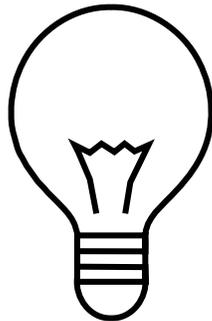


Thinking about Quality Curriculum: What the Experts Teach Us

May 12, 2006

Carol Tomlinson
University of Virginia
cat3y@virginia.edu

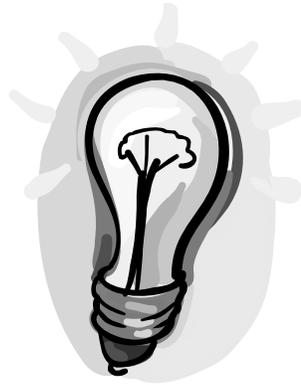
What is the best we know about curriculum design...



...and where does PCM fit in?

Think about it.....

- What do you think are the attributes of quality curriculum?
- Why do you say so?



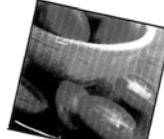
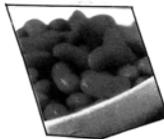
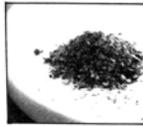
This is NOT a meal...



It's Ingredients for a meal!

You would not take people you care about into the kitchen, point to the ingredients on the counter, and say, "Here's dinner. Eat it."

**To make Dinner,
you mix the Ingredients
in an Appetizing Way . . .**



**Ensuring the right balance
of ingredients to be pleasing.**

To make Dinner,
you mix the Ingredients in an
Appetizing Way...



Ensuring the right balance of
ingredients to be pleasing

In Fact - with the same ingredients, you can make a base

SAVORY MEAT BASE
MAKES 4 CUPS
3 pounds lean ground beef
2 large onions, chopped
2 large green bell peppers, chopped
1 large green bell pepper, minced garlic
1 teaspoon bottled minced garlic
1 (28-ounce) jar marinara sauce
1 teaspoon salt
1/4 teaspoon pepper
COOK: First 4 ingredients in a large Dutch oven over medium-high heat; stir until crumbled and no longer pink. Drain mixture; return to Dutch oven. Drain in marinara sauce, salt, and pepper; cover and simmer, stirring occasionally, 15 minutes. Cool 10 minutes. Spoon about 4 cups each of mixture into 2 heavy-duty zip-top plastic bags; freeze until ready to use. Prep: 20 min., Cook: 15 min., Cool: 10



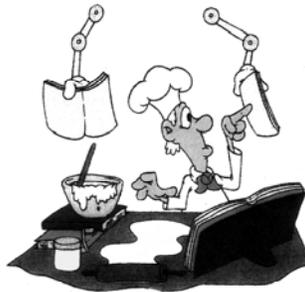
Savory Meat Base

that you can then use to make many different dishes



depending on the tastes and diet needs of your diners.

If you want to succeed as a cook, you have to quickly learn the difference between ingredients and dinner.



In moving from ingredients to dinner, the good cook becomes creative.

Tomlinson • 92

Learning is Natural/Hard

It's easy when:

- ✓ It's real and natural
- ✓ It's whole
- ✓ It's sensible
- ✓ It's interesting
- ✓ It's relevant
- ✓ It belongs to the learner
- ✓ It's part of a real event
- ✓ It has social utility
- ✓ It has purpose for the learner
- ✓ The learner chooses to use it
- ✓ It's accessible to learner
- ✓ The learner has power to use it

It's hard when:

- ✓ It's artificial
- ✓ It's broken into bits and pieces
- ✓ It's nonsense
- ✓ It's dull & uninteresting
- ✓ It's irrelevant to learner
- ✓ It belongs to someone else
- ✓ It's out of context
- ✓ It has no social value
- ✓ It has no discernable purpose
- ✓ It's imposed by somebody else
- ✓ It's inaccessible
- ✓ The learner is powerless



The greatest enemy
of understanding
is coverage.

Howard Gardner



SHOE / BY JEFF MACNELLY



The Business of school is:

The business of schools is to produce work that engages students, that is so compelling that students persist when they experience difficulties, and that is so challenging that students have a sense of accomplishment, of satisfaction--indeed, of delight--when they successfully accomplish the tasks assigned.



Inventing Better Schools. Schlechty

QUALITY CURRICULUM: THE SHORT VERSION

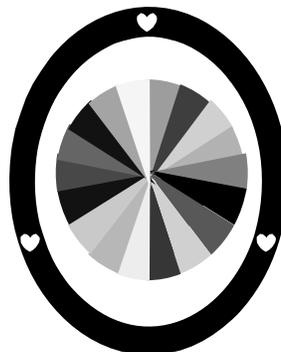
Engagement + Understanding = Success



2 minute pause

Talk in groups of 3-5 to:

- Summarize key points
- Add your own thoughts
- Pose clarifying questions

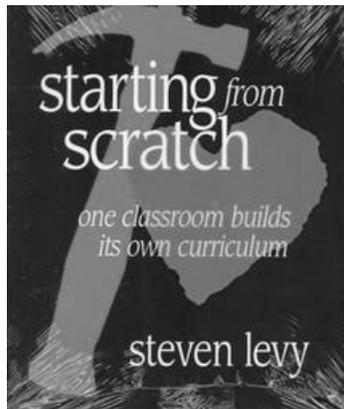


How do these experts help us achieve engagement & understanding?



- LEVY
- WIGGINS & McTIGHE
- TABA
- ERICKSON
- PCM

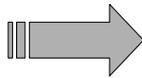
Key Contributions of...



Developing Curriculum

From Starting from Scratch by Steven Levy

1. Topic
This is a subject required by the curriculum, such as simple machines, plants, or colonial life. It is important for me to have a good understanding
2. Genius of the topic
This is the most important part of the process. What is essential about the American Revolution? What is unique about the world of plants, what distinguishes them from all other forms of life? What is the genius of th grammar? Finding the genius guides me in sorting through the pile of available information. It gives meaning and purpose to even the most mundane skills. Finding the genius of the topic is like setting the compass to true north.
3. Illustrations
I need to find the best examples of the expression of this genius. In history, I look for it in biographies of persons who embody in their lives the struggles of an age. I want to teach in the context of a story. In science, I try to find the manifestation of the concept in the natural world. For a mathematical concept, like telling time, I might try to discover its origin. These real-life illustrations provide the ore from which the children will mine the genius.



Cont'd

4. Experiences

I need to find examples in the children's experiences that parallel (on a small scale) the principles I am trying to teach them about the world. This is the bridge that connects their experience to the content of the required curriculum. I ask myself: What experiences have the children had that are miniature examples of the principle or concept I want them to understand?

5. Questions

I need to think of questions that will draw out the students' experiences and other questions that will help them see connections between their experiences and the same principles as they manifest in the world. "If you were to disappear today, how might I find out something about your life?" prompts the children to think of the kind of records and artifacts that are evidence of their existence. Then I might ask, "How do we know anything today about Paul Revere?" Having reflected on their own artifacts helps them understand the methods of the historian in interpreting the past.

6. Story

Children pay attention to a story. I have figured out a way to put the content I want them to master into a story. There needs to be a progression with a beginning, middle, and end. There needs to be a dramatic tension between protagonist and antagonist. A story keeps all the children involved and motivated. It facilitates memory and increases understanding. For example, what is the story of a plant?



Cont'd

7. Activities

The activities often arise out of the experiences I design for the children so that they will have a direct and personal link to the concepts. I try to think of activities that are open-ended enough to allow for a wide range of participation, depending on the children's developmental stage and ability. The activities often follow the basic curriculum framework of designing questions, researching answers, collecting and analyzing data, and sharing what is learned with the community. But sometimes the activity is the point of departure in the planning process. I may have an idea to do an archaeological dig. Then I think of ways to connect the activities and skills needed in excavating a site in my required curriculum.

8. Skills and habits

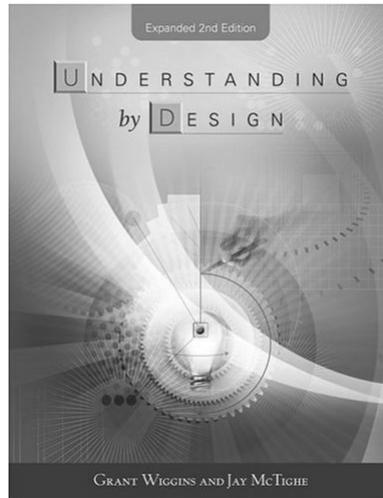
have to be clear what skills and habits I want to teach. For example, my children need to learn how to use capital letters, so I make sure to include reading activities in which they can discover the patterns of capitalization and writing activities in which they can practice using capital letters. I also want them to develop the habit of distinguishing between facts and assumptions, so I find repeated opportunities for them to practice telling the difference.

