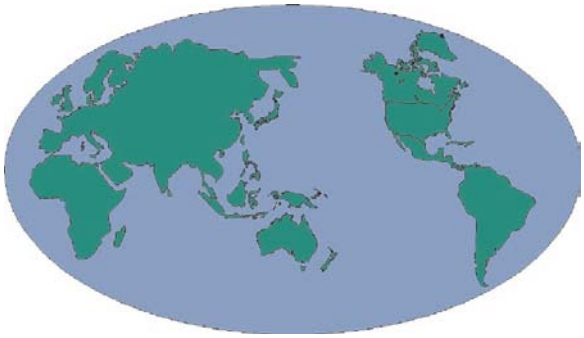

Big Ideas About Teaching Big Ideas

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Enabling students to understand big ideas about our world is essential to an effective democracy and, other than basic literacy skills and social competence, is the most important kind of knowledge we can impart to *all* our children. In this age of high-stakes testing and accountability, instruction in big ideas may be more elusive than ever. The presence and quality of big idea instruction is affected by many variables. In this article, we present four big ideas about teaching big ideas—and along the way, challenge some myths and misconceptions about teaching and learning today.

Big Idea #1: Separate Myths and Political Rhetoric From Reality

In theory, empirical evidence (research) provides reliable data that should form the basis of our beliefs and decisions about what to do and how to teach students with and without disabilities. To us, the relative influence of research is minor when compared to the power of long-held social beliefs and the political rhetoric of the moment. The result is that much of what we do is strongly guided by myths. Here are what we believe to be myths that are currently affecting instruction (or lack of) in big ideas.

Figure 1. Questions From Unit Test on Age of Exploration (Seventh Grade)

Name of Columbus' 3 ships (Nina, Pinta, Santa Maria)
Which of the 3 ships sank? (Santa Maria)
Captain of the Pinta? (Martin Pizon)
Explorer seeking the Fountain of Youth? (Ponce De Leon)
Explorer who discovered the Mississippi River? (De Soto)
Conquered the Aztecs? (Cortez)
Leader of the Aztecs? (Montezuma II)

Myth: Good Grades = Good Learning; Good Learning = Good Grades

Even though we know better, most of us who are parents experience a sense of joy when our children bring home a "good" report card. Those good grades elicit a feeling that our child is learning what he or she needs to learn. Upon closer examination, however, grades in secondary schools are often a function of four things: obeying rules, completing tasks on time, memorizing information for tests, and demonstrating test-taking skills.

Figure 1 shows test questions that assess whether students memorized factual information. Many students are effective memorizers when the teacher explicitly tells them what to study. And many perform considerably worse when they have to make decisions about what aspects of the content they should attend to when memorizing for the test. Thus many students are good memorizers but are poor at processing information.

Consider the questions illustrated in Figure 2. Notice that they were listed as "bonus" questions, implying that these ideas reflect incidental learning that some students (i.e., the gifted students) might manage to acquire, but it is considered acceptable if students didn't gain these understandings. One might argue that these questions reflect understandings that all students should be expected to gain, at least to some degree. These questions reflect big ideas, trends, or phenomena that are *generative* in nature—that is, the ideas themselves are universal and are not unique to a specific time and place. One might wonder if it is better for students

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Figure 2. Bonus Questions From Unit Test on Age of Exploration (Seventh Grade)

Competition for resources often causes powerful countries to manipulate and exploit weaker countries. Explain how this idea showed up during this age.

(BIG Idea: Throughout the ages, groups with power tend to exploit other groups in weaker positions in order to maintain their power.)

If a "lost continent" were suddenly discovered today, would the people and resources there be treated the same way as in the Age of Exploration? Why or why not?

(BIG Idea: Although not "politically correct," exploitation is still rampant in today's world.)

Do you think religion was intentionally used by countries as a way to build wealth during the Age of Exploration? Why or why not?

(BIG Idea: Throughout the ages, groups of people have used religion as an opportunity to build wealth and gain power.)

to experience the satisfaction and validation of making excellent grades when they are only expected to memorize trivia, or to make lower grades because their understanding of the generative idea might be less than stellar. In other words, is it better to know a lot of trivia (at least long enough to score well on tests) or is it better to have some level of understanding, even if somewhat erroneous, of the generative idea?

