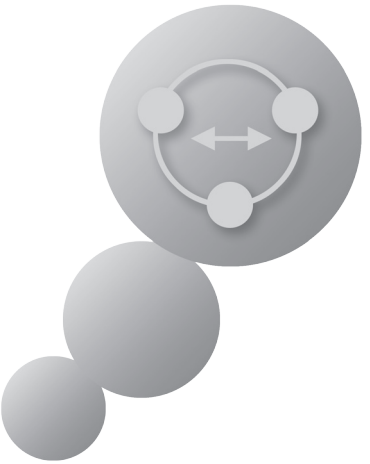
The Conceptual Dialectic

Foundations for Interdisciplinary Connections



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The Facts of Concepts

At the most challenging levels of education, it is axiomatic that curricula should involve concepts. Whatever else we think about education, we agree that advanced curricula should not be reduced to the rote memory of facts. In a unit on the Civil War, we would not expect talented students only to memorize the names of the generals, the dates of the battles, the sizes of the armies—and repeat those facts into a test of true/false, fill-in-the-blank, and matching questions.

Our research, and our common sense, show that such a fact-centered approach neglects important aspects of learning and thinking, especially the most intellectual aspects. Rather than repeat, we want students to process the facts they learn. We want students not only to memorize names and dates but to evaluate historical decisions, to imagine alternative courses of action, to reflect on the ethics of policies, to make synthetic comparisons with other events, and to place the entire phenomenon they are studying in a context of meaning, which requires employing concepts.

The fact that Stonewall Jackson was killed at the battle of Chancellorsville by his own troops is just a statement. Of itself, it is a dead end. Only by lifting the event into the realm of ideas can we begin to process the fact for meaning, to understand Jackson's death in human terms as an example of tragedy, of irony, of individual events altering the course of history, of a bright man on the wrong side, and so forth.

Facts are just facts. They do not contain the understandings of an educated mind; they only make them possible.

Even so, in gifted education there is an underappreciation of the importance and telling power of facts, as well as a disturbing failure to grasp the importance of memory. We must keep in mind that the phrase "rote memory" is a loaded description, a derogation of what we used to call, more accurately, "learning by heart."

In his film series *The Day the Universe Changed*, James Burke discusses the creation of the fact, which was made possible by the invention of printing. Prior to Gutenberg, humanity had no good way to distribute statements so that they could be checked for accuracy. Once cheap printing made manual manuscript copying obsolete and wide distribution of information possible, anyone who wanted to

could check an assertion and verify or refute it. This result in turn could be widely distributed, generating new checks, and the fact was born.

Since that time, facts have come a long way, and we must not despise them. There are heaps of facts that children should learn by heart, that are worth learning.

Furthermore, not all facts are equal; it is more important for students to know the presidents and the elements and the geometry equations than it is for them to know the movie stars and the pop musicians, and I do not think that this depends upon where you live or what your culture is. Nor is it elitist to want all children to be correctly informed about the fundamental facts of history, science, the planet, the solar system, and so forth. The idea that it doesn't matter what you learn, as long as you study it with higher-order thinking processes, is a naive misconception.

We must realize that we live in a culture that plays on ignorance for monetary profit. There are hosts of disreputable and intellectually unethical authors who are getting rich by deceiving children with specious books about the Bermuda Triangle, alien crop circles and abductions, monsters, and other topics that would be acceptable if they placed themselves in the science fiction sections of the

bookstores. Unfortunately, such predatory books are found in the nonfiction sections, where they abuse ignorant minds by pretending to be the real story, probably hidden by the government.

One of the most heinous examples of this literature was a book about ancient astronauts landing in South America. The author claimed that carvings on ancient stones showed the alien astronauts doing open-heart surgery. Scientific follow-up disclosed that the author had visited an Andean village and had had the "ancient" stones carved to order by a local craftsman, who burned the stones in mule manure to make them look old.

A strong knowledge of correct facts is a child's best defense against being deceived by unscrupulous mercenaries, and higher-order thinking processes alone are no protection.

It is possible to be an ignorant brainstormer.

It is possible to waste time brainstorming on the basis of errors and lies.

You can waste weeks brainstorming the riddle of the alien crop circles if you don't know that the hoax was invented by three blokes at a British bar who finally became so depressed by the world's credulity that they confessed their prank to the press.

Higher-order thinking, if based on error, won't prevent children from being fooled.

There are other ideas, too, that interfere with our faith in facts. The catchy cliché that all knowledge becomes obsolete before it can be published, which has contributed to educational complacency about learning factual knowledge, is also false; it is even foolish. Much of the mathematics that every educated person learns, or should learn, has not changed since it was enunciated by Euclid. The great outlines and informations of history will be as important when our third graders are octogenarians as they are today. The classics of literature and philosophy will still be read, as they have been for hundreds or even thousands of years. Students who study English vocabulary and grammar will apply that knowledge for their entire lives. Yes, new knowledge is accumulating rapidly, and it is adding many facts that are also worth remembering, but in most cases these facts do not supplant existing knowledge; they fill in its gaps.

What goes unsaid is that much of this new knowledge will be understood only by those who know the knowledge that preceded it.

In most cases, too, the new knowledge is generated on the basis of the previous knowledge. It stands on the back of the previous knowledge.

Often, the new knowledge is an elaboration of the existing knowledge, and the words of the existing knowledge are part of its postulate. Knowledge doesn't come from nowhere; knowledge generates knowledge. We do not see quantities of valuable discovery coming from ignorant individuals or from enthusiasts who cannot discern science from science fiction.