9. Evaluation

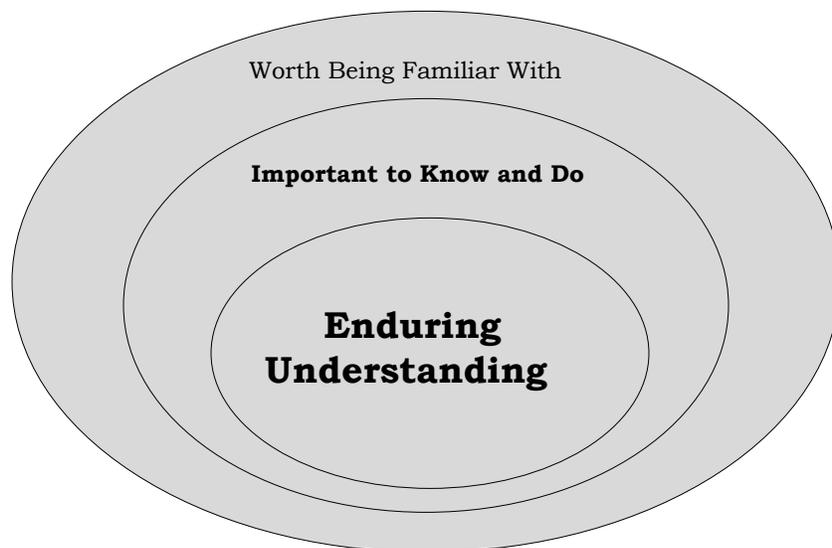
Of primary importance is their demonstration that they understand the genius of our subject, for that is also a measure of how effective my teaching is.



Key Contributions of...



Teachers Must Distinguish Between:





An Enduring Understanding...

- Represents a big idea having enduring value beyond the classroom
- Resides at the heart of the discipline (involves *doing* the subject)
- Requires *uncoverage* (of abstract or often misunderstood ideas)
- Offers potential for engaging students



adaptation



'Big Idea' Understanding:

Living organisms have developed adaptive mechanisms to enable them to survive in harsh environments.

Essential Question:

In what ways do living organisms adapt to survive in harsh environments?



world literature



'Big Idea' Understanding:
Great literature from various cultures explores enduring themes and reveals recurrent aspects of the human condition.

Essential Question:
How can stories from other places and times be about me?



predictive statistics



'Big Idea' Understanding:
Statistical analysis and display often reveal patterns in data, enabling us to make predictions with degrees of confidence.

Essential Question:
Can you predict the future? What will happen next? How sure are you?



artistic expression

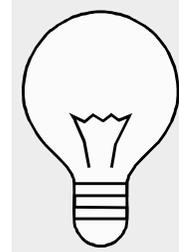


‘Big Idea’ Understanding:
Available tools and technologies influence the ways in which artists express their ideas.

Essential Questions:
Where do artists get their ideas?
What factors influences artistic expression?

Important to Remember!!

A “Big Idea” should be:
Enduring
At the Heart of the Discipline
An effective organizer of facts/information
Transferable/Applicable to other situations



It’s the Big Idea that allows us to make connections.

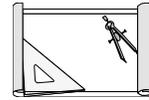
We root around to find Big Ideas in the same way we root around to find the theme of a novel or poem.

We can’t “own” Big Ideas by being taught or told them. To learn them, requires thought—meaning making.

An Essential Question is the doorway to a Big Idea and signals students that Big Ideas can be gleaned from Essential Questions.

3 Stages of Backward Design

1. Identify desired results.



2. Determine acceptable evidence.

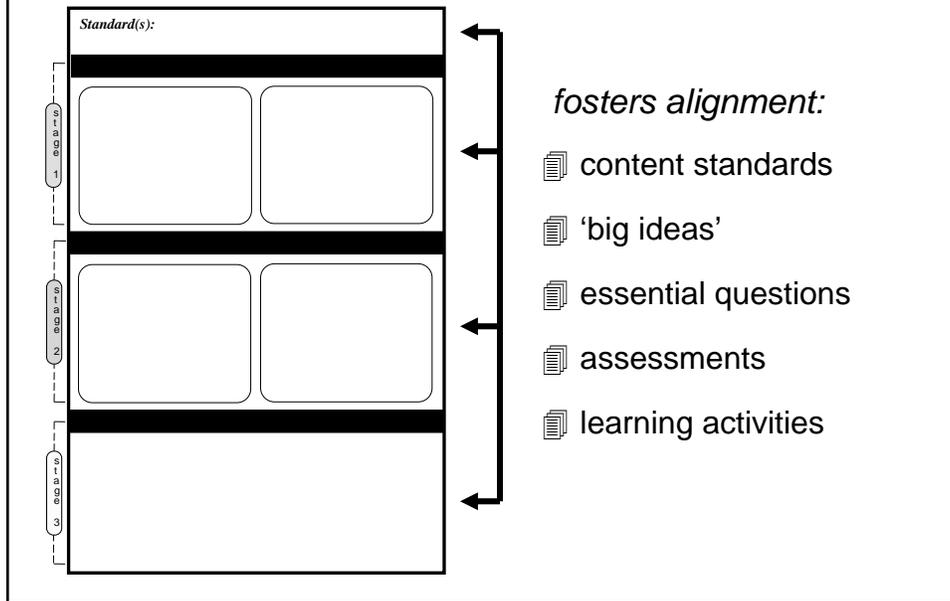
**3. Plan learning experiences
& instruction.**

Six Facets of Understanding

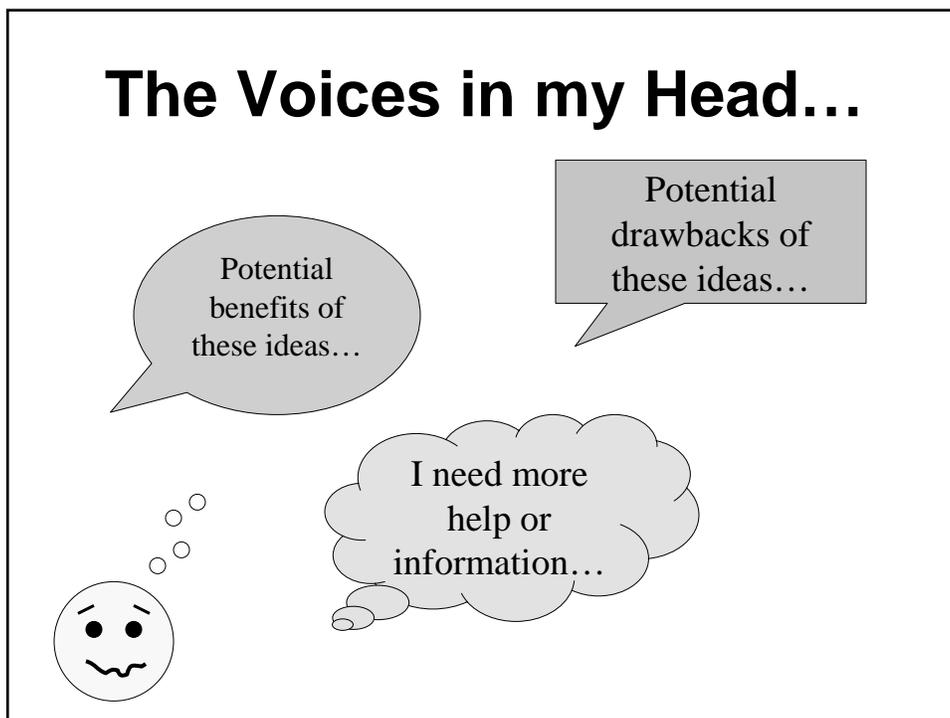
- **Explanation**
Determine misunderstanding as well as understanding
- **Interpretation**
Determine whether the student can weave a coherent, illuminating, substantiated story behind an idea
- **Application**
Determine ability to use knowledge with a purpose for a particular audience in a particular context
- **Perspective**
Determine ability to take stock of an idea/solution and its adequacy—to be thoughtful and critical
- **Empathy**
Determine ability to walk in someone else's shoes, to see varied sides of an issue, to teach
- **Self-Knowledge**
Determine ability to assess one's own work (past and present)



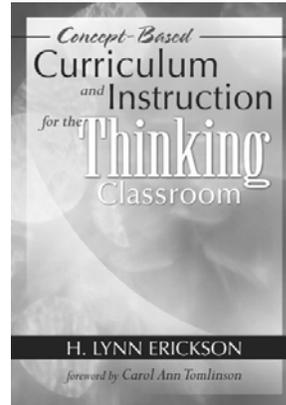
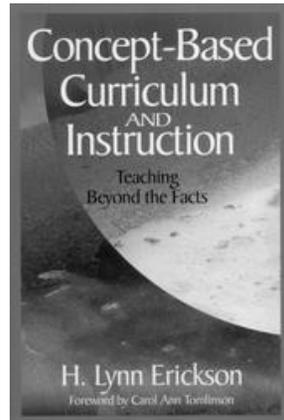
The UBD 1-page template



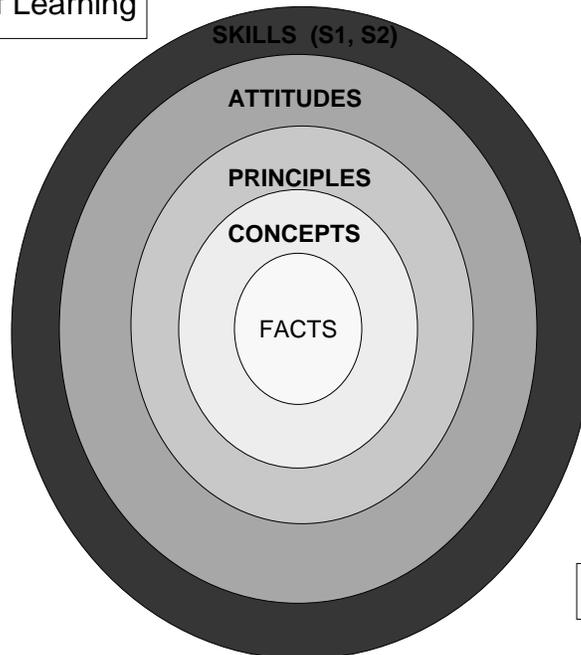
The Voices in my Head...