Traditional classroom tests tend to assess knowledge as dichotomous—that is, the answer is correct or incorrect. In reality, only knowledge of factual information is dichotomous. All other types of knowledge are forms of or degrees of understanding, which fall on a continuum ranging from sophisticated, accurate, and complete to superficial, erroneous, or incomplete. Figure 3 illustrates some of the kinds of evidence that reflect understanding of big ideas.

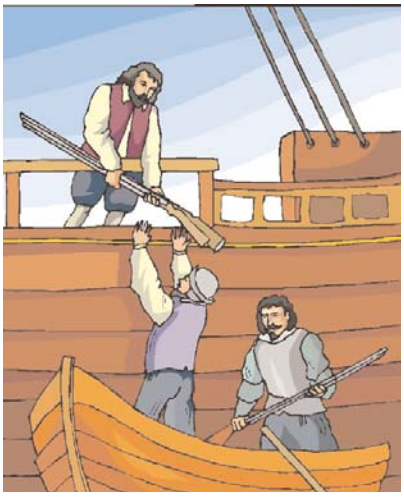
Teachers should not confuse the problems with teaching trivia with the necessity of teaching relevant details and facts. To have a contextual understanding of a big idea (i.e., why the idea matters in our world), one must have a minimal understanding of the details of the context in which the idea is relevant. In short, students need to know both the big idea and its components—the little ideas that make it big.

There are basically two approaches to big idea instruction. The first is a constructive approach whereby the educator teaches a series of pertinent little ideas that lead students to constructing an understanding of the big idea. Here, the teacher's task is not done until students demonstrate an understanding of both the big idea and its essential components or details. The second takes an opposite track. Here, the big idea is first explained and then de-constructed as the details supporting the ideas are identified and understood. Unfortunately, teachers typically do neither. Rather, most teach an assortment of details and ideas that neither lead to an understanding of a big idea nor enable students to construct a big idea. The really scary part is that a great many "expert," highly qualified teachers do not know what the big ideas are, nor do they have a way to access this information.

Myth: Hands On = Minds On

There are many kinds of knowledge, but the two that are most critical to academic success are *episodic knowledge* (what one knows from experience, as in "hands-on activities") and *semantic knowledge* (what one knows from language or words). Episodic knowledge is gained when one observes tadpoles and sees their different stages of metamorphosis. Semantic knowledge is gained when one reads about things that are going on during the metamorphosis process that cannot be readily observed or experienced.

Popular teachers are often considered good because their instruction is largely hands-on—it's interesting, fun, and experiential. It is assumed that students are learning something during these experiences. In many cases, students thoroughly enjoy the activity, but they totally do not "get it" nor gain a deep understanding of the concept the activity was designed to teach. This is, in part, likely because semantic and episodic learning experiences were not sufficiently intermingled. Put another way, students failed to use language as a learning tool to elaborate on the experience.



Language learning, or elaboration, is an essential ingredient to developing deeper understandings of ideas. In the absence of elaboration, students will memorize what they believe they need to know for an upcoming test. The less one elaborates on information, the less likely it will be remembered. Thus, many students who make reasonably good grades actually know very little. In short, although hands-on experiences are an important ingredient to learning, what makes them really powerful is when there is a considerable degree of student elaboration of those experiences.

Myth: The General Education Curriculum Is Worth Learning

The notion that all students should learn the general education curriculum

Figure 3. Indexes of Understanding Big Ideas

- Makes many connections to other ideas.
- Can explain how idea is affected by various phenomena.
- Can explain impact of idea on the world.
- Makes effective comparisons with other ideas.
- Can summarize or explain gist of idea in own words.
- Has sufficient knowledge of relevant facts.
- Can identify different manifestations of idea.
- Can recognize inappropriate applications or iterations of idea.

(GEC) is based on the assumption that it is worth learning. Take for example, the test questions illustrated in Figure 1 (based on GEC) and the bonus questions illustrated in Figure 2 (*not* from GEC). Which kind of knowledge is more valuable?

