



Identify Relevant and Transferable Skills and Concepts

The first step in designing (or redesigning) a course is to identify the core set of skills and concepts that you want students to develop and master (Nilson, 2016). You may want to start by asking, “What do I want my students to know and be able to do when the course is over?” And, “What is the big impact I want my course to have on my students two or three years after they have finished college and are in their post-college life and profession?”

Relevant and Transferable Skills and Concepts

According to Pallas and Neumann (2019), the core or transferable skills and concepts students learn in a single course are like building blocks for developing the knowledge and skills that they will need in future courses and in their lives. For instance, if your course is an introduction to photography, you may begin with the evolution of the camera to help students understand lighting and shutter speed because you feel this transferable skill will help students learn how to manipulate light and time on contemporary digital cameras in the future.

Although identifying the core transferable skills and concepts is important, creating outcomes that are relevant for your students is also important. Relevant knowledge and skills often connect to students’ prior knowledge, their social capital, and sometimes to recent events.

The sets of questions below can help you ensure that your course outcomes are both relevant and transferable.

In *What the Best College Teachers Do* (2004), Ken Bain suggests exploring the following questions when identifying transferable skills and concepts:

- What big questions will my course help students answer?
- What skills or abilities will my course help them develop?
- What type of critical thinking skills must students have or develop to answer the big questions that the course raises?
- What information will my students need to understand to answer the big questions of the course and challenge their assumptions?

Additionally, you may also want to consider these questions:

- What skills and concepts do subsequent courses in the program or department require?
- Is your course providing entry into a specific industry, profession, or field? If so, what skills will benefit students in their long-term goals?

To work toward creating concepts and skills that are relevant to students, consider the following questions:

- What prior knowledge do you assume your students already have as they begin your course?
- Are there key learning gaps that need to be addressed through course content early on?
- Are there any common misconceptions that students typically hold about the field or discipline that your course content can challenge?
- What experiences do your students have that can be incorporated into your course?



ACUE

Student Success
Through Exceptional
Teaching

Examples of Core Concepts Shared by Pallas and Neumann (2019)

- Statistics: Middle and spread of a distribution
- English Composition: Articulating a claim and positing a solution to a problem
- Earth Science: Formulating testable ideas and relying on evidence to assess their accuracy; the scientific process
- Western Civilization: Collect and analyze historical evidence to argue for or against a historical claim

Sources

Bain, K. (2004). *What the best college teachers do*. Harvard University Press.

Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors* (4th ed.). John Wiley & Sons.

Pallas, A. M., & Neumann, A. (2019). *Convergent teaching: Tools to spark deeper learning in college*. Johns Hopkins University Press.



Generate Interest by Integrating Discipline-Specific Ways of Thinking

Discipline-specific ways of thinking are those thought processes and skills that are essential to the students' success in future courses and careers within your discipline. Although each course may have countless discipline-specific ways of thinking, it is important to integrate those that will most benefit students in their continued learning both in your course, in subsequent courses, and in their careers (Pallas & Neumann, 2019).

Discipline-Specific Ways of Thinking and Critical Thinking Skills

One of the benefits to integrating discipline-specific ways of thinking is that it often allows you to teach critical thinking skills within your subject area (Miller, 2014). In *Minds Online* (2014), Michelle Miller writes that you can begin the process of integrating discipline-specific ways of thinking by exploring the kinds of critical thinking used to solve problems that are typical for your course.

The chart below provides examples of discipline-specific approaches in reading, writing, and thinking for various disciplines (Lent, 2017).

