

What I've Learned About Curriculum



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PBL Resources

Curriculum Units



1.

The **ONLY** Reason to
Alter Curriculum
for Gifted Students

Their LEARNING NEEDS are **DIFFERENT**
because

THEY are **DIFFERENT**



The Gifted Mind

Rapid Learning
Conceptual Thinking
Inquiry
Complexity
Emotional Intensity
Openness

These Characteristics are

Universal

to Gifted Students

2.

BECAUSE

they are **DIFFERENT**

our **GOALS** are

Different

What are the Aims of Gifted Education?



A Journey to Expertise

Knowledge

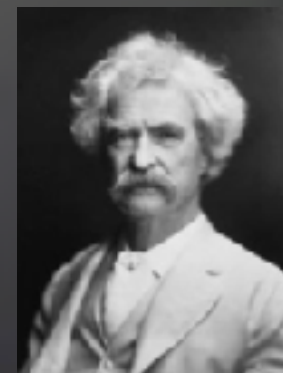
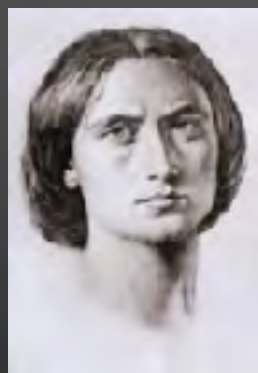
Thinking Skills

Problem-Solving

Metacognition

Tolerance for Ambiguity

Passion

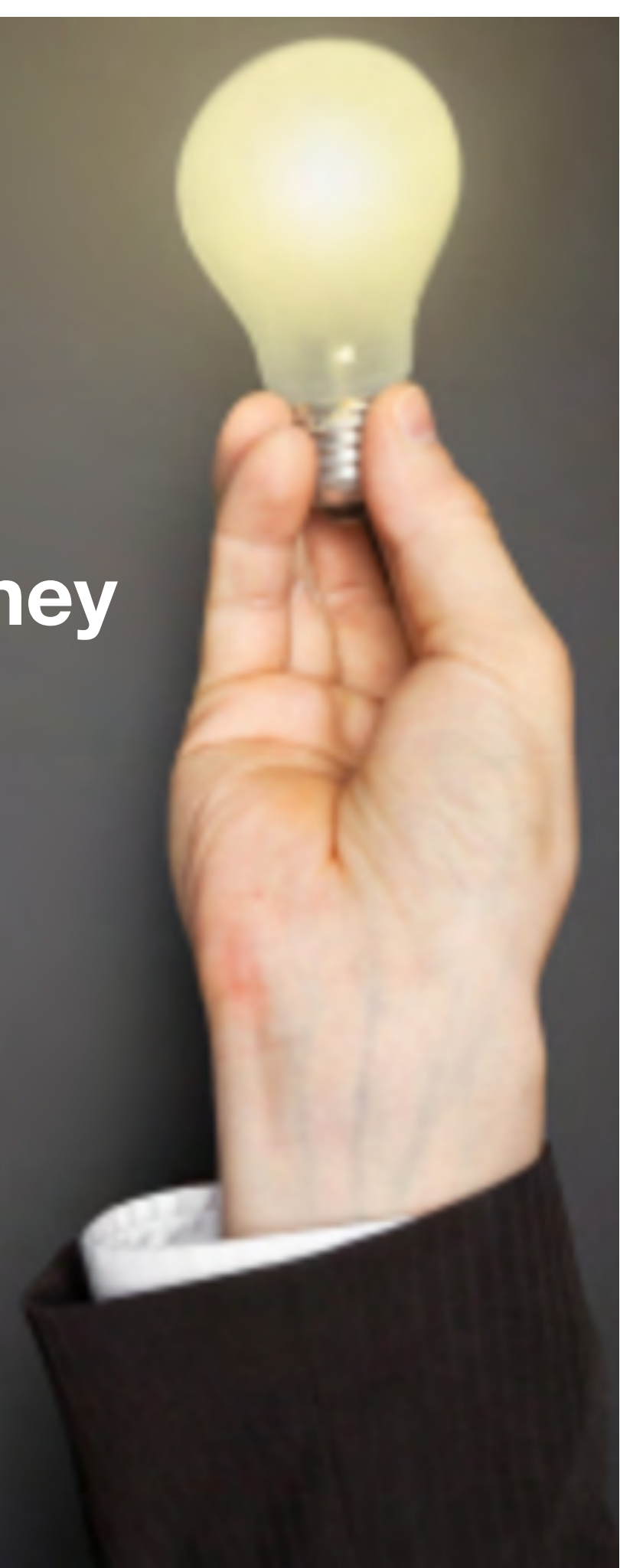


The QUESTION:

How to ENGAGE STUDENTS so they

Practice

THINKING LIKE EXPERTS...



