University of Mississippi

eGrove

1-2-2023

Planning and Teaching Strategies for Effective Classroom Practice

University of Mississippi. School of Education. Department of Teacher Education

Follow this and additional works at: https://egrove.olemiss.edu/open

Part of the Curriculum and Instruction Commons, and the Teacher Education and Professional Development Commons

---

Recommended Citation

Planning and Teaching Strategies for Effective Classroom Practice

Planning and Teaching Strategies for Effective Classroom Practice
University of Mississippi. School of Education. Department of Teacher Education.

Table of Contents

5. **Module 5: Who are we teaching?**

6. **Module 6: How do we differentiate instruction to meet our students' needs?**

MODULE #1: What is Backward Design?

Understanding by Design

Overview

Understanding by Design, an excellent book by Grant Wiggins and Jay McTighe, offers a powerful framework for designing courses through what they call "Backward Design." It seems "backward" in that it starts from the opposite end of the planning process we typically go through to design courses—we usually start by thinking about how to teach our content. Backward Design, in contrast, leaves teaching activities until the end and starts with the desired results of that teaching. In other words, Wiggins and McTighe argue that you can't start planning *how* you're going to teach until you know exactly *what* you want your students to learn.

"Teaching is a means to an end. Having a clear goal helps us educators to focus our planning and guide purposeful action toward the intended results."

The Backward Design process proceeds in three phases, as follows:

I. Identify desired results

First, you establish your learning goals for the course. What should students know, understand and be able to do? And how do you prioritize and narrow down the content you want to teach so it fits within the limited framework of the course? Wiggins and McTighe provide a useful process for establishing curricular priorities. They suggest you ask yourself three questions as you progressively focus in on the most valuable content:

1. What should participants hear, read, view, explore or otherwise encounter?   This knowledge is "*worth being familiar with.*"
2. What knowledge and skills should participants master? Sharpen your choices by considering what is "*important to know and do"* for your students. What facts, concepts and principles should they know? What processes, strategies and methods should they learn to use?
3. What are big ideas and important understandings participants should retain? These choices are the "*enduring understandings"* that you want students to remember after they've forgotten the details of the course.

Answering each of these questions will help you determine the best content for your course,*and* create concrete, specific learning goals for your students.

II. Determine acceptable evidence

In the second phase of Backward Design, you think about how you will decide if students are starting to master the knowledge and skills you want them to gain. What will you accept as evidence that students are making progress toward the learning goals of the course? How will you know if they are "getting it"?

When planning how you will collect this evidence, consider a wide range of assessment methods (for example, essay tests, term papers, short-answer quizzes, homework assignments, lab projects, problems to solve, etc.) in order to ensure that you test for exactly the learning you want them to gain. In other words, sometimes our assessments don't match our learning goals and we therefore cannot attain the evidence we want.

For example, if one of your goals is for student to learn how to problem-solve, give them an assessment that requires a demonstration of their problem-solving skills. Have them write out each step they took in addressing the problem, and an explanation of why they took it, instead of simply providing the right answer.

III. Plan learning experiences & instruction

Finally, after you have decided what results you want and how you will know you've achieved them, *then* you start planning how you're going to teach. You can now move to designing your instructional strategies and students' learning activities. What are the best exercises, problems or questions for developing your students' ability to meet your learning goals? How can they practice using new knowledge to gain the skills you want them to learn? How can they apply their learning? Devise active and collaborative exercises that encourage students to grapple with new concepts in order to "own" them. You want to foster increasing understanding, not rote memorization.

Resources
- *Understanding by Design* is available online via UM Libraries. Chapter One of the book provides a brief and accessible 12-page overview, entitled "What Is Backward Design?" In addition, Chapter Eleven offers blank templates that are useful for charting out a course.
- *Introduction to Understanding by Design*, is an online PowerPoint or PDF presentation.

Return to Table of Contents

Backward Design

Backward design, also called *backward planning* or *backward mapping*, is a process that educators use to design learning experiences[1] and instructional techniques to achieve specific learning goals. Backward design begins with the objectives of a unit or course—what students are expected to learn and be able to do—and then proceeds "backward" to create lessons that achieve those desired goals. In most public schools, the educational goals of a course or unit will be a given state's learning standards—i.e., concise, written descriptions of what students are expected to know and be able to do at a specific stage of their education.

The basic rationale motivating backward design is that starting with the end goal, rather than a starting with the first lesson chronologically delivered during a unit or course, helps teachers design a sequence of lessons, problems, projects, presentations, assignments, and assessments that result in students achieving the academic goals of a course or unit—that is, actually learning what they were expected to learn.

Backward design helps teachers create courses and units that are focused on the goal (learning) rather than the process (teaching). Because "beginning with the end" is often a counterintuitive process, backward design gives educators a structure they can follow when creating a curriculum and planning their instructional process. Advocates of backward design would argue that the instructional process should serve the goals; the goals—and the results for students—should not be determined by the process.

While approaches may vary widely from school to school or teacher to teacher, a basic backward-design process might take the following form:

1. A teacher begins by reviewing the learning standards that students are expected to meet by the end of a course or grade level. In some cases, teachers will work together to create backward-designed units and courses. For a related discussion, see common planning time.
2. The teacher creates an index or list of the essential knowledge, skills, and concepts that students need to learn during a specific unit. In some cases, these academic expectations will be called learning objectives, among other terms.
3. The teacher then designs a final test, assessment, or demonstration of learning that students will complete to show that they have learned what they were expected to learn. The final assessment will measure whether and to what degree students have achieved the unit goals.
4. The teacher then creates a series of lessons, projects, and supporting instructional strategies intended to progressively move student understanding and skill acquisition closer to the desired goals of the unit.
5. The teacher then determines the formative-assessment strategies that will be used to check for understanding and progress over the duration of the unit (the term *formative assessment* refers to a wide variety of methods—from questioning techniques to quizzes—that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or course, often for the purposes of modifying lessons and teaching techniques to make them more effective). Advocates typically argue that formative assessment is integral to effective backward design because teachers need to know what students are or are not learning if they are going to help them achieve the goals of a unit.

6. The teacher may then review and reflect on the prospective unit plan to determine if the design is likely to achieve the desired learning goals. Other teachers may also be asked to review the plan and provide constructive feedback that will help improve the overall design.

While backward-design strategies have a long history in education—going back at least as far as the seminal work *Basic Principles of Curriculum and Instruction*, by Ralph W. Tyler, published in 1947—the educators and authors Grant Wiggins and Jay McTighe are widely considered to have popularized "backward design" for the modern era in their book *Understanding by Design*. Since its publication in the 1990s, Understanding *by Design* has evolved in series of popular books, videos, and other resources.

Reform

As a strategy for designing, planning, and sequencing curriculum and instruction, backward design is an attempt to ensure that students acquire the knowledge and skills they need to succeed in school, college, or the workplace. In other words, backward design helps educators create logical teaching progressions that move students toward achieving specific—and important—learning objectives. Generally speaking, strategies such as backward design are attempts to bring greater coherence to the education of students—i.e., to establish consistent learning goals for schools, teachers, and students that reflect the knowledge, skills, conceptual understanding, and work habits deemed to be most essential. For a related discussion, see curriculum mapping.

Backward design arose in tandem with the concept of learning standards, and it is widely viewed as a practical process for using standards to guide the development of a course, unit, or other learning experience. Like backward designs, learning standards are a way to promote greater consistency and commonality in what gets taught to students from state to state, school to school, grade to grade, and teacher to teacher. Before the advent of learning standards and other efforts to standardize public education, individual schools and teachers typically determined learning expectations in a given course, subject area, or grade level—a situation that can, in some cases, give rise to significant educational disparities.

For related discussions, see achievement gap, equity, and high expectations.

CC LICENSED CONTENT, SHARED PREVIOUSLY

- Backward Design. **Authored by**: S. Abbott (Ed.). **Provided by**: Great Schools Partnership. **Located at**: https://www.edglossary.org/backward-design/. **Project**: The Glossary of Education Reform. **License**: *CC BY-NC-SA: Attribution-NonCommercial-ShareAlike*

Return to Table of Contents

MODULE 2: How Do We Identify Standards and Write Objectives?

Learning Standards

Learning standards are concise, written descriptions of what students are expected to know and be able to do at a specific stage of their education. Learning standards describe educational objectives—i.e., what students should have learned by the end of a course, grade level, or grade span—but they do not describe any particular teaching practice, curriculum, or assessment method (although this is a source of ongoing confusion and debate).

Following the adoption of a variety of federal and state policies—notably the No Child Left Behind Act, a reauthorization of the Elementary and Secondary Education Act of 1965—all states now use standardized assessments designed to evaluate academic achievement in relation to a set of learning standards. Until the development and widespread adoption of the Common Core State Standards for the subjects of English language arts and mathematics, and more recently the Next Generation Science Standards, learning standards in the United States were independently developed by states, usually as part of a collaborative committee process overseen by a state's department of education that included educators and subject-area specialists, as well as public-commentary periods (although both development and adoption processes varied from state to state). When investigating or reporting on learning standards, it is important to know how they were developed, what knowledge and skills they describe, and how they are actually used in schools.

While learning standards vary in content, purpose, and design from state to state, most standards systems in the United States share a few common attributes:

- **Subject areas:** Learning standards are typically organized by subject area—e.g., English language arts, mathematics, science, social studies, health and wellness, etc. Most standards systems use the same general subject-area categories that public schools have been using for decades, although some may be refined to reflect new knowledge or changing educational priorities, such as "science and technology" or "health and wellness."
- **Learning progressions:** In each subject area, standards are typically organized by grade level or grade span—consequently, they may be called *grade-level expectations* or *grade-level standards*—and the sequencing of standards across grades or stages of academic progress is called a "learning progression" (although terminology may vary from place to place). Learning progressions map out a specific sequence of knowledge and skills that students are expected to learn as they progress through their education. There are two main characteristics of learning progressions: (1) the standards described at each level are intended to address the specific learning needs and abilities of students at a particular stage of their intellectual, emotional, social, and physical development, and (2) the standards reflect clearly articulated sequences— that is, each grade-level learning expectation builds upon previous expectations while preparing students for more challenging concepts and more sophisticated coursework at the next level. The basic idea is to make sure that students are learning age-appropriate material (knowledge and skills that are neither too advanced nor too rudimentary), and that teachers are sequencing learning effectively or avoiding the inadvertent repetition of material that was taught in earlier grades. For a more detailed discussion, see learning progression.

- **Educational goals:** Many sets of learning standards also include overarching, long-term educational goals—i.e., what students should be able to do when they have completed their public-school education. These overarching goals will typically describe the knowledge, skills, work habits, and character traits that public schools should be teaching and cultivating in stages throughout a student's education. For example, they may address critical thinking, logical reasoning, and problem solving; oral and written communication; perseverance and work ethic; digital technology and media; or multicultural literacy (valuing and understanding other perspectives, races, and cultures)—i.e., broadly applicable skills that will help students succeed in adult life.
- **Content:** While each set of learning standards is unique, there is often a great deal of commonality from system to system or state to state. For example, while different sets of mathematics standards may use different descriptions, or they may sequence specific learning expectations differently, most mathematics standards describe similar quantitative concepts, principles, and reasoning. That said, in subjects such as history, social studies, or science—which contain an enormous variety of possible concepts, facts, skill sets, and areas of study, not to mention politically and ideologically contentious issues—learning standards will likely reflect greater content-related disparities. In addition, some learning standards are considered to be more precise, exacting, and prescriptive—e.g., they will describe the specific punctuation marks that students should know how to use correctly at a particular grade level—while others are considered to be more general, encompassing, and descriptive—e.g., they will explain more broadly what students should be able to do when writing (articulate concepts clearly, use grammatical conventions correctly, cite sources accurately, etc.).

The following examples, taken from the Common Core State Standards English Language Arts Standards for grades 9–10, can serve to illustrate what learning standards are and how they describe educational expectations:

Reading

- Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.

Writing

- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

- Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Language

- Demonstrate command of the conventions of standard English grammar and usage when writing and speaking.
- Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

Speaking and listening

- Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
- Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
- Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Reform

In the United States, learning standards could be considered a de facto reform strategy, given that they are a relatively recent historical development, and they are generally intended to improve the effectiveness of schools, the quality and consistency of teaching, and the academic achievement of students (whether or not they accomplish this goal remains a subject of debate). The following are a few representative ways in which learning standards are used to improve public education:

- **Educational consistency:** Learning standards are, generally speaking, a way to promote greater consistency and commonality in what gets taught to students from state to state, school to school, or classroom to classroom. Before the advent of learning standards and other efforts to standardize public education, individual schools and teachers determined learning expectations in a given course, subject area, or grade level—a situation that can give rise to significant educational disparities.
- **Quality control:** Learning standards are also seen as a way to improve school quality, teaching effectiveness, and student learning. By mandating the use of learning standards in public schools, for example, states, policy makers, and elected officials can increase the likelihood that students will acquire—at a minimum—a certain body of skills and knowledge during their public-school education.
- **Accountability:** If states base standardized tests or other assessments on learning standards, they can—at least to some degree—measure whether schools are teaching students the required material. If students in a particular school underperform, steps can be taken to improve performance. For example, in the case of high-stakes tests designed to measure

whether or not students have achieved expected learning standards, poor school performance can trigger a variety of consequences.

- **Prioritization:** Given that there is a vast number of subjects, concepts, facts, perspectives, and skills that schools could potentially be teaching, learning standards are a way to determine educational priorities in a state or education system. For example, learning standards are a way to prioritize the teaching of certain historical subjects over others—say, the civic, social, political, and economic history of the United States and other countries over the history of sports, entertainment, and fashion.

- **Pacing:** Depending on their specific content and sequencing, learning standards can accelerate (or slow down) learning progress—at least in relation to other standards or educational systems. If learning standards are modified to require certain concepts to be taught in earlier grades, for example, students may learn them earlier and be able to move on to more sophisticated ideas and material. For a related discussion, see acceleration.

- **Expectations:** Learning standards also establish academic expectations for schools, teachers, and students in terms both content (what gets taught) and depth (the level or degree to which it is taught). If learning standards are made more challenging, exacting, or demanding, the reasoning goes, more complex topics and more sophisticated skills will be taught by schools and learned by students. The basic rationale is that if schools apply the same high expectations to every student, then more students will achieve those higher expectations, or at least get closer to achieving those expectations, than if the expectations were lower.

- **Coherence:** Learning standards can promote greater academic and instructional coherence, or "alignment," within a school or education system. Because standards are carefully mapped out and sequenced, they can help schools and teachers avoid redundancy or unnecessary repetition, while also creating a progression of instruction in which each lesson builds on previous lessons, moving students from simpler concepts to more complex and challenging concepts, from lower-level thinking to higher-level thinking, or from less-sophisticated skills to more-sophisticated skills as they progress through their education. For a related discussion, see coherent curriculum.

- **Teaching:** Depending on how they are written, learning standards can influence the ways in which schools and educators teach students. If standards are written to emphasize factual content and memorization, for example, rather than deeper comprehension and the application of knowledge, that emphasis will likely be reflected in the teaching materials and methods used by educators. In the first case, for example, worksheets, textbooks, lectures, videos, and tests may be seen as effective ways to teach factual content and determine whether students can recall historical dates, execute a mathematical formula, or write a grammatical sentence. In the second case, teachers may need to use alternative methods to teach students how to use the knowledge and skills they have acquired to solve complex problems, evaluate ambiguous issues, complete challenging tasks, or produce sophisticated work products.

- **Equity:** Learning standards are also seen as a way to increase equity and fairness within an educational system. For example, there is strong evidence that students of color and students from lower-income households are held to lower academic expectations, or enrolled in lower-level classes, more frequently and consistently than their white and wealthier peers. As many educators have pointed out, this situation (often called the "soft bigotry of low expectations") can create a "cycle of low expectations," possibly even a multigenerational cycle, in which

minority and low-income students never catch up with their peers academically, earn collegiate degrees at the same rates, or achieve the same social, professional, or economic status. Learning standards—because they are applied to all students in an education system—are seen by many educators as a way to ensure that minority and disadvantaged students are held to the same expectations, and given the same quality of education, as other students. For related discussions, see achievement gap, high expectations, opportunity gap, multicultural education, and stereotype threat.

- **Resources:** If states and schools use the same learning standards, it also allows them to make use of the same educational resources, whether it's textbooks, online learning programs, tests, or the curriculum and lesson plans that teachers create to organize a course. In the case of textbooks and other learning resources, it may be possible for states or schools to share educational resources or save money when purchasing resources. For example, before many states adopted the Common Core State Standards, textbook publishers had to create different English or math textbooks for each state. Similarly, each state contracted with different test developers to create unique standardized tests each year that were based on the state's learning standards, but initiatives such as the [Smarter Balanced Assessment Consortium](#) and the Partnership for Assessment of Readiness for College and Careers (PARCC) were created to develop tests that could be used by multiple states. In addition, common learning standards allow teachers to share educational materials—such as instructional plans, reading lists, projects, and assignments—and several online resource-sharing websites have recently been created to facilitate the exchange of standards-based educational materials among teachers.

Debate

Learning standards are a major source of debate in the United States—and even more so since the No Child Left Behind Act connected high-stakes testing to learning standards and most states replaced preexisting standards with the Common Core State Standards. The arguments both for and against learning standards are highly complex, and it is not possible to address every nuance here. The following, however, will serve to illustrate a few of the major debates about learning standards:

- **Should states or the federal government determine what students learn in public school? Or should local communities, parents, and students make these decisions?** Some argue that—to maintain educational quality and ensure that students are prepared to be productive adults, workers, and citizens—educational experts, elected officials, and government agencies need to play a role in setting educational standards and learning expectations. Without such guidelines and requirements, there is no way to ensure a minimum level of educational quality in public schools, or ensure that students are taught the most critically important knowledge and skills. Others argue, however, that learning standards are a form of governmental overreach, and that decisions about what gets taught in schools should remain local—or, in the view of some, familial and individual. In this case, the debate often intersects with political, ideological, and moral differences, or fears about the students being "indoctrinated" into certain ideologies, given that some standards address subjects that are broadly contentious in American society—e.g., teaching evolution in science courses, multiculturalism in social studies, or sex education in health courses.
- **Are learning standards forcing schools and educators to use a mandated curriculum?** There is a great deal of confusion about the distinction between learning standards and curriculum, and

whether they are qualitatively and substantively different or effectively the same. Some argue that standards only describe broad learning expectations and content categories, and that they do not tell teachers how to teach or even to a great extent what to teach. For example, a standard that requires students to learn and understand how "checks and balances" and "separation of powers" work in American government does not require teachers to teach those ideas in any specific way—they can use any number of instructional approaches, learning materials, or historical examples to teach students the concepts described in the standards. Others believe, or express concern, that learning standards are a form of forced curriculum that will limit what teachers can teach, while also deprioritizing or neglecting certain subjects. Some critics even contend that parents should be able be able to control what gets taught to their children in school.

- **Are learning standards useful, effective guidelines for schools and educators? Or are they burdensome regulatory requirements that take up valuable resources and time without adding much educational value?** As some educational experts have pointed out, learning standards can become overbuilt if they are either too prescriptive or so numerous and comprehensive that there is simply not enough time to ensure that students learn and master every standard. In the second case, educators and others may debate whether teaching a specific set of learning standards is even feasible, given the amount of time and the average number of years that students typically attend public school. And depending on how states structure their learning standards and related compliance requirements, there could be a wide variety of potential debates and criticism related to compliance obligations, including whether schools have sufficient time and funding to meet the requirements, or whether teachers have been given the training they need to modify their lessons and bring them into alignment with standards.