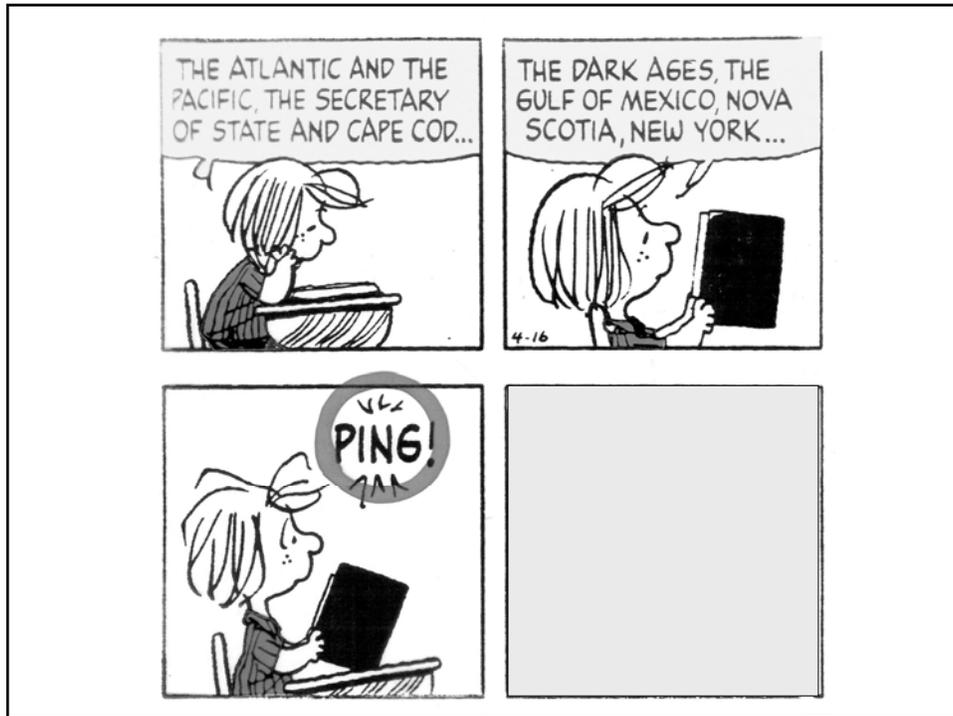
Key Contributions of...



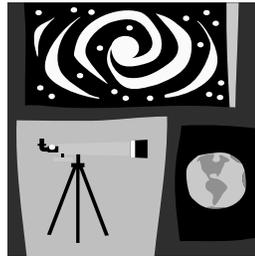
Levels of Learning



Hilda Taba

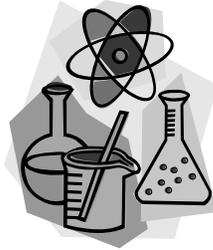


Examples of Factual Knowledge



- There are nine planets.
- The capital of Connecticut is Hartford
- $2 + 2 = 4$
- "Cat" has one syllable.
- There are 7 food groups.
- Andrew Wyeth was a famous painter.





Science is built up of facts,
as a house is built of stones;
but an accumulation of facts
is no more a science
than a heap of stones is a house.

Jules-Henri Poincare

Concepts

- ④ Concepts are the names given to the categories formed as a result of classifying factual data.
- ④ Learners of all ages form concepts and give them names in order to make sense of all the various stimuli in the world.
- ④ Imagine the cognitive overload if everything in the world were seen as a separate and unrelated entity.
- ④ To form concepts, learners pay attention to likenesses, ignore differences, and place similar objects in the same category.
- ④ A pussycat asleep by the fire and a tiger in the jungle have many differences, but by attending to similarities and ignoring differences, the concept of *cat* is formed.



Definition and Attributes of a Concept

A concept is an organizing idea;
a mental construct...

- Timeless
- Universal
- Abstract
- Represented by 1 or 2 words
- Examples share common attributes



SUBJECT SPECIFIC:
ECOLOGY



- Population
- Organization
- Environment
- Technology

GENERIC



- Patterns
- Change
- Balance
- Interdependence
- Systems

TWO KINDS OF CONCEPTS

P olitics

E conomics

E sthetics

P eople

S ocial Issues



C ultural

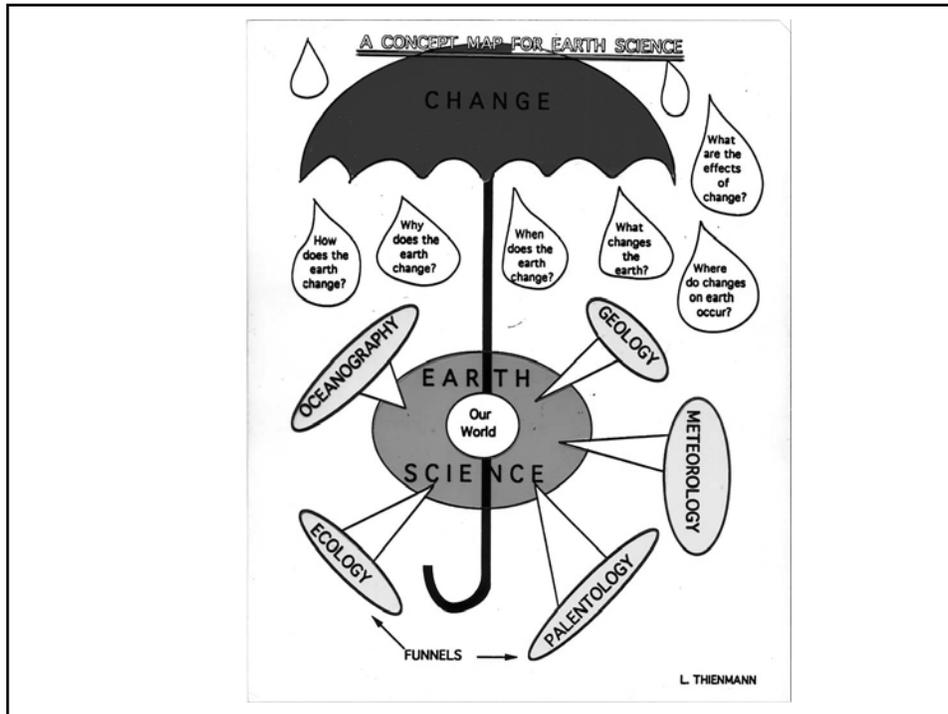
R eligious

E conomic

E ducational

P olitical

S ocial



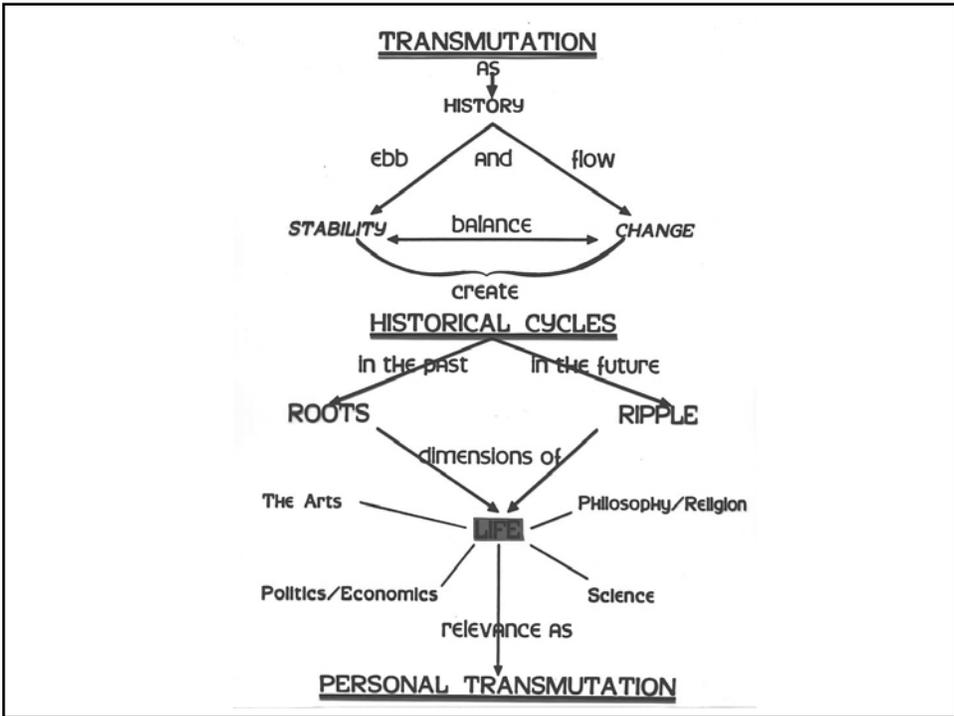
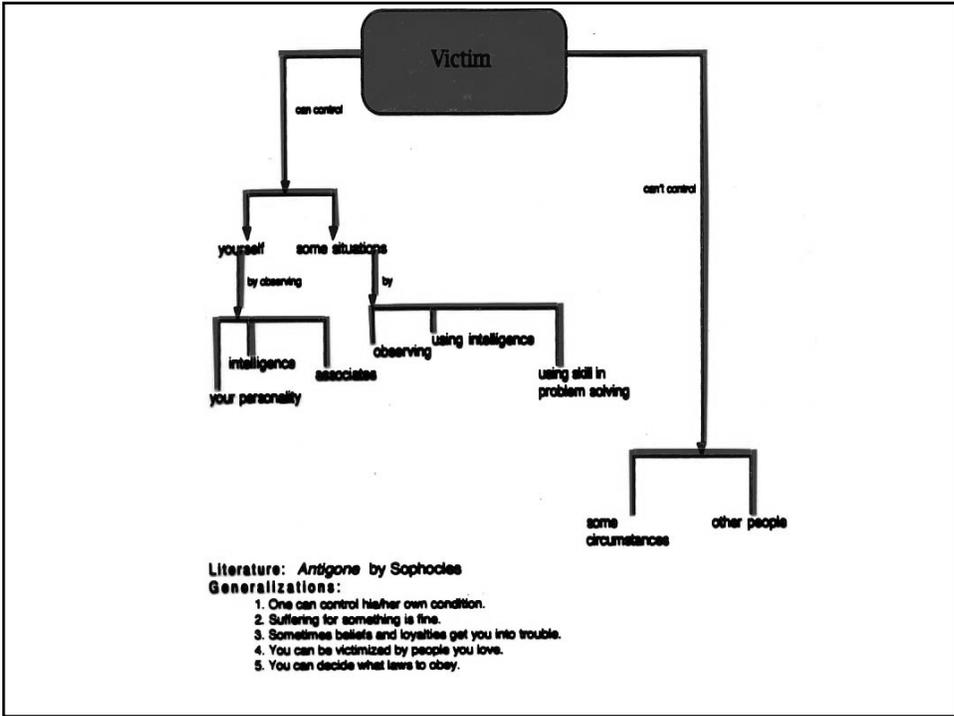