3.

**Kids Love
Stories**

**III-Structured
Problems ARE Stories**

III-Structured Problems Educational Benefits

**Content Knowledge
Process Knowledge
Multiple Solution Paths
Choice and Decision Making
Evaluative Thinking
Metacognition**



A Story

Realistic Fiction

Mystery



A Story

Neural Synthesis of Cognition and Affect

Paul Zak

More memorable than Other Narratives

Greaser





Stories

Data with a Soul

Dr. Brene Brown



YOU are the *STORYTELLER*



They are the **PROTAGONIST**

“Scaffolded Autonomy”

Learning Issues Board

Hunches:

What do we know?

What are our Learning Issues? What is our Action Plan?

YOUR Story

THEIR Choices

4.

**We can
ENHANCE
Relevance**



Apprenticeship



Apprenticeship

The purpose of an **APPRENTICESHIP** is to provide both hands-on training and theoretical instruction

so that an interested person can learn the *full range of skills and information* behind a *highly skilled occupation*.

By participating in an apprenticeship, he can learn the

subtleties

of the craft from an expert and

can begin

his own practice

under close observation.

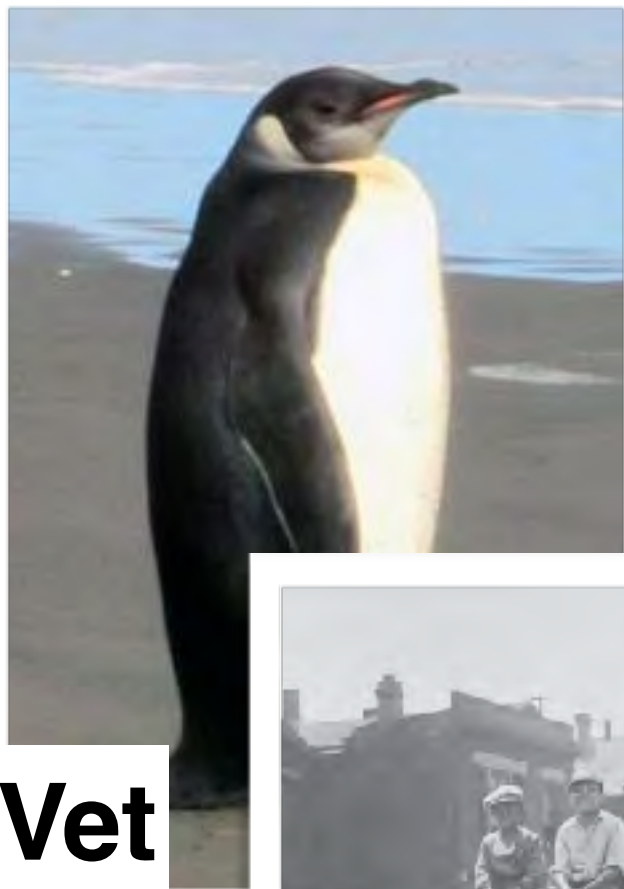
In the *best* curriculum a
student acts as a
hero
willing
to become an
unknown self