We lean heavily toward the generative ideas because these ideas help learners understand what goes on in the world and how things occur the way they do, and how or why they will probably occur again.

A common argument is that we should be teaching both. Yes—if we had unlimited time, energy, and resources to do so, but the reality is that time to teach the curriculum is relatively fixed (175–200 school days per year); there are limits to teachers' energy reserves and instructional resources are consistently being reduced. Teachers are under enormous pressure to teach more, in less time, with fewer resources, to students with widely diverse abilities and backgrounds. In short, there is a limit to what teachers can accomplish, so we believe they should be focusing on teaching a curriculum that has some degree of relevance; unfortunately, this is not always reflected by GEC.

GEC, as it currently stands, does not measure up to a level warranting insistence that all students learn it. It tends to not address generative ideas for several reasons. First, there is little agreement among content experts what the generative ideas are, whereas facts are less debatable and more assessable. Second, special interest groups put enormous pressures on textbook companies not to have their material include ideas that might be offensive to some. Texts, therefore, tend to be highly homogenized and devoid of honest discussions of critical issues to decrease the likelihood of rejection by sensitive members of selection committees or school boards. Thus, teachers often do not have access to text information about generative ideas associated with the content they are teaching. Third, U.S. education has placed so much emphasis on memorization of trivia as the standard for learning that few teachers have any sense of what the generative ideas are because they never had opportunities to learn them themselves. These individuals subsequently find themselves on state curriculum committees writing standards for their state's GEC. To insist that all students learn GEC in its current state seems illogical, at best.

Big, "generative" ideas help learners understand what goes on in the world and how things occur the way they do, and how or why they will probably occur again.

On a more optimistic note, many national professional organizations have developed sets of standards that very effectively address big ideas and principles. For example, a consortium of four geography professional organizations published a set of national standards that reflect 6 big ideas and 18 principles that spring from them (Geography Standards Committee, 1994). These clearly define what it is about geography that students need to understand.

Myth: Highly Qualified = Good Teacher (or, at Least, Better Teacher)

There are many merits to insisting that our children's teachers be knowledgeable in their subject area, thus "highly qualified" (HQ); we certainly do not want our children to be taught erroneous information. However, keep in mind that the information teachers are expected to master in order to become HQ often suffers from the same limitations as discussed previously.

Parenthetically, teachers' knowledge of their subject matter influences how they teach it. Some do not know enough about the content, in spite of their HQ status, to prioritize the information into essential and nonessential information to teach. These teachers are often highly dependent on their textbooks and teacher guides. Because they tend to be somewhat overwhelmed with trying to teach unfamiliar information, utilizing anything other than the most basic forms of pedagogy (lecturing) is often beyond their capacity. Classes comprised of students representing a range of ability and background knowledge are typically provided a one-size-fits-all form of instruction.

Other teachers who lack knowledge of their subject often disguise this by substituting activities and projects that keep students occupied with surface-level information—the notion being that they are allowing students to "construct their own understanding." Other content teachers' ability to help students understand what is essential to know is handicapped by their *abundance* of knowledge about a topic. From their perspective, everything is relevant and essential to understand; the idea that the subject matter should be differentiated into essential-to-understand big ideas from related, but less essential-to-

know concepts and facts violates the integrity of the subject matter. Students in these classes are provided little assistance with understanding generative ideas. Students know that the key to success with these teachers is to secure a study guide that lists everything they will be expected to memorize.

Big Idea #2: Make Content More Learner Friendly Rather Than Water It Down

To make the curriculum more accessible for students with disabilities, accommodations should be one of the first things teachers should do because the expectations for learning are maintained. In contrast, modifications should be one of the last things teachers do because learning expectations are reduced. These two kinds of strategies are often used together as if they were synonymous when they are anything but. As a result, expectations for learning are almost always reduced at the onset.

From our perspective, most of the information about accommodations that is circulated to teachers reflects lists of relatively shallow, superficial strategies (i.e., move student to front of room, provide a note-taker, etc.). These lists often fail to include what we believe are the two most robust things teachers can do to facilitate understanding: reduce information processing demands and maximize opportunities for student elaboration.

