

## How Do Students Learn Best?

Rachael L. Sloan

Bridgewater College

### Abstract

Although learning can happen in many different contexts, there are some key principles of a learning environment that hold true to help students learn best. The first of these principles is a supportive classroom environment that encourages learning, creativity, and exploration. Also, the teacher must be the guide of students' learning and provide structure to the classroom. Students must be provided with the correct skill set for each learning topic, and they must be able to organize their learning and make connections among information, including information across different disciplines. Students should be provided with background and connections to show them how information they are learning can be used in life. Finally, students must have deep learning, through which they can develop an understanding of concepts, draw connections, think critically, and discuss their concepts of topics. A learning environment that includes support, structure, skill sets, connections, and deep learning will best foster learning for students.

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“The purpose of education is to enable individuals to reach their full potential as human beings, individually and as members of a society,” according to Ira Shor, professor at City University of New York (21<sup>st</sup> Century Schools, 2010, para. 5). If this idea is true, as many believe it is, how should students be taught so that they can reach their full potential? How *do* students learn best? Some schools of thought promote teaching just the information required on standardized tests, while others encourage students to learn whatever they want, without regard for subjects. However, the best solution is in the middle of these extremes. Students learn best in an environment that is supportive and structured, provides a skill set, and encourages making connections and deep learning.

A classroom environment that is supportive of students’ learning will help students learn by fostering creativity and intellectual growth. It is important that students feel that they have the freedom to try new ideas, make mistakes, and explore what interests them without fear of embarrassment or punishment. A key source of this feeling of freedom is the teacher, who sets the tone for the entire classroom. If a teacher encourages, accepts, and praises his or her students, the students will thrive (Brown, 2004, p. 40). The “climate” of the classroom – that is, the feelings and interactions of the students and teacher – can have a major impact on students’ learning both positively and negatively. On the positive side, feelings of security, including trust in and encouragement from the teacher, promote student reactions that are positive, respectful, and inquisitive. However, the threat of humiliation and punishment lead to an emotional response; if a student feels threatened, “thoughtful processing gives way to emotion or survival reactions” (Sousa, 2001, p. 61), and the student’s learning is impeded. One practical way for a teacher to reduce perceived threats is to increase wait time, or “the period of teacher silence that

follows the posing of a question before the first student is called on for a response” (Sousa, 2001, p. 128). When a teacher asks a question and leaves only a second or two for response, some students feel rushed, stressed, or unable to think; however, when the teacher allows at least five seconds for response, more students participate and students are more likely to give answers that are well thought-out (Sousa, 2001, p. 128). Simple adaptations in the classroom like extending wait time can have a major impact on the classroom climate and encourage student learning to its full extent.

Along with making students feel safe and encouraged, teachers should also help each student to feel that he or she is a necessary part of the classroom community. The idea of a “community of learners,” in which teachers and students work together to learn and teach one another, is conducive to a safe and supportive environment. In Jeanne Ormrod’s *Educational Psychology: Developing Learners*, the key tenets of a community of learners include such ideas as “all students are participants in classroom activities” and “students and teacher coordinate their efforts in helping one another learn; no one has exclusive responsibility for teaching others” (2011, p. 235). In a classroom environment in which every individual helps others learn and every student participates, each student develops a feeling of owning his or her own learning, which motivates him or her to learn more, be curious, and delve deeper into subjects. In addition, classrooms can encourage active engagement and participation by allowing students to choose the direction of their studies. Students can experience a feeling of empowerment in student-centered learning, in which they decide what to study and how to pursue the topic, rather than teacher-centered learning, in which the teacher decides everything that the students should learn, how they will learn it, and what they should do with that knowledge (Brown, 2004, p. 43).

Students learn best when the teacher is the guide of classroom learning as an authority figure and a source of help and provides structure to the classroom. As the Community of Learners model states, “the teacher provides some guidance and direction for classroom activities, but students also contribute to such guidance and direction” (Ormrod, 2011, p. 235). An example of a classroom following this model is as follows: At the beginning of the school year, a fifth-grade teacher speaks to her students about acceptable and unacceptable behaviors in the classroom, and together they brainstorm to create a list of classroom rules for the year. As the year progresses, students are held accountable by their teacher and one another to the list of rules that they created. In teaching and learning matters, this classroom follows the same guidelines; the teacher introduces a unit topic that the class will be covering (e.g., the American Revolution), and students may decide what kind of project they will develop to demonstrate key tenets of the topic (e.g. the causes of the war through a poster, video, slideshow, diorama, skit, or other means to demonstrate learning).

Another key tenet of the classroom in which students learn best is the implementation of a structured environment, demonstrated through the fifth-grade classroom’s list of rules. In this context, a structured environment means one in which there are boundaries for safety, discipline, and order, while allowing and encouraging students’ creativity and interests. Students feel safe in an environment in which they know the expectations of the classroom and know that they will be regularly enforced. The Alabama Federation Council for Exceptional Children (n.d.) recommends that each classroom post and enforce socially acceptable rules, such as completing assignments and respect for others and others’ property, and remarks that “a structured classroom is not necessarily rigid or inflexible. Rather, it contains characteristics that are designed to emphasize the relationship between behavior and consequences” (para. 1). When a teacher is

upfront with his or her students in promoting the rules and consequences, the classroom has a structure with obvious right and wrong behaviors that can then be shaped to promote classroom peace, fewer distractions, and deeper learning.

