

Topic C: Learning Theories and Practices

How we teach will be shaped by our temperament but also by psychological theories and the practices that have evolved from those theories. This topic focuses on four lines of research and practice that should influence how you come to think about teaching. Maria Montessori is particularly important to lower elementary education and William Glasser's ideas are particularly important to character and citizenship education.

At the heart of teaching is the ability of the teacher—through astute lesson planning—to place the student at what Vygotsky (1978) defined as the **zone of proximal development (ZPD)**. Basically, ZPD is what a student is capable of learning—the space between the student's current academic ability and potential ability. The following ideas are intended to help a new teacher reflect on how he or she will create the “right” environment so that learning can take place.

Historical Perspective

The early 1900s launched an industrialization movement that instigated a more scientific analysis by psychologists of how tasks are achieved in both factories and schools (Kliebard, 1995). In factories, seamstresses were turned into buttonhole makers and former carriage makers were turned into axle assemblers in the Ford motor company assembly line, all in the name of efficiency and basically converting the creativity of their crafts into discrete tasks that became jobs. The focus of individual creativity was shifted to analyzing and engineering efficient assembly lines composed of repetitive tasks.

*Nothing is particularly hard if
you divide it into small jobs.*
Henry Ford

In education, a similar phenomenon occurred when psychologists began to analyze the steps in the learning process with an eye to greater efficiency and improved outcomes (see Brandt & Perkins, 2000). This more scientific approach to learning and teaching led to the introduction of reading materials that were crafted according to readability scales and processes such as the Madeline Hunter method (see Topic 9). It also led to two schools of learning theory: the Associationist/Behaviorist model and the Constructivist/Cognitive model.

The Associationist/Behaviorist Model

Thorndike (1922), Skinner (1954), and Gagne (1965) were among the key leaders of the **Associationist/Behaviorist** schools of learning theories, which focused on the basic tasks and the process of learning. The theories are based on a number of concepts:

1. Learning is sequential.
2. Learning is hierarchical.
3. Learning is the accumulation of bits of knowledge.
4. Proceeding to the next bit of knowledge should only begin after assessment.
5. Assessment should be used to assess and reinforce learning.
6. External motivations should be as positive as possible.

This movement still has a profound effect on teaching today. It is based on the principle that knowledge acquisition is best learned if it is divided into a logical, sequential set of steps with reinforcement based on the accomplishment of each task assigned to each step. By the 1960s,

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this approach led to the widespread adoption of **Behavioral Objectives**, which define what is to be learned. Behavioral objectives are still in use in many schools and teacher education programs.

In the search for precision, words like *know* and *understand*, which had been commonly used by teachers to define what their goals were, became unacceptable for defining and assessing students' knowledge. More specific words like *write*, *identify*, and *list* were adopted to define and assess the behaviors that would demonstrate knowledge. In his *Taxonomy of Educational Objectives*, Bloom (1956) categorized cognitive behaviors into *Knowledge*, *Comprehension*, *Application*, *Analysis*, *Synthesis*, and *Evaluation* and developed the words used to describe these behaviors (see Teacherworld's listing of "Action Verbs" at <http://teacherworld.com/potactionverbs.html> or enter "Bloom's Taxonomy" in your search engine). So rather than explaining that students will know how to divide as an objective, teachers would use, as a procedure, the **ABCD method: Audience, Behavior, Conditions, and Degree**. An example would be "(A) Fourth grade students (B) will divide 3-digit numbers by 2-digit numbers (C) without a calculator (D) with 90 percent accuracy." You may also want to investigate Bloom's Affective and Psychomotor domains by searching for "Bloom's Taxonomy" (see Teacherworld at <http://teacherworld.com/potslo.html>).