- **Do learning standards address the most important and appropriate knowledge and skills?** In the education community, there is often debate about whether a specific set of standards addresses the right content or establishes appropriate learning expectations. Given the enormous breadth, depth, and multiplicity of knowledge and skills that could potentially be addressed in learning standards, it is perhaps unsurprising that educators would hold divergent views about educational priorities for students. Both within and outside of the education community, debates about the content of learning standards also intersect with broader political, ideological, and religious differences and debates in the United States.

- **Are learning standards too prescriptive or are they not prescriptive enough?** In the view of some educators, learning standards that are too prescriptive, detailed, or numerous can reduce a teacher's professional autonomy, instructional flexibility, and responsiveness to student learning needs. In this case, standards may be perceived as a burdensome checklist that teachers need to work through. Other educators, however, believe that the very fact that standards are prescriptive or required is what makes them effective. In this example, learning standards may be seen as way to improve educational consistency and quality across a complex system that includes both more-effective and less-effective teachers, or as a way to protect students from the long-term personal and societal harm that may result from low educational expectations and low-quality teaching.

- **Do standards represent authentic learning progressions, or are they merely content progressions or teaching progressions?** This somewhat technical debate occurs mostly among

educators, researchers, and education experts. The basic idea is that standards, by necessity, are created by adults with only a limited understanding of how students actually learn and develop cognitively at specific ages. Therefore, grade-level standards and learning progressions reflect "best-guess" ideas about how content or teaching should be sequenced across grades, but they do not necessarily reflect the ways in which students actually learn new knowledge and acquire new skills. Consequently, they may not facilitate learning in the most effective ways, or they may inadvertently promote and reinforce less-effective teaching strategies.

CC LICENSED CONTENT, SHARED PREVIOUSLY

- Learning Standards. **Authored by**: S. Abbott (Ed.). **Provided by**: Great Schools Partnership. **Located at**: https://www.edglossary.org/learning-standards/. **Project**: The Glossary of Education Reform. **License**: *CC BY-NC-SA: Attribution-NonCommercial-ShareAlike*

Return to Table of Contents

Creating Objectives

A learning objective is a short statement of the goals and objectives that students should know or be able to put into practice after a lesson.

KEY POINTS

- Large-scale learning objectives will be articulated in a teacher's curriculum guide, but it is up to each individual teacher to formulate learning objectives for individual lesson plans.
- In the middle of the twentieth century, a committee chaired by Benjamin Bloom created a well-known taxonomy of learning objectives.
- Benjamin Bloom's learning objectives are built on the following template: VERB [which refers to a particular cognitive process] + OBJECT [which refers to the knowledge students are expected to acquire or construct].

TERM

- learning objective Any fact, technique or other outcome that a student is expected to learn or achieve at the end of a specific course of instruction

FULL TEXT

A learning objective is a short statement of the goals and objectives that students should know or be able to put into practice after a lesson. Focusing on what students should know is frequently called the "cognitive" approach, focusing on what students should be able to do the "behavioral" approach. While most teachers are, by temperament, drawn to one of the two approaches, in practices most teachers often combine the two, perhaps without knowing it.

Large-scale learning objectives will be articulated in a teacher's curriculum guide, but it is up to each individual teacher to formulate learning objectives for individual lesson plans. Teachers must find a way to disaggregate a large-scale learning objective (of the sort found in a curriculum guide) into a number of individual objectives.

In the middle of the twentieth century, a committee chaired by Benjamin Bloom created a well-known taxonomy of learning objectives. His learning objectives are built on the following template: VERB [which refers to a particular cognitive process] + OBJECT [which refers to the knowledge students are expected to acquire or construct]. The verbs themselves form a series which moves from relatively low-level cognitive processes like "remembering" toward high-level processes like "creating. " A low-order learning objective, then, would be formed by joining a verb associated with "remembering" to the content to be acquired: "identify [VERB] the five major steps of photosynthesis [OBJECT]. " A high-order learning objective, by contrast, would be formed by joining a verb associated with "creating" to the content to be acquired: "generate [VERB] a visual representation of photosynthesis within a plant cell [OBJECT]. "

As is evident from the above example, Bloom's taxonomy includes verbs associated with both the

"cognitive" and "behavioral" approach. The committee Bloom chaired, in fact, created the taxonomy with the aim of designing a more holistic form of education.

Bloom's Rose
Bloom's wheel, according to the Bloom's verbs and matching assessment types. The verbs are intended to be feasible and measurable.

Example Objectives
Knowledge (1):

The student will list the parts of a fish.

The student will **recognize** nouns in a sentence.

Comprehension (2):

The student will **paraphrase** the results of the survey.

The student will **summarize** types of governments.

Application (3):

The student will **produce** argumentative essays.

The student will **sketch** graphs using the data provided.

Analysis (4):

The student will **categorize** animals based on physical features.

The student will **compare** different ways of solving equations.

Synthesis (5):

The student will **construct** a program for addressing flood disaster relief.

The student will **design** stage props for a specific play.

Evaluation (6):

The student will **criticize** government policies on unemployment during the Great Depression.

The student will **evaluate** the use of U.S. propaganda during WWII.

Licenses and Attributions

CC LICENSED CONTENT, SHARED PREVIOUSLY

- Creating Learning Objectives. **Authored by**: Boundless. **Project**: Boundless Education. **License**: *CC BY-SA: Attribution-ShareAlike*

Return to Table of Contents

Webb's Depth of Knowledge (DOK)

Webb's Depth of Knowledge

DOK Level 1
(Recall)

Verbs: arrange, calculate, define, draw, identify, list, label, illustrate, match, memorize, recognize, tell, ...

Focus: on specific facts, definitions, details, or procedures

Note: there's one correct answer, and a combination of Level 1s does not make it a Level 2

DOK Level 2
(Skill / Concept)

Verbs: categorize, cause/effect, classify, compare, distinguish, estimate, graph, interpret, modify, predict, relate, show, summarize, ...

Focus: on applying skills and concepts explaining how or why

Note: there's one correct answer

DOK Level 3
(Strategic Thinking)

Verbs: assess, cite evidence, compare, conclude, construct, critique, develop logical argument, differentiate, formulate, hypothesize, investigate, revise, ...

Focus: on reasoning and planning in order to respond complex and abstract thinking required defending reasoning or conclusions

Note: multiple answers or approaches

DOK Level 4
(Extended Thinking)

Verbs: apply concepts, analyze, connect, create, critique, design, prove, ...

Focus: on complex reasoning, planning, and thinking make real-world applications in new situations

Note: has multiple answers or approaches often requires extended periods of time with multiple steps

(cc) BY   Webb's DOK Graphic by Tracy Watanabe is licensed under a Creative Commons Attribution 3.0 Unported License.

Example objectives:

DOK 1:

The student will **label** the parts of a fish (DOK 1).

The student will **recognize** nouns in a sentence (DOK 1).

DOK 2:

The student will **graph** the results of the survey (DOK 2).

The student will **compare** types of governments (DOK 2).

DOK 3:

The student will **construct** persuasive essays (DOK 3).

The student will **assess** the use of colors to portray mood in art (DOK 3).

DOK 4:

The student will **critique** government policies on unemployment during the Great Depression (DOK 4).

The student will **design** a program for addressing invasive fish species in the Mississippi River (DOK 4).

The importance of Depth of knowledge (DOK) goes beyond the objectives. DOK will also influence the instructional strategies you use. For example, instructional activities on how to label the parts of a fish will look much different than instruction on how to design a plan to address invasive fish. Unit plans should address different levels of DOK. When moving students through the levels, often teachers will start with lower DOK levels and move students to higher DOK levels once a foundation is set.
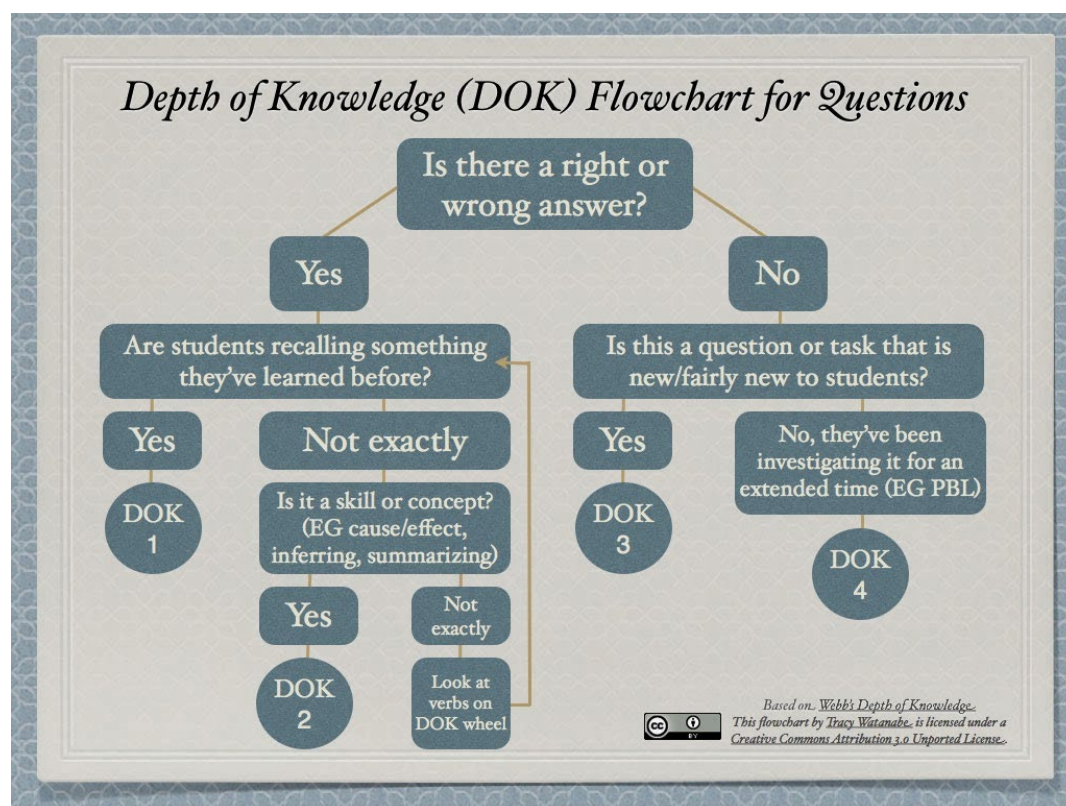
Licenses and Attributions

CC LICENSED CONTENT, SHARED PREVIOUSLY

- Webb's Depth of Knowledge Graphic. **Authored by**: Tracy Watanabe. **Located at**: https://wwwatanabe.blogspot.com/2013/11/striving-for-higher-order-thinking-and.html. **License**: *CC BY: Attribution*
- Webb's Depth of Knowledge Flowchart. **Authored by**: Tracy Watanabe. **Located at**: https://wwwatanabe.blogspot.com/2013/11/striving-for-higher-order-thinking-and.html. **License**: *CC BY: Attribution*

Return to Table of Contents

A Model of Leaning Objectives - Revised Bloom's Taxonomy of Learning

Here is a link to a taxonomy of learning terms that look at the cross-section of knowledge dimensions and cognitive process dimension.

[Revised Blooms Handout](#)

Here is how [Bloom's Taxonomy and DOK are connected](#). (Source: Ohio Department of Education)

CC LICENSED CONTENT, SHARED PREVIOUSLY
- A Model of Learning Objectives. **Authored by**: Rex Heer. **Provided by**: Center for Excellence in Teaching and Learning, Iowa State University. **Located at**: https://www.celt.iastate.edu/wp-content/uploads/2015/09/RevisedBloomsHandout-1.pdf. **License**: *CC BY-SA: Attribution-ShareAlike*

Return to Table of Contents

MODULE 3: How Do We Assess What Students Know?

Assessment

In education, the term **assessment** refers to the wide variety of methods or tools that educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students.

While assessments are often equated with traditional tests (especially the **standardized tests** developed by testing companies and administered to large populations of students) educators use a diverse array of assessment tools and methods to measure everything from a four-year-old's readiness for kindergarten to a twelfth-grade student's comprehension of advanced physics. Just as academic lessons have different functions, assessments are typically designed to measure specific elements of learning—e.g., the level of knowledge a student already has about the concept or skill the teacher is planning to teach or the ability to comprehend and analyze different types of texts and readings. Assessments also are used to identify individual student weaknesses and strengths so that educators can provide specialized **academic support**, educational programming, and/or social services. In addition, assessments are developed by a wide array of groups and individuals, including teachers, district administrators, universities, private companies, state departments of education, and groups that include a combination of these individuals and institutions. While assessment can take a wide variety of forms in education, the following descriptions provide a representative overview of a few major forms of educational assessment.

Assessments are used for a wide variety of purposes in schools and education systems:
- **High-stakes assessments** are typically standardized tests used for the purposes of accountability—i.e., any attempt by federal, state, or local government agencies to ensure that students are enrolled in effective schools and being taught by effective teachers. In general,

"high stakes" means that important decisions about students, teachers, schools, or districts are based on the scores students achieve on a high-stakes test, and either punishments (sanctions, penalties, reduced funding, negative publicity, not being promoted to the next grade, not being allowed to graduate) or accolades (awards, public celebration, positive publicity, bonuses, grade promotion, diplomas) result from those scores. For a more detailed discussion, see **high-stakes test**.

- **Pre-assessments** are administered before students begin a lesson, unit, course, or academic program. Students are not necessarily expected to know most, or even any, of the material evaluated by pre-assessments—they are generally used to (1) establish a baseline against which educators measure learning progress over the duration of a program, course, or instructional period, or (2) determine general academic readiness for a course, program, grade level, or new academic program that student may be transferring into.
- **Formative assessments** are in-process evaluations of student learning that are typically administered multiple times during a unit, course, or academic program. The general purpose of formative assessment is to give educators in-process feedback about what students are learning or not learning so that instructional approaches, teaching materials, and academic support can be modified accordingly. Formative assessments are not always scored or graded, and they may take a variety of forms, from more formal quizzes and assignments to informal questioning techniques and in-class discussions with students.
- **Summative assessments** are used to evaluate student learning at the conclusion of a specific instructional period—typically at the end of a unit, course, semester, program, or school year. Summative assessments are typically scored and graded tests, assignments, or projects that are used to determine whether students have learned what they were expected to learn during the defined instructional period.

Formative assessments are commonly said to be *for* learning because educators use the results to modify and improve teaching techniques during an instructional period, while summative assessments are said to be *of* learning because they evaluate academic achievement at the conclusion of an instructional period. Or as assessment expert Paul Black put it, "When the cook tastes the soup, that's formative assessment. When the customer tastes the soup, that's summative assessment."

- **Interim assessments** are used to evaluate where students are in their learning progress and determine whether they are on track to performing well on future assessments, such as standardized tests, end-of-course exams, and other forms of "summative" assessment. Interim assessments are usually administered periodically during a course or school year (for example, every six or eight weeks) and separately from the process of instructing students (i.e., unlike formative assessments, which are integrated into the instructional process).
- **Placement assessments** are used to "place" students into a course, course level, or academic program. For example, an assessment may be used to determine whether a student is ready for Algebra I or a higher-level algebra course, such as an honors-level course. For this reason, placement assessments are administered before a course or program begins, and the basic intent is to match students with appropriate learning experiences that address their distinct learning needs.
- **Screening assessments** are used to determine whether students may need specialized assistance or services, or whether they are ready to begin a course, grade level, or academic

program. Screening assessments may take a wide variety of forms in educational settings, and they may be developmental, physical, cognitive, or academic. A preschool screening test, for example, may be used to determine whether a young child is physically, emotionally, socially, and intellectually ready to begin preschool, while other screening tests may be used to evaluate health, potential learning disabilities, and other student attributes.

Assessments are also designed in a variety of ways for different purposes:

- **Standardized assessments** are designed, administered, and scored in a standard, or consistent, manner. They often use a multiple-choice format, though some include open-ended, short-answer questions. Historically, standardized tests featured rows of ovals that students filled in with a number-two pencil, but increasingly the tests are computer-based. Standardized tests can be administered to large student populations of the same age or grade level in a state, region, or country, and results can be compared across individuals and groups of students. For a more detailed discussion, see **standardized test**.
- **Standards-referenced or standards-based assessments** are designed to measure how well students have mastered the specific knowledge and skills described in local, state, or national **learning standards**. Standardized tests and high-stakes tests may or may not be based on specific learning standards, and individual schools and teachers may develop their own standards-referenced or standards-based assessments. For a more detailed discussion, see **proficiency-based learning**.
- **Common assessments** are used in a school or district to ensure that all teachers are evaluating student performance in a more consistent, reliable, and effective manner. Common assessments are used to encourage greater consistency in teaching and assessment among teachers who are responsible for teaching the same content, e.g. within a grade level, department, or **content area**. They allow educators to compare performance results across multiple classrooms, courses, schools, and/or learning experiences (which is not possible when educators teach different material and individually develop their own distinct assessments). Common assessments share the same format and are administered in consistent ways—e.g., teachers give students the same instructions and the same amount of time to complete the assessment, or they use the same scoring guides to interpret results. Common assessments may be "formative" or "summative*."* For more detailed discussions, see **coherent curriculum** and **rubric**.
- **Performance assessments** typically require students to complete a complex task, such as a writing assignment, science experiment, speech, presentation, performance, or long-term project, for example. Educators will often use collaboratively developed common assessments, scoring guides, rubrics, and other methods to evaluate whether the work produced by students shows that they have learned what they were expected to learn. Performance assessments may also be called "authentic assessments," since they are considered by some educators to be more accurate and meaningful evaluations of learning achievement than traditional tests. For more detailed discussions, see **authentic learning**, **demonstration of learning**, and **exhibition**.
- **Portfolio-based assessments** are collections of academic work—for example, assignments, lab results, writing samples, speeches, student-created films, or art projects—that are compiled by students and assessed by teachers in consistent ways. Portfolio-based assessments are often used to evaluate a "body of knowledge"—i.e., the acquisition of diverse knowledge and skills

over a period of time. Portfolio materials can be collected in physical or digital formats, and they are often evaluated to determine whether students have met required **learning standards**. For a more detailed discussion, see **portfolio**.

The purpose of an assessment generally drives the way it is designed, and there are many ways in which assessments can be used. A standardized assessment can be a high-stakes assessment, for example, but so can other forms of assessment that are not standardized tests. A portfolio of student work can be a used as both a "formative" and "summative" form of assessment. Teacher-created assessments, which may also be created by teams of teachers, are commonly used in a single course or grade level in a school, and these assessments are almost never "high-stakes." Screening assessments may be produced by universities that have conducted research on a specific area of child development, such as the skills and attributes that a student should have when entering kindergarten to increase the likelihood that he or she will be successful, or the pattern of behaviors, strengths, and challenges that suggest a child has a particular learning disability. In short, assessments are usually created for highly specialized purposes.

Reform

While educational assessments and tests have been around since the days of the one-room schoolhouse, they have increasingly assumed a central role in efforts to improve the effectiveness of public schools and teaching. Standardized-test scores, for example, are arguably the dominant measure of educational achievement in the United States, and they are also the most commonly reported indicator of school, teacher, and school-system performance.