	Read	Write	Think
Science	<p>When scientists read, they</p> <ul style="list-style-type: none"> • Ask "Why?" more than "What?" • Interpret data, charts, and illustrations • Seek to understand concepts as well as words • Determine validity of sources and quality of evidence • Pay attention to details 	<p>When scientists write, they</p> <ul style="list-style-type: none"> • Use precise vocabulary • Compose in phrases, bullets, graphs, or sketches • Use passive voice • Favor exactness over craft or elaboration • Communicate in a systematic form 	<p>When scientists think, they</p> <ul style="list-style-type: none"> • Tap into curiosity to create questions • Rely on prior knowledge or research • Consider new hypotheses or evidence • Propose explanations • Create solutions
History	<p>When historians read, they</p> <ul style="list-style-type: none"> • Interpret primary and secondary sources • Identify bias • Think sequentially • Compare and contrast events, accounts, documents, and visuals • Determine meaning of words within context 	<p>When historians write, they</p> <ul style="list-style-type: none"> • Create time lines with accompanying narratives • Synthesize information/evidence from multiple sources • Emphasize coherent organization of ideas • Grapple with multiple ideas and large quantities of information • Create essays based on argumentative principles 	<p>When historians think, they</p> <ul style="list-style-type: none"> • Create narratives • Rely on valid primary and secondary sources to guide their thinking • Compare and contrast or ponder causes and effects • Consider big ideas or inquiries across long periods of time • Recognize bias
Math	<p>When mathematicians read, they</p> <ul style="list-style-type: none"> • Use information to piece together a solution • Look for patterns and relationships • Decipher symbols and abstract ideas • Ask questions • Apply mathematical reasoning 	<p>When mathematicians write, they</p> <ul style="list-style-type: none"> • Explain, justify, describe, estimate, or analyze • Favor calculations over words • Use precise vocabulary • Include reasons and examples • Utilize real-word situations 	<p>When mathematicians think, they</p> <ul style="list-style-type: none"> • Consider patterns • Utilize previous understandings • Find connections • Estimate, generalize, and find exceptions • Employ mathematical principles



English Language Arts	When students of English read, they <ul style="list-style-type: none"> • Understand how figurative language works • Find underlying messages that evolve as a theme • Assume a skeptical stance • Pay attention to new vocabulary or words used in new ways • Summarize and synthesize 	When students of English write, they <ul style="list-style-type: none"> • Engage in a process that includes drafting, revising, and editing • Use mentor texts to help them with the craft of writing • Pay attention to organization, details, elaboration, and voice • Rely on the feedback of others • Avoid formulaic writing 	When students of English think, they <ul style="list-style-type: none"> • Reflect on multiple texts • Ask questions of the author • Consider research or others' ideas • Discuss ideas and themes • Argue both sides of a point
------------------------------	--	---	---

From the February 2017 issue of *Educational Leadership Magazine*. © 2017 by ASCD. Reproduced with permission. All rights reserved.

Sources

Lent, R. (2017). *Disciplinary literacy: A shift that makes sense*. ASCD. <https://www.ascd.org/el/articles/disciplinary-literacy-a-shift-that-makes-sense>

Miller, M. D. (2014). *Minds online: Teaching effectively with technology*. Harvard University Press.

Pallas, A. M., & Neumann, A. (2019). *Convergent teaching: Tools to spark deeper learning in college*. Johns Hopkins University Press.



Create Learning Objectives

Learning objectives are the concepts and skills that students need to know and be able to do to ultimately meet course outcomes (DePaul University). They are statements describing exactly what your students should know and be able to do at specific points during the course and are the building blocks to the course outcomes (Nilson, 2016).

According to the Center for Excellence in Learning and Teaching at Iowa State University, learning objectives are:

- More specific than course outcomes
- Encompass distinct units of knowledge and skills
- Can be accomplished in shorter periods of time

Aligning Course Outcomes and Learning Objectives

To create unit- or module-level learning objectives, begin by listing the specific concepts students will need to know and the skills they will need to develop to be able to demonstrate mastery of each course outcome.

The examples below demonstrate how learning objectives can be written to support course outcomes.

Course	Course outcome	Learning objectives
Biology 101	Describe the flow of information in various signaling pathways and in the flow from DNA to proteins.	<ol style="list-style-type: none"> 1. Draw a basic model of DNA, being able to point out where DNA variation is part of the structure. 2. Distinguish what makes somatic cells in the body similar and what makes them different. 3. Trace a specific DNA sequence all the way to a protein. 4. Calculate the variations in code that lead to the same protein.
Nursing	Apply empathy and open-mindedness while working with patients in hospital settings	<ol style="list-style-type: none"> 1. Define empathy. 2. Describe an open-minded approach toward patients. 3. Apply empathy within your bedside manner. 4. Demonstrate open-mindedness within your bedside manner.
Spanish Language	Demonstrate advanced proficiency in spoken and written Spanish	<ol style="list-style-type: none"> 1. Speak persuasively in Spanish. 2. Interpret written text in Spanish. 3. Develop a written argument in Spanish in response to written text.