Furthermore, more than is commonly realized, a strong knowledge of facts is the necessary precondition for higher-order thinking. If a student glosses over a historical event, or just reads the *Cliff's Notes* for a Shakespearean play, or just studies the definitions in a glossary instead of reading the whole chapter about cells, he will not receive the interlocking engine of information that propels thinking to the next level. He will not know the facts that create the questions. He will never have heard of the details that initiate human reactions of sadness or excitement.

Concepts are not about nothing; they are about facts, are responses to facts, and without facts that give substance to concepts, students must chew with their mouths empty.

If your knowledge of the Civil Rights Movement is limited to a paragraph's worth of facts, it will scarcely register on your consciousness or

conscience. But if you have learned the facts about the movement, if you have read Martin Luther King, Jr.'s *Why We Can't Wait* and the *Autobiography of Malcolm X*, if you have read about the Freedom Riders and the history of slavery in the United States, if you have read a biography of John Brown and *The Narrative of Frederick Douglass* (a brilliant book that should be standard reading in American curricula)—if you have done these things and many others that have given you a foundation of facts to think with, then you will see how, like mists, facts gravitate into forms, into questions and reactions and care.

You never care about things you don't know about.

It is only if a student learns a lot of facts in every subject that he or she is prepared to make the most out of the concepts and higher-order thinking that are about those facts.

So aside from concepts and higher-order thinking, there is such a thing as knowledge of the facts that make one educated rather than ignorant. In today's politically sensitive environment, it has begun to feel inappropriate to suggest that there is even such a thing as ignorance, but there is, and it is no favor to anyone to tolerate standards that maintain ignorance.

Among the differentiations that must differentiate gifted education from regular education is that gifted children should learn more facts—much more—not fewer. Gifted children are capable of being well-informed beyond the boundaries of common assumption, and they should be. It is one of the greatest benefits of their gift that they can know so much.

But they must also think so much. Though facts and memory are more important to gifted minds than we usually emphasize, they are not the essence of gifted education. Ideas are. Yes, gifted children should have an unparalleled knowledge of facts, but they should process that exceptional knowledge into exceptional reflections and ideas. Knowing more than most about truth's details, gifted children must do more thinking than most about them, with more depth and meaning than most. It is this explosive combination of advanced information with advanced concepts that characterizes the greatest examples of gifted education and that brings differentiation to its highest levels.

There has been a dichotomy in gifted education concerning the pedagogical choice of content versus process. Some would have gifted children accelerate rapidly into advanced content, while others would focus gifted education on higher-

order thinking. The choice between content and process is, however, a lethal false dichotomy. There is no reason for educators to make an unbalanced choice between process and content, since the excellent processes developed through research are most beneficial when they are applied to excellent content. Rather than brainstorm how to survive on the moon with a paper clip and a Frisbee, children should brainstorm the serious intellectual options inherent in the advanced content they are studying.

Conceptual Curricula

What does it mean to have a conceptual approach? In *Excellence in Educating Gifted and Talented Learners* (1998), Dr. Joyce VanTassel-Baska wrote that "New learning theory research postulates that declarative knowledge is best taught through a concept approach" (347):

> A conceptual approach to curriculum focuses on large organizational themes and issues in order to frame the curriculum at an appropriate level. This approach allows for maximum applications in various domains. (347)

The emphasis in conceptual learning, she wrote, "is on depth, interdisciplinarity, and understanding important ideas within a discipline." VanTassel-Baska said that gifted students:

> ...are in an excellent position to benefit from such a curriculum approach since it honors their capacity to make connections among bodies of knowledge easily and to deal effectively with abstractions and complexity of thought. (347)

As examples of concepts that can make connections among bodies of knowledge, VanTassel-Baska wrote that:

> Themes such as humankind's search for identity, the question of authority, and the concept of unity could be explored at several grade levels, with more sophisticated objectives at each succeeding grade level. (354)

She added that major concepts emphasized in curriculum development work include change, systems, models, patterns, origins, signs and symbols, and power. We can see that these are global concepts, perfectly suited for integrating disciplines, making connections, and providing an abstract framework for all kinds of information. VanTassel-Baska explained that:

> Conceptual learning for the gifted puts a premium on providing students with a good scaffolding of important concepts that constitute the structure of each discipline, as well as providing them with important pathways between disciplines so that separate aspects of knowledge are understood as being integrated. (347)

The English word *concept* that VanTassel-Baska emphasized comes from the Latin *concipere*, to conceive. A concept is something conceived in the mind. It is also defined as an abstract idea that is generalized from particular instances. We think immediately of Plato's Socratic dialogues, with Socrates trying to prize from the minds of his disputants the thing that all examples of love,

or beauty, or truth have in common. This concept of *concept* also illuminates Hilda Taba's process of concept development, in which students first list, then group, then label, then subsume. To group things according to what they have in common is first to perceive what they have in common, the X in the background. For Jerome Bruner, concept attainment was discovering the attributes that distinguish members and nonmembers of a class. Bruner presented examples and challenged students to understand what concept the examples shared. In the original form of Bloom's Taxonomy, synthesis is a primary process for collecting divergent examples together with a single concept.

This connecting ability is more than just intellectually interesting. In intellectual history, important breakthroughs have occurred when thinkers combined discrepant ideas or even fields that no one else had thought to marry, such as Einstein's combination of physics and Riemannian tensor calculus to provide a foundation for relativity. Archimedes discovered the principle of displacement of water when he synthetically connected the rising water in his bathtub with the problem of finding the volume of the king's crown. Among the reasons that Crick and Watson were first to solve the structure of the DNA molecule was their incessant combining of knowledge from

various specialties; where others feared to presume outside their own specialty, Crick and Watson saw that the solution to DNA involved interdisciplinary knowledge, and they undertook strenuous efforts to master knowledge that was typically unassociated with their own area.