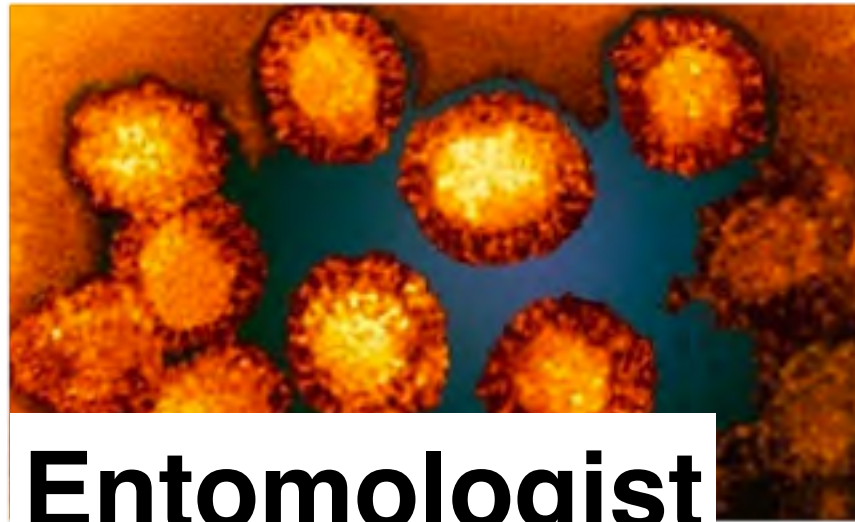
Jerome Bruner:



Experiencing Subject Matter from an Expert's Perspective



Vet



Entomologist



Congress



Task Force



Biologist



Engineer



Town Elder



Journalist



“It is ... neurobiologically impossible to think deeply about things that you don’t care about.”

Emotions, Learning, and the Brain, Mary Helen Immordino-Yang

**Complex emotional feelings like interest, inspiration,
indignation or compassion ...pertain ...to**



abstract inferences, interpretations and ideas.

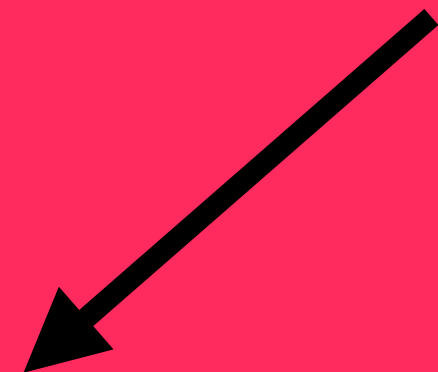
Emotions, Learning, and the Brain,
Mary Helen Immordino-Yang

5.

CURRICULUM MODELS are HELPFUL GUIDES

Depth and Complexity
occur in
Individual Lessons

**Appropriateness
for
Gifted Students**



PBL
is NOT
Inherently
Appropriate for
Gifted Students

(and neither are the other models in gifted education)

A close-up photograph of an open oyster shell. The top half of the shell is closed, showing a rough, textured exterior with shades of brown, grey, and white. The bottom half is open, revealing a smooth, iridescent interior. A single, round, light-colored pearl is nestled in the center of the open shell. The background is a soft, out-of-focus brown.

Model

Lesson

**The GESTALT is critical
the Systematic Consideration of an Idea over Time**

Goals of Problem-Based Learning

Problem Solving

Core Content

Conceptual Reasoning

Research

Thinking Skills

Ethics

Dispositions/Metacognition



A PLAN

Plan for
THINKING,
not **DOING**

Center on Meaningful, Rigorous Information

*A Passing Good Little Book
Necessary and Behooveful Against the Pestilence*
Unknown
1485

Within the house all the day, and if it be needful that a man to go out, yet let him abide in his house til the Sun be up in the East passing southward.

Hereafter follows the Remedies for the Pestilence.

Now it is to know by what remedies a man may preserve himself from pestilence. First see the writing of Jeremiah the Prophet that a man ought to forsake evil things and do good deeds and meekly to confess his sins. For why it is the best remedy in time of pestilence—penance and confession to be preferred [to] all other medicines. Nevertheless I permit you verily it is a good remedy to void and change the infected place. But some may not profitably change their places—therefore as much as to them is possible it is to eschew every cause of putrefaction chewed. Also the southern wind, v [facing] the south in likewise as it the windows against the north. Of

