "survey overload" for your students.
- When you do any CAT, explain its purpose and your goal clearly to students.
- Report your findings to your students and let them know what you plan to do in terms of their feedback.

<i>Name</i>	<i>Description</i>	<i>What to do with the data</i>	<i>Time required</i>	<i>Online adaptation</i>
<b>Minute paper</b>	During the last few minutes of the class period, ask students to answer on a half-sheet of paper: "What is the most important point you learned today?"; and, "What point remains least clear to you?". The purpose is to elicit data about students' comprehension of a particular class session.	Review responses and note any useful comments. During the next class periods emphasize the issues illuminated by your students' comments.	Prep: Low In class: Low Analysis: Low	Use a short-answer or essay single-item quiz in Canvas.
<b>Chain Notes</b>	Students pass around an envelope on which the teacher has written one question about the class. When the envelope reaches a student he/she spends a moment to respond to the question and then places the response in the envelope.	Go through the student responses and determine the best criteria for categorizing the data with the goal of detecting response patterns. Discussing the patterns of responses with students can lead to better teaching and learning.	Prep: Low In class: Low Analysis: Low	Use a short-answer or essay single-item quiz in Canvas.
<b>Memory matrix</b>	Students fill in cells of a two-dimensional diagram for which instructor has provided labels. For example, in a music course, labels might consist of periods (Baroque, Classical) by countries (Germany, France, Britain); students enter composers in cells to demonstrate their ability to remember and classify key concepts.	Tally the numbers of correct and incorrect responses in each cell. Analyze differences both between and among the cells. Look for patterns among the incorrect responses and decide what might be the cause(s).	Prep: Med In class: Med Analysis: Med	Have fill this out in a Word document using a table and turn it in as a Canvas assignment.
<b>Directed paraphrasing</b>	Ask students to write a layman's "translation" of something they have just learned -- geared to a specified individual or audience -- to assess their ability to comprehend and transfer concepts.	Categorize student responses according to characteristics you feel are important. Analyze the responses both within and across categories, noting ways you could address student needs.	Prep: Low In class: Med Analysis: Med	

<b>One-sentence summary</b>	Students summarize knowledge of a topic by constructing a single sentence that answers the questions "Who does what to whom, when, where, how, and why?" The purpose is to require students to select only the defining features of an idea.	Evaluate the quality of each summary quickly and holistically. Note whether students have identified the essential concepts of the class topic and their interrelationships. Share your observations with your students.	Prep: Low In class: Med Analysis: Med	Canvas quiz or assignment submission
<b>Exam Evaluations</b>	Select a type of test that you are likely to give more than once or that has a significant impact on student performance. Create a few questions that evaluate the quality of the test. Add these questions to the exam or administer a separate, follow-up evaluation.	Try to distinguish student comments that address the fairness of your grading from those that address the fairness of the test as an assessment instrument. Respond to the general ideas represented by student comments.	Prep: Low In class: Low Analysis: Med	Canvas quiz or exam, or Google form
<b>Application cards</b>	After teaching about an important theory, principle, or procedure, ask students to write down at least one real-world application for what they have just learned to determine how well they can transfer their learning.	Quickly read once through the applications and categorize them according to their quality. Pick out a broad range of examples and present them to the class.	Prep: Low In class: Low Analysis: Med	Canvas quiz or assignment or Google Form
<b>Student-generated test questions</b>	Allow students to write test questions and model answers for specified topics, in a format consistent with course exams. This will give students the opportunity to evaluate the course topics, reflect on what they understand, and what are good test items.	Make a rough tally of the questions your students propose and the topics that they cover. Evaluate the questions and use the good ones as prompts for discussion. You may also want to revise the questions and use them on the upcoming exam.	Prep: Med In class: High Analysis: High  (may be homework)	

For many of the online adaptations, instructors may use Canvas assignments or quizzes or a Google form. Canvas has the advantage of being easy to include as a grade, but may not be quite as easy to reformat for reuse in some way. In contrast, data entered via a Google form is stored in a spreadsheet and spreadsheet data can be quickly used in a variety of ways from using a merge technique to yield nicely formatted documents to sorting, ranking, and grouping techniques using additional columns. For assistance and ideas for using and managing data as well as implementing these techniques in your course, please contact the instructional designer assigned to your college (teaching.unl.edu).

Angelo, T. A., & Cross, P. K. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers* (2nd ed.). San Francisco, CA: Jossey-Bass.

## Active Learning Techniques

**Think-Pair-Share** - First, students individually *think* for a few minutes about a question posed by the instructor, then get together for a short period in groups of two (*pair*) to four students to discuss their thoughts, and one or more groups *share* the results of their discussion with the class. In addition to engaging with course content, students can reflect before speaking, and share their ideas in a low-risk situation before participating in full class discussion. Thus, both the quality of class discussion and students' comfort in contributing to class discussion may improve.

