From: Stirring the Heart, Soul & Mind by L. Erikson.

Although the greatest problem for the teachers was a feeling of pressure to cover the curriculum, test results demonstrated that the time spent on process teaching and learning did not impede strong achievement in learning the fact-based information (Taba, 1966).

CONCEPTUAL ORGANIZERS

A conceptually organized curriculum helps solve the problem of the overloaded curriculum. Concepts bring focus and depth to study and lead students to the enduring understandings. It is important to clarify the issue of concepts in general before we return to their value in curriculum organization.

What Is a Concept?

A universal concept is a mental construct that is timeless, universal, and abstract. Although the specific examples of a concept may vary, the general descriptors of the concept will be the same. "Symmetry," as a concept, has many different examples, but the descriptors of symmetry in all of the examples are the same. Examples of symmetry can be found across disciplines, as in art, life science, or music. The descriptors or characteristics include "balance" and "equivalence."

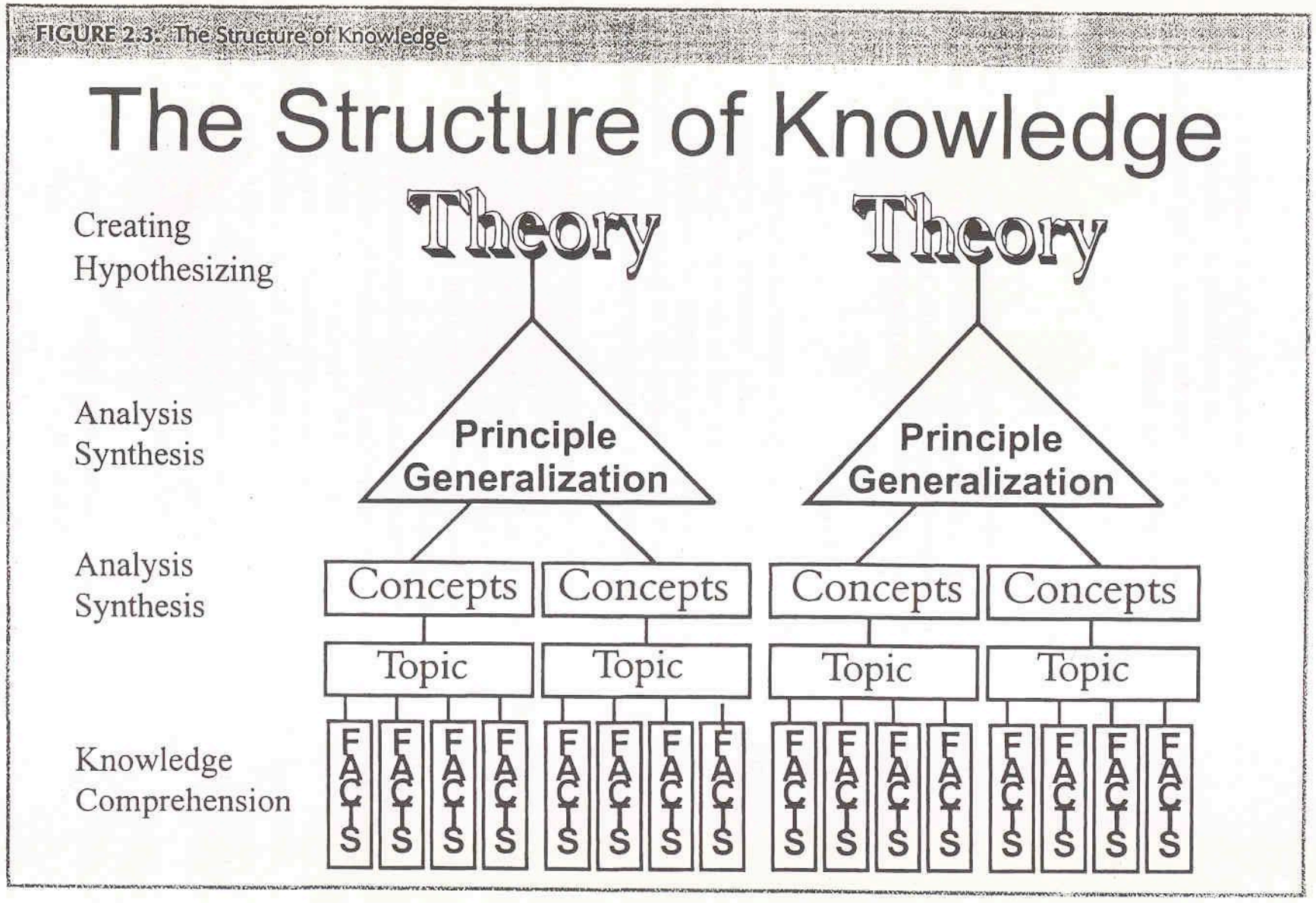
Concepts are a higher level of abstraction than facts in the structure of knowledge. They serve as cells for categorizing the factual examples. Conceptual understanding continues to grow more sophisticated as new examples fill each concept cell. Because higher-level concepts are timeless, they may be studied through the ages. Because they are universal, their examples may be derived from cultures around the world.