The Chronical
Jean de Venette
c. 1359

In A.D. 1348, the people of Florence and of almost the whole world were struck by a blow other than war. For in addition to the famine...and to the wars..., pestilence and its attendant tribulations appeared again in various parts of the world. In the month of August, 1348, after Vespers when the sun was beginning to set, a big and very bright star appeared above Paris, toward the west. It did not seem, as stars usually do, to be very high above our hemisphere but rather very near. As the sun set and night came on, this star did not seem to me or to many other friars who were watching it to move from one place. At length, when night had come, this big star, to the amazement of all of us who were watching, broke into many different rays and, as it shed these rays over Paris toward the east, totally disappeared and was completely annihilated. Whether it was a comet or not, whether it was composed of airy exhalations and was finally resolved into vapor, I leave to the decision of astronomers. It is, however, possible that it was a presage of the amazing pestilence to come, which, in fact, followed very shortly in Paris and throughout France and elsewhere, as I shall tell. All this year and the next, the mortality of men and women, of the young even more than of the old, in Paris and in the kingdom of France, and also, it is said, in other parts of the world, was so great that it was almost impossible to bury the dead. People lay ill little more than two or three days

Primary
Resources

When Will the Pestilence Arrive?

The news you have to bring to the Council meeting tonight is the worst you have ever had to deliver. Word has just reached you that the Black Death that has been raging across the south of Italy is spreading north.

Constantinople, a city far to the south, has been suffering the effects of the plague for more than a year. Wise men in that city have been able to figure out when the pestilence first threatened them by calculating when trade goods from a nearby city infected with the plague first reached Constantinople. The Great Mortality appeared in their city within days of the trade goods arriving there. If the wise men are right, the plague can be expected in your town about the time trade goods arrive.

Part I: Finding the Routes



Blank Map of Italy

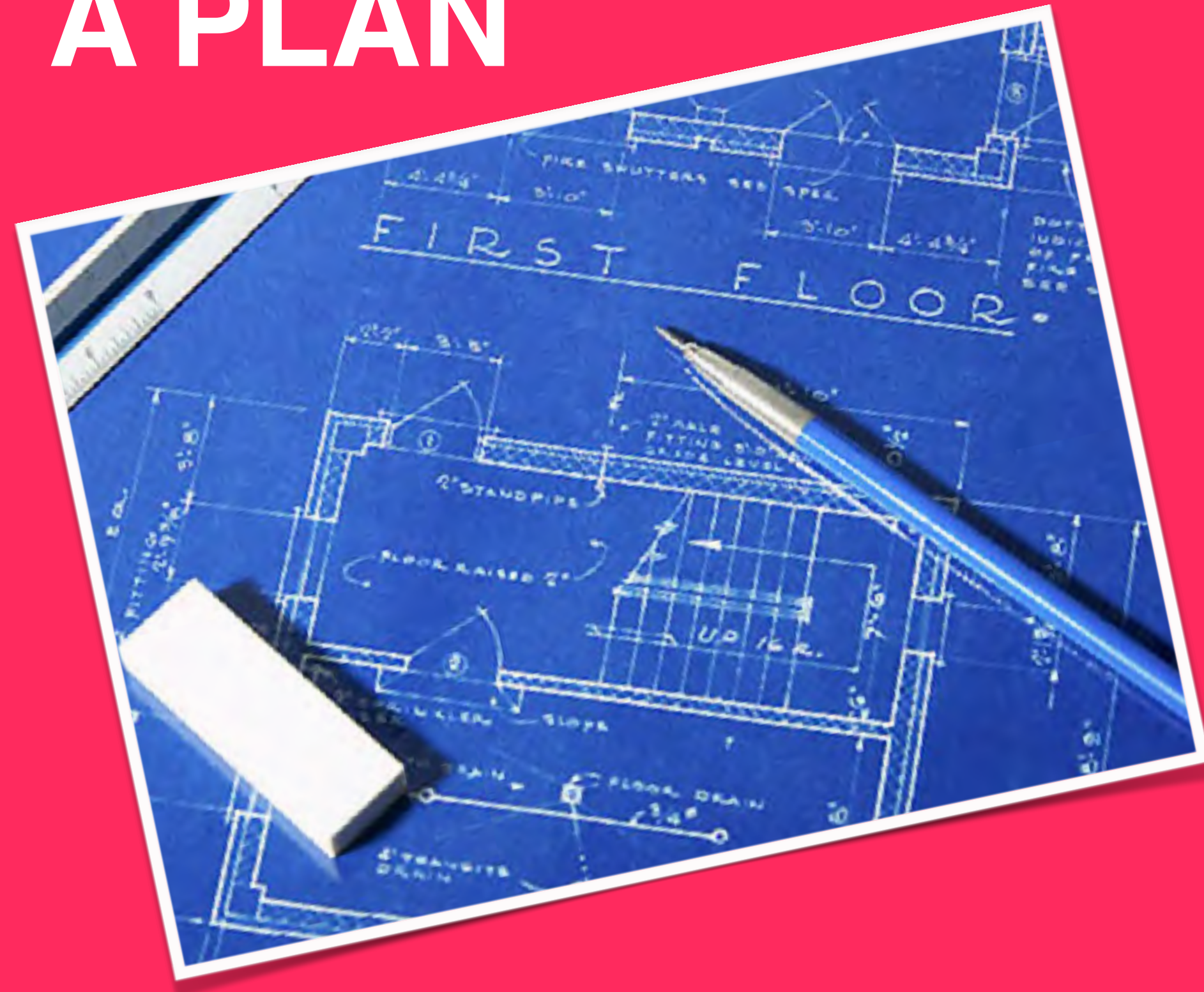
Directions: First, find Lucca on the detailed map, and mark it on this blank map. Next, draw the routes that start in: (1) Ragusa, (2) Naples, and (3) Rome, and that end in Lucca.