Reducing Information Processing Demands

Many students with dual disabilities experience language learning disabilities that are manifested in a variety of ways and lead to difficulty processing information. These include

- Short-term memory deficits (the student's brain cannot hold on to the information long enough to get it processed).
- Working memory deficits (the student experiences difficulty accessing related background knowledge or applying various elaboration strategies such as predicting, questioning, summarizing, imaging, and monitoring comprehension).

Some students can use these cognitive processes effectively, but simply need more time to apply them. An unfortunate net result is that students do not appear to learn the complex information, so expectations are lowered via curriculum modifications.

An alternative strategy to "dumbing down" the curriculum is to focus on ways to make the information easier to process by increasing its clarity (Deshler, et al., 2001; Ellis, 1997). Two ways to do this are (a) reduce the verbiage, and (b) make the organization of the to-be-learned information self-evident to the learner.

Reducing Verbiage. The more words we use to explain an idea, the more language students with language learning disabilities must process. Complex ideas expressed using concise and precise language is considerably easier to understand than when these ideas are expressed in rambling, poorly conceptualized, fuzzy language. Novice teachers frequently do not know the content well enough to express it clearly, and content experts often flood students with far too much information than is needed to develop a novice's understanding of the complex idea.

Organizing Information Into Recognizable Patterns. Most teachers are familiar with graphic organizers, primarily webs and Venn diagrams. Webs depict hierarchic organizational structures, whereas Venn diagrams facilitate compare/contrast structures. Other graphic organizers depict cause/effect relationships and either linear or circular sequences. A wealth of research has demonstrated their utility both as literacy tools and as content-learning tools. These are powerful tools presumably because when one processes information, the brain is engaged in an array of cognitive processes centered around relating the information to prior knowledge, conceptualizing how the information is structured or organized, differentiating supra-ordinate, coordinate, and subordinate levels of information (separating main ideas from details) and monitoring comprehension.

Using graphic organizers relieves the brain from engaging in some of these processes, hypothetically freeing it to engage in the other information processes required to construct meaning. Critical to understand is that when the brain does not have to work as hard to process and understand information, teachers can increase the complexity of the content rather than decrease it. Basic graphic organizers provide *structural prompts* to help students understand the information's organization structure (see our Web site, www.GraphicOrganizers.com).

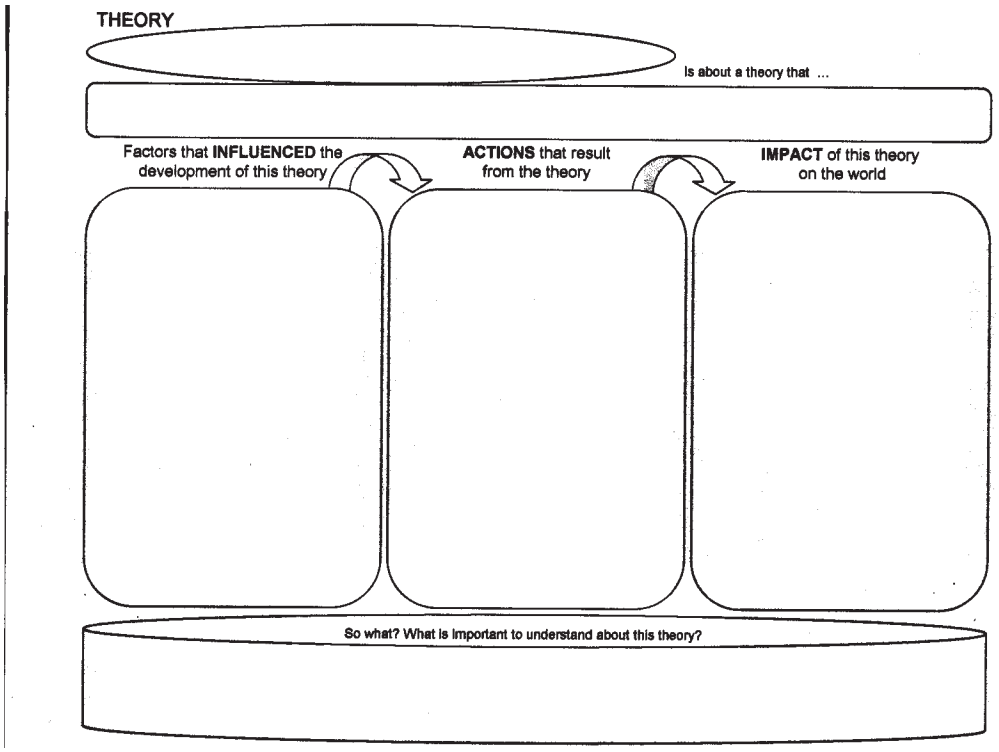
Conceptual and *relational* prompts can be embedded into graphic organizers to make them even more robust. Conceptual prompts focus the students' attention on specific ways to conceptualize the to-be-learned information. The words embedded in the graphic organizer in Figure 4 direct students to think about the topic in specific and important ways.