As schools become increasingly equipped with computers, tablets, and wireless internet access, a growing proportion of the assessments now administered in schools are either computer-based or online assessments—though paper-based tests and assessments are still common and widely used in schools. New technologies and software applications are also changing the nature and use of assessments in innumerable ways, given that digital-assessment systems typically offer an array of features that traditional paper-based tests and assignments cannot. For example, online-assessment systems may allow students to log in and take assessments during out-of-class time or they may make performance results available to students and teachers immediately after an assessment has been completed (historically, it might have taken hours, days, or weeks for teachers to review, score, and grade all assessments for a class). In addition, digital and online assessments typically include features, or "analytics," that give educators more detailed information about student performance. For example, teachers may be able to see how long it took students to answer particular questions or how many times a student failed to answer a question correctly before getting the right answer. Many advocates of digital and online assessments tend to argue that such systems, if used properly, could help teachers "personalize" instruction—because many digital and online systems can provide far more detailed information about the academic performance of students, educators can use this information to modify educational programs, learning experiences, instructional approaches, and academic-support strategies in ways that address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students. In addition, many large-scale standardized tests are now administered online, though states typically allow students to take paper-based tests if computers are unavailable, if students prefer the paper-based option, or if students don't have the technological skills and literacy required to perform well on an online assessment.

Given that assessments come in so many forms and serve so many diverse functions, a thorough discussion of the purpose and use of assessments could fill a lengthy book. The following descriptions, however, provide a brief, illustrative overview of a few of the major ways in which assessments—especially assessment results—are used in an attempt to improve schools and teaching:

- **System and school accountability**: Assessments, particularly standardized tests, have played an increasingly central role in efforts to hold schools, districts, and state public-school systems "accountable" for improving the academic achievement of students. The most widely discussed and far-reaching example, the 2001 federal law commonly known as the No Child Left Behind Act, strengthened federal expectations from the 1990s and required each state develop **learning standards** to govern what teachers should teach and students should learn. Under No Child Left Behind, standards are required in every grade level and **content area** from kindergarten through high school. The law also requires that students be tested annually in grades 3-8 and at least once in grades 10-12 in reading and mathematics. Since the law's passage, standardized tests have been developed and implemented to measure how well students were meeting the standards, and scores have been reported publicly by state departments of education. The law also required that test results be tracked and reported separately for different "subgroups" of students, such as minority students, students from low-income households, students with special needs, and students with **limited proficiency in English**. By publicly reporting the test scores achieved by different schools and student groups, and by tying those scores to penalties and funding, the law has aimed to close **achievement gaps** and improve schools that were deemed to be underperforming. While the No Child Left Behind Act is one of the most controversial and contentious educational policies in recent history, and the technicalities of the legislation are highly complex, it is one example of how assessment results are being used as an accountability measure.
- **Teacher evaluation and compensation**: In recent years, a growing number of elected officials, policy makers, and education reformers have argued that the best way to improve educational results is to ensure that students have effective teachers, and that one way to ensure effective teaching is to evaluate and compensate educators, at least in part, based on the test scores their students achieve. By basing a teacher's income and job security on assessment results, the reasoning goes, administrators can identify and reward high-performing teachers or take steps to either help low-performing teachers improve or remove them from schools. Growing political pressure, coupled with the promise of federal grants, prompted many states to begin using student test results in teacher evaluations. This controversial and highly contentious reform strategy generally requires fairly complicated statistical techniques—known as *value-added measures* or *growth measures*—to determine how much of a positive or negative effect individual teachers have on the academic achievement of their students, based primarily on student assessment results.
- **Instructional improvement**: Assessment results are often used as a mechanism for improving instructional quality and student achievement. Because assessments are designed to measure the acquisition of specific knowledge or skills, the design of an assessment can determine or influence what gets taught in the classroom ("teaching to the test" is a common, and often derogatory, phrase used to describe this general phenomenon). Formative assessments, for example, give teachers in-process feedback on student learning, which can help them make instructional adjustments during the teaching process, instead of having to wait until the end of

a unit or course to find out how well students are learning the material. Other forms of assessment, such as standards-based assessments or common assessments, encourage educators to teach similar material and evaluate student performance in more consistent, reliable, or comparable ways.

- **Learning-needs identification**: Educators use a wide range of assessments and assessment methods to identify specific student learning needs, diagnose learning disabilities (such as autism, dyslexia, or nonverbal learning disabilities), evaluate language ability, or determine eligibility for specialized educational services. In recent years, the early identification of specialized learning needs and disabilities, and the proactive provision of educational support services to students, has been a major focus of numerous educational reform strategies. For a related discussion, see **academic support**.

Debate

In education, there is widespread agreement that assessment is an integral part of any effective educational system or program. Educators, parents, elected officials, policy makers, employers, and the public all want to know whether students are learning successfully and progressing academically in school. The debates—many of which are a complex, wide ranging, and frequently contentious—typically center on how assessments are used, including how frequently they are being administered and whether assessments are beneficial or harmful to students and the teaching process. While a comprehensive discussion of these debates is beyond the scope of this resource, the following is a representative selection of a few major issues being debated:

- Is high-stakes testing, as an accountability measure, the best way to improve schools, teaching quality, and student achievement? Or do the potential consequences—such as teachers focusing mainly on test preparation and a narrow range of knowledge at the expense of other important skills, or increased incentives to cheat and manipulate test results—undermine the benefits of using test scores as a way to hold schools and educators more accountable and improve educational results?

- Are standardized assessments truly *objective* measures of academic achievement? Or do they reflect intrinsic biases—in their design or content—that favor some students over others, such wealthier white students from more-educated households over minority and low-income students from less-educated households? For more detailed discussions, see **measurement error** and **test bias**.

- Are "one-size-fits-all" standardized tests a fair way to evaluate the learning achievement of all students, given that some students may be better test-takers than others? Or should students be given a variety of assessment options and multiple opportunities to demonstrate what they have learned?

- Will more challenging and **rigorous** assessments lead to higher educational achievement for all students? Or will they end up penalizing certain students who come from disadvantaged backgrounds? And, conversely, will less-advantaged students be at an even greater disadvantage if they are not held to the same high educational standards as other students (because lowering educational standards for certain students, such as students of color, will only further disadvantage them and perpetuate the same cycle of low expectations that historically contributed to racial and socioeconomic **achievement gaps**)?

- Do the costs—in money, time, and human resources—outweigh the benefits of widespread, large-scale testing? Would the funding and resources invested in testing and accountability be better spent on higher-quality educational materials, more training and support for teachers, and other resources that might improve schools and teaching more effectively? And is the pervasive use of tests providing valuable information that educators can use to improve instructional quality and student learning? Or are the tests actually taking up time that might be better spent on teaching students more knowledge and skills?
- Are technological learning applications, including digital and online assessments, improving learning experiences for students, teaching them technological skills and literacy, or generally making learning experiences more interesting and engaging? Or are digital learning applications adding to the cost of education, introducing unwanted distractions in schools, or undermining the value of teachers and the teaching process?

Purpose of Assessment

Assessment drives instruction
A pre-test or needs assessment informs instructors what students know and do not know at the outset, setting the direction of a course. If done well, the information garnered will highlight the gap between existing knowledge and a desired outcome. Accomplished instructors find out what students already know, and use the prior knowledge as a stepping off place to develop new understanding. The same is true for data obtained through assessment done during instruction. By checking in with students throughout instruction, outstanding instructors constantly revise and refine their teaching to meet the diverse needs of students.

Assessment drives learning
What and how students learn depends to a major extent on how they think they will be assessed. Assessment practices must send the right signals to students about what to study, how to study, and the relative time to spend on concepts and skills in a course. Accomplished faculty communicate clearly what students need to know and be able to do, both through a clearly articulated syllabus, and by choosing assessments carefully in order to direct student energies. High expectations for learning result in students who rise to the occasion.

Assessment informs students of their progress
Effective assessment provides students with a sense of what they know and don't know about a subject. If done well, the feedback provided to students will indicate to them how to improve their performance. Assessments must clearly match the content, the nature of thinking, and the skills taught in a class. Through feedback from instructors, students become aware of their strengths and challenges with respect to course learning outcomes. Assessment done well should not be a surprise to students.

Assessment informs teaching practice
Reflection on student accomplishments offers instructors insights on the effectiveness of their teaching strategies. By systematically gathering, analyzing, and interpreting evidence we can determine how well student learning matches our outcomes / expectations for a lesson, unit or course. The knowledge from feedback indicates to the instructor how to improve instruction, where to strengthen teaching, and what areas are well understood and therefore may be cut back in future courses.

Role of grading in assessment
Grades should be a reflection of what a student has learned as defined in the student learning outcomes. They should be based on direct evidence of student learning as measured on tests, papers, projects, and presentations, etc. Grades often fail to tell us clearly about "large learning" such as critical thinking skills, problem solving abilities, communication skills (oral, written and listening), social skills, and emotional management skills.

When student learning outcomes are not met
Accomplished faculty focus on the data coming out of the assessments they complete before, during and at the end of a course, and determine the degree to which student learning outcomes are or are not met. If students are off course early on, a redirecting, reteaching of a topic, referral to student learning

centers, or review sessions by the instructor may remediate the problem. Through careful analysis it is possible to determine the challenges and weaknesses of instruction in order to support student learning better. Some topics or concepts are notoriously difficult, and there may be a better approach to use. Perhaps a model, simulation, experiment, example or illustration will clarify the concept for students. Perhaps spending a bit more time, or going over a topic in another way will make a difference. If the problem is noticed late in the course, an instructor may plan to make any instructional changes for the next time the course is taught, but it is helpful to make a note of the changes needed at the time so that the realization is not lost.

Assessment Strategies

There are many assessment strategies, each offering its own strengths and weaknesses, that educators can use to assess their student.

KEY POINTS

- Some of the most familiar **assessment** strategies are quizzes, tests, state-administered standardized tests, and essays. While each of these relatively traditional forms of assessment has its place in a curriculum, many teachers are finding that they are limiting in other, important ways.
- Authentic assessment strategies, such as portfolios, performances, and exhibitions, allow students to showcase their talents and what they have learned in a course in creative manner.
- Many teachers are now also experimenting with **self-evaluation** and **peer-evaluation**. Some educational theorists believe that students are more invested in their performance in the course when they know that they (and their peers) are actively involved in the overall assessment.
- No matter the type of assessment, instructors must create unambiguous expectations and be open to employing a range of assessment strategies.

TERMS

- **assessment**: An appraisal or evaluation.
- **self-evaluation**: allowing students to evaluate their own performance on assignments
- **peer-evaluation**: allowing students to evaluate the performance of their peers on assignments

FULL TEXT

There are many different types of assessments that teachers can use to analyze what their students have learned. Some of the most familiar are quizzes, tests, state-administered standardized tests, and essays. And while each of these relatively traditional forms of assessment has its place in a curriculum, many teachers are finding that they are limiting in other, important ways. This has prompted many teachers to design alternative assessments that they feel better match and evaluate the content of the instruction.

For example, fine arts courses may not be particularly well-suited to any of the traditional forms of assessment listed above. By contrast, asking a student to put on a performance, to create a portfolio, or to curate an exhibition might well help gauge just how well students have understood the central concerns of the course. Such forms of assessments are referred to as "authentic assessment" or, more neutrally, as "alternative assessment." Authentic assessment strategies can be used in almost any types of courses, even those that more often use traditional forms of assessment.

Many teachers are now also experimenting with self-evaluation and peer-evaluation. Some educational theorists believe that students are more invested in their performance in the course when they know that they (and their peers) are actively involved in the overall assessment.

No matter the type of assessment, the following two best practices should guide all instructors' assessment strategies. First, instructors must create unambiguous expectations. Students cannot perform well on any assessment if, in the time leading up to the assessment, there is uncertainty surrounding just what is to be known or done. Second, instructors should be open to employing a wide range of assessment strategies. Instructors obviously reserve the right to utilize the assessment strategy of their choice. But they should recognize that different students succeed in different assessment venues, and, thereby, to try to incorporate a few different types of assessments over the course of a unit. By utilizing different assessment strategies, teachers can help students experience more success by tapping into their various learning preferences.

CC LICENSED CONTENT, SHARED PREVIOUSLY
- Assessment Strategies. **Authored by**: Boundless. **Project**: Boundless Education. **License**: *CC BY-SA: Attribution-ShareAlike*

Return to Table of Contents

Formative Assessment

LAST UPDATED: 04.29.14

Formative assessment refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or course. Formative assessments help teachers identify concepts that students are struggling to understand, skills they are having difficulty acquiring, or learning standards they have not yet achieved so that adjustments can be made to lessons, instructional techniques, and academic support.

The general goal of formative assessment is to collect detailed information that can be used to improve instruction and student learning *while it's happening*. What makes an assessment "formative" is not the design of a test, technique, or self-evaluation, per se, but the way it is used—i.e., to inform in-process teaching and learning modifications.

> Formative assessments are commonly contrasted with summative assessments, which are used to evaluate student learning progress and achievement at the conclusion of a specific instructional period—usually at the end of a project, unit, course, semester, program, or school year. In other words, formative assessments are for learning, while summative assessments are *of* learning. Or as assessment expert Paul Black put it, "When the cook tastes the soup, that's formative assessment. When the customer tastes the soup, that's summative assessment." It should be noted, however, that the distinction between formative and summative is often fuzzy in practice, and educators may hold divergent interpretations of and opinions on the subject.

Many educators and experts believe that formative assessment is an integral part of effective teaching. In contrast with most summative assessments, which are deliberately set apart from instruction, formative assessments are integrated into the teaching and learning process. For example, a formative-assessment technique could be as simple as a teacher asking students to raise their hands if they feel they have understood a newly introduced concept, or it could be as sophisticated as having students complete a self-assessment of their own writing (typically using a rubric outlining the criteria) that the teacher then reviews and comments on. While formative assessments help teachers identify learning needs and problems, in many cases the assessments also help students develop a stronger understanding of their own academic strengths and weaknesses. When students know what they do well and what they need to work harder on, it can help them take greater responsibility over their own learning and academic progress.

While the same assessment technique or process could, in theory, be used for either formative or summative purposes, many summative assessments are unsuitable for formative purposes because they do not provide useful feedback. For example, standardized-test scores may not be available to teachers for months after their students take the test (so the results cannot be used to modify lessons or teaching and better prepare students), or the assessments may not be specific or fine-grained enough to give teachers and students the detailed information they need to improve.

The following are a few representative examples of formative assessments:

- Questions that teachers pose to individual students and groups of students during the learning process to determine what specific concepts or skills they may be having trouble with. A wide variety of intentional questioning strategies may be employed, such as phrasing questions in specific ways to elicit more useful responses.
- Specific, detailed, and constructive feedback that teachers provide on student work, such as journal entries, essays, worksheets, research papers, projects, ungraded quizzes, lab results, or works of art, design, and performance. The feedback may be used to revise or improve a work product, for example.
- "Exit slips" or "exit tickets" that quickly collect student responses to a teacher's questions at the end of a lesson or class period. Based on what the responses indicate, the teacher can then modify the next lesson to address concepts that students have failed to comprehend or skills they may be struggling with. "Admit slips" are a similar strategy used at the beginning of a class or lesson to determine what students have retained from previous learning experiences.
- Self-assessments that ask students to think about their own learning process, to reflect on what they do well or struggle with, and to articulate what they have learned or still need to learn to meet course expectations or learning standards.
- Peer assessments that allow students to use one another as learning resources. For example, "workshopping" a piece of writing with classmates is one common form of peer assessment, particularly if students follow a rubric or guidelines provided by a teacher.

In addition to the reasons addressed above, educators may also use formative assessment to:

- Refocus students on the learning process and its intrinsic value, rather than on grades or extrinsic rewards.
- Encourage students to build on their strengths rather than fixate or dwell on their deficits. (For a related discussion, see growth mindset.)
- Help students become more aware of their learning needs, strengths, and interests so they can take greater responsibility over their own educational growth. For example, students may learn how to self-assess their own progress and self-regulate their behaviors.
- Give students more detailed, precise, and useful information. Because grades and test scores only provide a general impression of academic achievement, usually at the completion of an instructional period, formative feedback can help to clarify and calibrate learning expectations for both students and parents. Students gain a clearer understanding of what is expected of them, and parents have more detailed information they can use to more effectively support their child's education.
- Raise or accelerate the educational achievement of all students, while also reducing learning gaps and achievement gaps.

Reform

While the formative-assessment concept has only existed since the 1960s, educators have arguably been using "formative assessments" in various forms since the invention of teaching. As an intentional school-improvement strategy, however, formative assessment has received growing attention from educators and researchers in recent decades. In fact, it is now widely considered to be one of the more effective instructional strategies used by teachers, and there is a growing body of literature and academic research on the topic.

Schools are now more likely to encourage or require teachers to use formative-assessment strategies in the classroom, and there are a growing number of professional-development opportunities available to educators on the subject. Formative assessments are also integral components of personalized learning and other educational strategies designed to tailor lessons and instruction to the distinct learning needs and interests of individual students.

Debate

While there is relatively little disagreement in the education community about the utility of formative assessment, debates or disagreements may stem from differing interpretations of the term. For example, some educators believe the term is loosely applied to forms of assessment that are not "truly" formative, while others believe that formative assessment is rarely used appropriately or effectively in the classroom.

Another common debate is whether formative assessments can or should be graded. Many educators contend that formative assessments can only be considered truly formative when they are ungraded and used exclusively to improve student learning. If grades are assigned to a quiz, test, project, or other work product, the reasoning goes, they become de facto summative assessments—i.e., the act of assigning a grade turns the assessment into a performance evaluation that is documented in a student's academic record, as opposed to a diagnostic strategy used to improve student understanding and preparation before they are given a graded test or assignment.

Some educators also make a distinction between "pure" formative assessments—those that are used on a daily basis by teachers while they are instructing students—and "interim" or "benchmark" assessments, which are typically periodic or quarterly assessments used to determine where students are in their learning progress or whether they are on track to meeting expected learning standards. While some educators may argue that any assessment method that is used diagnostically could be considered formative, including interim assessments, others contend that these two forms of assessment should remain distinct, given that different strategies, techniques, and professional development may be required.

Some proponents of formative assessment also suspect that testing companies mislabel and market some interim standardized tests as "formative" to capitalize on and profit from the popularity of the idea. Some observers express skepticism that commercial or prepackaged products can be authentically formative, arguing that formative assessment is a sophisticated instructional technique, and to do it well requires both a first-hand understanding of the students being assessed and sufficient training and professional development.

Summative Assessment

LAST UPDATED: 08.29.13

Summative assessments are used to evaluate student learning, skill acquisition, and academic achievement at the conclusion of a defined instructional period—typically at the end of a project, unit, course, semester, program, or school year. Generally speaking, summative assessments are defined by three major criteria:

- The tests, assignments, or projects are used to determine whether students have learned what they were expected to learn. In other words, what makes an assessment "summative" is not the design of the test, assignment, or self-evaluation, per se, but the way it is used—i.e., to determine whether and to what degree students have learned the material they have been taught.
- Summative assessments are given at the conclusion of a specific instructional period, and therefore they are generally evaluative, rather than diagnostic—i.e., they are more appropriately used to determine learning progress and achievement, evaluate the effectiveness of educational programs, measure progress toward improvement goals, or make course-placement decisions, among other possible applications.
- Summative-assessment results are often recorded as scores or grades that are then factored into a student's permanent academic record, whether they end up as letter grades on a report card or test scores used in the college-admissions process. While summative assessments are typically a major component of the grading process in most districts, schools, and courses, not all assessments considered to be summative are graded.