It is common in educational circles today to hear the word *theme* being used for the ideas I am defining as concepts. The problem I have found with this practice is that the definition of *theme* is so loose that topics sometimes become confused with concepts. This is a significant problem in integrated curriculum if the goal is higher-level, integrated-unit design. Units centered on a topic alone will only result in coordinated, multidisciplinary curriculum. This means that two or more subjects, or disciplines, are coordinated in instructional time and content to focus on a single topic. Integrated curriculum, described in detail in Chapter 4, requires a conceptual as well as a topical focus if thinking is to be integrated.

Where Do Concepts Fall in the Structure of Knowledge?

Figure 2.3 illustrates the relationship of concepts to topics and facts, generalizations, principles, and theories in the structure of knowledge. Traditionally in

FIGURE 2.3. The Structure of Knowledge



education, we have spent the majority of our content study on the lowest cognitive level, the memorization of isolated facts.

The often-quoted Third International Mathematics and Science Study (TIMMS) study that compared U.S. curriculum to higher achieving industrialized countries really characterizes the problem best: "American curriculum is an inch deep and a mile wide" (TIMMS, 1996). Although there is controversy over whether the TIMMS research is an unbiased and accurate international comparison, no one can argue that the United States covers far more content than other industrial nations. Common sense tells us that massive content coverage will be intellectually shallow when time is limited.

I was surprised to realize, through my work in curriculum, the generally shallow cognitive level most of us have experienced as students in our educational paths. I now think this is largely the result of fact-based rather than idea-based emphases in textbook and curriculum design. And we often teach as we were taught. Educators today, however, know that students must be actively and mentally engaged in their learning. As a result, they are adjusting the learning experience. Unfortunately, many textbook materials and some standards continue to be structured with low cognitive expectations and a continued emphasis on coverage over intellectual engagement.

Some people would argue that students cannot apply higher-level thinking processes until they have a wealth of foundational knowledge. But that is not so. As a first-grade teacher, I enlisted creative and critical thinking from my students in the solution of problems. For example, using the concept of *want* versus *need,* my students built new homes for our two imaginary pets, Chalk Mouse and Pencil Mouse. Chalk Mouse kept eating the teacher's chalk, and Pencil Mouse chewed on the pencils. They lost their homes in a natural disaster (the custodian accidentally disposed of them). The charge for students was to decide what Chalk Mouse and Pencil Mouse would "need" and "want" in a home.

All students gathered their own materials for the project and went to work. They had chalk and pencils for them to eat, water to drink, ladders for their use in climbing up and down from desks, and soft straw to lie on. Needless to say, this was the expression of critical and creative thinking at its finest. The room was buzzing with discussion of need versus want. The critical point is that the students were responsible for solving the problem. I'm sorry to say that Chalk Mouse turned to dust with the invention of the white board in classrooms.

Perhaps in the days of relatively unsophisticated technology and global isolationism, it was not as critical to think at high levels. But the game has changed. Global interdependence and sophisticated technologies require that we raise the intellectual as well as the academic standards in classrooms.

What Are Some Examples of the Subject Area Organizing Concepts?

Teachers frequently want to know if there is a "master list of concepts in the sky" for each subject area. Except for the field of science, there are no formal lists

FIGURE 2.4: Top Level of Knowledge

SOURCE: Cartoon by David Ford. *david@twocrowcartoons.com*

at this time, but it would be helpful to have national subject area organizations de velop their lists of the most significant organizing concepts as frames for the criti cal content. Certainly, the dialogue among the professionals has started, but th task is not yet complete.

We need not wait, however. I have seen some of the most intense professiona dialogue occur among subject area staff as they relate the content they teach to th organizing concepts. This process forces teachers to consider the most importar ideas for instruction. Figure 2.5, as well as Resource A, shows some of the orga nizing concepts for different subject areas. I have included additional examples c subject area concepts in this edition to help further the work of curriculum com mittees and teachers.