In addition, with new photocopying technology and therefore greater emphasis on assessment as part of the reinforcement regime, **objective-type testing** rather than oral and written open-ended testing became dominant in the classroom. The teacher at the turn of the twentieth century, without such tools, used daily observation, demonstration by students, dialogue, drill, practice, and questioning (also referred to as Socratic method) as part of a daily regime of assessment that was iterative, interactive, and constant. But by the 1950s, weekly and quarterly objective quizzes became the norm, which in some disciplines have had the unexpected side effect of defining knowledge more as vocabulary, facts, and mundane skills. Lost in the transition was the opportunity to assess students' ability to generalize what they had learned, or what is referred to in the literature as **Transfer**. In its simplest form, transfer is the ability to apply the concept learned with one set of information to a new set of information. It is more difficult for a teacher to construct objective tests that measure the concepts behind vocabulary and thinking skills than it is to use the more subjective Socratic method or dialectic, which requires students to explain their thinking in real time while interacting with a teacher. Objective-type testing, with its quantitative scores, provides comparative data and excellent documentation for parents who might be concerned about teachers with bias; with subjective testing, like essays and questioning, students are more easily compelled to construct their own knowledge, a prerequisite to transfer.

The Constructivist/Cognitive Model

Constructivist learning theory is primarily based on the work of Jean Piaget (1972), Jerome Bruner (1990), Lev Vygotsky (1978), and David Ausubel (1967), to name a few notable leaders in the field. Unlike the previous associationist/ behaviorist learning theory, constructivist theory is more of an underlying set of assumptions about how the human mind acquires and maintains knowledge. This textbook, while being eclectic, is biased toward this particular view of learning, as are most current textbooks. Constructivist practices are important to concept formation, problem solving, decision making, and lifelong learning. They emphasize teaching students **HOW** to think using content, rather than to think about the exact content that teachers give them

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during instruction. In any Internet search engine, type “Constructivist Theory” or one of the names listed above to learn more about these principles in greater depth. What follows is a brief summary of key features of the cognitive model of learning.

Piaget described **intelligence** as how an organism adapts to its environment. Behavior (adaptation to the environment) is controlled through **schemas** (I like to think of these as little boxes inside one’s mind) that the individual uses to represent the world. As we encounter new information, we experience **disequilibrium**. The drive to adapt comes from the need to balance the schemas in our mind’s eye as we encounter new information. The two processes by which individuals move from the discomfort of disequilibrium to the temporary but more comfortable equilibrium are assimilation and accommodation. **Assimilation** is the process of placing new facts, concepts, ideas, and beliefs in the preexisting schemas. **Accommodation** is the process of creating new schemas or changing existing schemas. Both processes are used simultaneously throughout life in developing cognitive as well as affective schemas.

The construction of knowledge includes both (a) content in the traditional sense of facts and concepts (**Information Knowledge**; see Topic 2) and (b) thinking and basic skills (**Procedural Knowledge**; see Topic 2) (Philips, 1995). This theory is supported by Bruner (1960, 1990 & 1996), who identified four major factors that the teacher must consider when planning instruction—the first and fourth related to motivation, the second to knowledge, and the third to methods and strategies:

1. Students’ predisposition towards learning
2. The ways in which a body of knowledge is structured so that it can be most readily grasped by the learner
3. The most effective sequences in which to present material
4. The nature and pacing of rewards and punishments

Vygotsky (1978) focused on the capacity to independently problem-solve, that is, to use general thinking skills or procedural knowledge. The teacher finds each student at one end of the **zone of proximal development**. The other end of the expanding zone is the potential capacity for problem solving. To move students through the zone, teachers introduce increasingly sophisticated forms of procedural knowledge by (a) modeling problem solving; (b) providing opportunities for practice in which the student is guided by the teacher; and (c) engaging other students as models who have more advanced procedural knowledge skills than their peers (Wilson, 2002). However, in the end, learners must actively **self-teach** (construct) for themselves what the new information means so that they can perform the mental task (and thus produce the behaviorists’ objectively measured product) on their own.

Constructivist Best Practices

The following are best practices for a constructivist classroom.