**Jigsaw** - A class is divided into multiple teams of students. The instructor gives each team a slightly different but well-defined task with clear instructions that each member of the team will do to represent the group at the end of the work. Each team then collaborates on the task, developing expertise in the designated area. The instructor is available for questions and guidance as the groups work to learn their material. Then the instructor rearranges the groups to create new groups that are composed of one member from each of the original groups. Within the new groups each student has designated expertise and is responsible for teaching the information learned in the original group as well as learning the information from the other groups.

**Roundtable** - The instructor asks students to collaborate in small groups on a specific prompt that can generate multiple responses. Students share a single piece of paper that gets passed around their circle rapidly. The goal is to generate as many responses as possible from all members of the group in a defined period of time. A small prize (candy, extra credit point, etc.) may be offered to increase the stakes if desired. Roundtables are often followed by a reporting mechanism in which the professor calls on groups to share their responses. The report-out instructions might ask for no repeated answers, the most predictable answer, the most creative answer, etc. Finally, the instructor may choose to collect the Roundtable papers after the exercise to get a full record of all the small group conversations.

**Problem-Based Learning** - Challenged with a complex, real-world problem, students work in collaborative groups or teams to understand the problem and propose solutions. Often such problems do not have an obvious solution, but are examples of challenging, open-ended problems faced in our world today. Students must analyze the nature of the problem, identify what they need to know and how to find needed information, reach informed judgments, and apply what they learn to generate ideas for possible solutions.

**Team-Based Problem Solving** - In Team-Based Problem Solving, students form collaborative teams to solve a problem or undertake a project. Across each team, members should bring a diversity of complementary talents, knowledge and experience to the problem-solving process.

Team-based learning has many pedagogical benefits. Students engaging in teamwork typically develop greater problem-solving skill and content understanding, higher motivation to learn and enthusiasm for course content, and present higher quality solutions. At the same time, through ongoing, focused team interaction, they develop more effective communication and interpersonal skills, and greater comfort participating in collaborative groups.

With learning teams, the instructor takes on the important role of facilitator. Beginning with group assignment, the facilitator must nurture student groups to become functioning, self-directed, productive teams.

**Project-Based Learning** - Project-Based Learning focuses on real solutions to a problem. Once a problem is identified, student teams develop and demonstrate their understanding of the problem by proposing one or more solutions, often designing, constructing, and delivering a prototype.

The focus is on building students' ability to develop creative, realistic, tangible solutions to sometimes difficult problems through teamwork. Once a solution is agreed upon, the team must decide how to realize that solution with a product or service. Attention then turns to designing and developing a prototype of the product or detailed definition of the service. When completed, teams may present their solution to the class or in a demo session to a broader audience.

**Case Method Teaching** - In Case Method Teaching, students review a real-world situation (a case) that poses a thought-provoking problem or dilemma. Students are placed in the role of decision maker and asked how they would resolve the problem.

The real-life nature of cases brings interest and relevance to the application of abstract concepts and theory in practice. Students have to sort out and analyze data presented in the case, consider relevant theory, draw conclusions, and present solutions. Through teamwork and whole-class discussion, collaborative learning plays a large role in uncovering different solutions, understanding the pros and cons of each, and weighing benefits.

### **Experiential Learning**

Experiential learning is a process through which students develop knowledge, skills, and values from direct experiences outside a traditional academic setting. Experiential learning encompasses a variety of activities including internships, service learning, undergraduate research, study abroad, and other creative and professional work experiences. Well-planned, supervised and assessed experiential learning programs can stimulate academic inquiry by promoting interdisciplinary learning, civic engagement, career development, cultural awareness, leadership, and other professional and intellectual skills.

Learning that is considered "experiential" contain all the following elements:

1. Reflection, critical analysis and synthesis
2. Opportunities for students to take initiative, make decisions, and be accountable for the results
3. Opportunities for students to engage intellectually, creatively, emotionally, socially, or physically
4. A designed learning experience that includes the possibility to learn from natural consequences, mistakes, and successes

### **Resources**

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Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>

## INNOVATIVE INSTRUCTIONAL DESIGN

Innovative Instructional Design consults with and supports faculty developing and teaching online, blended, and face-to-face courses and/or implementing course curriculum redesign projects. We also collaborate with colleges, departments, and university units to design or support a variety of initiatives and events related to teaching and learning. We are currently providing integrated support with UNL Information Technology Services for the campus transition to Canvas. Our support is focused on how to select Canvas features to best support your desired instructional strategies. Please contact us for more information.

If you wish to **discuss instructional design support services and collaboration**, contact:

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