Part 2: Estimating the Day the Black Death Will Reach Your Town

According to the merchant, *ships travel about 100 miles a day*. Wind direction, calm periods, and storms affect their speed. *Animals and merchants travel 10 miles each day on foot*, including the stops they make to sell their goods, feed the animals (and themselves), contend with bandits, and take shelter when the weather is bad.

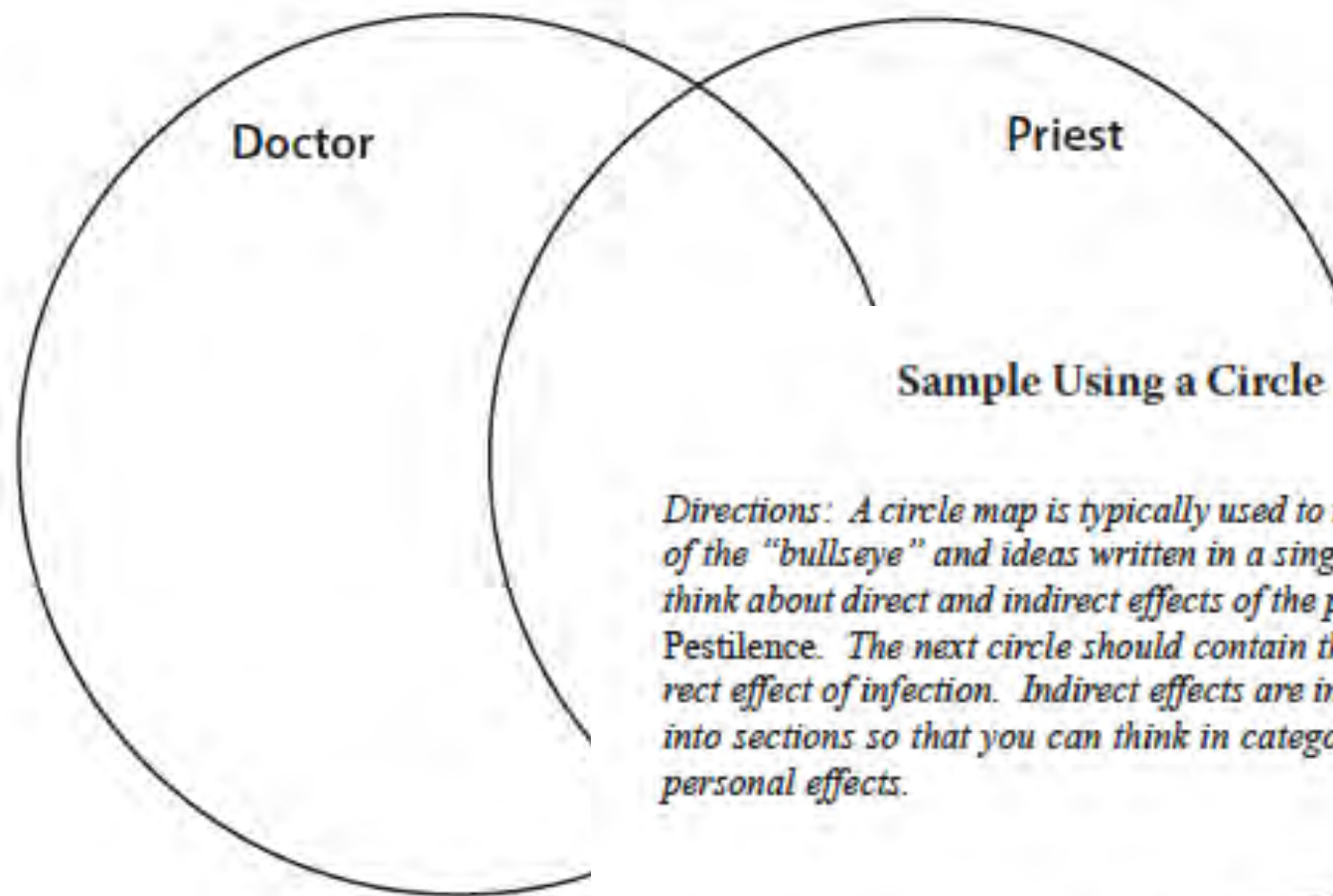
A PLAN



**Plan DOING
to advance
THINKING**

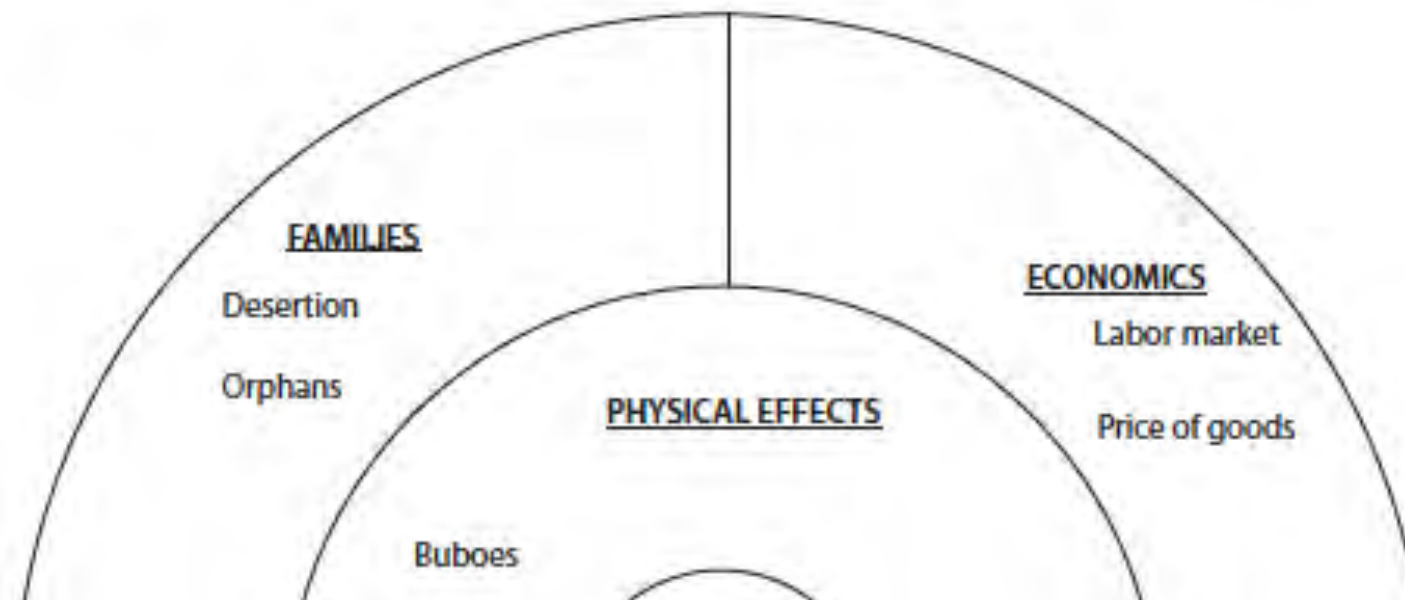
**Engage in Relevant Activities
(Advance the Story)**