1. Constructing one’s own meaning out of knowledge is the essence of learning; so thoughtful discussion and time to reflect are emphasized.
2. Students are given an opportunity to think and to propose ideas and beliefs so they can test and construct their own knowledge.
3. Teachers ask open-ended questions,

*Spoon-feeding in the long run
teaches us nothing but the shape of the
spoon.*
E. M. Foster

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- listen to students' ideas, and provide alternative propositions.
4. Teachers start with what students know and use metaphors and anecdotes to help them build bridges to new knowledge.
 5. Big Ideas create context for facts. Learning is accomplished when parts are developed in the context of the whole.
 6. Teachers set up problems, guide student inquiry, and point out and emphasize Procedural Knowledge while monitoring students' explanations.
 7. Teachers use raw data, primary documents, and realia so students can construct their own meaning out of materials rather than rely on textbook explanations.
 8. Students use graphic organizers in creating cognitive structures. In direct instruction, graphic organizers can create an "umbrella" for ideas.
 9. The most general ideas of a subject should first be presented; then the subject should be progressively differentiated in terms of detail and specificity.
 10. Organizers should attempt to integrate new material with previously presented material.

Montessori Educational Practices

Maria Montessori (1870–1952) was a physician and educator who had a profound effect on the education of children. Self-directed, active learning and self-responsibility are centerpieces of Montessori education. Part of the reason that accredited Montessori schools are successful is their required teacher-student ratios on the order of one to eight, which are generally far lower than those in American public education.

The following learning principles are particularly important for social studies elementary education because they encourage civility with sound learning practices. Many of them were adapted from publications and videos available at the American Montessori Society website at <http://www.amshq.org/>.

1. **Learning centers** where children can explore ideas
2. **Self-paced instruction** where children can determine how much time to spend on various topics
3. **Discretionary learning** where children are relatively free to move from one learning experience to another
4. **Hands-on learning** where students manipulate and construct products
5. **Respect for other children** and politeness—the teacher interrupts inappropriate behavior, questions the students about the behavior, and explains appropriate behavior to individual children
6. **Order**, with the requirement that the children (not the teachers) return materials to their proper places
7. **Cleanliness**, with children required to clean the classroom and its materials
8. **Peer teaching** so that students take responsibility for others as well as for themselves

The first idea that the child must acquire, in order to be actively disciplined, is that of the difference between good and evil; and the task of the educator lies in seeing that the child does not confound good with immobility, and evil with activity.

Maria Montessori

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Choice Theory Practices

Choice theory focuses on inspiration or intrinsic motivation. This learning theory was proposed by William Glasser and is presented here because of its relevance to values formation, citizenship, practice, and current events. The William Glasser Institute at <http://www.wglasser.com/> provides a number of resources. The following are some best practices derived from Glasser's work:

1. Quality work is emphasized and expected of students, as opposed to mundane worksheets and other forms of lower-level learning.
2. Intrinsic rewards, such as personal satisfaction, are emphasized: field trips, pizza parties, and films are external rewards.
3. Self-paced instruction is encouraged, but quality work is required.
4. Learning is more effective when problem solving and democratic discussions set the tone in the classroom and the school.
5. Students need to see practical applications of what they are learning. Teachers should draw analogies to current events and students' experiences.
6. To achieve depth of learning, learners should be given time to analyze, clarify, or articulate their experiences to others in their family and work or social groups. Teachers should encourage democratic discussions inside and outside class.

Website Recourses: Learning Theories and Practices	
University of Colorado	Gateway site on <i>models of instruction</i> http://carbon.cudenver.edu/~mryder/itc_data/idmodels.html
Video Seminar	Thirteen.org <i>Constructivism as a Paradigm for Teaching and Learning</i> http://www.thirteen.org/edonline/concept2class/
ERIC	ED445674 <i>The Legacy of Robert M. Gagne</i> , edited by Richey, Rita C., 2000.
	ED430683 <i>Architects of the Intellect</i> , by Fogarty, Robin, 1999, presents the constructivist or brain-compatible classroom by describing classroom activities based on the work of theorists Dewey, Piaget, Vygotsky, and others
<i>Check the Companion Website for additional links and links that are periodically updated to reflect new resources as they become available.</i>	

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