Please note in Figure 2.5 that literature has two types of concepts. One typ arises out of the literature itself—out of the "themes" of literature. Family, love, co flict, and so on are examples of the first type of concepts. The other type is draw from the writer's craft. How does the author use concepts such character, symbo ism, allegory, foreshadowing, and so on to convey meaning or create effect

In Figure 2.5, note the "macroconcepts" that cut across disciplines. Becau these concepts rise above the fact base and can be exemplified through multip disciplines, they are often used as organizers for interdisciplinary, integrated cu riculum, the focus of Chapter 4.

FIGURE 2.5. Examples of Subject-Specific Concepts

Science	*Social Studies*	*Literature*
Cause/effect	Cause/effect	Cause/effect
Order	Order	Order
Organism	Patterns	Patterns
Population	Population	Character
System	System	Interconnections
Change	Change/culture	Change
Evolution	Evolution	Evolution
Cycle	Cycle	Cycle
Interaction	Interaction	Interaction
Energy matter	Perception	Perception
Equilibrium	Civilization	Intrigue
Field	Migration/immigration	Passion
Force	Interdependence	Hate
Model	Diversity	Love
Time/space	Conflict/cooperation	Family
Theory	Innovation	Conflict/cooperation
Fundamental entities	Beliefs/values	
Replication		

Mathematics	*Visual Art*	*Music*
Ratio	Rhythm	Rhythm
Proportion	Line	Melody
Scale	Color	Harmony
Symmetry	Value	Tone
Probability	Shape	Pitch
Pattern	Texture	Texture
Interaction	Form	Form
Cause/effect	Space	Tempo
Order	Repetition	Dynamics
Quantification	Balance	Timbre
System	Angle	Pattern
Theory	Perception	Perception
Field	Position	
Gradient	Motion	
Invariance	Light	
Model		

The science concepts are taken from the national science standards (National Research Council, 1996). The macroconcepts are referred to as *integrating concepts* in the national science standards because they can be applied across all of the science disciplines—earth, life, and physical. They lead to the encompassing, enduring ideas that explain our world and universe. The microconcepts are the more discipline-specific concepts, although some of them also transfer across disciplines.

An excellent source for identifying discipline-based concepts is in the national standards for each discipline. In some standards, such as the national science standards, the concepts are easily identified and labeled. In other subjects, such as history, one must know the difference between a topic and a concept and draw them out. In Resources A and B, there are additional lists of concepts for different disciplines.

Identifying the major concepts for a topic of study is not as difficult as it seems. If you were asked to name the major concepts for a unit on U.S. trade, the economics concepts of *scarcity, supply and demand,* and, of course, *trade* would spring to mind. Once you have a list of terms related to the unit theme, you can run them through the "Concept Definition Test."

Concept Definition Test

Does the term you are considering as a higher-level concept serve as a mental frame or construct for a class of examples? Does it meet the following criteria?