> Summative assessments are commonly contrasted with formative assessments, which collect detailed information that educators can use to improve instruction and student learning while it's happening. In other words, formative assessments are often said to be *for* learning, while summative assessments are *of* learning. Or as assessment expert Paul Black put it, "When the cook tastes the soup, that's formative assessment. When the customer tastes the soup, that's summative assessment." It should be noted, however, that the distinction between *formative* and *summative* is often fuzzy in practice, and educators may have divergent interpretations and opinions on the subject.

Some of the most well-known and widely discussed examples of summative assessments are the standardized tests administered by states and testing organizations, usually in math, reading, writing, and science. Other examples of summative assessments include:

- End-of-unit or chapter tests.
- End-of-term or semester tests.
- Standardized tests that are used to for the purposes of school accountability, college admissions (e.g., the SAT or ACT), or end-of-course evaluation (e.g., Advanced Placement or International Baccalaureate exams).
- Culminating demonstrations of learning or other forms of "performance assessment," such as portfolios of student work that are collected over time and evaluated by teachers or capstone projects that students work on over extended periods of time and that they present and defend at the conclusion of a school year or their high school education.

While most summative assessments are given at the conclusion of an instructional period, some summative assessments can still be used diagnostically. For example, the growing availability of student data, made possible by online grading systems and databases, can give teachers access to assessment results from previous years or other courses. By reviewing this data, teachers may be able to identify students more likely to struggle academically in certain subject areas or with certain concepts. In addition, students may be allowed to take some summative tests multiple times, and teachers might use the results to help prepare students for future administrations of the test.

It should also be noted that districts and schools may use "interim" or "benchmark" tests to monitor the academic progress of students and determine whether they are on track to mastering the material that will be evaluated on end-of-course tests or standardized tests. Some educators consider interim tests to be formative, since they are often used diagnostically to inform instructional modifications, but others may consider them to be summative. There is ongoing debate in the education community about this distinction, and interim assessments may defined differently from place to place. See formative assessment for a more detailed discussion.

Reform

While educators have arguably been using "summative assessments" in various forms since the invention of schools and teaching, summative assessments have in recent decades become components of larger school-improvement efforts. As they always have, summative assessments can help teachers determine whether students are making adequate academic progress or meeting expected learning standards, and results may be used to inform modifications to instructional techniques, lesson designs, or teaching materials the next time a course, unit, or lesson is taught. Yet perhaps the biggest changes in the use of summative assessments have resulted from state and federal policies aimed at improving public education—specifically, standardized high-stakes tests used to make important decisions about schools, teachers, and students.

Debate

While there is little disagreement among educators about the need for or utility of summative assessments, debates and disagreements tend to center on issues of fairness and effectiveness, especially when summative-assessment results are used for high-stakes purposes. In these cases, educators, experts, reformers, policy makers, and others may debate whether assessments are being designed and used appropriately, or whether high-stakes tests are either beneficial or harmful to the educational process. For more detailed discussions of these issues, see high-stakes test, measurement error, test accommodations, test bias, score inflation, standardized test, and value-added measures.

MODULE 4: What Teaching Strategies Are Available?

Cooperative Learning

Group work: Using cooperative learning groups effectively

By Cynthia J. Brame, Ph.D., CFT Assistant Director and Rachel Biel, CFT undergraduate intern
Vanderbilt University

Many instructors from disciplines across the university use group work to enhance their students' learning. Whether the goal is to increase student understanding of content, to build particular transferable skills, or some combination of the two, instructors often turn to small group work to capitalize on the benefits of peer-to-peer instruction. This type of group work is formally termed cooperative learning, and is defined as the instructional use of small groups to promote students working together to maximize their own and each other's learning (Johnson, et al., 2008).

Cooperative learning is characterized by positive interdependence, where students perceive that better performance by individuals produces better performance by the entire group (Johnson, et al., 2014). It can be formal or informal, but often involves specific instructor intervention to maximize student interaction and learning. It is infinitely adaptable, working in small and large classes and across disciplines, and can be one of the most effective teaching approaches available to college instructors.

- What can it look like?

Informal cooperative learning groups

In informal cooperative learning, small, temporary, ad-hoc groups of two to four students work together for brief periods in a class, typically up to one class period, to answer questions or respond to prompts posed by the instructor.

**ADDITIONAL EXAMPLES OF WAYS TO STRUCTURE INFORMAL GROUP WORK**

Think-pair-share

The instructor asks a discussion question. Students are instructed to think or write about an answer to the question before turning to a peer to discuss their responses. Groups then share their responses with the class.

THINK-PAIR-SHARE

Round 1 – Think
Have students think or write about a discussion question.

1 2
3 4
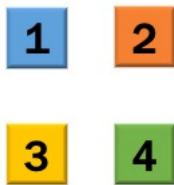
Round 2 – Pair
Allow students to turn to a partner and discuss their responses.

1 2
3 4

Round 3 – Share
Start a group discussion by having each pair share their responses with the class.

1 2
3 4

Vanderbilt University Center for Teaching

Think-pair-share developed by Lyman (1981)

Peer Instruction

This modification of the think-pair-share involves personal responses devices (e.g. clickers). The question posted is typically a conceptually based multiple-choice question. Students think about their answer and vote on a response before turning to a neighbor to discuss. Students can change their answers after discussion, and "sharing" is accomplished by the instructor revealing the graph of student response and using this as a stimulus for large class discussion. This approach is particularly well-adapted for large classes.

PEER INSTRUCTION

Question
Post a conceptually based multiple-choice question.

Your sister calls to say she's having twins. Which of the following is more likely? (Assume she's not having identical twins.)
A. Twin boys
B. Twin girls
C. One boy, one girl
D. All are equally likely

Source: derekbruff.org/?p=1938

Individual Responses and Discussion
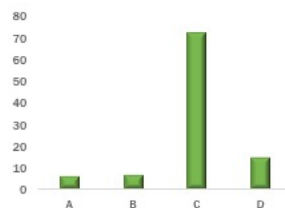Have students answer with a personal response devices (e.g. clickers) then turn to a neighbor and discuss.
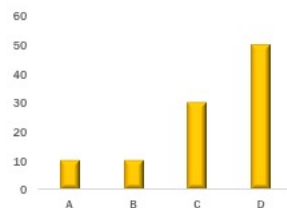
Responses Before Discussion

Re-voting
Allow students to change their answers after discussion. Display responses and use as stimulus for class discussion.

Responses After Discussion

Vanderbilt University Center for Teaching

Peer instruction developed by Mazure (1990)

Jigsaw

In this approach, groups of students work in a team of four to become experts on one segment of new material, while other "expert teams" in the class work on other segments of new material. The class then rearranges, forming new groups that have one member from each expert team. The members of the new team then take turns teaching each other the material on which they are experts.

Formal cooperative learning groups
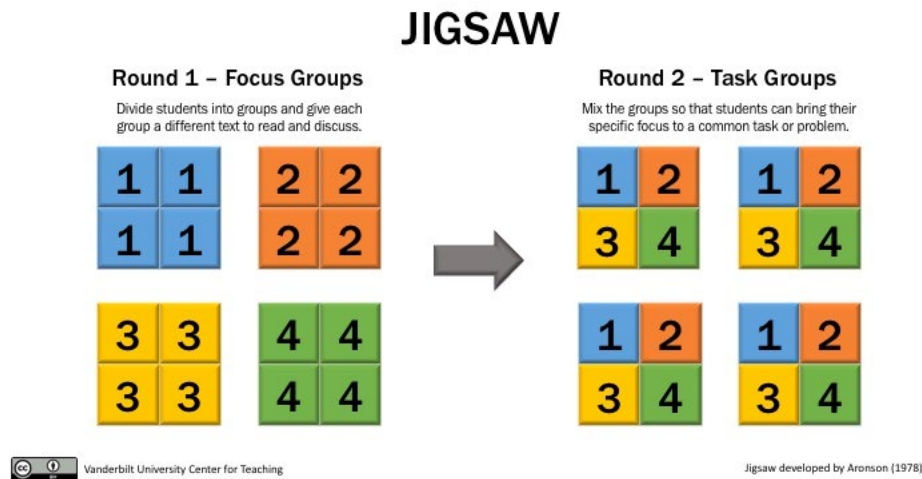
Formal cooperative learning groups

In formal cooperative learning students work together for one or more class periods to complete a joint task or assignment (Johnson et al., 2014). There are several features that can help these groups work well:

- The instructor defines the learning objectives for the activity and assigns students to groups.
- The groups are typically heterogeneous, with particular attention to the skills that are needed for success in the task.
- Within the groups, students may be assigned specific roles, with the instructor communicating the criteria for success and the types of social skills that will be needed.
- Importantly, the instructor continues to play an active role during the groups' work, monitoring the work and evaluating group and individual performance.
- Instructors also encourage groups to reflect on their interactions to identify potential improvements for future group work.

This video shows an example of formal cooperative learning groups in David Matthes' class at the University of Minnesota:

There are many more specific types of group work that fall under the general descriptions given here, including team-based learning, problem-based learning, and process-oriented guided inquiry learning.

- What's the theoretical underpinning?

The use of cooperative learning groups in instruction is based on the principle of constructivism, with particular attention to the contribution that social interaction can make. In essence, constructivism rests on the idea that individuals learn through building their own knowledge, connecting new ideas and experiences to existing knowledge and experiences to form new or enhanced understanding (Bransford, et al., 1999). The consideration of the role that groups can play in this process is based in social interdependence theory, which grew out of Kurt Koffka's and Kurt Lewin's identification of groups as dynamic entities that could exhibit varied interdependence among members, with group members motivated to achieve common goals. Morton Deutsch conceptualized varied types of interdependence, with positive correlation among group members' goal achievements promoting cooperation.

Lev Vygotsky extended this work by examining the relationship between cognitive processes and social activities, developing the sociocultural theory of development. The sociocultural theory of development suggests that learning takes place when students solve problems beyond their current developmental level with the support of their instructor or their peers. Thus both the idea of a zone of proximal development, supported by positive group interdependence, is the basis of cooperative learning (Davidson and Major, 2014; Johnson, et al., 2014).

Cooperative learning follows this idea as groups work together to learn or solve a problem, with each individual responsible for understanding all aspects. The small groups are essential to this process because students are able to both be heard and to hear their peers, while in a traditional classroom setting students may spend more time listening to what the instructor says.

Cooperative learning uses both goal interdependence and resource interdependence to ensure interaction and communication among group members. Changing the role of the instructor from lecturing to facilitating the groups helps foster this social environment for students to learn through interaction.

- Is there evidence that it works?

David Johnson, Roger Johnson, and Karl Smith performed a meta-analysis of 168 studies comparing cooperative learning to competitive learning and individualistic learning in college students (Johnson et al., 2006). They found that cooperative learning produced greater academic achievement than both

competitive learning and individualistic learning across the studies, exhibiting a mean weighted effect size of 0.54 when comparing cooperation and competition and 0.51 when comparing cooperation and individualistic learning. In essence, these results indicate that cooperative learning increases student academic performance by approximately one-half of a standard deviation when compared to non-cooperative learning models, an effect that is considered moderate. Importantly, the academic achievement measures were defined in each study, and ranged from lower-level cognitive tasks (e.g., knowledge acquisition and retention) to higher level cognitive activity (e.g., creative problem solving), and from verbal tasks to mathematical tasks to procedural tasks. The meta-analysis also showed substantial effects on other metrics, including self-esteem and positive attitudes about learning. George Kuh and colleagues also conclude that cooperative group learning promotes student engagement and academic performance (Kuh et al., 2007).

Springer, Stanne, and Donovan (1999) confirmed these results in their meta-analysis of 39 studies in university STEM classrooms. They found that students who participated in various types of small-group learning, ranging from extended formal interactions to brief informal interactions, had greater academic achievement, exhibited more favorable attitudes towards learning, and had increased persistence through STEM courses than students who did not participate in STEM small-group learning.

The box below summarizes three individual studies examining the effects of cooperative learning groups.

Dees (1991) determined the effects of cooperative learning on mathematical problem solving ability by comparing students in four sections of a laboratory portion of a remedial algebra and geometry course at a commuter university. Students who participated in cooperative learning had significantly better improvements in their ability to solve algebra word problems and write geometry proofs.

Jones and Brickner (1996) separated undergraduate students in a basic mechanics course at Purdue University into two groups: cooperative learning and traditional learning. The students in the cooperative learning condition took in-class group quizzes, while the traditional learning students took the quizzes on their own. Students in the cooperative learning groups showed significant improvements in their quiz scores and expressed more positive comments towards the course.

Smith, Hinckley, and Volk (1991) compared exam scores from students participating in an undergraduate chemistry lab using traditional methods and students taught using a cooperative method. Students in the cooperative method scored significantly higher on their exams than students taught using traditional methods.

What are approaches that can help make group work effective?

Preparation

Articulate your goals for the group work, including both the academic objectives you want the students to achieve and the social skills you want them to develop.

Determine the group conformation that will help meet your goals.
- In informal group learning, groups often form ad hoc from near neighbors in a class.
- In formal group learning, it is helpful for the instructor to form groups that are heterogeneous with regard to particular skills or abilities relevant to group tasks. For example, groups may be heterogeneous with regard to academic skill in the discipline or with regard to other skills related to the group task (e.g., design capabilities, programming skills, writing skills, organizational skills) (Johnson et al, 2006).
- Groups from 2-6 are generally recommended, with groups that consist of three members exhibiting the best performance in some problem-solving tasks (Johnson et al., 2006; Heller and Hollabaugh, 1992).
- To avoid common problems in group work, such as dominance by a single student or conflict avoidance, it can be useful to assign roles to group members (e.g., manager, skeptic, educator, conciliator) and to rotate them on a regular basis (Heller and Hollabaugh, 1992). Assigning these roles is not necessary in well-functioning groups, but can be useful for students who are unfamiliar with or unskilled at group work.

Choose an assessment method that will promote positive group interdependence as well as individual accountability.

- In team-based learning, two approaches promote positive interdependence and individual accountability. First, students take an individual readiness assessment test, and then immediately take the same test again as a group. Their grade is a composite of the two scores. Second, students complete a group project together, and receive a group score on the project. They also, however, distribute points among their group partners, allowing student assessment of members' contributions to contribute to the final score.
- Heller and Hollabaugh (1992) describe an approach in which they incorporated group problem-solving into a class. Students regularly solved problems in small groups, turning in a single solution. In addition, tests were structured such that 25% of the points derived from a group problem, where only those individuals who attended the group problem-solving sessions could participate in the group test problem. This approach can help prevent the "free rider" problem that can plague group work.
- The University of New South Wales describes a variety of ways to assess group work, ranging from shared group grades, to grades that are averages of individual grades, to strictly individual grades, to a combination of these. They also suggest ways to assess not only the product of the group work but also the process. Again, having a portion of a grade that derives from individual contribution helps combat the free rider problem.

Helping groups get started

Explain the group's task, including your goals for their academic achievement and social interaction.

Explain how the task involves both positive interdependence and individual accountability, and how you will be assessing each.

Assign group roles or give groups prompts to help them articulate effective ways for interaction. The University of New South Wales provides a valuable set of tools to help groups establish good practices when first meeting. The site also provides some exercises for building group dynamics; these may be particularly valuable for groups that will be working on larger projects.

Monitoring group work

Regularly observe group interactions and progress, either by circulating during group work, collecting in-process documents, or both. When you observe problems, intervene to help students move forward on the task and work together effectively. The University of New South Wales provides handouts that instructors can use to promote effective group interactions, such as a handout to help students listen reflectively or give constructive feedback, or to help groups identify particular problems that they may be encountering.

Assessing and reflecting

In addition to providing feedback on group and individual performance (link to preparation section above), it is also useful to provide a structure for groups to reflect on what worked well in their group and what could be improved. Graham Gibbs (1994) suggests using the checklists shown below.

Planning ahead: *What can I do better next time?*
(Source: Gibbs, G. (1994) Learning in Teams: A Student Manual. Oxford: Oxford Brooks University.)

Last time

- What I liked most about the group was...
- What I liked least about the group was...
- The most effective things about the way the group worked was...
- The least effective things about the way the group worked was...
- The things I did that helped the group most were...
- The things I did that helped the group least were...

Next time

- The types of people I'd like to work with are...
- The roles I'd like to play in the group are...
- The exercises I'd like the group to go through are...
- The working methods I'd like to use are...
- The way I'd like us to run our meeting is...

The University of New South Wales provides other reflective activities that may help students identify effective group practices and avoid ineffective practices in future cooperative learning experiences.

References

Bransford, J.D., Brown, A.L., and Cocking, R.R. (Eds.) (1999). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academy Press.

Bruffee, K. A. (1993). *Collaborative learning: Higher education, interdependence, and the authority of knowledge.* Baltimore, MD: Johns Hopkins University Press.

Cabrera, A. F., Crissman, J. L., Bernal, E. M., Nora, A., Terenzini, P. T., & Pascarella, E. T. (2002). Collaborative learning: Its impact on college students' development and diversity. *Journal of College Student Development, 43*(1), 20-34.

Davidson, N., & Major, C. H. (2014). Boundary crossing: Cooperative learning, collaborative learning, and problem-based learning. *Journal on Excellence in College Teaching, 25* (3&4), 7-55.

Dees, R. L. (1991). The role of cooperative leaning in increasing problem-solving ability in a college remedial course. *Journal for Research in Mathematics Education, 22*(5), 409-21.

Gokhale, A. A. (1995). Collaborative Learning enhances critical thinking. *Journal of Technology Education, 7*(1).

Heller, P., and Hollabaugh, M. (1992) Teaching problem solving through cooperative grouping. Part 2: Designing problems and structuring groups. American Journal of Physics 60, 637-644.

Johnson, D.W., Johnson, R.T., and Smith, K.A. (2006). Active learning: Cooperation in the university classroom (3rd edition). Edina, MN: Interaction.

Johnson, D.W., Johnson, R.T., and Holubec, E.J. (2008). Cooperation in the classroom (8th edition). Edina, MN: Interaction.

Johnson, D.W., Johnson, R.T., and Smith, K.A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. Journl on Excellence in College Teaching 25, 85-118.

Jones, D. J., & Brickner, D. (1996). Implementation of cooperative learning in a large-enrollment basic mechanics course. *American Society for Engineering Education Annual Conference Proceedings.*

Kuh, G.D., Kinzie, J., Buckley, J., Bridges, B., and Hayek, J.C. (2007). Piecing together the student success puzzle: Research, propositions, and recommendations (ASHE Higher Education Report, No. 32). San Francisco, CA: Jossey-Bass.

Love, A. G., Dietrich, A., Fitzgerald, J., & Gordon, D. (2014). Integrating collaborative learning inside and outside the classroom. Journal on Excellence in College Teaching, 25(3&4), 177-196.

Smith, M. E., Hinckley, C. C., & Volk, G. L. (1991). Cooperative learning in the undergraduate laboratory. *Journal of Chemical Education 68*(5), 413-415.

Springer, L., Stanne, M. E., & Donovan, S. S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Review of Educational Research, 96*(1), 21-51.