Analysis



Sample Using a Circle Map for Direct and Indirect Effects

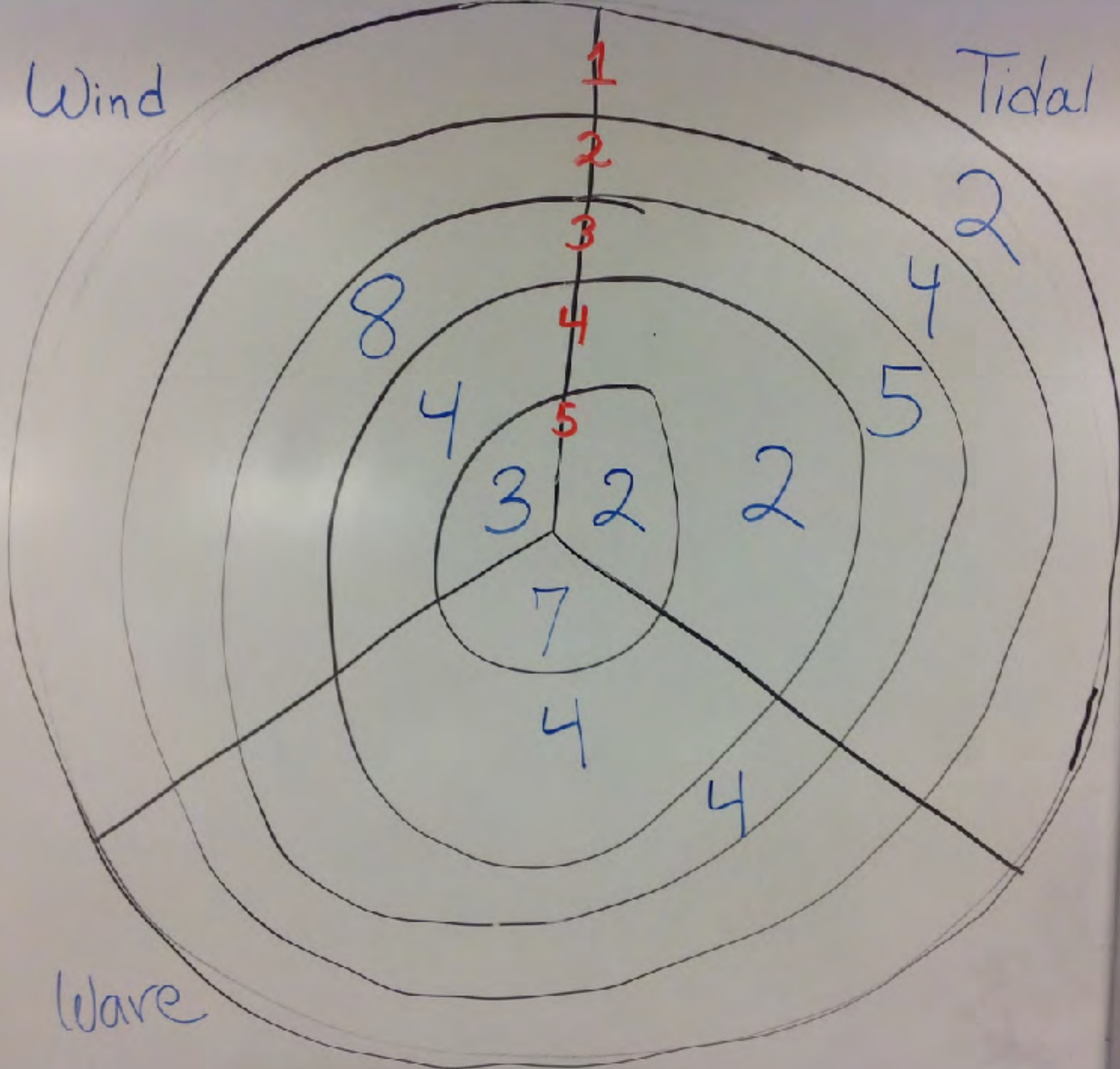
Directions: A circle map is typically used to record brainstormed ideas, with the topic placed in the center of the "bullseye" and ideas written in a single outer ring. In this lesson, a circle map is used to help you think about direct and indirect effects of the plague. The center circle contains the topic word, in this case Pestilence. The next circle should contain the physical effects of the disease, since illness is the most direct effect of infection. Indirect effects are in the circle's outer rim. The outer rim of this circle is divided into sections so that you can think in categories. Examples of categories include social, economic, and personal effects.