Physical Science



- I. OBSERVERS
 - A. Observe
 1. What?
 2. How much?
 - B. Classify
 - C. Explain
 - D. Verify
- II. EVENTS
 - A. Matter
 1. Physical aspects
 2. Chemical aspects
 - B. Energy
 1. Kinetic
 2. Potential
- III. RELATIONSHIPS
 - A. Changes
 1. Chemical
 2. Physical
 - B. Forces
 - C. Applications



PRINCIPLES are statements that explain the relationship between two or more concepts. Principles might be called laws, rules, or generalizations. They can explain essential characteristics, cause and effect, conditions, or purposes.



The settlers migrated to meet a variety of needs (economic, psychological, spiritual, and social)



Examples of Principles

- The natural resources of a region influences the economy and lifestyles of its inhabitants.
- Authors do not always say exactly what they mean and mean what they say (literally).
- Satire attempts to expose and ridicule public or political immorality and stupidity through irony, sarcasm, or exaggeration.
- Persuasion often involves an emotional appeal to the particular wishes, needs, hopes, and fears of an audience, irrespective of how logical and rational the argument.
- People migrate in response to a variety of physical, social, psychological, or economic needs.
- Stories can shed light on the complexities and inconsistencies in our relationships and ourselves.

A QUESTION FOR YOU...

How effective are these concepts & principles in developing engagement & understanding?

Concepts:

Fiction, Change, Reader's Role, Self-Understanding



Principles:

Fiction is never an answer, always a question.

Fiction is always about change.

In good fiction, the reader asks, "What if I were the character? What would I do?"

In good fiction, the reader asks, "What motivates human beings to do what they do?"

Through good fiction, readers try on lives to see which one fits.

In good fiction, the epiphany is a sudden breakthrough of understanding—of self-awareness.

Good fiction changes readers.

What's the comparison between this as a starting point for teaching a novel vs. a list of vocabulary, story elements, author information, and questions?

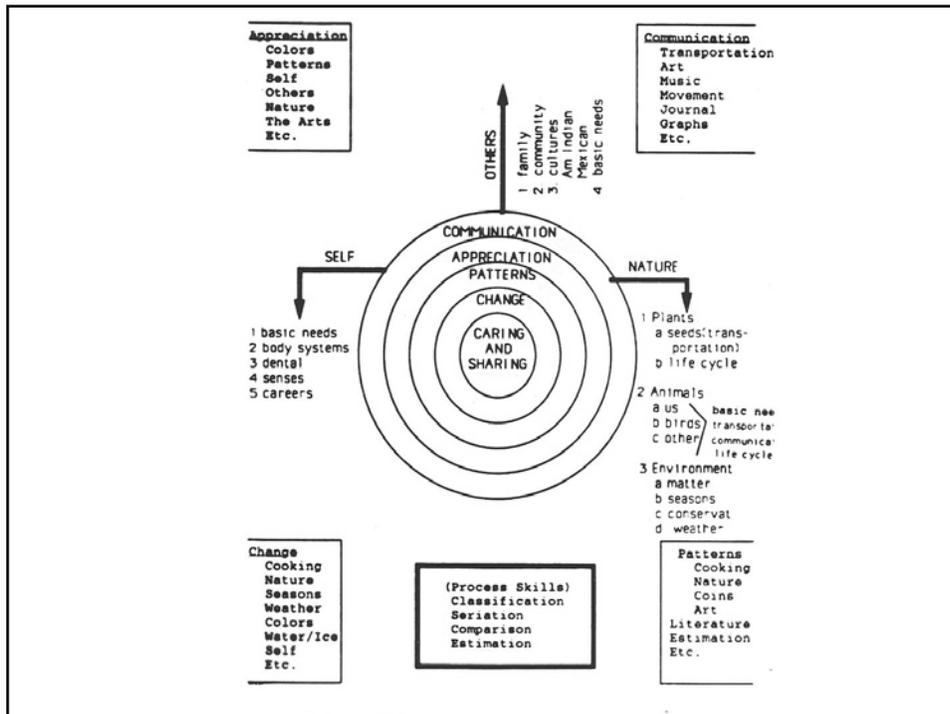
Principles derived from *Past Perfect, Present Tense* by Richard Peck, New York: Dial, pp. 1-3

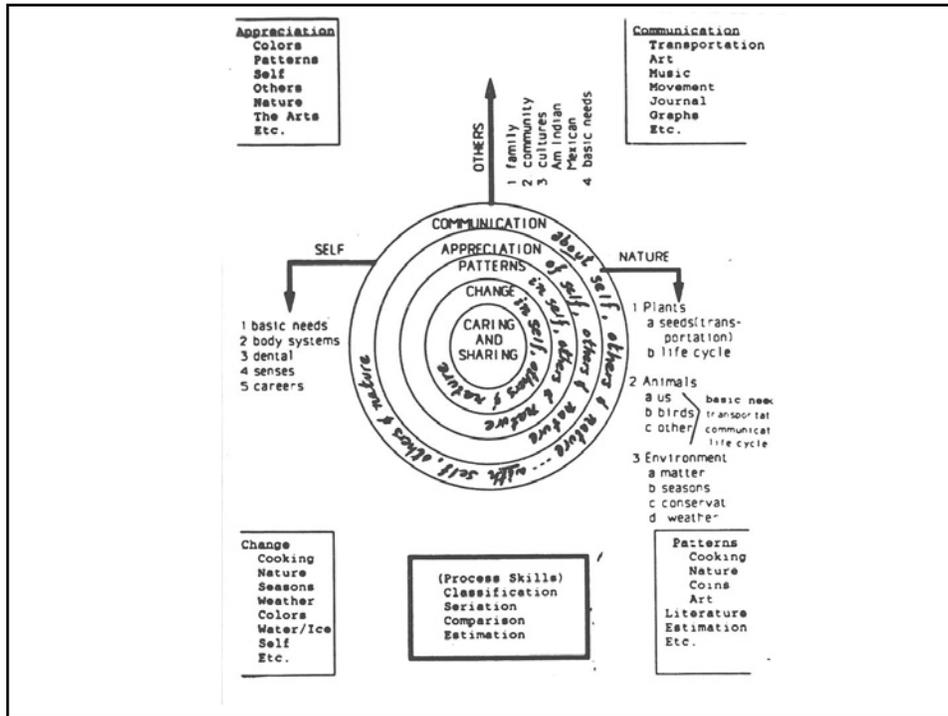
Kindergarten Topics

Welcome to school	Mexico	Seasons	Growth
Senses	Geography	Magnets	Body Systems
Dental	Classifying	Seriation	Art Explorations
Transportation	Problem Solving	Movement Exploration	Comparison
Native Americans	Literature	Conversation	Graphs
Holiday	Self and others	Family	Water and ice
Drama	Animals	Poetry	Estimation
Sharing and Caring	Environment/Earth	Colors	Seeds
Weight and Measurement	Pattern	Science Experiments	Matter
Farm	Air	Construction	Light-Shadows
Pilgrim/Indians	Community	Weather	Plants
Coins	Problem Solving	Earth	Nutrition

Kindergarten Concepts and Topics

Cooperation	Communication	Culture	Change	Exploration
Welcome to school Self and others Family Basic needs/goods and services Pilgrims/Indians Community Sharing and caring Problem solving	Literature Listening/Speaking Conversation- Listening, speaking, Writing, AV materials Drama Senses Poetry-Rhyme, Rhythm Signs/Symbols	Mexico Native American Holiday	Seasons Light/Shadows Matter Nature Metamorphosis Growth Earth Animals Geography Farms Self Weather Environment Cooking Plants	Problem Solving Math Their Way Patterns Graphs Coins Caring for Self Dental, Body Systems, Music, Careers, Classifying Science Magnets, Air, Weight, Senses Positions Estimation Nutrition Art Movement Comparison Seeds Colors Construction





A Kindergarten Concept-Based Unit: Patterns and Changes in the Animal Kingdom

Rationale: There are patterns and changes in all animals including humans.