Uribe, D., Klein, J. D., & Sullivan, H. (2003). The effect of computer-mediated collaborative learning on solving ill-defined problems. *Educational Technology Research and Development, 51*(1), 5-19.

Vygotsky, L. S. (1962). *Thought and Language.* Cambridge, MA: MIT Press.

Vygotsky, L. S. (1978). *Mind in society.* Cambridge, MA: Harvard University Press.

Return to Table of Contents

Problem-based Learning

The following section summarizes, paraphrases, and uses quotes from this article:
Savery, J. R. (2006). Overview of Problem-based Learning: Definitions and Distinctions. *Interdisciplinary Journal of Problem-Based Learning, 1*(1).
Available at: http://dx.doi.org/10.7771/1541-5015.1002

KEY POINTS

- Problem-based learning is a pedagogical method in which students working as a team to solve complicated, ill-structured problems rooted in the real world.
- The role of the teacher is that of a manager and a facilitator (this approach is student-centered).
- The teacher must consider the students ability to work collaboratively, be self directed, and to think critically (and be prepared to teach these skills during the learning experience).
- Proponents of Problem-based learning point to research that shows it promotes critical thinking skills, communication skills, and cooperation.

DEFINITIONS

Problem-based learning: A pedagogical approach in which students work on a complicated, ill-structured problem or issue and attempt to develop solutions.

FULL TEXT

The core idea of problem-based learning is that real-world problems capture students' interest and provoke serious thinking as the students acquire and apply new knowledge in a problem-solving context. The teacher plays the role of facilitator, working with students to frame worthwhile questions, structuring meaningful tasks, coaching both knowledge development and social skills, and carefully assessing what students have learned from the experience. Typically, the instructor presents a problem to solve (e.g. addressing pollution in the school pond), and in some instances, students have a say in which problem they wish address. The problem must be complicated, and do not typically have one solution. This is a main reason problem-based learning is different than case-based and project-based learning.

With problem-based learning, students are in the driver's seat and take on a lot of responsibility. The approach is student-centered and they utilize the guidance of an instructor when necessary.

With problem-based learning, it is typical to have a lot of cross-curricular content. For example, if students are investigating pollution in the school pond, they will be looking at issues related to science, but will also bring in English skills when they attempt to communicate on the issue. Also, there may be some involvement of social studies if students investigate laws and regulations surrounding the issue. Math would play a part as well, since students could measure pollution levels and use math to calculate potential costs of implementing a solution.

To implement problem-based learning, it is important to understand the "soft-skills" students must possess. The ability to Communicate, think critically, compromise and collaborate are all essential skills

when it comes to problem-based learning. The teacher will need to understand this and will most likely need to spend time teaching and evaluating these skills. It is also important for students to evaluate themselves and their peers and be able to articulate what they have learned and defend the solutions they present. In addition, the instructor will need to anticipate when students will get stuck and what things students will need.

Things the Teacher Should Consider

What resources are available to students (e.g. subject experts, technology, books)?

What will the student produce at the end? How will they represent their learning?

What skills will students need to have in order to successfully work in groups?

How will students be assessed?

What roles will students have when they are working in groups?

What common questions will students ask?

Roles

When students use technology as a tool to communicate with others, they take on an active role vs. a passive role of transmitting the information by a teacher, a book, or broadcast. The student is constantly making choices on how to obtain, display, or manipulate information. Technology makes it possible for students to think actively about the choices they make and execute. Every student has the opportunity to get involved either individually or as a group.

Instructor role in Project Based Learning is that of a facilitator. They do not relinquish control of the collaborative classroom or student learning but rather develop an atmosphere of shared responsibility. The Instructor must structure the proposed question/issue so as to direct the student's learning toward content-based materials. The instructor must regulate student success with intermittent, transitional goals to ensure student projects remain focused and students have a deep understanding of the concepts being investigated. The students are held accountable to these goals through ongoing feedback and assessments. The ongoing assessment and feedback are essential to ensure the student stays within the scope of the driving question and the core standards the project is trying to unpack. According to Andrew Miller of the Buck Institute of Education, formative assessments are used "in order to be transparent to parents and students, you need to be able to track and monitor ongoing formative assessments, that show work toward that standard. " The instructor uses these assessments to guide the inquiry based learning process and ensure the students have learned the required content. Once the project is finished, the instructor evaluates the finished product and learning that it demonstrates

Outcomes

Students learn to work in a community, thereby taking on social responsibilities. Some of the most significant contributions of problem-based learning have been in schools languishing in poverty stricken areas; when students take responsibility, or ownership, for their learning, their self-esteem soars. It also helps to create better work habits and attitudes toward learning. Although students do work in groups, they also become more independent because they are receiving little instruction from the teacher. With

Problem-based learning students also learn skills that are essential in higher education. The students learn more than just finding answers, Problem-based learning allows them to expand their minds and think beyond what they normally would. Students have to find answers to questions and combine them using critically thinking skills to come up with answers.

Opponents of Project Based Learning warn against negative outcomes primarily in projects that become unfocused and tangential arguing that underdeveloped lessons can result in the wasting of precious class time. No one teaching method has been proven more effective than another. Opponents suggest that narratives and presentation of anecdotal evidence included in lecture-style instruction can convey the same knowledge in less class time. Given that disadvantaged students generally have fewer opportunities to learn academic content outside of school, wasted class time due to an unfocused lesson presents a particular problem. Instructors can be deluded into thinking that as long as a student is engaged and doing, they are learning. Ultimately it is cognitive activity that determines the success of a lesson. If the project does not remain on task and content driven the student will not be successful in learning the material. The lesson will be ineffective. A source of difficulty for teachers includes, "Keeping these complex projects on track while attending to students' individual learning needs requires artful teaching, as well as industrial-strength project management. " Like any approach, Project Based Learning is only beneficial when applied successfully.

Project-based learning

- o Project-based learning is a pedagogical strategy in which students produce a product related to a topic.
- o The teacher sets the goals for the learner, and then allows the learner to explore the topic and create their project.
- o The teacher is a facilitator in this student-centered approach and provides scaffolding and guidance when necessary.
- o Proponents of project-based learning cite numerous benefits of these strategies including a greater depth of understanding of concepts, broader knowledge base, improved communication and interpersonal/social skills, enhanced leadership skills, increased creativity, and improved writing skills.
- o When students use technology as a tool to communicate with others, they take on an active role vs. a passive role of transmitting the information by a teacher, a book, or broadcast. The student is constantly making choices on how to obtain, display, or manipulate information.

DEFINITION

Project-based learning: Students independently gather resources and information to create a project and/or product.

FULL TEXT

Project-based learning, is a pedagogical method in which students are directed to create an artifact (or artifacts) to present their gained knowledge. Artifacts may include a variety of media such as writings, art, drawings, three-dimensional representations, videos, photography, or technology-based presentations. The basis of PBL lies in the authenticity or real-life application of the research and is considered an alternative to paper-based, rote memorization, teacher-led classrooms. Proponents of project-based learning cite numerous benefits to the implementation of these strategies in the classroom including a greater depth of understanding of concepts, broader knowledge base, improved communication and interpersonal/social skills, enhanced leadership skills, increased creativity, and improved writing skills.

John Dewey initially promoted the idea of "learning by doing. " Educational research has advanced this idea of teaching and learning into a methodology known as "project-based learning. " Blumenfeld & Krajcik (2006) cite studies by Marx et al., 2004, Rivet & Krajcki, 2004 and William & Linn, 2003 state that "research has demonstrated that students in project-based learning classrooms get higher scores than students in traditional classroom. "

Project-based learning is not without its opponents, however; in *Peer Evaluation in Blended Team Project-Based Learning: What Do Students Find Important?* Hye-Jung & Cheolil (2012) describe social loafing as a negative aspect of collaborative learning. Social loafing may include insufficient performances by some team members as well as a lowering of expected standards of performance by the group as a whole to maintain congeniality amongst members. These authors said that because

teachers tend to grade the finished product only, the social dynamics of the assignment may escape the teacher's notice.

Elements

The core idea of project-based or inquiry based learning is that real-world problems capture students' interest and provoke serious thinking as the students acquire and apply new knowledge in a problem-solving context. The teacher plays the role of facilitator, working with students to frame worthwhile questions, structuring meaningful tasks, coaching both knowledge development and social skills, and carefully assessing what students have learned from the experience. Typical projects present a problem to solve (What is the best way to reduce the pollution in the schoolyard pond?) or a phenomenon to investigate (What causes rain?).

Examples

At the high school level, classroom activities may include making water purification systems, investigating service learning, or creating new bus routes. At the middle school level, activities may include researching trash statistics, documenting local history through interviews, or writing essays about a community scavenger hunt. Classes are designed to help diverse students become college and career ready after high school.

Roles

When students use technology as a tool to communicate with others, they take on an active role vs. a passive role of transmitting the information by a teacher, a book, or broadcast. The student is constantly making choices on how to obtain, display, or manipulate information. Technology makes it possible for students to think actively about the choices they make and execute. Every student has the opportunity to get involved either individually or as a group.

Instructor role in Project Based Learning is that of a facilitator. They do not relinquish control of the collaborative classroom or student learning but rather develop an atmosphere of shared responsibility. The Instructor must structure the proposed question/issue so as to direct the student's learning toward content-based materials. The instructor must regulate student success with intermittent, transitional goals to ensure student projects remain focused and students have a deep understanding of the concepts being investigated. The students are held accountable to these goals through ongoing feedback and assessments. The ongoing assessment and feedback are essential to ensure the student stays within the scope of the driving question and the core standards the project is trying to unpack. According to Andrew Miller of the Buck Institute of Education, formative assessments are used "in order to be transparent to parents and students, you need to be able to track and monitor ongoing formative assessments, that show work toward that standard. " The instructor uses these assessments to guide the inquiry based learning process and ensure the students have learned the required content. Once the project is finished, the instructor evaluates the finished product and learning that it demonstrates

Outcomes

Students learn to work in a community, thereby taking on social responsibilities. The most significant contributions of PBL have been in schools languishing in poverty stricken areas; when students take

responsibility, or ownership, for their learning, their self-esteem soars. It also helps to create better work habits and attitudes toward learning. Although students do work in groups, they also become more independent because they are receiving little instruction from the teacher. With Project-Based Learning students also learn skills that are essential in higher education. The students learn more than just finding answers, PBL allows them to expand their minds and think beyond what they normally would. Students have to find answers to questions and combine them using critically thinking skills to come up with answers.

Opponents of Project Based Learning warn against negative outcomes primarily in projects that become unfocused and tangential arguing that underdeveloped lessons can result in the wasting of precious class time. No one teaching method has been proven more effective than another. Opponents suggest that narratives and presentation of anecdotal evidence included in lecture-style instruction can convey the same knowledge in less class time. Given that disadvantaged students generally have fewer opportunities to learn academic content outside of school, wasted class time due to an unfocused lesson presents a particular problem. Instructors can be deluded into thinking that as long as a student is engaged and doing, they are learning. Ultimately it is cognitive activity that determines the success of a lesson. If the project does not remain on task and content driven the student will not be successful in learning the material. The lesson will be ineffective. A source of difficulty for teachers includes, "Keeping these complex projects on track while attending to students' individual learning needs requires artful teaching, as well as industrial-strength project management. " Like any approach, Project Based Learning is only beneficial when applied successfully.

Direct Instruction

In general usage, the term **direct instruction** refers to (1) instructional approaches that are structured, sequenced, and led by teachers, and/or (2) the presentation of academic content to students by teachers, such as in a lecture or demonstration. In other words, teachers are "directing" the instructional process or instruction is being "directed" at students.

While a classroom lecture is perhaps the image most commonly associated with direct instruction, the term encompasses a wide variety of fundamental teaching techniques and potential instructional scenarios. For example, presenting a video or film to students could be considered a form of direct instruction (even though the teacher is not actively instructing students, the content and presentation of material was determined by the teacher). Generally speaking, direct instruction may be the most common teaching approach in the United States, since teacher-designed and teacher-led instructional methods are widely used in American public schools. That said, it's important to note that teaching techniques such as direct instruction, differentiation, or scaffolding, to name just a few, are rarely mutually exclusive—direct instruction may be integrated with any number of other instructional approaches in a given course or lesson. For example, teachers may use direct instruction to prepare students for an activity in which the students work collaboratively on a group project with guidance and coaching from the teacher as needed (the group activity would not be considered a form of direct instruction). In addition, the basic techniques of direct instruction not only extend beyond lecturing, presenting, or demonstrating, but many are considered to be foundational to effective teaching. For example:

- Establishing learning objectives for lessons, activities, and projects, and then making sure that students have understood the goals.
- Purposefully organizing and sequencing a series of lessons, projects, and assignments that move students toward stronger understanding and the achievement of specific academic goals.
- Reviewing instructions for an activity or modeling a process—such as a scientific experiment—so that students know what they are expected to do.
- Providing students with clear explanations, descriptions, and illustrations of the knowledge and skills being taught.
- Asking questions to make sure that students have understood what has been taught.

It should be noted that the term direct instruction is used in various proprietary or trademarked instructional models that have been developed and promoted by educators, including—most prominently—Direct Instruction, created by Siegfried Engelmann and Wesley Becker, which is a "explicit, carefully sequenced and scripted model of instruction," according to the National Institute for Direct Instruction.

Debate

In recent decades, the concept of direct instruction has taken on negative associations among some educators. Because direct instruction is often associated with traditional lecture-style teaching to classrooms full of passive students obediently sitting in desks and taking notes, it may be considered outdated, pedantic, or insufficiently considerate of student learning needs by some educators and reformers.

That said, many of direct instruction's negative connotations likely result from either a limited definition of the concept or a misunderstanding of its techniques. For example, all teachers, by necessity, use some form of direct instruction in their teaching—i.e., preparing courses and lessons, presenting and demonstrating information, and providing clear explanations and illustrations of concepts are all essential, and to some degree unavoidable, teaching activities. Negative perceptions of the practice tend to arise when teachers rely too heavily upon direct instruction, or when they fail to use alternative techniques that may be better suited to the lesson at hand or that may improve student interest, engagement, and comprehension.

While a sustained forty-five-minute lecture may not be considered an effective teaching strategy by many educators, the alternative strategies they may advocate—such as personalized learning or project-based learning, to name just two options—will almost certainly require some level of direct instruction by teachers. In other words, teachers rarely use either direct instruction or some other teaching approach—in actual practice, diverse strategies are frequently blended together. For these reasons, negative perceptions of direct instruction likely result more from a widespread overreliance on the approach, and from the tendency to view it as an either/or option, rather than from its inherent value to the instructional process.

Direct Instruction
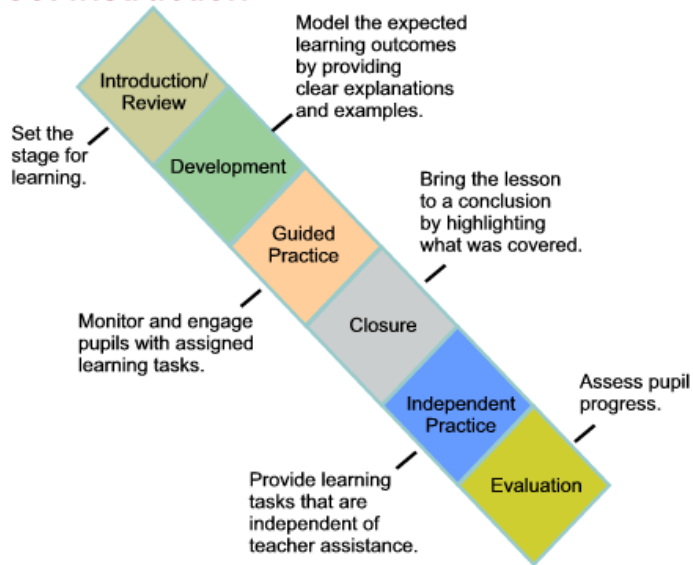
- Direct Instruction. **Authored by**: S. Abbott (Ed.). **Provided by**: Great Schools Partnership. **Project**: The Glossary of Education Reform. **License**: *CC BY-NC-SA: Attribution-NonCommercial-ShareAlike*
- Direct Instruction Graphic. **Authored by**: Bill Kerr. **Located at**: http://billkerr2.blogspot.com/2012/04/direct-instruction-observations-at.html. **License**: *CC0: No Rights Reserved*

Return to Table of Contents

Concept Attainment

We must learn to tailor our concepts to fit reality, instead of trying to stuff reality into our concepts.

Victor Daniels

About this teacher move

Concept Attainment is a constructivist approach to teaching and learning drawn from the work of Jerome Bruner (1956). In this instructional model students apply their prior understanding to determine the attributes of a concept through the processes of comparing and contrasting. This structured inquiry approach, gives students the opportunity to:

- distinguish between relevant and irrelevant information
- observe, classify, and hypothesize
- connect newly attained concepts with old information
- think inductively

The teacher's principal responsibilities are to provide examples, record student data, and ask probing questions. The principal goals of the concept attainment model are to enhance long-term learning and enable students to develop a habit of analysis through inductive reasoning.

Implementing this teacher move

1. Gather images, sounds, and words to use as exemplars.

2. Duplicate the Student Discovery Guide.

3. Obtain chart paper, markers, tape.

Managing this teacher move with students

A. **Stage One: Categorizing**

1. Post two pieces of chart paper or divide a marker board into two sections.

2. Label the charts or marker board sections as Positive Exemplars (Have the Attributes) and Negative Exemplars (Lack the Attributes).

3. Present several paired Exemplars (pictures, words, sounds, symbols, etc.) according to positive and negative categories. Begin the list with a paired example that has a High Attribute Value i.e., each member of the pair is strongly representative of that attribute. For example, if the concept was "sedentary", a sloth would have a level attribute value and a baby chimpanzee would score at a low value.

4. Working singly or in groups, students complete their Discovery Guides in which they attempt to determine common attributes by:

- Making comparisons within a single category

- Looking for contrasts between categories
- Answering focusing questions: What makes the items fit into that category? What prevents these items from being in the other category?

B. Stage Two: Building Concepts

1. Provide students with additional paired exemplars.

2. In the large group, students hypothesize about common attributes. The teacher charts student ideas.

3. Teacher presents a new, additional example to test students' hypothetical explanations.

· Ask students "Is this a positive or negative exemplar? Why?"

· Tabulate class data and confirm the example.

5. Students attempt to name the Category or teacher gives the category a name or label.

6. Students give additional examples of that concept.

C. Stage Three: Attaining Concepts

1. Students work in pairs to identify the Essential Attributes of the concept.

2. Student pairs prepare a final working description of the concept.

3. Students analyze and describe their thinking as they worked though the Concept Attainment processes.

D. Suggested Formative Assessments
1. Score the completed Student Discovery Guide.
2. Create a related concept map. See Add Visual Components for additional information.
3. Test for the ability to identify additional positive exemplars for the concept.

E. **Concept Attainment Glossary**

Attribute – a major feature or characteristic of something; e.g., robin - red breast.

Attribute value – the degree or strength to which the attribute is represented in the exemplar.

Category – a collection of examples that share attributes missing in the other exemplar list.

Concept – an idea, object, or event that can be given a name or label.

Data set – a large list of exemplars.

Essential attribute – the characteristic that is critical to understanding the concept under consideration.

Exemplars - subset of a collection of data presented as a pair.

Induction - process of reasoning that proceeds from the specific to the general.