ACUE

Student Success
Through Exceptional
Teaching

Sources

Center for Excellence in Learning and Teaching. Iowa State University. Retrieved from <https://www.celt.iastate.edu/teaching/preparing-to-teach/tips-on-writing-course-goalslearning-outcomes-and-measurable-learning-objectives/>

DePaul University, Teaching Commons. (n.d.). *Course objectives and learning outcomes*. <https://resources.depaul.edu/teaching-commons/teaching-guides/course-design/Pages/course-objectives-learning-outcomes.aspx>

Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors* (4th ed.). John Wiley & Sons.



Make Course Outcomes and Learning Objectives Learner-Centered, Meaningful, and Measurable

Developing course outcomes and learning objectives that are learner-centered, meaningful, and measurable ensures that you are better able to design assignments, assessments, and learning experiences that truly help and offer proof that students attain mastery of those objectives and outcomes. Writing outcomes that meet these criteria also helps students better understand and act on what they are to learn.

Use Learner-Centered Language

Course outcomes and learning objectives become **learner-centered** when they are written from the students' point of view. To ensure that course outcomes and learning objectives are learner-centered, ask yourself if the outcome or objective describes what you as the instructor will do or if they describe what students will be expected to learn or be able to do.

For example, "Students will apply the scientific method to lab investigations" is focused on the student's action, giving them a better understanding of what they are expected to know and do by the end of the course. An outcome that reads, "This course will introduce students to the scientific method" describes what the course or instructor will do.

When sharing outcomes and objectives with students, it is helpful to word them so that they are focused on the learning and skill development of the students. Some leaders in the field, such as Catherine Haras and Beverly Bondad-Brown, also believe that it can be powerful to speak directly to students rather than referring to them in the third person. For instance, rather than "Students will apply the scientific method," you can write "You will apply the scientific method."

Make Course Outcomes Meaningful

Meaningful course outcomes support student learning and success in subsequent courses and in their lives or future careers. They also represent the significant learning you expect students to master by the end of the course. To ensure that course outcomes are meaningful, review each one from the lens of "Is this skill or concept relevant to their lives now and in the future?" and "Is this skill or concept transferable to subsequent courses or jobs and careers?" Another useful question from Dee Fink (2013) is, "What would distinguish students who have taken this course from students who have not?"

Learning objectives are meaningful when they bring students closer to mastering the course outcomes. For example, the learning objective, "You will solve for equations with a single variable" is meaningful because it is a stepping-stone for students working toward the course outcome of solving for equations with multiple variables.

Make Course Outcomes Measurable

Measurable course outcomes and learning objectives make it clear what students need to do to demonstrate mastery of the objective. For example, the learning objective, "Students will draw a basic model of DNA" would allow you to analyze student work to determine if they have met this objective, making this objective measurable.

Let's compare these two course outcomes:

- "You will solve equations with multiple variables"
- "You will understand how to solve equations with multiple variables"

In the first example, the verb "solve" is an action that can be measured through assessments and assignments by



ACUE

Student Success
Through Exceptional
Teaching

asking students to solve equations with multiple variables. The term “understand” in the second example reflects an internal state that is difficult to measure. The use of verbs that reflect internal states such as “understand” or “appreciate” are difficult to measure and should typically be avoided.

Coming up with the right verb can be challenging, and sometimes an existing outcome or objective can be revised in a much more effective way simply by using the right verb. Download the table “Action Verbs by Cognitive Level” on the Implementation Resources page to help you select a measurable verb.

Sources

Fink, L. D. (2013). *Creating significant learning experiences, revised and updated: An integrated approach to designing college courses*. Jossey-Bass.



Action Verbs by Cognitive Level

Action verbs organized into the six cognitive levels outlined in Bloom's Taxonomy.