Concept: Patterns

Generalizations:

1. Scientists classify animals by using patterns
2. A category of animals has predictable patterns in it
3. We can classify animals by patterns in their size, movement, body features, habitat, food type, etc.
4. There are patterns in the life cycles of animals
5. There are patterns in animal "families"
6. Weather and habitat determine basic patterns in animals' bodies and lives
7. There are patterns of interdependence in lives of humans and other animals
8. There are patterns in how and why animals communicate

Concept: Change

Generalizations:

- Animals change as they grow
- Metamorphosis is a complete change
- Ways in which animals move, see, protect themselves, etc. change among classifications of animals
- Animals which do not adapt to change in their environments become extinct
- Some animals change their habits
- Some animals change their coloration to protect themselves



Ratcheting Generalizations

Level 1 Generalizations

Use: affect, influence, impact, is, are, have
Flat, evident, low potential to extend thinking
Example: Economic depression affects a nation.

Level 2 Generalizations

Answer: So what?
Show the significance or effect that's hiding in a Level 1 Generalization
Example: Economic depression leads to decreases in production and consumption.

Level 3 Generalization

Probe for deeper significance or impact behind a Level 2 Generalization
Answer: How?
Example: Decrease in production and consumption can alter the balance of trade among nations.

Based on the work of Lynn Erickson

The Role of Level 1, 2, & 3



No students should have to settle for Level 1 Generalizations.



All students should work at least with Level 2 Generalizations.



More advanced students may be challenged by exploring Level 3 Generalizations

Another Example

Level One

Leaders influence a community.

How? 

Level Two

Leaders explain community issues and share perspectives.

So What? 

Level Three

By clarifying issues and sharing perspectives, leaders can unify people to accomplish goals.

Skill Categories

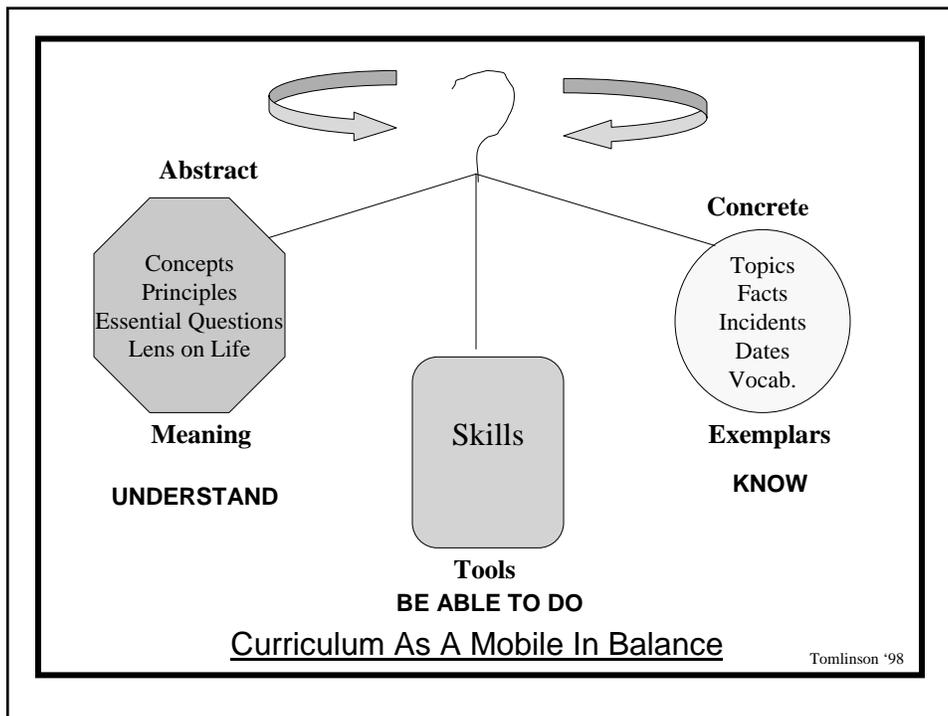
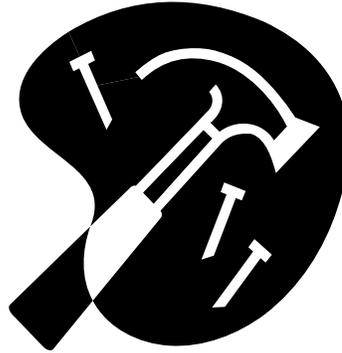


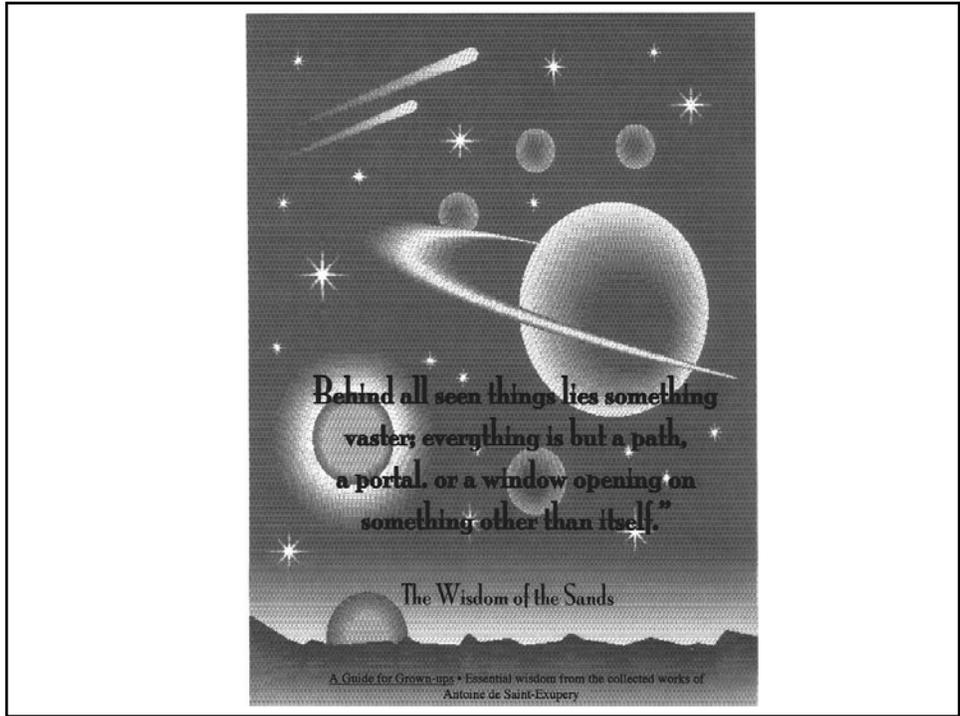
- Thinking Skills
- Affective Skills
- Skills of Literacy & Numeracy
- Study Skills
- Research Skills
- Communication Skills
- Social Skills
- Subject Specific Methods and Techniques

Purcell 2004

Skill Examples

- Comparing and Contrasting
- Listening
- Note taking
- Using an index
- Controlling a variable
- Writing a business letter
- Measuring temperature
- Listening with an open mind
- Designing an experiment
- Working collaboratively

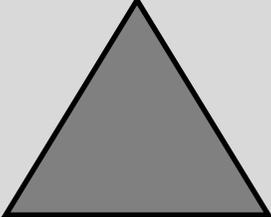




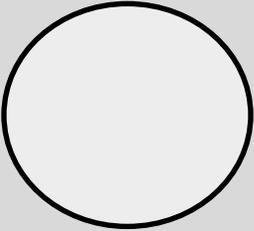
The SQUARES with my beliefs.



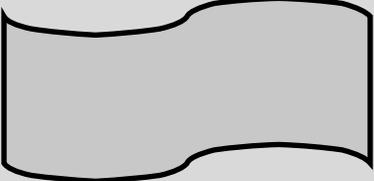
THREE POINTS I want to remember.



Here's what's going **AROUND** in my mind.

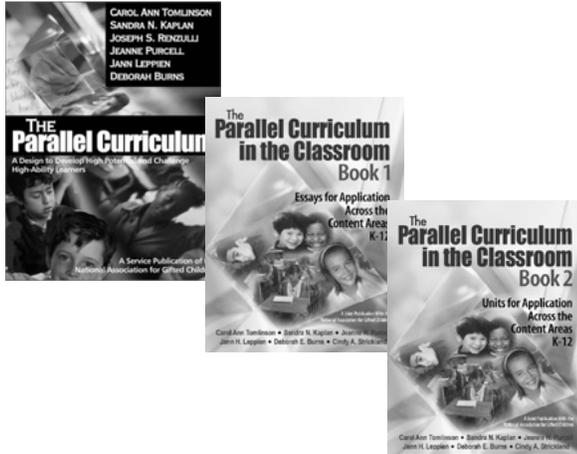


This made me **WIGGLE** in my seat.



Judy Rex • Scottsdale, AZ

Key Contributions of...



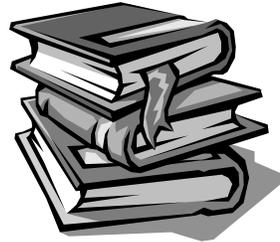
Characteristics of Expertise

1. Experts notice meaningful patterns in information or processes.
2. Experts have a lot of content knowledge.
3. Expert knowledge is organized in a way that reflects deep understanding.
4. Expert information is tied to context and is not just a series of facts and skills. It reflects how information is affected by circumstances.
5. Experts are flexible in their approach to new situations (use heuristics rather than algorithms).
6. Experts retrieve information with relatively little effort.
7. Experts are metacognitively aware.
8. Experts are competent and confident.
9. Experts start problem solving at a higher place.
10. Experts know they have much more to learn (vs. believing they have all the right answers).

