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Do Students Care About Learning? Pages 70-73

Guiding the Innate Constructivist

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Teachers can create short, carefully designed events that fully engage students and prepare the way for active learning.



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How do students learn? Brain research and cognitive psychology offer insights that can help us see how students become engaged learners. The notion of living systems (Capra, 1994), for example, helps us understand students as concerned with surviving in and adapting to the changing demands of the world around them. And Gopnik, Meltzoff, and Kuhl (1999) suggest that every infant is born with an innate drive to make sense of every experience. Almost all such natural learning, then, is constructivist, seeking to construct personal meaning in response to the world.

This desire to make sense of the world is an intense, total experience. Maturana, Varella, and Paolucci (1998) maintain that learners do not react to portions of their experiences but, in fact, respond to the totality of every experience. And as learners interact with the world, they change both mentally and physically. Neuroscientists have unveiled the brain's remarkable plasticity and how learners' experiences of the world shape their brains.

Neuroscientist Antonio Damasio further points out that every aspect of body and mind interconnect—"the human brain and the rest of the body constitute an indissociable organism" (1994, pp. xvi-xvii). In every subject in every class, then, the entire student, body and mind, is learning. In addition, "almost every thought, no matter how bland, is accompanied by an emotion, no matter how subtle" (Restack, 1995, p. 21), and these emotions activate and reinforce learning. Problems arise, of course, when the instruction does not relate to what the student finds important to learn and therefore does not engage his or her full response.

The challenge for educators, then, is to link what we want to teach to what really matters to students—to engage the whole body and mind of students in the classroom so that their natural learning capacities become fully engaged in the subject.

The Guided Experience

Creating compelling classroom events that spark students' curiosity and questions is a powerful way to guide students to explore a subject. These guided experiences (Caine & Caine, 2001) combine intellectual information on a specific subject with powerful emotional content to elicit students' questions and their innate drive to understand their personal experiences. Because

students tend to make sense of experience by focusing on what they care about, embedding our standards in these guided experiences naturally motivates students to ask questions that are personally important to them and that meet standards at the same time.

As soon as students are looking for answers that matter to them, they can work with others and, with teacher guidance, use good questioning and critical thinking skills to identify and integrate the standards through their personal inquiries.

What are these guided experiences like? Here are two examples.

The U.S. Civil War

Several instructors worked together to develop a module about the U.S. Civil War for an 8th grade class. Before they began the unit, they had made sure that the class had a good sense of community so that students could deal with the difficult subject of war and work effectively in groups. For example, students had learned how to listen to one another and how to handle most disagreements among themselves in a nonjudgmental way.

Next, the teachers agreed on the standards and core information that they wanted their students to master, including such topics as the causes of the war, the nature of slavery, and the development of the Union. Students also needed to know core facts, including important dates and the sequence of events, major battles, and significant individuals who affected the outcome of the war.

Although the teachers had certain content standards in mind, they did not explicitly outline the facts and issues that they were going to cover. Instead, they created and presented a powerful introductory event that engaged students' heads and hearts in the issues of the Civil War.

To engage students' natural interest in novelty and the unexpected, one of the teachers began by reading a story about Sarah Rosetta Wakeman, a female soldier in the Union army who, disguised as a man, secured a position as a coal handler on a canal boat in 1862, apparently to help support her impoverished family.

After briefly introducing this female soldier, the instructors played a short excerpt from the video *Gettysburg* (Turner Pictures & Maxwell, 1993). It showed Confederate soldiers lining up and then marching into the face of ferocious Union cannon fire. Instead of the video's soundtrack, the instructors played an audiotape of Charlotte Church (1998) singing "Pie Jesu."

The clear voice contrasting with the violence expanded and heightened the range of emotions experienced by the students. After a few minutes, but while the video and music were still playing, the instructors displayed an overhead on the classroom wall. The overhead told the rest of the story of Sarah Rosetta Wakeman, explaining that although her female identity was never discovered during her lifetime, she was one of more than 400 women who served in the Civil War.

The teachers then displayed data about the battle at Gettysburg on another overhead, citing, for example, the 51,000 deaths that resulted from three days of fighting, a total that exceeds the number of U.S. soldiers who died in the Vietnam War.

When the 10-minute presentation was over, the room was completely silent. After a short while, the teachers asked, "What questions do you have?" The responses were overwhelming: "Why did they fight?" "Why did the soldiers walk into enemy gunfire?" "Were women really fighting, and why did no one know they were?" and so on.

Using these questions as guides, the teachers grouped the students with similar interests to research their questions. Students visited a library, searched the Internet, and talked to war

veterans. The class as a whole agreed on time limits for the research and how they would share their findings. Then student groups presented their reports.

During the students' research and reporting, the teachers introduced and embedded the standards. For example, one of the key issues that the unit explored was social class. When a student asked questions about the clothes that people wore, a teacher asked, "Was there a difference between the clothes of a general and a private?" and "Why do you think their clothes were different?" In this way, the teachers naturally introduced the notions of social class. Similarly, the question "Why did they fight?" led to discussions about the causes of the war and the different groups involved. This active questioning process enabled the teachers to raise all the core issues and to introduce most of the core facts.

Of course, the teachers had to raise some issues directly and use short presentations and creative practice and rehearsal to ensure that all students knew, and even memorized, some relevant facts. Because students were answering their own questions and covering information that was interesting to them, they welcomed occasional teacher lecturettes and memory games.