Basic graphic organizers provide *structural prompts* to help students understand the information's organization structure.

Maximizing Opportunities For Low-Risk Elaboration

Simply put, the more students elaborate on ideas they are learning, the better they develop meaningful understanding and remember them. One of the problems most readily noticeable in students with language learning disabilities is their struggle with elaborating ideas. They say as little as possible in class, rarely ask questions, or otherwise voluntarily engage in class discussions. When prompted to verbalize in class, they sometimes express ideas in ways that subject them to ridicule. As a result, to avoid embarrassing these students as well as having the instructional flow stall, these students are often the least likely to be called on in class. Thus, they are least likely to have opportunities for developing elaboration

Figure 4. Graphic Organizer With Content Prompts



skills (Ellis, 1998). They approach test preparation primarily as a rote learning task rather than an elaborative learning task. These are the overt symptoms.

The covert symptoms manifest in ways that significantly contribute to failure and subsequent lack of motivation and include inability to paraphrase, summarize, form predictions, use imagery, generate questions, and connect ideas to background knowledge. Brief factual statements followed by succinct open-ended questions are often preferable to long, extended questions. Likewise, activities that focus on helping students construct concise elaborations are considerably more robust than those that seek brief answers or imprecise elaborations (Ellis, 1997).

Big Idea #3: Scaffold Knowledge Complexity

When teaching students how to perform a skill, process, or strategy, most teachers are familiar with the process of scaffolding assistance whereby the teacher gradually fades support as students learn to independently apply the skill. When teaching students about big ideas, scaffolding knowledge is an essential tool. Here, teachers take the time to find out what students already know, or think they know about the concept, as well as what misconceptions or erroneous understandings they may have at the onset. The teacher then uses this background knowledge as a basis for teaching the abstract information. Likewise, they scaffold the complexity of the concept.

Educators need to focus their limited time and resources on teaching a curriculum that has some degree of relevance for students.

When faced with complex concepts from the general curriculum, a common initial reaction is to assume that students with learning problems cannot learn such abstract information. What is often substituted is instruction in more concrete concepts, or even worse, forgoing concept instruction and just teaching related factual information. In contrast, recursively teaching the same concept on increasingly more sophisticated levels (as opposed to attempting to initially teach the complex version of it) can often result in surprisingly complex and sophisticated understanding.

Big Idea #4: Meaningful, Intentional Learning Experiences

There are many paths to gaining knowledge of big ideas. In some instances, students need is to have someone explicitly explain the idea to them. However, what really makes understanding of the idea come alive for students is to engage them in authentic learning opportunities via structured inquiry. The idea is to provide students with opportunities to conduct their own investigations that have an authentic purpose.

Research has clearly demonstrated that students who are gifted perform

best in these circumstances when the projects are opened-ended, yet have a degree of structure and scaffolded assistance as needed. This would seem especially true for students with dual exceptionalities given their organizational problems. The idea is to provide enough structure as to enable the learner to be successful, yet not so much structure that the task is stifled by directions and inflexible procedures. Generally, these experiences fall into interrelated categories of project-based, problem-based, and service-based learning. We collectively refer to these as project-based learning (PBL).

Essential to understand about PBL, however, is that merely creating the project-oriented learning experience or opportunity is insufficient. The PBL must be intentionally linked to specific academic standards, and there must be a way to assess whether the standards were actually attained.