Based on *How People Learn: Brain, Mind, Experience, and School*, 1999, National Research Council.

Curricula Leading to Expertise Would:

1. Be built on the key concepts, principles, skills and information of the discipline
2. Ensure understanding rather than rote memory of the nature of the discipline
3. Emphasize meaningful patterns of knowledge and pattern recognition
4. Help students begin by trying to understand problems rather than searching for canned or algorithmic solutions
5. Emphasize depth of knowledge over breadth of knowledge
6. Help students practice selective retrieval (look for relevant information and processes from large bodies of information or process options)



Curricula Leading to Expertise Would:

7. Ensure that students know when, where, and why to use knowledge, not just repeat knowledge
8. Help students practice fluency at least as much as accuracy (relates to effortless retrieval)
9. Help students focus on learning vs. remembering
10. Help students learn to teach themselves
11. Encourage to monitor their approach to problem solving (be metacognitive)
12. Help learners routinely step back from problems and ask whether the knowledge and processes they are using are relevant and effective

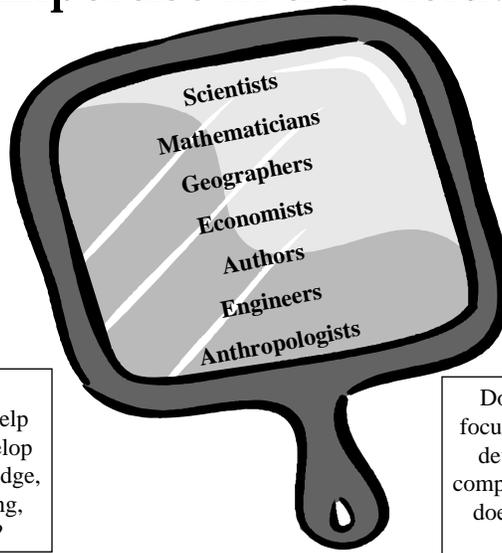


Based on
How People Learn: Brain, Mind, Experience and School
National Research Council, 1999

Does the Curriculum Mirror Expertise in the Field?

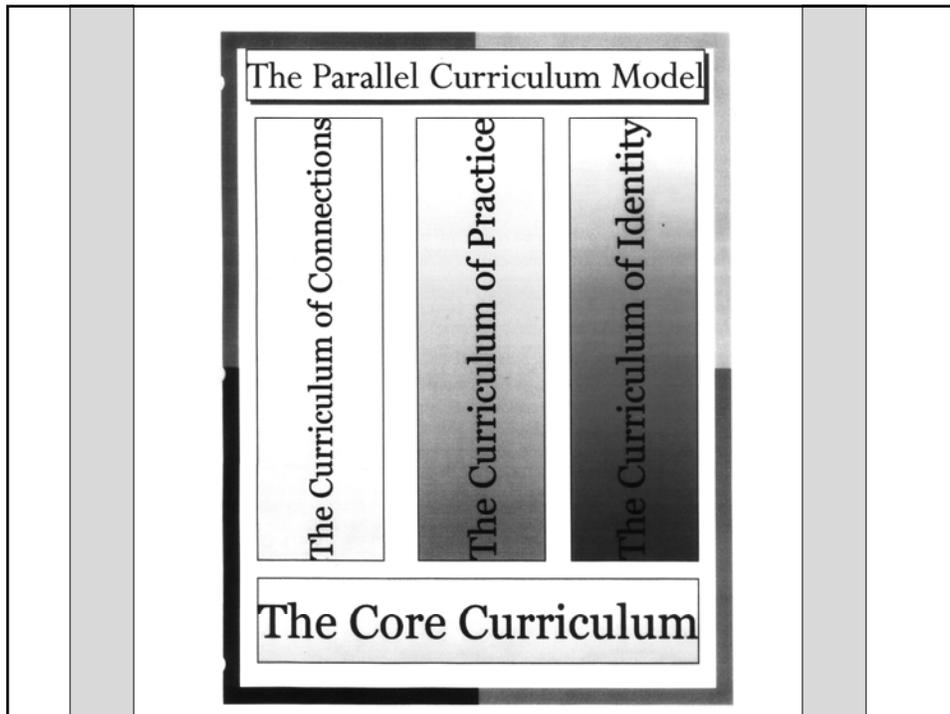
Are the content, processes, and products defensible when we examine the discipline?

Does the curriculum help students develop expert knowledge, understanding, and skills?



Would a disciplinarian assess the curriculum and say, "This has nothing to do with the way I do my work."

Does the curriculum focus on what matters in developing deep and complex understanding or does it concentrate on coverage?



The Parallel Curriculum Model

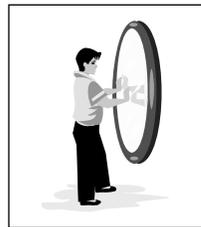
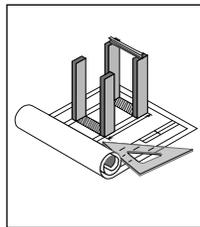
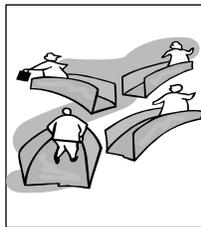
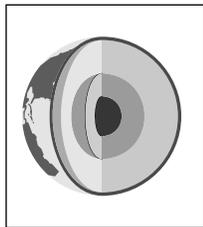
Core	
Connections	
Practice	
Identity	

What are the ten components of a comprehensive curriculum unit, lesson, or task?

- Content 
- Assessment 
- Introduction/Closure 
- Teaching Strategies 
- Learning Activities 
- Grouping Strategies 
- Products
- Resources
- Extension Activities
- Modification
(Ascending Level of Intellectual Demand)

The Parallel Curriculum Model: Four Ways of Knowing

CORE CURRICULUM CURRICULUM OF CONNECTIONS CURRICULUM OF PRACTICE CURRICULUM OF IDENTITY



KEY CURRICULUM COMPONENTS



Ascending Intellectual Demand

Is the mechanism for ensuring that even very rich and challenging curriculum can continue to provide the elasticity necessary to extend the capacity of advanced learners as they grow.

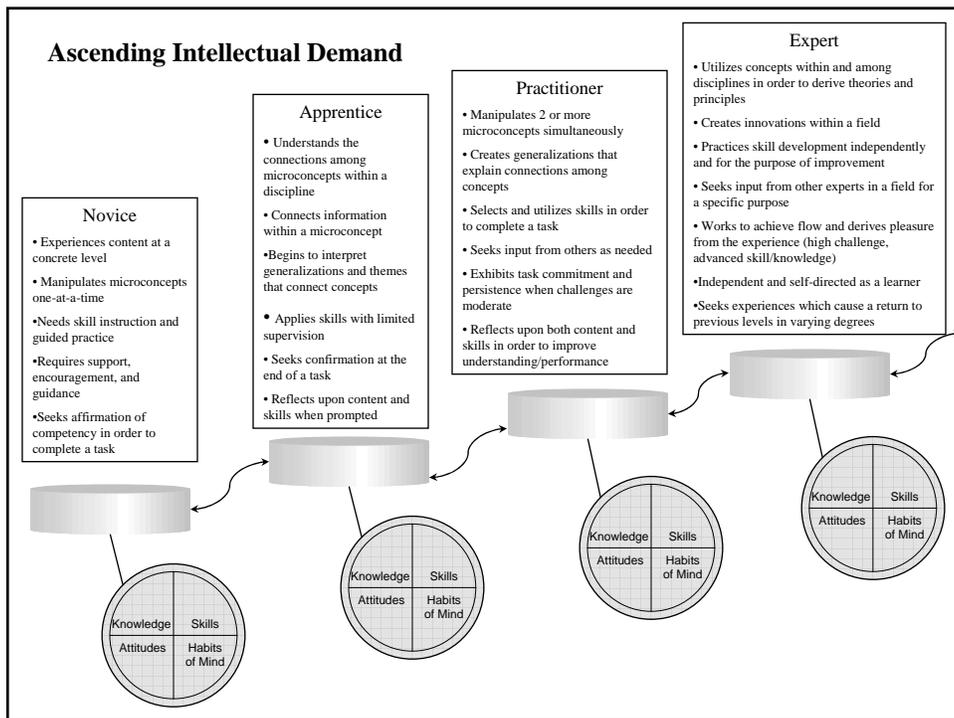
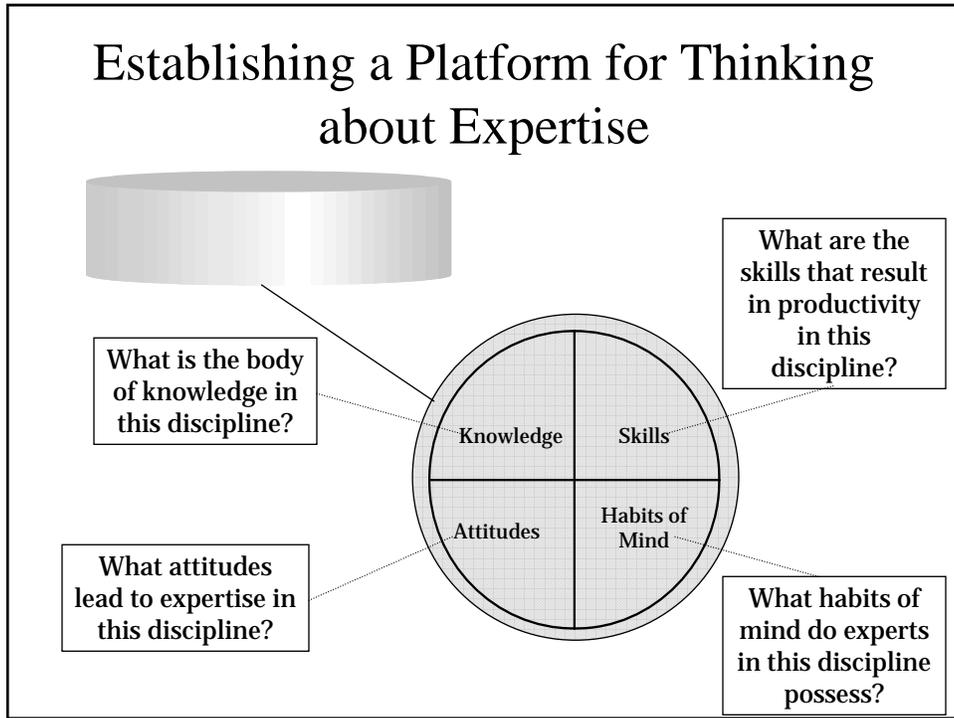
Provides a new way of looking at what it means to provide challenge for gifted learners.