Remember	Arrange Choose Copy Define Describe Duplicate Find	Identify Label List Locate Match Memorize Name	Omit Order Quote Recall Recite Recognize Relate	Repeat Reproduce Select Spell State Tell
Understand	Arrange Associate Clarify Classify Compare Contrast Defend Describe Differentiate	Discuss Exemplify Explain Express Grasp Identify Illustrate Indicate Infer	Interpret Locate Paraphrase Organize Outline Recognize Reorganize Rephrase	Report Restate Review Rewrite Select Summarize Transform Translate
Apply	Apply Appraise Break down Calculate Choose Classify Compute Construct Contrast	Criticize Demonstrate Determine Develop Diagnose Dramatize Employ Estimate Examine	Execute Formulate Give examples Identify Illustrate Implement Interpret Make use of Manipulate	Modify Operate Practice Schedule Sketch Solve Use Utilize
Analyze	Analyze Break down Calculate Categorize Change Classify Combine Compare Contrast Criticize Debate	Deduce Derive Diagram Differentiate Discriminate Discuss Dissect Distill Distinguish Divide Examine	Experiment Extrapolate Formulate Identify assumptions Illustrate Induce Inspect Investigate Figure Find	Model Modify Organize Predict Probe Question Simplify Sketch Solve Survey Test
Evaluate	Agree Appraise Argue Assess Award Challenge Check Choose Conclude Convince Criticize	Critique Debate Decide Defend Detect Discount Discredit Disprove Dispute Estimate	Evaluate Judge Justify Monitor Predict Prioritize Persuade Qualify Rank Rate	Recommend Rule on Score Select Support Test Validate Value Verify Weigh
Create	Adapt Arrange Assemble Build Change Collect Compose Conclude Construct Create	Design Develop Devise Discover Estimate Extend Formulate Forward Generalize Imagine	Infer Integrate Invent Make up Manage Modify Organize Originate Plan Posit	Predict Prepare Produce Propose Rearrange Set up Suppose Theorize Transform Verify

Source: Adapted from Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors* (4th ed.). San Francisco, CA: Jossey-Bass. Reproduced by permission.



Explicitly Share Course Outcomes and Learning Objectives With Students

Showing students that the content and skills they are learning in your course are valuable now, in subsequent courses, and in the future helps to engage and motivate them.

Share Course Outcomes and Learning Objectives

Ken Bain (2004) shares that dedicating time during the first day of a course to discuss outcomes is time well spent because it allows you to show your students how the concepts and skills they will learn are connected to their interests and future. When students are aware of what they will learn and understand how that learning is related to their goals and interests, they are more likely to be engaged.

A possible first day or week activity is to ask students to reflect on the course outcomes and either discuss in small groups in a face-to-face course or post in a discussion forum the outcome they are most interested in learning more about and why.

It is also helpful to share the learning objectives for each week, module, or unit with students so again, they have clarity regarding what it is they are to learn. It is also helpful to show them how those learning objectives connect to the broader course outcomes.

You may even share the learning objectives that each assignment is intended to help students practice or master. Making learning outcomes and objectives transparent to students is motivating, creates more equity, and contributes to their overall academic success.

Use Student-Friendly Language

Some students may not know the purpose of course outcomes or learning objectives. Therefore, it may be helpful to dedicate some time in the beginning of the course to explain the purpose of outcomes and objectives.

When discussing outcomes and objectives, you may also take steps to define academic language that may be confusing for students. For instance, if the course outcome is “Apply the scientific method,” you may explain to students that to meet the outcome, they will demonstrate that they can use the scientific method and that the scientific method is a specific thinking process used in science to ensure that all scientific findings are based on observation, measurement, and experimentation.

Tie Learning Objectives Back to Course Outcomes

Explicitly sharing how the learning objectives are met through specific assignments or assessments and then showing how those build to demonstrate mastery of course outcomes helps students have a clear understanding of the work they need to do to master course outcomes and achieve a good course grade. Understanding these connections helps motivate and engage students in successfully completing coursework, therefore it is best to revisit the learning objectives and outcomes throughout the course rather than only discussing learning objectives and outcomes on the first day or week of a course.

Sources

Bain, K. (2004). *What the best college teachers do*. Harvard University Press.



Provide Opportunities for Students to Reflect on Course Outcomes and Learning Objectives

Reflection is a powerful learning tool; it helps students retain new information while deepening their understanding of a concept or skill (Cohen, 2018). Reflection also helps students adjust their own learning, track their progress, and increase their engagement with the concepts or skills of the course. When students are given the opportunity to reflect on and respond to course outcomes, it helps them develop an understanding of what they will be doing in the course and what the final learning goals are (Darby, 2019).

There are several ways to engage students in reflecting on course outcomes and learning objectives, which increases equitable academic outcomes for all students.