Example Concept Formation Lesson

Nationalism: A Concept Formation Lesson

Grade Level: This lesson is designed primarily for 9th Grade World History classes, and incorporates the main learning objectives for the 9th Grade World History Curriculum in regards to the definition of nationalism and its role in modern society.

Topic: Critical examination of the concept of nationalism

Length: about 55 minutes

Instructional Model: The instructional model is a Concept Formation Lesson. This model is used to explain abstract ideas to students, providing them with case studies that typify the concept being studied rather than presenting them with a specific, yet hollow definition. Students are asked to examine teacher-provided case studies and look for similarities and differences among them, which they will then use to develop a definition and label of the concept. The student-established definition is employed to classify additional examples and non-examples. With this model, students must independently develop a definition of key ideas in order to gain a fuller and more lasting understanding of the concept. Students expand upon their critical thinking skills and gain an introduction to the content related to the concept.

Overview: Nationalism is a concept that is critical to studies of 20th century world history given its pivotal function as a motivating factor in international relations. Despite its important role, nationalism is, in some ways, difficult to define; its meaning evolves depending on the context in which it is being applied. Certain qualities are true of all forms of nationalism: extreme devotion to one's nation, a desire for national independence and advancement, and a belief in the supremacy of one's own nation. However, its exact characteristics change with each specific circumstance; nationalism during the Italian Risorgimento did not look exactly the same as German nationalism under Bismarck. Nationalism can also be classified according to different ideas of "nations." Given that "nations" can be religious, ideological, geographic, cultural, or ethnic, it is important that students understand the basic principles of nationalism so they can clearly identify it in all of its forms. Students will look at a series of case studies, some of which will be historical; others will pertain to modern society. Through these studies students will see the enormous impact that nationalism has had historically and its ability to propel nations to drastic actions. This lesson will provide students with an understanding for the both basic principles of nationalism and the critical role that it has played in society.

Rationale: Nationalism is concept that students must understand in order to progress in their studies of modern world history. The interplay between and among nations during the 20th century can largely be defined by their reactions to nationalistic developments and ideologies. Since nationalism is such an important concept to understand, it lends itself well to a concept form lesson. Students must have a working understanding of nationalism in order to comprehend the recent interactions among nations. Further, the specific expression of nationalism is different with each situation, so it is important that students understand its critical attributes in order to later apply their definition and identify cases of nationalism in their studies.

<u>Objectives</u>

- After the concept formation lesson students will understand the critical attributes of nationalism, demonstrated by their ability to create their own definition of the concept, incorporating all four of the critical attributes.
- SOL Objectives: WWII.7C, WWII.7D, WWII.8E
- NCSS Standards: 1.5 (individuals, groups, and institutions, 1.6 (Power, Authority, Governance), 1.9 (Global Connections)
- After the concept formation lesson, students will employ their definition of nationalism by correctly classifying 4 teacher-prepared cases as either examples or non-examples.
- After the lesson, students will be able to analyze case studies for similarities and differences when given a description of a situation.
- Students will demonstrate their understanding of nationalism by independently completing an in-class assignment in which they must use their definition of the concept to change a teacher-provided non-example into an accurate example of nationalism.
- Students will display their ability to utilize their definition and critical attributes by completing an at-home assignment in which they must identify an additional case of nationalism (or create their own case) and support their example by writing one to two paragraphs about how it meets all four of the critical attributes.

<u>Assessment</u>

- Assess students as they participate in the identification of similarities/differences and the establishment of the concept definition, listening to the quality of their contributions to both class discussion and partnered discussion. Contributions should be based on the examples and should demonstrate students' abilities to draw connections between the cases and accurately compare them. Notes will be taken on individual student participation which will be shared with students in private conferences at the conclusion of the lesson (or in the days following).
- After the concept has been identified and the critical attributes have been established, students will complete a worksheet in which they must identify 4 cases as examples or non-examples of nationalism. They will work in groups in order to complete the initial assignment but will then work independently to write a paragraph explaining why one non-example fails to meet the critical attributes and then changing it so that it would fit the definition. Paragraphs must address each of the critical attributes. Worksheets will be collected at the end of class and graded for completeness and will then be returned to students with comments on the quality of their work.
- Students will complete a homework writing assignment in which they must find an additional example of nationalism (or create their own) and then write a paragraph about the example which clarifies how it demonstrates the critical attributes. Students will receive credit for completing the assignment if they: (1) turn it in on time (2) find an appropriate example and (3) use at least two critical attributes to support their example.

<u>Content and Instructional Strategies</u>

The Concept Definition

- Critical Attributes:
  - Extreme devotion to one's nation
  - Belief in the supremacy or majesty of one's own nation and/or national heroes
  - Desire for national advancement
  - Willingness to pursue national independence
- Definition:
  - A feeling of extreme devotion to one's nation characterized by the belief in the supremacy of one's own nation, a desire for national advancement, and the willingness to pursue national independence.

Preparation

- Have desks set up in pairs of two so that students will have a partner with whom they can work on the project. Prior to class create heterogeneous pairs of students based on skill level. As students enter, tell them who they are partnered with and ask them to sit with their partner.
- Hand students the article on American patriotism and the first packet of worksheets as they enter the classroom. Ask them to sit down and begin reading the American Patriotism article silently.

Hook (8 minutes)

- After students arrive and sit down allow them time to read through the worksheet.
- After students finish reading, give them a few minutes to write down their reflections.
- Have students share their reflections with their partners
- Ask students if they would like to share anything that they discussed with their partner. Encourage students to share their thoughts and reactions.
- After the discussion, explain that this article relates to a concept that will be discussed for the remainder of the class. Clarify what a concept is and explain how the class will run, preparing students to begin looking at the examples.

Data-Retrieval Chart and Example Analysis (10 minutes)

- Have students turn to the "Examples of Concept" worksheet. Have students work with a partner to fill out the critical attributes chart (same partners as before). Explain that all of the worksheets and written work that students complete in class during this lesson will be collected at the end of class and evaluated for participation credit.
- As students are working on the chart, walk around the room and note student participation (frequency and quality).

Defining and Labeling the Concept (35 minutes)

- After students complete the "Examples of Concept" worksheet, instruct them to turn to the "Concept Formation Notes" worksheet and fill it out with their partner.
- Once students seem to have completed this worksheet, lead a class discussion about the similarities and differences that they identified.
- First go around the room and ask that each pair share a difference that they came up with, polling students to see if other groups came up with similar responses.

- After discussing the differences, turn to the similarities. Ask each group to share their best similarity, going around the room until all similarities have been identified. As students identify similarities list them on the board.
- Once all similarities have been listed, ask students to select which attributes they believe are most important. Tell students to list the class-determined critical attributes in the appropriate space on their worksheet.
- Ask students to work with their partners again to come up with a definition of the concept using the critical attributes.
- Ask students to share their definitions with the class.
- Ask students if they have an idea about the correct label of the concept. After students share their ideas, tell them that the real name of the concept is "Nationalism".
- Hand out the second worksheet package. Have students turn to the "Further Examples" worksheet. Ask students to continue working with their partners and identify the provided cases as either examples or non-examples. Go over the answers with the class by calling on student to share their responses and then seeing if the class as a whole agrees.
- Ask students to pick one non-example from the most recent worksheet and independently write a short paragraph explaining how it fails to meet the critical attributes, citing all of the applicable critical attributes.
- Once students finish writing, they should share their paragraph with their partner. At the end of class these papers and all other class work should be collected so that it can be evaluated and participation credit can be given.
- Before students leave ask them to look at the "Finding Examples" worksheet at the back of their packet. Explain the assignment to students so they understand that they must find an additional example of the concept (or create their own) and then write a paragraph or two explaining how their example fits the definition they created of nationalism. Much like the in-class paragraph, it should refer to all four attributes.

Resources

- Class set of copies of "Celebrating American Patriotism" article
- Class set of copies of the following worksheets put together in two groups:
    - "Examples of Concept" worksheet
    - "Concept Formation Notes" worksheet
    and
    - "Further Examples" worksheet
    - "Finding Examples" worksheet

Differentiation

For this lesson students are working in deliberately created heterogeneous pairs. Students of a high skill level are paired with students of lower skill levels. In this way, the students can assist each other as they work through the case studies. The case studies are written in clear language so that they are accessible to students at lower reading levels. The material in the case studies will be read individually and then discussed in pairs and as a class. This is beneficial because students who learn better when verbally receiving information will have an opportunity to really take something from this lesson as well as those

students who learn best from reading the material.

This lesson also offers students the chance to participate in multiple ways. By first having students discuss the information in pairs, they are forced to participate, but in a "low stakes" situation. Those students who do not care to share information in front of the whole class will have the chance to express their ideas without the pressure of speaking in front of everyone. For those who enjoy class discussion, there are opportunities for large group dialog. Further, for those students who really do not feel comfortable sharing their ideas verbally, there are written assignments which allow them to demonstrate their knowledge without having to speak extensively.

Adaptations

This lesson could easily be modified to assist students with IEP's, 504 plans, and other special needs. Since all of the case studies have been teacher-created, the writing can be altered so that it is simpler for a struggling reader. The case studies could also be annotated for students who need a little more assistance accessing the texts. If reading is a severe challenge, the case studies could even be read aloud to a student. Further, pictorial or video sources could be provided if students really cannot comprehend a written text. If the case studies are too simple for students additional case studies could be prepared and handed out if students seem to move through the first examples too quickly so as to keep them engaged in the lesson.

Reflections

A possible problem that could arise from this lesson plan is that students might not be able to make the leap from their similarities to the critical attributes or might have difficulties forming their definitions from the critical attributes. The best way to avoid this problem is to be prepared with some leading questions that will help students find the correct information and elicit the desired responses. Additionally, the teacher could carefully direct the conversation as students are identifying similarities so as to be certain that students are headed on the right track. It is also possible that students may lose interest in the process of reading examples, identify similarities/differences, etc., which can at times be a little tedious. It is important that the teacher stay excited and positive about the material in order to increase student excitement. It would also be beneficial to stress to students the important role that the unidentified concept will play in their future learning.

Post-teaching

Overall I felt that the lesson went fairly well. Some of the students responded better than others to the lesson. I think that part of the problem with the specific execution of this lesson was that my CT spoke somewhat extensively about nationalism right before the lesson, so the student were a little confused about why they were "guessing" at a concept about which they had just learned. I think that the lesson did do an effective job of giving students examples of nationalism. They seemed to be interested in the cases that they looked at and were engaged in the actual material. They were able to fill out the chart without much difficulty, although it was evident that it was an easier task for some students than for others. They were given the option of working in groups with the person sitting next to each other, but

few took advantage of this. I think that in the future if I really want them to work together I would make more structured groups so it is clear to students that they are expected to work together. I also think that I would model the lesson a bit more before beginning so that students would have a better idea of what is expected of them. I was facing some time limits, so I think my directions were a little rushed and unclear. Also because of timing the lesson was divided by lunch. I think that in the future I would try to avoid this and do the lesson without interruption.

The lesson met a fair amount of PASS standards. I think that students were encouraged to participate in some higher order thinking as they worked through the examples and had to apply the critical attributes to other cases. In order to successfully do this they had to manipulate some of the information that they had acquired during the first portion of the lesson and then apply it. I feel as though many of the students were able to do this, although there were certainly some who could not. I think that some students were able to acquire deep knowledge of the nationalism concept, but others seemed to only gain "thin" knowledge. During the lesson some students were really getting into the discussion and seemed to be really analyzing the concept. They were able to find relationships between the examples and were adept at applying the concept to other examples.

I felt as though more substantive conversation could have been had. The students were really waiting for me to initiate dialog and I did not feel that we were having a conversation so much as they were responding to questions that I asked. There was some conversation, but I think that the sharing of ideas was limited. Some of the examples allowed for students to make connections to the world beyond the classroom because they were fairly contemporary in nature, but I think that the lesson could be altered to include more modern examples so that students could make additional real world connections. The lesson did not include ethical valuing. It was informative, but did not really require students to make value-based decisions. I think that there could have been more integration in the lesson as well. It would have been hard to have curricular and interdisciplinary integration, but I think that technology could perhaps be use to enhance examples by showing visual images. I think that the lesson contained a fair amount of integration of time and place with examples from many different times and places, but the connections between these examples could have been more explicit in order to enhance integration.

Resources

Connor, Todd. "Celebrating American Patriotism." FoxNews.com 8 September 2002.

17 October 2008 < http://www.foxnews.com/story/0,2933,62336,00.html>.

Miller, Sue, ed. World History, the Human Journey, Modern World. Austin: Holt, Reinhart, Winston, 2003.

"Palestinian Nationalism." Wikipedia, the Free Encyclopedia. 2008. 15 October 2008 <http://en.wikipedia.org/wiki/Palestinian_nationalism>.

Inquiry-Based Learning

Inquiry-based learning (also **enquiry-based learning** in British English) starts by posing questions, problems or scenarios—rather than simply presenting established facts or portraying a smooth path to knowledge. The process is often assisted by a facilitator. Inquirers will identify and research issues and questions to develop their knowledge or solutions. Inquiry-based learning is closely related to problem-based learning, and is generally used in small scale investigations and projects, as well as research. Inquiry-based instruction allows students to develop and practice critical thinking skills.

History

Inquiry-based learning is primarily a pedagogical method, developed during the discovery learning movement of the 1960s as a response to traditional forms of instruction – where people were required to memorize information from instructional materials. The philosophy of inquiry based learning finds its antecedents in constructivist learning theories, such as the work of Piaget, Dewey, Vygotsky, and Freire among others, and can be considered a constructivist philosophy. Generating information and making meaning of it based on personal or societal experience is referred to as constructivism. Dewey's experiential learning pedagogy (that is, learning through experiences) comprises the learner actively participating in personal or authentic experiences to make meaning from it. Inquiry can be conducted through experiential learning because inquiry values the same concepts, which include engaging with the content/material in questioning, as well as investigating and collaborating to make meaning. Vygotsky approached constructivism as learning from an experience that is influenced by society and the facilitator. The meaning constructed from an experience can be concluded as an individual or within a group.

In the 1960s Joseph Schwab called for inquiry to be divided into four distinct levels. This was later formalized by Marshall Herron in 1971, who developed the Herron Scale to evaluate the amount of inquiry within a particular lab exercise. Since then, there have been a number of revisions proposed and inquiry can take various forms. There is a spectrum of inquiry-based teaching methods available.

Characteristics

Specific learning processes that students engage in during inquiry-learning include:

- Creating questions of their own
- Obtaining supporting evidence to answer the question(s)
- Explaining the evidence collected
- Connecting the explanation to the knowledge obtained from the investigative process
- Creating an argument and justification for the explanation

Inquiry learning involves developing questions, making observations, doing research to find out what information is already recorded, developing methods for experiments, developing instruments for data collection, collecting, analyzing, and interpreting data, outlining possible explanations and creating predictions for future study.

Levels

There are many different explanations for inquiry teaching and learning and the various levels of inquiry that can exist within those contexts. The article titled *The Many Levels of Inquiry* by Heather Banchi and Randy Bell (2008) clearly outlines four levels of inquiry.

Level 1: Confirmation Inquiry

The teacher has taught a particular science theme or topic. The teacher then develops questions and a procedure that guides students through an activity where the results are already known. This method is great to reinforce concepts taught and to introduce students into learning to follow procedures, collect and record data correctly and to confirm and deepen understandings.

Level 2: Structured Inquiry

The teacher provides the initial question and an outline of the procedure. Students are to formulate explanations of their findings through evaluating and analyzing the data that they collect.

Level 3: Guided Inquiry

The teacher provides only the research question for the students. The students are responsible for designing and following their own procedures to test that question and then communicate their results and findings.

Level 4: Open/True Inquiry

Students formulate their own research question(s), design and follow through with a developed procedure, and communicate their findings and results. This type of inquiry is often seen in science fair contexts where students drive their own investigative questions.

Banchi and Bell (2008) explain that teachers should begin their inquiry instruction at the lower levels and work their way to open inquiry in order to effectively develop students' inquiry skills. Open inquiry activities are only successful if students are motivated by intrinsic interests and if they are equipped with the skills to conduct their own research study.

Continue reading this article on Wikipedia

Learning Cycle

It is not hard to learn more. What is hard, is to unlearn when you discover yourself wrong.

Martin H. Fischer

About this teacher move

A Learning Cycle lesson can be used for any content area in which the goal is to create a motivational learning context in which students are actively engaged in exploring, discussing, and synthesizing information. The Learning Cycle approach to instructional planning capitalizes on what is known about how people learn and is designed to cause lasting changes in a student's conceptual understanding. The model used here was adapted from the 5E Learning Cycle popularized by the Biological Sciences Curriculum Study. Although this Learning Cycle framework is geared toward building individual lessons, the Learning Cycle approach is more commonly applied when designing instructional units that consist of multiple lessons.

Each step in a learning cycle serves a different purpose and incorporates specially structured activities. What makes this type of lesson format particularly effective is its emphasis on active engagement of the learner and that it requires students to explore their prior understanding as they encounter new material. Finally, the 5 E Model provides opportunities that challenge students to apply these new understanding in novel, but related situations.

Learning Cycles cast teachers in the role of curriculum developers. During the lesson's actual implementation, teacher responsibilities vary according to what happens during each stage of the Learning Cycle. Sometimes the situation calls for direct instruction. In cases where activities are more student-centered, the teacher plays a less prominent, background role.

Implementing this teacher move

1. Choose a topic and identify the related student Learning Expectations to which the topic is aligned.

2. Design an assessment that is closely tied to the Learning Expectations that you are targeting. Build a corresponding scoring rubric if necessary.

3. Apply the focusing questions in the Learning Cycle framework to determine the ideal stage for introducing an activity.

- Always ask, "Does this activity really help students to meet the learning expectations on which the assessment is based?"
- If an activity is a good one, but does not really address the targeted learning goals, consider using it for enrichment purposes.

4. Assess student understanding.

5. Consider supplementing the Learning Cycle with a Learning Center where students can further explore the topic.

Managing this teacher move with students

The key to building a quality Learning Cycle is to carefully select activities that address the goals for each particular stage in the 5E Model.

1. A quality **Engagement** activity promotes student involvement in the topic or question in an exciting way.

- Tends to be of short duration and is highly motivational and interesting.
- "Hooks" the learner and generate interest in the topic.
- Focusing Question: What is your plan for generating excitement about the topic?

2. A quality **Exploration** activity taps into and activates student's prior knowledge.

- Offers opportunity for students to mess around and investigate objects, materials, and events based on their own ideas and prior knowledge of the topic.
- Often reveals student misconceptions.
- Provides information to the teacher about student readiness for learning about the topic.
- Focusing Question: What is your plan for activating students' prior knowledge?

3. A quality **Explanation** activity provides direct instruction or active learning experiences that build new content knowledge or promote skill acquisition.

- Often requires a more active role by the teacher.
- Focusing Question: What is your plan for introducing students to new content knowledge or skills?

4. A quality **Extension** activity enables students to compare the efficacy of former ideas about the topic with new understandings.

- Encourages students to apply or transfer their new knowledge or skills in new and different contexts.
- Can be used to make connections with other content areas.
- Focusing Question: What is your plan for allowing students to extend their new content knowledge to a new, but related context?

5. A quality **Evaluation** activity is the opportunity for students to demonstrate their understanding of the topic or question.

- Is a formative assessment that reveals if Learning Expectations have been met by the student.
- Provides an indication of teacher effectiveness.
- Focusing Question: What is your plan for assessing students' understanding of this topic?