PBL focuses on student-team (or individual) investigations and/or applied real-life problem-solving actions or authentic application of knowledge. Guided by content area national standards and the teacher's expertise, students target areas of interest or a community need, plan and conduct investigations, develop and implement action plans and then share what they have learned with authentic audiences. As students conduct investigations into content-area subjects, they also develop essential skills for gathering and making sense of information, communicating, using higher order thinking, collaborating, reflecting, and self-evaluating. Perhaps most important, they experience a sense of active participation and enfranchisement with the community (Corporation for National and Community Service, 2002; Kauffman, 1999). Figure 5 shows PBL tasks in graphic form.

PBL provides a format for implementing several very powerful instructional principles, including differentiating instruction, scaffolding instruction, and facilitating socially constructed knowledge. This approach fosters the development in students of a sophisticated understanding of content-area subjects, as well as development of effective and efficient strategies for information-gathering and processing; communicating; critical, analytical, and creative thinking; collaborating; goal setting; and self-evaluating.

In addition to helping students develop specific skills and knowledge related to standards from the state course of study, PBL teachers emphasize the following:

- Using effective task-specific strategies that get the job done in an effective and efficient manner.
- Employing effective collaboration strategies and work habits.
- Maintaining a commitment to quality at all levels of project work and results (Ellis & Farmer, 2005; also, refer to Figure 5).

Final Thoughts

In teaching big ideas to any students, you must know where you want to go, you must want to get there, and you must be willing to do what is necessary to make it happen. Be persistent, show commitment, and use multiple strategies to encourage your students. The depth of their learning may surprise and delight you.

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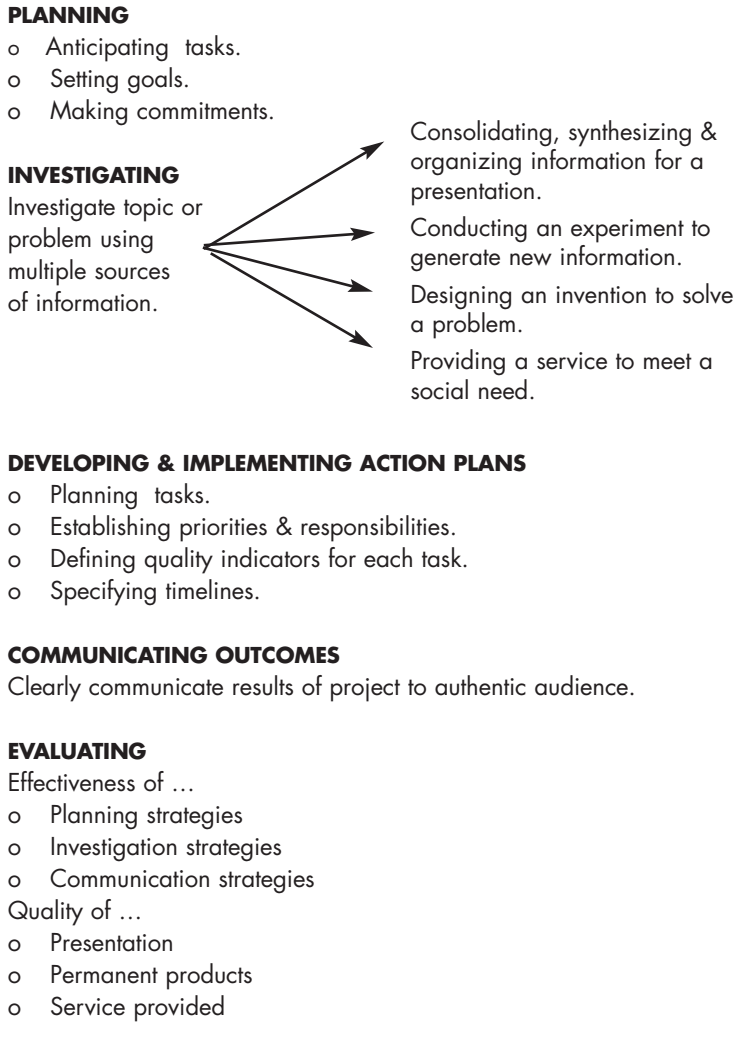
Figure 5. Project-Based Learning Tasks



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