Even in a classroom with structure, there will inevitably be discipline problems that need to be addressed to ensure that students are not distracted and their learning is not impeded. However, since the supportive environment of the classroom is a key issue, the way that discipline problems are addressed is, likewise, a delicate but important matter. David Lieberman noted in *Learning: Behavior and Cognition* that when students are disruptive, “they not only fail to learn themselves but also seriously interfere with the work of those around them” (1993, p. 286). Students learn best when their behavior, good and bad, is dealt with appropriately and fairly. Psychologist B.F. Skinner’s study of operant conditioning stated that “a behavior will be repeated by a subject when rewarded” (Williams, 2011). Skinner recommended the use of positive reinforcement (an incentive) and negative reinforcement (taking away an unpleasant situation or thing) to encourage correct behavior, and Lieberman added that “even a seemingly trivial reinforcer...[can produce] remarkable changes in the behavior of the most severely disruptive children in the school, provided that this reinforcement [is] both immediate and consistent” (1993, p. 287). Reinforcement can take the shape of material items, such as a token economy in which students are rewarded with points or tokens which can later be exchanged for candy or other items, or social reinforcers, such as praise (Lieberman, 1993, p. 289). Along with reinforcement, regular feedback must be implemented to encourage students and make sure they understand the relationship between their behaviors and consequences (Lieberman, 1993, p. 288).

As students learn appropriate behaviors, they are being prepared not only for the rest of their school years, but also for adult life in society in which they will be expected to act in certain ways and know particular skills for different situations. Students learn best when they are provided with the correct skill set for the situation, whether the skill set is behavioral, informational, or procedural. In the classroom, no matter what subject is being taught, students need the proper skill set to learn and understand the information being presented. Before students can be taught any new information, the teacher must assess students' prior knowledge, making sure it is factual, and promote understandings of the vocabulary, basic skills, and background of the topic. For example, in a high school chemistry class, the teacher must first teach the essentials of the elements and their atomic structures before explaining chemical reactions between elements. The chemistry teacher should review what students have already learned about how elements work and teach necessary vocabulary to enhance understanding before teaching more complex information about the subject. This example illustrates Robert Gagne's theory of hierarchical learning, which states that students must learn the information on one level before progressing to the next (Kearsley, 2011a). Similarly, George Brown noted that

If new information is encoded separately it is likely to remain inert or attached to only a few loosely related networks. If the encoding is based on the existing network of ideas (schemata) then the information is more readily assimilated and, usually, more easily retrieved. New information may change the schemata but the precise conditions when this will occur are hard to predict (2004, p. 24).

Thus, as students advance from lower to higher levels of complexity and understanding, they must organize their learning and make connections among the countless types of information they have learned to better retain and recall information. Students learn best when

their learning is interconnected; teachers should “explore and show connections and links between and within topics” (Brown, 2004, p. 22). The prominent educational psychologist Jean Piaget believed that learners construct their understandings of the world, and that the more information they are given, the more complex and intertwined their ideas of the world become. Piaget proposed that as students learn, they either assimilate new ideas into previous ways of thinking, or accommodate ideas by modifying old ways of thinking or creating a new way of thinking (Ormrod, 2011, p. 28). Lev Vygotsky, another famous educational psychology theorist, encouraged teachers to work with students to “scaffold,” or help build upon, their previous learning to connect new learning; he called the area in which students could not achieve a task alone, but could achieve it with help, the Zone of Proximal Development, or ZPD (Ormrod, 2011, p. 41). Using the ZPD is an especially effective way of helping students learn in that it promotes cognitive growth and challenges students to grow beyond their current levels of knowledge and learning. The ZPD can be utilized effectively by a teacher when the work assigned to a student is neither too easy to be accomplished entirely without help, nor so hard that it cannot be accomplished even with help. For example, a third-grade teacher could present, as a new topic, a three-digit subtraction problem and walk through it with her students step by step, providing cues along the way but still allowing students to give answers. If the students had never seen a three-digit subtraction problem, they might not be able to solve it, but with the encouragement and help of the teacher, the students could build upon their previous knowledge of subtraction and learn the process.

Connections among concepts further enhance learning in that they provide motivation and reasoning to students who wonder how they can use this information in their everyday lives. George Brown noted that “learning is more effective if it is based on the learner’s own



experience” because the student’s reflection on the learning transforms it from a theoretical concept to one that can be used in everyday life and possibly transferred into other subjects (2004, p. 36). For example, in a seventh-grade economics class, each student must create a product, market that product to his or her classmates, and reinvest the profits to keep the business going. Through this project, students are not only learning about the economics of their own businesses, small as they may be, but also about how large companies work and how the economy of the world functions. The project may also bridge transfer to other classes, which aids in drawing stronger connections; students might use the information they learned in economics to discuss a book about the Great Depression in a language arts class. As students can see how the information they are learning relates to the past, their lives now, and their lives in the future, and they can also see how information learned in one situation could be transferred into other situations, they will make deeper connections among concepts and have an overall better understanding of the information that they have learned.