Help Students Track Progress

When students are engaged in what, how, and why they are learning, they are more likely to engage in the content and develop sustainable learning (Nilson, 2016). There are several tools that may be used to help students reflect on and track their progress toward course outcomes or learning objectives.

Self-Reflection

After students complete an assignment or learning experience, provide time for them to respond to the following questions:

- Did this assignment help you to practice the skills or better comprehend the content identified in the assignment?
- How confident do you feel in being able to demonstrate the following skills? (List the skills the assignment was designed to have students practice or master.)
- What steps can you take to increase your confidence?
- What steps can I take to help you better comprehend the content or practice the skills?

Exit Tickets

According to Brown University's Harriet W. Sheridan Center for Teaching and Learning, an exit ticket is an ideal way to end a class because it provides feedback to instructors and ensures that students reflect on their learning (Wakeford, n.d.).

The exit ticket is a low-stakes assignment that should take five minutes or less and can be applied in either in-person or online courses. There are many different approaches to exit tickets and the general process is to provide students with questions or prompts designed to have them reflect on the learning experience they just completed.

Below are some example questions or prompts for an exit ticket:

- What was the purpose of the group discussion today?
- What skills were applied in the quiz today?
- Which readings best prepared you for today's lecture?
- What three things did you learn today? What one question do you still have?



- Share a real-world application for the content you just learned.

If online, this exit ticket can be presented as a **Key Takeaway** discussion forum. In this forum, have students post one key takeaway from the module. A takeaway can include an insight, a challenge, a relationship, a pattern, or a next-step idea. This type of summary discussion requires students to review the material and identify what they think is the most important takeaway and offers other benefits as well, such as:

- giving students an opportunity to see what stood out to other students, so they can learn from other perspectives.
- providing the instructor with valuable information about students’ points of understanding or confusion.
- allowing the instructor, after all students have posted, to close with a summary of the themes, clarify any points of confusion, and provide a transition to the next module.

The exit ticket may also take the form of a **Practice Quiz**. Whether online, in person, or in a hybrid environment, provide an ungraded practice quiz for students to assess their comprehension of the major concepts of the module. They can then identify where they are confused and need to spend more time with course material. You may want to allow students to take the quiz more than once, so that they can be assured they have grasped the important concepts before they move forward.

Other forms of exit tickets include opening and ending your class session with prompts. The table below includes examples for doing so.

Open the class session with:	Close the class session with:
Presenting a question students will answer during the class or at the end of class	Having students answer your initial question using what they have learned in the class
Asking students to write down their questions on the lecture topic, and having a few students share with the class	Having students summarize what they have learned, reflecting on which of their questions were answered and which questions remain unanswered
Posing a complex problem, possibly a real-world application, to which students offer initial solutions	Having students apply new knowledge from the lecture by revising their initial solutions to the problem posed at the start of class
Telling an interesting story, sharing an anecdote, or making a pop culture reference that piques students’ interest in the topic of the class	Having students summarize what they learned by making connections to the opening story told in class
Connecting students’ previous lab or class session experiences to the content of the day, illustrating how the concepts are interrelated	Presenting a thought-provoking problem or question related to the lecture that students will consider during their next lab or the next class session



ACUE

Student Success
Through Exceptional
Teaching

Summary Discussion

A summary discussion takes place either at the end of the course or after a major or final project is submitted either in an online discussion forum or face-to-face. Ask students to complete a self-reflection to prepare for the discussion. Having an open conversation at this time allows students to reflect on what concepts they learned and applied, what skills they developed, what was challenging and what was engaging, how they overcame the challenges, and how all of this relates to the course outcomes and benefits their subsequent courses or professional goals.

Sources

Cohen, L. (2018). *The power of reflection*. California Teacher Development Collaborative. <https://catdc.org/the-power-of-reflection/>

Darby, F. (with Lang, J. M.). (2019). *Small teaching online: Applying learning science in online classes*. Jossey-Bass.

Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors* (4th ed.). Jossey-Bass.

Wakeford, L. (n.d.). *Sample exit tickets*. Brown University, Harriet W. Sheridan Center for Teaching and Learning. <https://www.brown.edu/sheridan/teaching-learning-resources/teaching-resources/course-design/classroom-assessment/entrance-and-exit/sample>