Life Sciences

The guided experience approach can work with every subject at every grade level and can vary in complexity. The 3rd grade standards for science in California, for example, stipulate that students should know that adaptations in physical structure or behavior can improve an organism's chance for survival. To understand this concept, students need to learn that plants and animals have structures that serve different functions in growth, survival, and reproduction. They should be familiar with the diverse life forms that flourish in different kinds of environments. In addition, students need to learn that asking questions and conducting careful investigations will improve their understanding of science. Janine, a 3rd grade teacher, knew the standards. One day, she set up an ant colony in the classroom. A sign over the aquarium said,

Ants are wonderfully organized, but no single ant is in charge. Some large corporations are studying ants to learn how to organize their businesses. They understand that sometimes nature knows more than we do.

Janine asked for some volunteers to see how much weight each could lift. After a few people tried, she pointed to the ant colony and mentioned that an ant can lift objects five times heavier than itself.

Janine then showed a few minutes of the video *MicroCosmos* (Barratier, Mallet, Perrin, Nuridsany & Perennou, 1996). In one sequence, the camera began above the clouds, zoomed down to fields and trees, and then entered the surprising world between the blades of grass. There, a glorious array of everyday insects loomed large, revealing unexpected abilities, shapes, and behaviors.

The purpose of this guided experience was not to teach but to interest. When the teacher stopped the video, students asked her to play more.

"Why?" she asked. "What interested you?" There was a rush of opinion, discussion, and questions. Janine's job, then, was to direct that interest. Students identified strong interests and then generated and organized their questions. Some students chose specific insects for further investigation; others wanted to know more about what the ants in the classroom's ant colony could do.

As students launched their research projects, Janine introduced the required standards in many ways. For instance, when students reported back on particular insects, she generated discussions about the differences in structure and function. And when students described the life of a grasslands insect, she brought up questions about insects in other environments. Students

developed an appreciation of the processes of investigation because they were studying subjects that mattered to them.

Crucial Skills

For this approach to work well, teachers must master four key competencies.

Develop Community

A teacher must build a strong sense of community in the classroom and be attuned to the group's level of maturity, especially when students are dealing with such emotionally difficult issues as war. Also, this approach requires teachers to let go of a significant amount of direct control, so establishing a climate of mutual respect and responsibility is crucial. Encouraging reflection, group collaborations, and student decision making can lay the groundwork for developing a classroom community.

Use Materials Creatively

The design of guided experiences requires a sense of artistry. The prevalence of multimedia resources and block scheduling often tempts teachers to simply play more of a movie or video. The key to effective guided experiences, however, is to use just enough of the chosen source to engage students and give them a sense of context. The guided experience is not a time to present all the relevant facts or to tell students everything that they will be covering. Rather, the objective is to stimulate questions and a desire to learn more.

Question Effectively

The art of engaging students' emotions and of using questions to spark their curiosity is subtle and takes time to master. Teachers who focus their questions carefully can avoid diluting students' interests and not go beyond what students can handle. Introduced appropriately, questions can differentiate instruction and help students across a wide range of individual differences. For instance, advanced students can deal with more challenging information and complex issues at the same time that other students cover more basic information and less complex issues.

Master the Subject

The guided experience approach requires that a teacher have an excellent grasp of curriculum standards and be proficient in the subject matter. Students' questions will come from many unexpected directions. A well-informed teacher can be spontaneous and on the constant lookout for places in which to introduce the standards, able to recognize the appropriate opportunities to introduce or emphasize something relevant.

Cautions and Benefits

The foundation of the guided approach is brain/mind constructivism, the ways that the brain/mind learns naturally. Students have opportunities to make sense of what they come across, and teachers guide them in this process. Teachers who thrive with this approach can deal with ambiguity and let go of some control (Caine & Caine, 1997). They need to spend time on designing and preparing materials and on developing their questioning and community-building skills.

When done well, however, the approach engages students in authentic learning and offers teachers invigorating opportunities to be creative. Discipline problems diminish when students' concerns and questions lead the learning and their intrinsic interest drives participation. And

although the approach is nonlinear, our own experience over many years shows that students who have experienced the exhilaration of this kind of learning also tend to do better on standardized tests. Clearly, when we engage students' innate interests through these guided experiences, students do learn.

References

- Barratier, C., Mallet, Y., & Perrin, J. (Producers), & Nuridsany, C., & Perennou, M. (Directors). (1996). *MicroCosmos* [Film]. Burbank, CA: Miramax Films.
- Caine, G., & Caine, R. N. (2001). *The brain, education, and the competitive edge*. Lanham, MD: Scarecrow Press.
- Caine, R. N., & Caine, G. (1997). *Unleashing the power of perceptual change*. Alexandria, VA: ASCD.
- Capra, F. (1994). *The web of life: A new scientific understanding of living systems*. New York: Anchor Books.
- Church, C. (1998). Pie jesu. On *Voice of an Angel* [CD]. New York: Sony Music Enterprises.
- Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: Avon Books.
- Gopnik, A., Meltzoff, A. N., & Kuhl, P. (1999). *The scientist in the crib: Minds, brains, and how children learn*. New York: William and Morrow.
- Maturana, H. R., Varella, F. J., & Paolucci, R. (1998). *The tree of knowledge: The biological roots of human understanding*. Boston: Shambhala Publications.
- Restack, R. (1995). *Brainscapes*. New York: Hyperion.
- Turner Pictures (Producer), & Maxwell, R. F. (Writer/Director). (1993). *Gettysburg* [Film]. Atlanta, GA: Turner Pictures.

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