When students are better able to understand how what they are learning in the present will affect them in the future, their learning will be more effective and they will be more motivated to learn, remember, and find better ways of remembering what they have learned. One strategy for learning and memory is through metacognition and metamemory. Psychologist John Flavell introduced the theories of metacognition, or “thinking about thinking,” and metamemory, or thinking about the process of memory. He proposed that people consciously organize and store the constant stream of information input they experience, and they use metacognition and metamemory when they are thinking about the information they are taking in, the way they want to store the information, and how they can best retrieve the information later. Flavell further proposed that metacognition and metamemory can be improved, and students can

be taught better ways to process, store, and retrieve information that they have learned (Alic, 2001). Therefore, students learn best when they know strategies to organize and store their learning so that they can access it again.

One such strategy that is essential in the classroom and in the world is the process of note-taking. When students take notes most effectively, they organize the information they are learning so that they can more easily remember it for future use and build upon it. Psychiatrist David Ausubel promoted the idea of advance organizers, saying that before information is presented to students, they should be provided with ways to organize the information they will be learning. “Organizers act as a subsuming bridge between new learning material and existing related ideas” (Kearsley, 2011b). In the classroom, students can use organizers to see how information connects and draw conclusions, write summaries, and form new ideas from the organization of knowledge. Similarly, the Gestalt theory of learning, popularized by Max Wertheimer in the 20<sup>th</sup> century, states that people group pieces of information in four main ways: proximity to each other, similarity, closure, or completion, and simplicity, including symmetry and regularity (Brown, 2004, p. 15). As teachers use Ausubel’s idea of advance organizers and the Gestalt theory to help students organize their learning, students will eventually be able to organize notes on their own and further improve their metacognitive skills and metamemory.

The final attribute of a classroom in which students learn best is the encouragement of deep learning, or “the search for understanding,” including such characteristics as “intention to understand material for oneself, interacting critically with the content, relating new ideas to previous knowledge and experience, relating evidence to conclusions, examining the logic of an argument, [and] using organizing principles to integrate ideas” (Brown, 2004, p. 32). Several of components have been addressed here previously, in ownership of learning, making connections,

and organizing ideas, and deep learning encourages an integration of all of these components. Students must apply the skill sets they have learned, construct their own knowledge and question information, and take responsibility for their learning. One example of an approach to deep learning is called discovery learning. Introduced by Jerome Bruner, discovery learning expects students to explore ideas and procedures to construct their own knowledge (Conway, 1997). Often, discovery learning projects are given in groups, with each student having one area in which he or she is an “expert” on the topic; this helps students work better with others and allows them to integrate their knowledge. However, “teachers have found that discovery learning is most successful when students have prerequisite knowledge and undergo some structured experiences” (Conway, 1997), so it is most useful when combined with strategies previously discussed, such as teaching a skill set and having classroom structure.

Strategies like discovery learning encourage curiosity in students, helping them to enjoy and continue to develop strategies and skills to be used in life-long learning (Martin, 2000). Students learn best when they are encouraged to discern information and draw conclusions. Case-based learning, in which students are given practical, real-life situations in which they must find solutions to problems, is one type of discovery learning. For example, in a tenth-grade biology class, students are given a mock murder scene and must gather evidence, run tests, and find the perpetrator. Although the teacher acts as the guide and provides resources, the students must work together to learn how to run their “crime lab” and how to carry out each step. In this case, as in much of learning, the “what” is equally as important as the “why” and the “how” questions; that is, students are not just memorizing facts, but learning how they relate to one another and why it matters.

This idea of deep learning counters the teaching practices of many of today's educators. Often learning just takes surface approaches, expecting students to reproduce the information given to them solely to meet assessment requirements (Brown, 2004, p. 32). Some students are strategic learners, who use both deep and surface learning strategies, depending on the context, to make good grades; these students are organized and intelligent enough to figure out how to "work the system," but all of their learning is not deep and therefore is not making connections that will stay with them.

One way to find out if students have been learning on the surface or truly have a deep grasp of the material is through discussion. Students learn best through the open presentation and challenging of ideas, as in discussion, and teachers can utilize discussion to encourage students to think in different ways about topics and make new connections. In addition, teachers can listen to students' opinions and reasoning in discussion to assess the depth of each student's grasp on the topic.

If the true purpose of schools is to produce thoughtful, learned, and productive citizens, these tenets of education should be adopted and utilized. When students are supported, given a structured environment, provided with the necessary skill sets, and taught to organize learning, make connections, and learn deeply with curiosity and interest, they will learn best and will be lifelong learners.

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