CC LICENSED CONTENT, SHARED PREVIOUSLY
- Learning Cycle. **Provided by**: Ayers Institute for Teacher Learning & Innovation. **Project**: Tennessee Curriculum Center. **License**: *CC BY-NC-SA: Attribution-NonCommercial-ShareAlike*

Return to Table of Contents

Various Teaching Strategies

Behavioral Model

Direct Instruction
Teacher-centered instruction which includes lecture, presentation, and recitation.

Step 1-Review Previously Learned Material

Step 2-State Objectives for the Lesson

Step 3-Present New Material

- Lectures
- Demonstrations

Step 4-Guide Practice, Assess Performance, and Provide Corrective Feedback

- Questioning
- Feedback

Step 5-Assign Independent Practice, Assess Performance, and Provide Corrective Feedback

- Worksheets
- Unitization and Automaticity
- Rubrics

Step 6-Review Periodically, Offering Corrective Feedback If Necessary

Information-Processing Models

Concept Attainment
Inductive model of instruction where student are presented with examples and non-examples of a concept. Students generate hypotheses and attempt to describe (and sometimes name) the concept.

Step 1-Select and Define a Concept and Select the Attributes

Step 2-Develop Positive and Negative Examples

Step 3-Introduce the Process to the Students

Step 4-Present the Examples and List the Attributes

Step 5-Develop a Concept Definition

Step 6-Give Additional Test Examples

Step 7-Discuss the Process with the Class

Step 8-Evaluate

Concept Development

Inductive teaching model. Concepts are taught using the sequence: list items, group items, label, regroup, synthesize, and evaluate (can students generate and group on their own?)

Step 1-List as Many Items as Possible That Are Associated with The Subject

Step 2-Group the Items Because They Are Alike in Some Way

Step 3-Label the Groups by Defining the Reasons for Grouping

Step 4-Regroup or Subsume Individual Items or Whole Groups Under Other Groups

Step 5-Synthesize the Information by Summarizing the Data and Forming Generalizations

Step 6-Evaluate Students' Progress by Assessing Their Ability to Generate a Wide Variety of Items and to Group Those Items Flexibly

Vocabulary Acquisition Model

Step 1-Pretest Knowledge of Words Critical to Content

Step 2-Elaborate upon and Discuss Invented Spellings and Hypothesized Meanings

Step 3-Explore Patterns of Meaning

Step 4-Read and Study

Synectics

Metaphors generated by the students are used to help them understand controversial issues or solve problems.

Version One: Making the Familiar Strange

Step 1-Describe the Topic

Step 2-Create Direct Analogies

Step 3-Describe Personal Analogies

Step 4-Identify Compressed Conflicts

Step 5-Create a New Direct Analogy

Step 6-Reexamine the Original Topic

Step 7-Evaluate

Version Two: Making the Strange Familiar

Step 1-Provide Information

Step 2-Present the Analogy

Step 3-Use Personal Analogy to Create Compressed Conflicts

Step 4-Compare the Compressed Conflict with the Subject

Step 5-Identify Differences

Step 6-Reexamine the Original Subject

Step 7-Create New Direct Analogies

Step 8-Evaluate

Version Three: The Synectics Excursion

Step 1-Present the Problem

Step 2-Provide Expert Information

Step 3-Question Obvious Solutions and Purge

Step 4-Generate Individual Problem Statements

Step 5-Choose One Problem Statement for Focus

Step 6-Question through the Use of Analogies

Step 7-Force Analogies to Fit the Problem

Step 8-Determine a Solution from a New Viewpoint

Step 9-Evaluate

Cause-Effect

Step 1-Choose the Data or Topic, Action, or Problem to Be Analyzed

Step 2-Ask for Causes and Support for Those Causes

Step 3-Ask for Effects and Support

Step 4-Ask for Prior Causes and Support

Step 5-Ask for Subsequent Effects and Support

Step 6-Ask for Conclusions

Step 7-Ask for Generalizations

Memorization
Actively organizing and working with concepts or terminology to improve incorporating those concepts into memory.

Problem-Centered Inquiry Models

Suchman Inquiry Model
Like twenty questions. Teacher poses problem then helps students solve problem by answering "yes" or "no" to student questions.

Step 1-Select a Problem and Conduct Research

Step 2-Introduce the Process and Present the Problem

Step 3-Gather Data

Step 4-Develop a Theory and Verify

Step 5-Explain the Theory and State the Rules Associated with It

Step 6-Analyze the Process

Step 7-Evaluate

Problem-based Learning Model
Step 1-Explore the Problem

Step 2-Use the Inquiry Chart to Map Learning

Step 3-Share different solutions

Step 4-Take Action

Conflict Resolution Model

Step 1-List All the Facts Pertinent to the Conflict

Step 2-Identify the Reasons for the Actions, the Feelings of the Participants, and the Reasons for Those Feelings

Step 3-Propose Solutions and Review Their Possible Effects

Step 4-Decide on the Best Resolutions and Hypothesize What the Consequences Would Be

Step 5-Discuss Similar Situations

Step 6-Evaluate the Decision and Look for Alternative Solutions

Step 7-Arrive at Generalizations

Step 8-Evaluate

Eggen and Kauchak's Integrative Model: Generalizing from Data
Step 1-Describe, Compare, and Search for Patterns

Step 2-Explanation of the Identified Comparisons

Step 3-Hypothesizing Different Outcomes

Step 4-Closure and Application

Social/Relational/Cooperative Learning Models

Cooperative Learning Model: The Template Planning Steps

Develop clear instructional goals

Consider and plan the number in and composition of groups

Make certain that the cooperative activity has all of the key elements of cooperative learning

Implementation Steps

Explanation of task

Identify the social skills that are critical for the success of the group

Monitor and provide feedback to individual groups as they are working

Group Summaries

Evaluation

Assess Group Process

The Graffiti Model

Step 1-Prepare the Graffiti Questions and Group Number and Composition

Step 2-Distribute Materials

Step 3-Group Answers Questions

Step 4-Exchange Questions

Step 5-Return to the Original Question, Summarize, and Make Generalizations

Step 6-Share Information

Step 7-Evaluate Group Process

The Jigsaw Model
Jigsaw I: Cooperative activity. The basic steps include: reading, meeting with expert groups, report back to main team, demonstrate knowledge through a test or report.

Jigsaw II: Cooperative activity. Basic steps: Read with group, discuss individual topic with expert groups, report back to team (to teach them what you learned in your expert group), test, team recognition.

Step 1-Introduce Jigsaw

Step 2-Assign Heterogeneously Grouped Students to Expert and Learning Groups and Review Behavior Norms

Step 3-Explain Task and Assemble Groups

Step 4-Allow Expert Groups to Process Information

Step 5-Experts Teach in Their Learning Group

Step 6-Individual Accountability

Step 7-Evaluating the Jigsaw Process

Academic Controversy
Step 1-Students Prepare Their Positions

Step 2-Students Present and Advocate Their Position

Step 3-Open Discussion and Rebuttals

Step 4-Reverse Positions

Step 5-Synthesize and Integrate the Best Evidence Into a Joint Position

Step 6-Present the Group Synthesis

Step 7-Group Processing

Socratic Seminar Model (under development)
Step 1-Prepare a set of questions with no right or wrong answers relevant to the students lives related to the subject matter.

Step 2-Break the class into two groups. Seat one around a group of tables. The second group stands around the seated group to listen and observe and think of additional relevant questions.

Step 3-Assign various questions to various people in the group to discuss your questions.

Step 4-Begin the discussion. As they discuss the questions model the discussion by hopping in to the conversation.

Step 5-Limit the conversation to allow the other questions to be asked.

Step 6-

Step 7-

Step 8-

Step 9-

Sources:

Gunter, M. A., Estes, T. H., & Mintz, S. L. (2007). *Instruction: a models approach*. Boston, MA: Pearson, A and B.

Maxwell Resources. (n.d.). *WKU IT ASA*. Retrieved December 06, 2010, from http://people.wku.edu/marge.maxwell/Resources.html

CC LICENSED CONTENT, SHARED PREVIOUSLY

- Teaching Models. **Provided by**: TES: The largest network of teachers in the world. **License**: *CC BY-SA: Attribution-ShareAlike*

Return to Table of Contents

MODULE 5: Who Are We Teaching?

English Language Learners

English-language learners, or ELLs, are students who are unable to communicate fluently or learn effectively in English, who often come from non-English-speaking homes and backgrounds, and who typically require specialized or modified instruction in both the English language and in their academic courses.

Educators use a number of terms when referring to English-language learners, including *English learners* (or ELs), *limited English proficient* (LEP) *students*, *non-native English speakers*, *language-minority students*, and either *bilingual students* or *emerging bilingual students*. The proliferation of terms, some of which may be used synonymously and some of which may not, can create confusion. For example, the term *English-language learner* is often used interchangeably with *limited English proficient student*, but some school districts and states may define the terms differently for distinct classifications of students. Nonetheless, the federal government and many state governments have acknowledged that both terms refer to the same group of students—those with limited proficiency in English. When investigating or reporting on English-language learners, it is important to determine precisely how the term, or a related term, is being defined in a specific educational context. In some cases, for example, the terms are used in a general sense, while in others they may be used in an official or technical sense to describe students with specific linguistic needs who receive specialized educational services.

Generally speaking, English-language learners do not have the English-language ability needed to participate fully in American society or achieve their full academic potential in schools and learning environments in which instruction is delivered largely or entirely in English. In most cases, students are identified as "English-language learners" after they complete a formal assessment of their English literacy, during which they are tested in reading, writing, speaking, and listening comprehension; if the assessment results indicate that the students will struggle in regular academic courses, they may be enrolled in either dual-language courses or English as a second language (ESL) programs.

English-language learners may also be students who were formerly classified as limited English proficient, but who have since acquired English-language abilities that have allowed them to transition into regular academic courses taught in English. While assessment results may indicate that they have achieved a level of English literacy that allows them to participate and succeed in English-only learning environments, the students may still struggle with academic language. For this reason, the federal government requires schools and programs receiving federal funding for English-language-learner programs to monitor the academic progress of students and provide appropriate academic support for up to two years after they transition into regular academic courses.

Reform

English-language learners are not only the fastest-growing segment of the school-age population in the United States, but they are also a tremendously diverse group representing numerous languages, cultures, ethnicities, nationalities, and socioeconomic backgrounds. While most English-language learners were born in the United States, their parents and grandparents are often immigrants who speak their native language at home. In addition, English-language learners may face a variety of challenges that could adversely affect their learning progress and academic achievement, such as

poverty, familial transiency, or non-citizenship status, to name just a few. Some English-language learners are also recently arrived immigrants or refugees who may have experienced war, social turmoil, persecution, and significant periods of educational disruption. In some extreme cases, for example, adolescent-age students may have had little or no formal schooling, and they may suffer from medical or psychological conditions related to their experiences (the term *students with interrupted formal education*, or SIFE, is often used in reference to this subpopulation of English-language learners).

On average, English-language learners also tend, relative to their English-speaking peers, to underperform on standardized tests, drop out of school at significantly higher rates, and decline to pursue postsecondary education. In school, they may also be enrolled—at significantly higher rates than their English-speaking peers—in lower-level courses taught by underprepared or less-experienced teachers who may not have the specialized training and resources needed to teach English-language learners effectively.

The increase in the number of English-language learners in public schools, coupled with the significant educational challenges faced by this student population, has led to numerous changes in curriculum, instruction, assessment, and teacher preparation. For example, states and national organizations have developed standards to guide curriculum and instruction in English-as a second language programs, while customized teaching and learning materials for English-language learners are now routinely introduced into regular academic courses. In addition, assessments and standardized tests have also been adapted to more accurately measure the academic achievement of English-language learners, and the majority of states now use the same large-scale assessment—the [World-Class Instructional Design and Assessment](#) consortium's ACCESS assessment (Assessing Comprehension and Communication in English State-to-State)—to identify English-language learners, place them into appropriate programs, and measure their academic progress and English acquisition. Teacher-preparation programs and certification requirements have also been modified to address relevant skills and training, and many states and national accrediting associations require formal training in the instruction of English-language learners. And in schools with significant populations of English-language learners, relevant experience, credentials, and training are often given priority during hiring and employment.

While there are a wide variety of instructional models and academic-support strategies for English-language learners being used throughout the United States, the following represent the three dominant forms:

- **Dual-language education**, formerly called *bilingual education*, refers to academic programs that are taught in two languages. While schools and teachers may use a wide variety of dual-language strategies, each with its own specific instructional goals, the programs are typically designed to develop English fluency, content knowledge, and academic language simultaneously.
- **English as a second language** refers to the teaching of English to students with different native or home languages using specially designed programs and techniques. English as a second language is an English-only instructional model, and most programs attempt to develop English skills and academic knowledge simultaneously. It is also known as *English for speakers of other languages* (ESOL), *English as an additional language* (EAL), and *English as a foreign language* (EFL).

- **Sheltered instruction** refers to programs in which English-language learners are "sheltered" together to learn English and academic content simultaneously, either within a regular school or in a separate academy or building. Teachers are specially trained in sheltered instructional techniques that may require a distinct licensure, and there are many different sheltered models and instructional variations.

Debate

Given the culturally sensitive and often ideologically contentious nature of the peripheral issues raised by the participation of non-English-speaking students in the American public-education system—including politicized debates related to citizenship status, English primacy, immigration reform, and employment and social-services eligibility for non-citizens—it is perhaps unsurprising that English-language learners, and the instructional methods used to educate them, can become a source of debate. For example, a significant number of states have adopted "English as the official language" statutes, and citizen referendums have passed in other states prohibiting dual-language instruction except in special cases.

The issues of citizenship status and fairness tend to be at the center of debates about English-language learners and the best ways to educate them. Critics often argue that the use of the non-English languages in public schools (outside of world-language courses) deemphasizes the role of English as a source of linguistic and cultural unification. While critics generally do not object to bilingualism—the ability to speak two languages—they often contend that non-English instruction inhibits or delays the acquisition of English fluency (yet there is a growing body of research indicating that increasing reading, writing, speaking, and listening skills in their native languages can facilitate English acquisition among English-language learners).

While there is widespread agreement that English-language learners should become proficient in English, debates often center on issues related to cultural assimilation. Those who favor assimilation into American society tend to emphasize English-only policies and instruction, while those who favor acculturation tend to argue for the importance of maintaining bicultural identity and bilingual development. In addition, since English-language learners and dual-education programs may require additional funding, training, and staffing, debates about fairness and resource allocation may also arise.

For more detailed discussions, see dual-language education (for debates related to non-English instruction), multicultural education (for debates related to cultural education and assimilation), and test accommodations and test bias (for debates related to the assessment of English-language learners).

Other related entries include equity, learning gap, achievement gap, and opportunity gap.

At-Risk

The term **at-risk** is often used to describe students or groups of students who are considered to have a higher probability of failing academically or dropping out of school. The term may be applied to students who face circumstances that could jeopardize their ability to complete school, such as homelessness, incarceration, teenage pregnancy, serious health issues, domestic violence, transiency (as in the case of migrant-worker families), or other conditions, or it may refer to learning disabilities, low test scores, disciplinary problems, grade retentions, or other learning-related factors that could adversely affect the educational performance and attainment of some students. While educators often use the term *at-risk* to refer to general populations or categories of students, they may also apply the term to individual students who have raised concerns—based on specific behaviors observed over time—that indicate they are more likely to fail or drop out.

When the term is used in educational contexts without qualification, specific examples, or additional explanation, it may be difficult to determine precisely what "at-risk" is referring to. In fact, "at-risk" can encompass so many possible characteristics and conditions that the term, if left undefined, could be rendered effectively meaningless. Yet in certain technical, academic, and policy contexts—such as when federal or state agencies delineate "at-risk categories" to determine which students will receive specialized educational services, for example—the term is usually used in a precise and clearly defined manner. For example, states, districts, research studies, and organizations may create at-risk definitions that can encompass a broad range of specific student characteristics, such as the following:

- Physical disabilities and learning disabilities
- Prolonged or persistent health issues
- Habitual truancy, incarceration history, or adjudicated delinquency
- Family welfare or marital status
- Parental educational attainment, income levels, employment status, or immigration status
- Households in which the primary language spoken is not English

In most cases, "risk factors" are situational rather than innate. With the exception of certain characteristics such as learning disabilities, a student's perceived risk status is rarely related to his or her ability to learn or succeed academically, and largely or entirely related to a student's life circumstances. For example, attending a low-performing school could be considered a risk factor. If a school is underfunded and cannot provide essential services, or if its teaching quality and performance record are poor, the school could conceivably contribute to higher rates of student absenteeism, course failures, and attrition.

Reform

Generally speaking, the behaviors and characteristics associated with being an "at-risk student" are, in most cases, based on research and observable patterns in student demographics and school performance. Numerous academic studies have demonstrated correlations between certain risk factors and a student's likelihood of succeeding academically, graduating from high school, or pursuing postsecondary education. Such correlations have given rise to a variety of reform strategies aimed at identifying student risk factors and then intervening with assistance and support intended to help "at-risk" students succeed academically and complete school.In terms of general education-reform trends, schools are increasingly taking a proactive approach to at-risk students (early identification of risk

factors followed by support), rather than a passive or reactive approach (allowing students to drop out, fall behind their peers academically, or fail courses before intervening). The basic rationale motivating these reforms is that schools can help at-risk students by increasing exposure to "success factors"—such as the personal attention and guidance of an adult, for example—and mitigating any risk factors that are within their control, such as reducing expulsions and grade retentions, which can increase the chances that a student will drop out.

Debate

In addition to being imprecise, some educators dislike the term *at-risk* because they believe it can give rise to overgeneralizations that may stigmatize students, particularly when the term is applied to large, diverse groups such as minorities or students from lower-income households. They may also fear that such labels may perpetuate the very kinds of societal perceptions, generalizations, and stereotypes that contribute to students being at greater risk of failure or of dropping out in the first place. If minorities or students from lower-income households are consistently labeled "at-risk," for example, schools and educators may respond by treating them in ways that could inadvertently perpetuate their at-risk status. For example, schools may enroll non-English-speaking students in specialized programs that separate them from their English-speaking peers. While the intention in this case is to provide the specialized language instruction that the students need, the program may also give rise to feelings of cultural isolation, or it may lower academic expectations so that participating students fall further and further behind their peers academically. Consequently, these students may drop out because they don't feel connected to the larger school culture or see the value of education, or they may lose hope that they will ever catch up or graduate (for a more detailed discussion of this specific example, see dual-language education). Research on stereotype threat and the Pygmalion effect has provided some evidence to support these general claims. Many educators and researchers have also noted that different individuals within the same demographic or risk categories may have very different innate abilities, familial resources, support systems, or other personal or situational characteristics that can lead them to be more resilient or successful than others; consequently, these students would be less "at-risk" than many of their peers. In this view, at-risk is an overly broad label that inevitably fails to take into account the true complexity of any particular student's situation. The concern is that, if schools act on general categorical assumptions, rather than diagnosing the specific learning needs of individual students and using that information to provide targeted academic support or more personalized learning experiences, the support they provide to students may be less useful or effective.

CC LICENSED CONTENT, SHARED PREVIOUSLY

- At-Risk Definition. **Authored by**: S. Abbott (Ed.). **Provided by**: Great Schools Partnership. **Project**: The Glossary of Education Reform. **License**: *CC BY-NC-SA: Attribution-NonCommercial-ShareAlike*

Return to Table of Contents

MODULE 6: How Do We Differentiate Instruction to Meet Our Students' Needs?