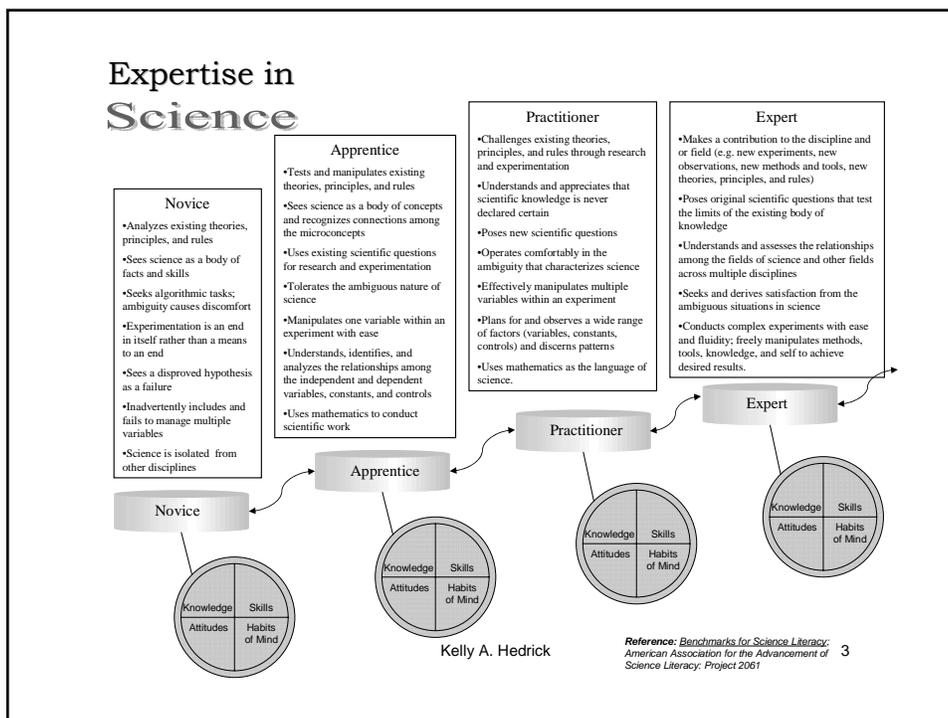
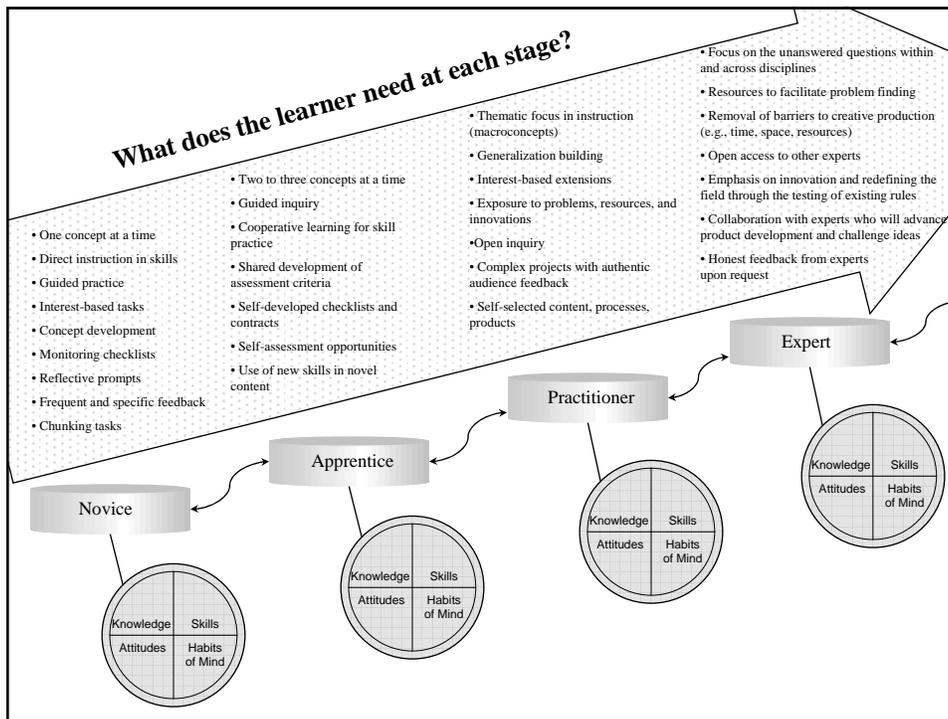
Is based on each learner's journey toward expertise in a discipline.

Is a kind of differentiation.

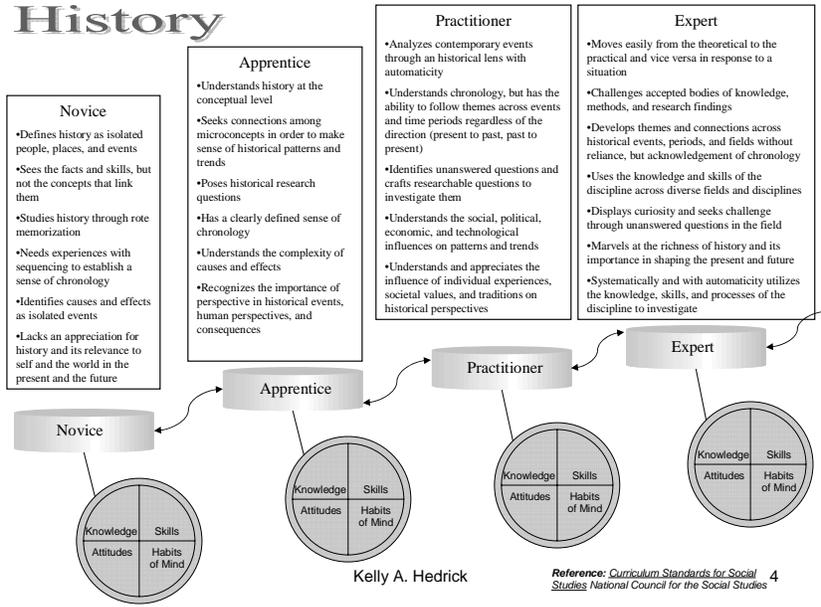


Establishing a Platform for Thinking about Expertise

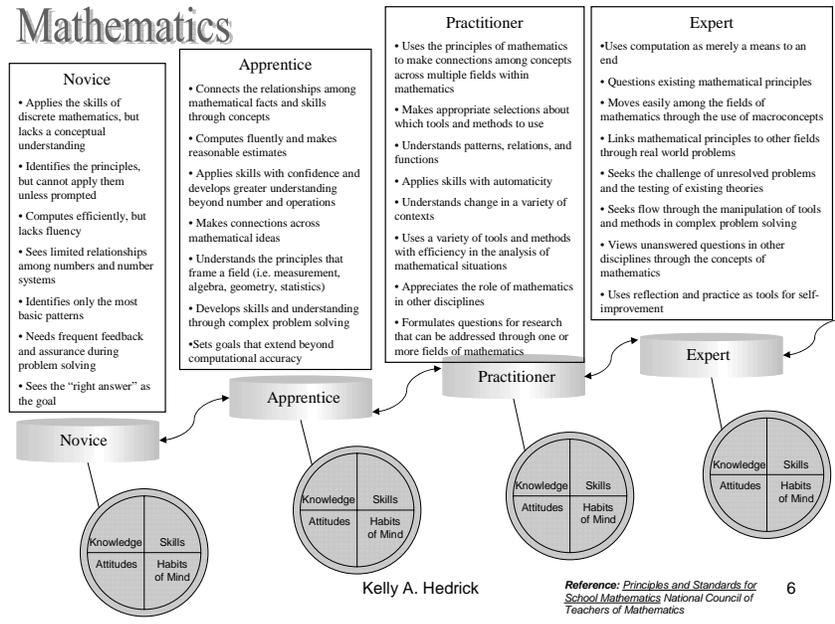




Expertise in History



Expertise in Mathematics



Expertise in English Language Arts

Novice

- Applies a limited range of skills in an algorithmic manner
- Understands the skills and concepts in isolation, but lacks flexibility in understanding and application
- Practices and applies skills when prompted
- Limits reading selections and resources to a narrow scope
- Written and oral communication is technically correct, but lacks variety and personal relevance
- Sees written and oral communication and research with limited possibilities
- Views editing and revision as punitive and drudgery