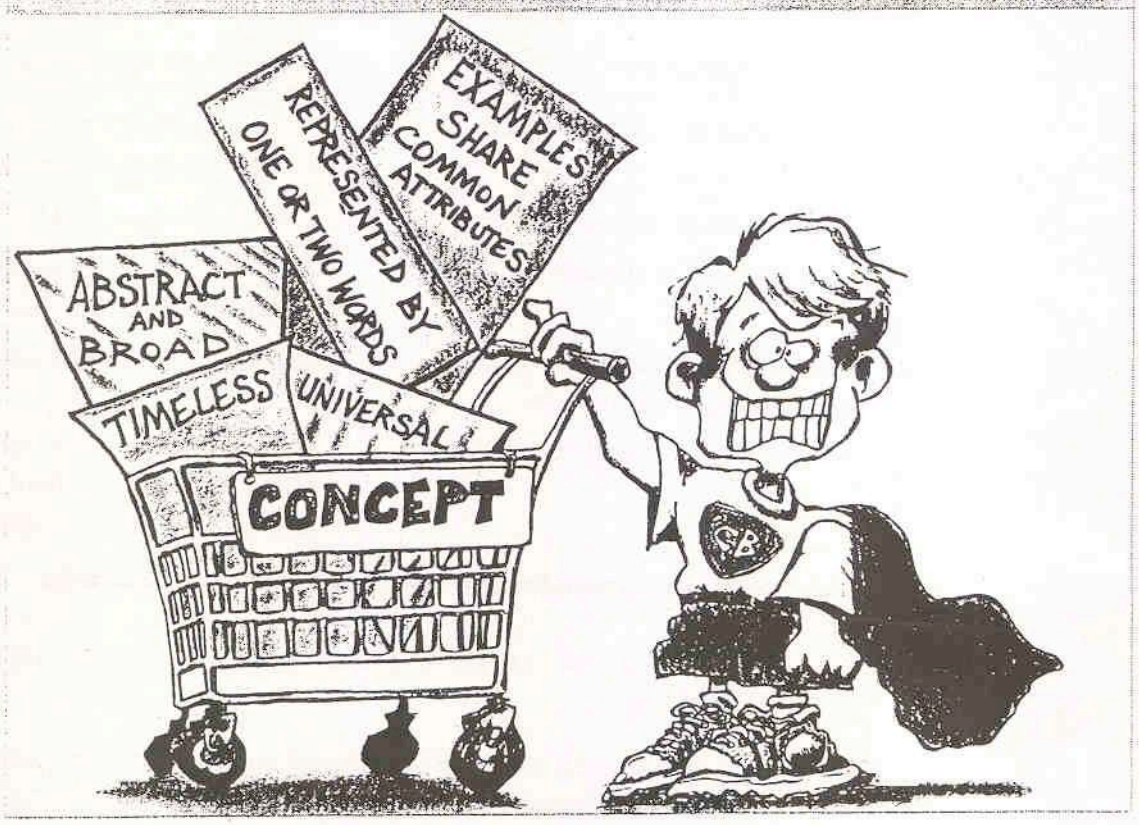
- Broad and abstract
- Represented by one or two words
- Universal in application
- Timeless—carries through the ages
- Represented by different examples that share common attributes

  Example: Conflict, as a concept, has many different examples, but the examples share the characteristics of "opposing forces" and "friction."

Let's try it. Which of the following are concepts? Apply each of the following terms to the test:

- Conflict
- Family
- Culture
- Change
- Fitness
- Human rights
- China
- Persuasion
- Power
- Revolution
- Model
- Dinosaurs
- Bears
- Cooperation

FIGURE 2.6. Superman/Concepts



SOURCE: Cartoon by David Ford. *david@twocrowcartoons.com*

How did you do? If you recognized that China, dinosaurs, and bears are *topics* that hold learning to the fact and activity base, then you are correct. But remember that you can apply a concept to the study of a topic, and you will shift learning to a higher cognitive plane. In the following examples, consider the effects on instruction and learning when the conceptual lens is focused on the topics under study:

Topic Example	Possible Conceptual Lens
Dinosaurs	Extinction
Presidential elections	Communication/influence

Why Should Curriculum Documents Provide a Conceptual Structure for the Content of Different Subject Areas?

- A conceptual structure for curriculum is important because conceptual understanding requires content knowledge, but the reverse is not true. National and state standards include the statement, "Students will understand the concepts and principles of mathematics, science, social studies,

TABLE 2.2 Topics Versus Concepts

Topical Organizers	*Conceptual Organizers*
Frame a set of isolated facts	Provide a mental schema for categorizing common examples
Maintain lower level of thinking	Lead to a higher level of thinking
Hold learning to the fact or activity level	Aid in the development of higher-order generalizations
Have short-term use—to cover an event, issue, or set of facts	Serve as a tool for processing life events
Increase the overload curriculum	Reduce the overload curriculum by framing the most salient or critical examples of the concepts

etc." It is recognized that concepts and principles signify deeper understanding.

- A conceptual structure is efficient for handling the growing body of information. Concepts focus and streamline the breadth of content.
- A conceptual structure forces students to think about topics and facts in terms of their transferable significance.
- A conceptual structure allows kindergarten through postsecondary teachers to become a team as they systematically build conceptual understanding and develop student intellect.
- A conceptual structure provides an instructional model that is "idea centered," rigorous, and engaging for both students and teachers.
- A conceptual structure ensures that teachers are clear on the concepts and "big ideas" that students must understand at each level of schooling. It is not "assumed" that students and teachers will reach deeper understanding of ideas by covering the course objectives.

Why Are Concepts Better Than Topics Alone as Curricular Organizers?

Curriculum design in the United States today is flawed in most subject areas because it relies on topics alone to organize content. If we are to truly raise standards, then a conceptual overlay for the topics and facts is critical.

Table 2.2 compares the value of concepts and topics as curricular organizers.