Student Engagement

In education, **student engagement** refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education. Generally speaking, the concept of "student engagement" is predicated on the belief that learning improves when students are inquisitive, interested, or inspired, and that learning tends to suffer when students are bored, dispassionate, disaffected, or otherwise "disengaged." *Stronger student engagement* or *improved student engagement* are common instructional objectives expressed by educators.

In many contexts, however, *student engagement* may also refer to the ways in which school leaders, educators, and other adults might "engage" students more fully in the governance and decision-making processes in school, in the design of programs and learning opportunities, or in the civic life of their community. For example, many schools survey students to determine their views on any number of issues, and then use the survey findings to modify policies or programs in ways that honor or respond to student perspectives and concerns. Students may also create their own questions, survey their peers, and then present the results to school leaders or the school board to advocate for changes in programs or policies. Some schools have created alternative forms of student governance, "student advisory committees," student appointments to the school board, and other formal and informal ways for students to contribute to the governance of a school or advise superintendents, principals, and local policy makers. These broader forms of "student engagement" can take a wide variety of forms—far too many to extensively catalog here. Yet a few illustrative examples include school-supported volunteer programs and community-service requirements (engaging students in public service and learning through public service), student organizing (engaging students in advocacy, community organizing, and constructive protest), and any number of potential student-led groups, forums, presentations, and events (engaging students in community leadership, public speaking, and other activities that contribute to "positive youth development"). For a related discussion, see student voice.In education, the term *student engagement* has grown in popularity in recent decades, most likely resulting from an increased understanding of the role that certain intellectual, emotional, behavioral, physical, and social factors play in the learning process and social development. For example, a wide variety of research studies on learning have revealed connections between so-called "non-cognitive factors" or "non-cognitive skills" (e.g., motivation, interest, curiosity, responsibility, determination, perseverance, attitude, work habits, self-regulation, social skills, etc.) and "cognitive" learning results (e.g., improved academic performance, test scores, information recall, skill acquisition, etc.). The concept of student engagement typically arises when educators discuss or prioritize educational strategies and teaching techniques that address the developmental, intellectual, emotional, behavioral, physical, and social factors that either enhance or undermine learning for students.

It should be noted that educators may hold different views on student engagement, and it may be defined or interpreted differently from place to place. For example, in one school observable behaviors such as attending class, listening attentively, participating in discussions, turning in work on time, and following rules and directions may be perceived as forms of "engagement," while in another school the

concept of "engagement" may be largely understood in terms of internal states such as enthusiasm, curiosity, optimism, motivation, or interest.

While the concept of student engagement seems straightforward, it can take fairly complex forms in practice. The following examples illustrate a few ways in which student engagement may be discussed or addressed in schools:

- **Intellectual engagement:** To increase student engagement in a course or subject, teachers may create lessons, assignments, or projects that appeal to student interests or that stimulate their curiosity. For example, teachers may give students more choice over the topics they are asked to write about (so students can choose a topic that specifically interests them) or they may let students choose the way they will investigate a topic or demonstrate what they have learned (some students may choose to write a paper, others may produce short video or audio documentary, and still others may create a multimedia presentation). Teachers may also introduce a unit of study with a problem or question that students need to solve. For example, students might be asked to investigate the causes of a local environmental problem, determine the species of an unknown animal from a few short descriptions of its physical characteristics and behaviors, or build a robot that can accomplish a specific task. In these cases, sparking student curiosity can increase "engagement" in the learning process. For related discussions, see authentic learning, community-based learning, differentiation, personalized learning, project-based learning, and relevance.
- **Emotional engagement:** Educators may use a wide variety of strategies to promote positive emotions in students that will facilitate the learning process, minimize negative behaviors, or keep students from dropping out. For example, classrooms and other learning environments may be redesigned to make them more conducive to learning, teachers may make a point of monitoring student moods and asking them how they are feeling, or school programs may provide counseling, peer mentoring, or other services that generally seek to give students the support they need to succeed academically and feel positive, optimistic, or excited about school and learning. Strategies such as advisories, for example, are intended to build stronger relationships between students and adults in a school. The basic theory is that students will be more likely to succeed if at least one adult in the school is meeting with a student regularly, inquiring about academic and non-academic issues, giving her advice, and taking an interest in her out-of-school life, personal passions, future aspirations, and distinct learning challenges and needs.
- **Behavioral engagement:** Teachers may establish classroom routines, use consistent cues, or assign students roles that foster behaviors more conducive to learning. For example, elementary school teachers may use cues or gestures that help young students refocus on a lesson if they get distracted or boisterous. The teacher may clap three times or raise a hand, for example, which signals to students that it's time to stop talking, return to their seats, or begin a new activity. Teachers may also establish consistent routines that help students stay on task or remain engaged during a class. For example, the class may regularly break up into small groups or move their seats into a circle for a group discussion, or the teacher may ask students on a rotating basis to lead certain activities. By introducing variation into a classroom routine, teachers can reduce the monotony and potential disengagement that may occur when students sit in the same seat, doing similar tasks, for extended periods of time. Research on brain-based

learning has also provided evidence that variation, novelty, and physical activity can stimulate and improve learning. For a related discussion, see classroom management.

- **Physical engagement:** Teachers may use physical activities or routines to stimulate learning or interest. For example, "kinesthetic learning" refers to the use of physical motions and activities during the learning process. Instead of asking students to answer questions aloud, a teacher might ask students to walk up to the chalkboard and answer the question verbally while also writing the answer on the board (in this case, the theory is that students are more likely to remember information when they are using multiple parts of the brain at the same time—i.e., the various parts dedicated to speaking, writing, physical activity, etc.). Teachers may also introduce short periods of physical activity or quick exercises, particularly during the elementary years, to reduce antsy, fidgety, or distracted behaviors. In addition, more schools throughout the United States are addressing the physical needs of students by, for example, offering all students free breakfasts (because disengagement in learning and poor academic performance have been linked to hunger and malnutrition) or starting school later at a later time (because adolescent sleep patterns and needs differ from those of adults, and adolescents may be better able to learn later in the morning).
- **Social engagement:** Teachers may use a variety of strategies to stimulate engagement through social interactions. For example, students may be paired or grouped to work collaboratively on projects, or teachers may create academic contests that students compete in—e.g., a friendly competition in which teams of students build robots to complete a specific task in the shortest amount of time. Academic and co-curricular activities such as debate teams, robotics clubs, and science fairs also bring together learning experiences and social interactions. In addition, strategies such as demonstrations of learning or capstone projects may require students to give public presentations of their work, often to panels of experts from the local community, while strategies such as community-based learning or service learning (learning through volunteerism) can introduce civic and social issues into the learning process. In these cases, learning about societal problems, or participating actively in social causes, can improve engagement.
- **Cultural engagement:** Schools may take active steps to make students from diverse cultural backgrounds—particularly recently arrived immigrant or refugee students and their families—feel welcomed, accepted, safe, and valued. For example, administrators, teachers, and school staff may provide special orientation sessions for their new-American populations or offer translation services and informational materials translated into multiple languages. Students, families, and local cultural leaders from diverse backgrounds may be asked to speak about their experiences to students and school staff, and teachers may intentionally modify lessons to incorporate the history, literature, arts, and perspectives of the student ethnicities and nationalities represented in their classes. School activities may also incorporate multicultural songs, dances, and performances, while posters, flags, and other educational materials featured throughout the school may reflect the cultural diversity of the students and school community. The general goal of such strategies would be to reduce the feelings of confusion, alienation, disconnection, or exclusion that some students and families may experience, and thereby increase their engagement in academics and school activities. For related discussions, see dual-language education, English-language learner, multicultural education, and voice.

Differentiation

Differentiation refers to a wide variety of teaching techniques and lesson adaptations that educators use to instruct a diverse group of students, with diverse learning needs, in the same course, classroom, or **learning environment**. Differentiation is commonly used in "heterogeneous grouping"—an educational strategy in which students of different abilities, learning needs, and levels of academic achievement are grouped together. In heterogeneously grouped classrooms, for example, teachers vary instructional strategies and use more flexibly designed lessons to engage student interests and address distinct learning needs—all of which may vary from student to student. The basic idea is that the primary educational objectives—making sure all students master essential knowledge, concepts, and skills—remain the same for every student, but teachers may use different instructional methods to help students meet those expectations.

Teachers who employ differentiated instructional strategies will usually adjust the elements of a lesson from one group of students to another, so that those who may need more time or a different teaching approach to grasp a concept get the specialized assistance they need, while those students who have already mastered a concept can be assigned a different learning activity or move on to a new concept or lesson. In more diverse classrooms, teachers will tailor lessons to address the unique needs of special-education students, high-achieving students, and English-language learners, for example. Teachers also use strategies such as **formative assessment**—periodic, in-process evaluations of what students are learning or not learning—to determine the best instructional approaches or modifications needed for each student. Also called "differentiated instruction," differentiation typically entails modifications to *practice* (how teachers deliver instruction to students), *process* (how the lesson is designed for students), *products* (the kinds of work products students will be asked to complete), *content* (the specific readings, research, or materials students will study), *assessment* (how teachers measure what students have learned), and *grouping* (how students are arranged in the classroom or paired up with other students). Differentiation techniques may also be based on specific student attributes, including *interest* (what subjects inspire students to learn), *readiness* (what students have learned and still need to learn), or *learning preference* (the ways in which students like to learn material best).

Differentiation vs. Scaffolding

As a general instructional strategy, differentiation shares may similarities with scaffolding, which refers to a variety of instructional techniques used to move students progressively toward stronger understanding and, ultimately, greater independence in the learning process. Because differentiation and scaffolding techniques are used to achieve similar instructional goals—i.e., moving student learning and understanding from where it is to where it needs to be—the two approaches may be blended together in some classrooms to the point of being indistinguishable. That said, the two approaches are distinct in several ways. When teachers differentiate instruction, they might give some students an entirely different reading (to better match their reading level and ability), give the entire class the option to choose from among several texts (so each student can pick the one that interests them most), or give the class several options for completing a related assignment (for example, the students might be allowed to write a traditional essay, draw an illustrated essay in comic-style form, create a slideshow "essay" with text and images, or deliver an oral presentation). Alternatively, when teachers scaffold instruction, they typically break up a learning experience, concept, or skill into discrete parts, and then give students the assistance they need to learn each part. For example, teachers may give students an

excerpt of a longer text to read, engage them in a discussion of the excerpt to improve their understanding of its purpose, and teach them the vocabulary they need to comprehend the text before assigning them the full reading.

The following comparison chart will help illustrate the differentiation concept and its major component strategies:

Element	Traditional Example	Differentiated Example
Practice	A math teacher explains how to calculate slope to the entire class and gives students fifteen problems to practice.	A math teacher pre-tests students to determine their understanding of critical mathematical skills and then arranges students into groups based on their learning progress and understanding. Some students work online to practice the skills, some work in groups with the teacher, and some work individually with occasional teacher support.
Process	In an art class, students complete the following activities in order: write an artist statement, critique a peer's work, and then compile artifacts for a portfolio of their art.	Students determine the order in which they will write an artist statement, critique a peer's work, and compile artifacts for a portfolio of work. Some tasks can be done at home and some in class, and some can be done collaboratively and some individually.
Products	In a social studies class, students write a four-page essay arguing a position related to free speech that uses supporting evidence drawn from historical and contemporary sources.	Students may elect to write an essay, op-ed, or persuasive speech, or they may create a short documentary arguing a position related to free speech that uses supporting evidence drawn from historical and contemporary sources.
Content	In English class, students read *The Adventures of Huckleberry Finn* and discuss the messages it conveys about race and racism in the United States.	Students choose between *The Adventures of Huckleberry Finn, Uncle Tom's Cabin,* and *Invisible Man* to discuss different messages about race and racism in the United States. The three groups share their knowledge with each other.
Assessment	In a math class, students take an exam and are given a percentage grade based on how many answers were correct.	Students take an exam and receive feedback on which mathematics standards they have mastered, which standards they are making progress on, and which standards need more attention. The feedback suggests remedies for students with learning gaps and new projects for students who have mastered all the required skills and knowledge.

Grouping	Students are either grouped as a full class or they work independently most of the time.	Teachers use grouping strategies to address distinct learning needs. Students may be working independently, in small groups, in pairs, or using technology. Some groupings are by choice and some are assigned based on common learning needs. Some groupings or individual students work closely with the teacher and others have more independence.
Interest	In a social studies class, the teacher assigns a single topic, such as the Civil War, for a unit or project, and all students research the same historical event.	The teacher poses a question, such as "Why do nations go to war?" Students may select a military conflict that interests them most and address the question in different ways—for example, one student may choose to read historical literature about World War II, while another student may research films about the Vietnam War.
Readiness	In an English course, the teacher plans out the course topics and reading assignments in advance, and all students work through the same series of readings, lessons, and projects at the same pace.	The teacher evaluates students to determine what they already know, and then designs lessons and projects that allow students to learn at different levels of difficulty, complexity, or independence. For example, teachers may determine reading levels and then assign a variety of texts, reflecting different degrees of difficulty, to ensure an appropriate level of reading challenge for each student.
Learning Preference	In a math course, every student receives the same problems and assignments, which are all structured in the same way.	The teacher assigns a topic: solving quadratic equations. Some students choose to work with a software program that uses visual representations and simulations, other students work in teams and solve a series of problems from a book that increase in difficulty, and still others watch an online tutorial that can be viewed multiple times until the concept becomes clear.

Debate

Differentiation plays into ongoing debates about **equity** and "academic tracking" in public schools. One major criticism of the approach is related to the relative complexities and difficulties entailed in teaching diverse types of students in a single classroom or educational setting. Since effective differentiation requires more sophisticated and highly specialized instructional methods, teachers typically need adequate training, mentoring, and **professional development** to ensure they are using differentiated

instructional techniques appropriately and effectively. Some teachers also argue that the practical realities of using differentiation—especially in larger classes comprising students with a wide range of skill levels, academic preparation, and learning needs—can be prohibitively difficult or even infeasible.

Yet other educators argue that this criticism stems, at least in part, from a fundamental misunderstanding of the strategy. In her book *How to Differentiate Instruction in Mixed-Ability Classrooms*, the educator and writer Carol Ann Tomlinson, who is considered an authority on differentiation, points out a potential source of confusion: "Differentiated instruction is *not* the "Individualized Instruction" of the 1970s." In other words, differentiation is the practice of varying instructional techniques in a classroom to effectively teach as many students as possible, but it does not entail the creation of distinct courses of study for every student (i.e., individualized instruction). The conflation of "differentiated instruction" and "individualized instruction" has likely contributed to ongoing confusion and debates about differentiation, particularly given that the terms are widely and frequently used interchangeably.

Response to Intervention

Effective teaching requires differentiated instruction for students with different abilities and needs.

KEY POINTS
- o Effective teaching requires differentiated instruction—providing different materials, arrangements, and strategies for students with different abilities and needs.
- o Differentiated classrooms have also been described as ones that are responsive to student variety in readiness levels, interests and learning profiles. It is a classroom where all students are included and can be successful. To do this a teacher sets different expectations for task completion for students based upon their individual needs.
- o Tier 1 instruction involves efforts to teach an entire class in the most effective ways. Tier 2 instruction involves additional time or materials for the relatively small number of students who do not learn from Tier 1 methods. Tier 3 instruction is likely to involve special classes or individual tutoring outside of the classroom, using special education teachers or educational assistants hired for the purpose.

TERMS
- • response to intervention Response to intervention (RTI) emphasizes the importance of assessing learners' successes and needs continually, then grouping those learners into performance-based tiers for instruction.
- • differentiated instruction Differentiated instruction means providing different materials, arrangements, and strategies for students with different abilities and needs.

FULL TEXT

Differentiated instruction strategies and assessment (also known as differentiated learning or, in education, simply, differentiation) is a framework or philosophy for effective teaching that involves providing different students with different avenues (often in the same classroom) to acquiring content; to processing, constructing, or making sense of ideas; and to developing teaching materials and assessment measures so that all students within a classroom can learn effectively, regardless of differences in ability. Students vary in culture, socioeconomic status, language, gender, motivation, ability/disability, personal interests and more, and teachers need to be aware of these varieties as they are planning their curriculum. By considering varied learning needs, teachers can develop personalized instruction so that all children in the classroom can learn effectively. Differentiated learning classrooms have also been described as ones that are responsive to student variety in readiness levels, interests and learning profiles. It is a classroom where all students are included and can be successful. To do this a teacher sets different expectations for task completion for students based upon their individual needs.

Effective teaching requires differentiated instruction strategies—providing different materials, arrangements, and strategies for students with different abilities and needs. The differentiation can include unique structural arrangements in the school, such as special tutoring for individuals or special classes for small groups needing particular extra help. Differentiation can also include extra attention or coaching within a classroom for individual students or small groups.

One of the more widely used approaches for differentiating instruction is called response to intervention (or RTI). Like other forms of differentiation, RTI begins with the premise that students differ widely in

how they learn and the extent of their learning. It also assumes that a central part of teaching is respond to these differences, and to do so as promptly as possible. To achieve this purpose, RTI programs typically frame educational interventions around three levels called tiers. Tier 1 instruction involves efforts to teach an entire class in the most effective ways—ways that are good bets for being effective with the majority of students. Using Tier 1 strategies, for example, a teacher might sometimes explain new ideas to the whole class, but also put students into small groups for selected projects and give them individual seat work or homework to do. Tier 2 instruction involves additional time or materials for the relatively small number of students who do not learn from Tier 1 methods. Typically it involves additional work in small groups or even individual tutoring within the classroom by the teacher, an educational assistant, or adult volunteer. Tier 3 instruction is reserved for the even smaller number of students who still do not learn even from Tier 2 instruction. It is likely to involve special classes or individual tutoring outside of the classroom, using special education teachers or educational assistants hired for the purpose. Tier 3 instruction is therefore more resource intensive than Tier 2 instruction, which is in turn more resource intensive than Tier 1 instruction.

Although the three-tiered system of RTI resembles a traditional "tracking" system of education, it is much more effective (and fair to students) than traditional tracking because it also emphasizes the importance of assessing learners' successes and needs continually. As illustrated in the accompanying diagram, even Tier 1 instruction involves detailed screening of learners' progress—all learners' progress—through brief, short-term tests and observations. Since brief assessments can sometimes prove inaccurate, many advocates of RTI also propose screening all learners not once, but several times following initial instruction. The tests and observations help to identify students who are not responding to instruction and therefore may need Tier 2 instruction. At Tier 2 and Tier 3, assessment is also continual and short-term, and instruction focuses as much as possible on the same goals and objectives as in Tier 1. When implemented properly, therefore, it is difficult for a student to get placed at Tier 2 or Tier 3, only to be in effect abandoned at those levels educationally.

As this description implies, RTI is often used to organize services for students with special educational needs (for additional strategies see: "Students with special educational needs"). Many books have been published to help special educators with implementing its ideas. RTI differs from some alternative approaches to special education in advocating an especially inclusive approach when responding to diversity: essentially the same approach is proposed for teaching the entire class as is used for teaching students who are struggling. In either case, the key to the approach are two-fold: 1) use a variety of the best available teaching practices, and 2) assess students frequently, specifically, and briefly to keep track of their progress.