Apprentice

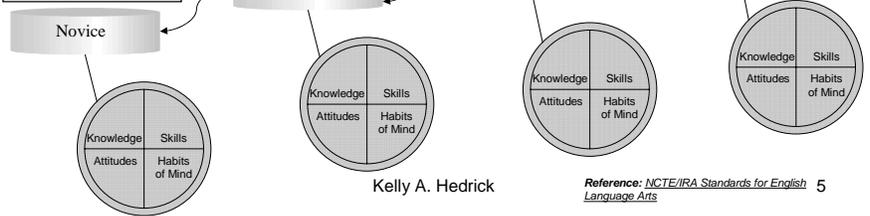
- Demonstrates flexibility in the use of skills and the understanding of concepts
- Understands the connections across written and oral communication, reading, and research
- Understands the need for a variety of selections in reading, writing, and research
- Understands the role of effective communication for a variety of purposes
- Adjusts communication modes according to purpose and audience
- Values the input of qualified reviewers in the editing and revision process

Practitioner

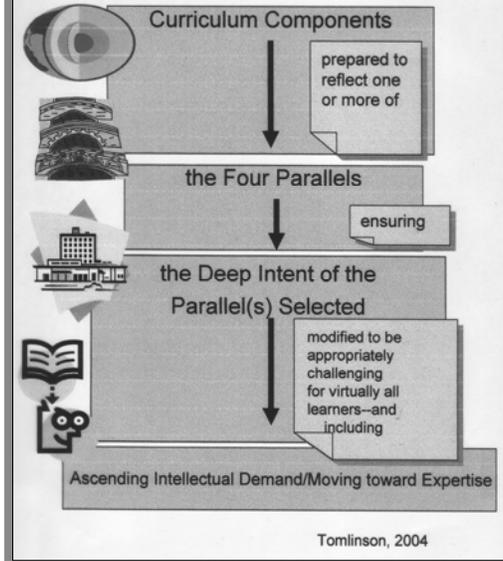
- Applies the skills of language arts in other disciplines with relative ease
- Moves fluidly among the various modes and methodologies associated with language arts
- Appreciates the art of communication
- Conducts authentic research applying the skills of questioning, information gathering, data analysis and synthesis
- Understands the necessity for multiple and varied resources in research
- Seeks the constructive criticism of knowledgeable persons across disciplines in developing a product
- Understands and respects the diversity of language across cultures

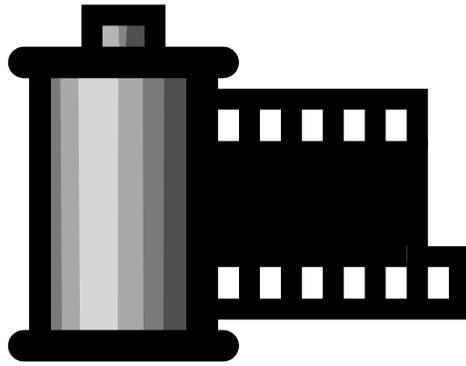
Expert

- Demonstrates knowledge, reflection, creativity, and critical analysis of language arts skills and concepts across a wide variety of disciplines
- Applies the wide range of skills associated with effective oral and written communication, reading, and research with automaticity
- Reading, writing, speaking, and researching lead to personal fulfillment beyond the goals of learning and the exchange of information
- Appreciates the power of the written and spoken word
- Questions the accepted conventions and rules
- Experiments with methods to communicate and develop greater understanding
- Practices in all areas (i.e. written and oral communication, reading, and research)



The Parallel Curriculum Model =

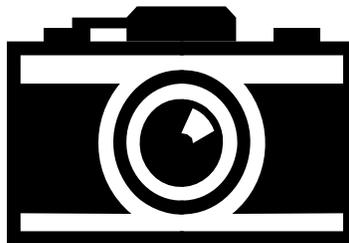




A CAMERA ANALOGY TO PCM

Think Along With Us!

"PhD" Cameras take okay pictures.
We get some sense of what's "out there."
But the detail isn't fine,
And the perspective on the world is always the same.



That's a lot like much of our current curriculum.

If you move to a 35mm camera with a standard 50 mm lens, the detail is *much* sharper! But the most powerful thing about the camera is its ability to let you use a variety of lenses to see the world out there.



That's a lot like the Core Curriculum in PCM. Its basic lens helps students see the real nature of a discipline—the structure of a subject like an expert understands it—a photograph rather than a snapshot--*and* through multiple lenses!

The Curriculum of Connections is like a wide-angle lens.



Through this lens, students still see the key concepts, principles and skills of the discipline, but it also allows them the breadth of vision to see how those elements connect across times, places, disciplines, etc.

The Curriculum of Practice is like a telephoto lens.



This parallel lets students see the key concepts, principles, and skills “up close and personal” as the student becomes a practitioner of a discipline—actually working and thinking in the discipline much as an expert would.

The Parallel of Identity is like a macro lens.



This parallel allows students to see the discipline “up close and personal” by examining a discipline through the experiences of a practitioner—and simultaneously examining how what they learn teaches them about themselves.



We Invite You...

to think today about how exciting teaching and learning would be if we showed our students how the world looks

by giving them the tools they need to see the real nature of the discipline(s) we teach--*and* the world through a variety of lenses

rather than with grainy film and through a fixed lens perspective!



This I Believe: Science Nourishes the Mind and Soul

Brian Greene, Professor of Physics & Mathematics, Columbia University

...just as our experience playing baseball is enormously richer if we know the rules of the game, the better we understand the universe's rules -- the laws of physics -- the more deeply we can appreciate our lives within it.

I believe this because I've seen it.



I've seen children's eyes light up when I tell them about black holes and the big bang. I've received letters from young soldiers in Iraq telling me how reading popular accounts of relativity and quantum physics has provided them hope that there is something larger, something universal that binds us together.



Which is why I am distressed when I meet students who approach science and math with drudgery. I know it doesn't have to be that way.

But when science is presented as a collection of facts that need to be memorized, when math is taught as a series of abstract calculations without revealing its power to unravel the mysteries of the universe, it can all seem pointless and boring.



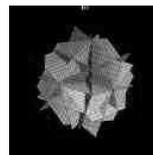
Even more troubling, I've encountered students who've been told they don't have the capacity to grasp math and science.

These are lost opportunities.

I believe we owe our young an education that captures the exhilarating drama of science.



I believe the process of going from confusion to understanding is a precious, even emotional, experience that can be the foundation of self-confidence...



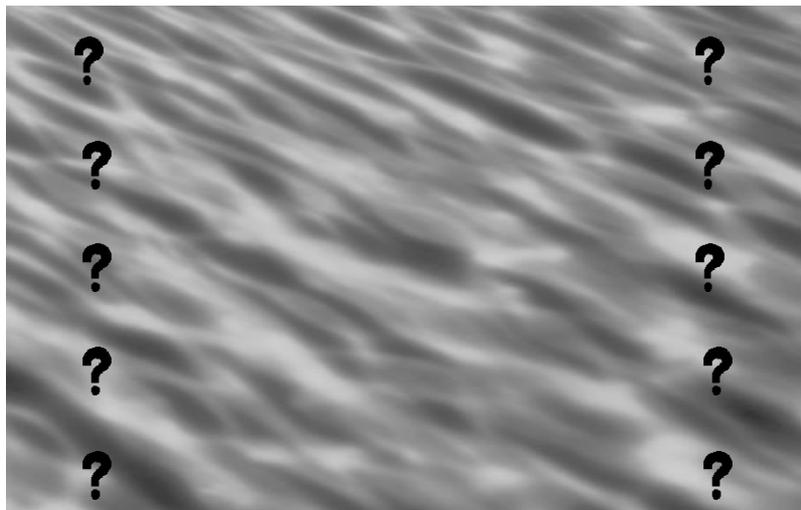
I believe that the wonder of discovery can lift the spirit like Brahms' Third Symphony.

I believe that the breathtaking ideas of science can nourish not only the mind but also the soul.



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BURNING QUESTIONS

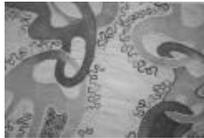


MAKING CONNECTIONS



Making mental connections is our most crucial learning tool, the essence of human intelligence: to forge links; to go beyond the given; to see patterns, relationship, context.

Marilyn Ferguson



Quotations on Education • Compiled by Rosalie Maggio • Prentice Hall Press • p.108



The joy of learning is as indispensable in study as breathing is in running. Where it is lacking there are no real students, but only poor caricatures of apprentices who, at the end of their apprenticeship, will not even have a trade.

Simone Weil

Quotations on Education compiled by Rosalie Maggio • Prentice Hall Press •59 p.



The attention of children must be lured, caught, and held, like a shy wild animal that must be coaxed with bait to come close. If the situations, the materials, the problems before a child do not interest him,

his attention will slip off to what does interest him, and no amount of exhortation or threats will bring it back.

John Holt

From Quotations on Education • Prentice Hall Press • p. 79