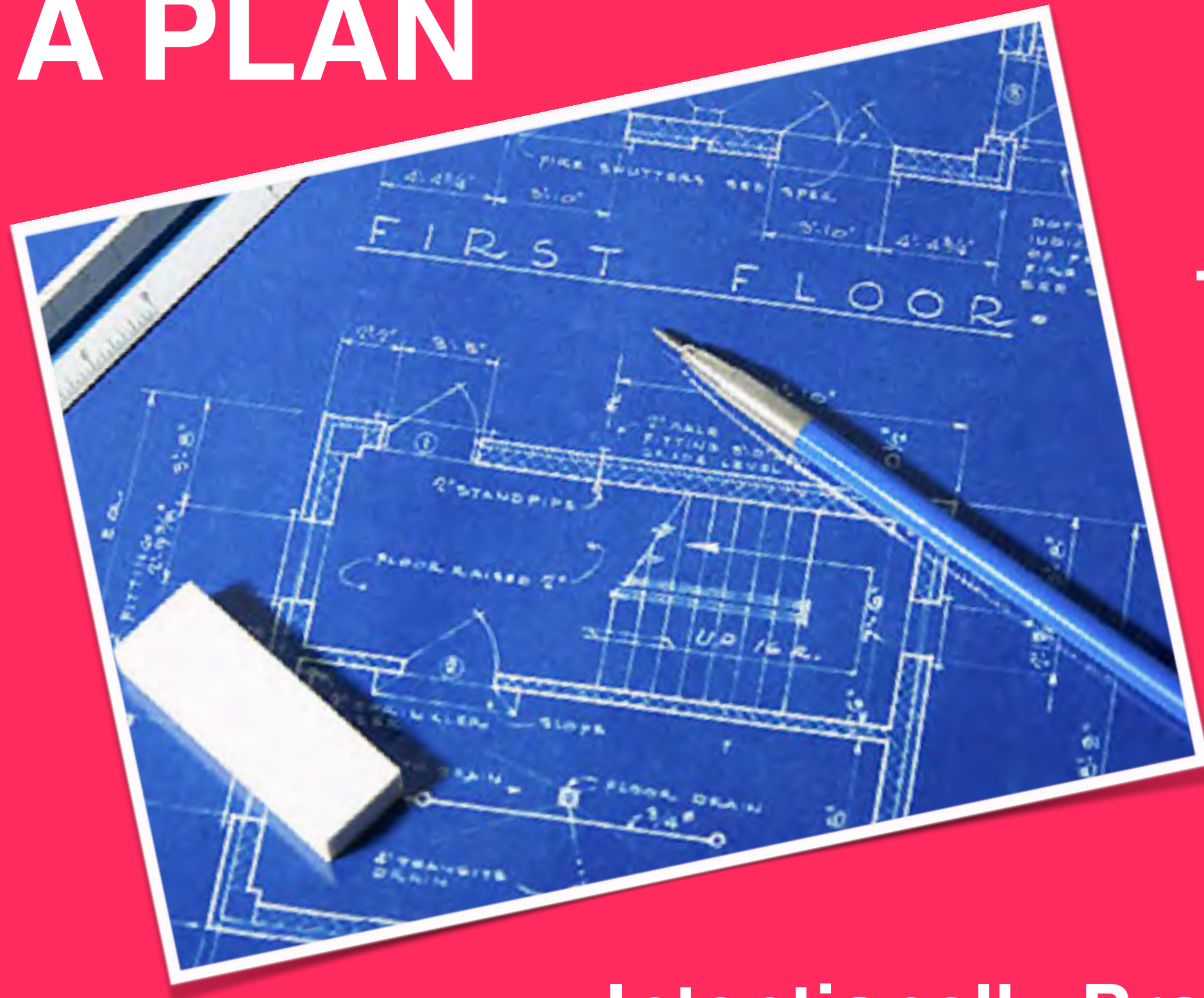
Wind

Tidal



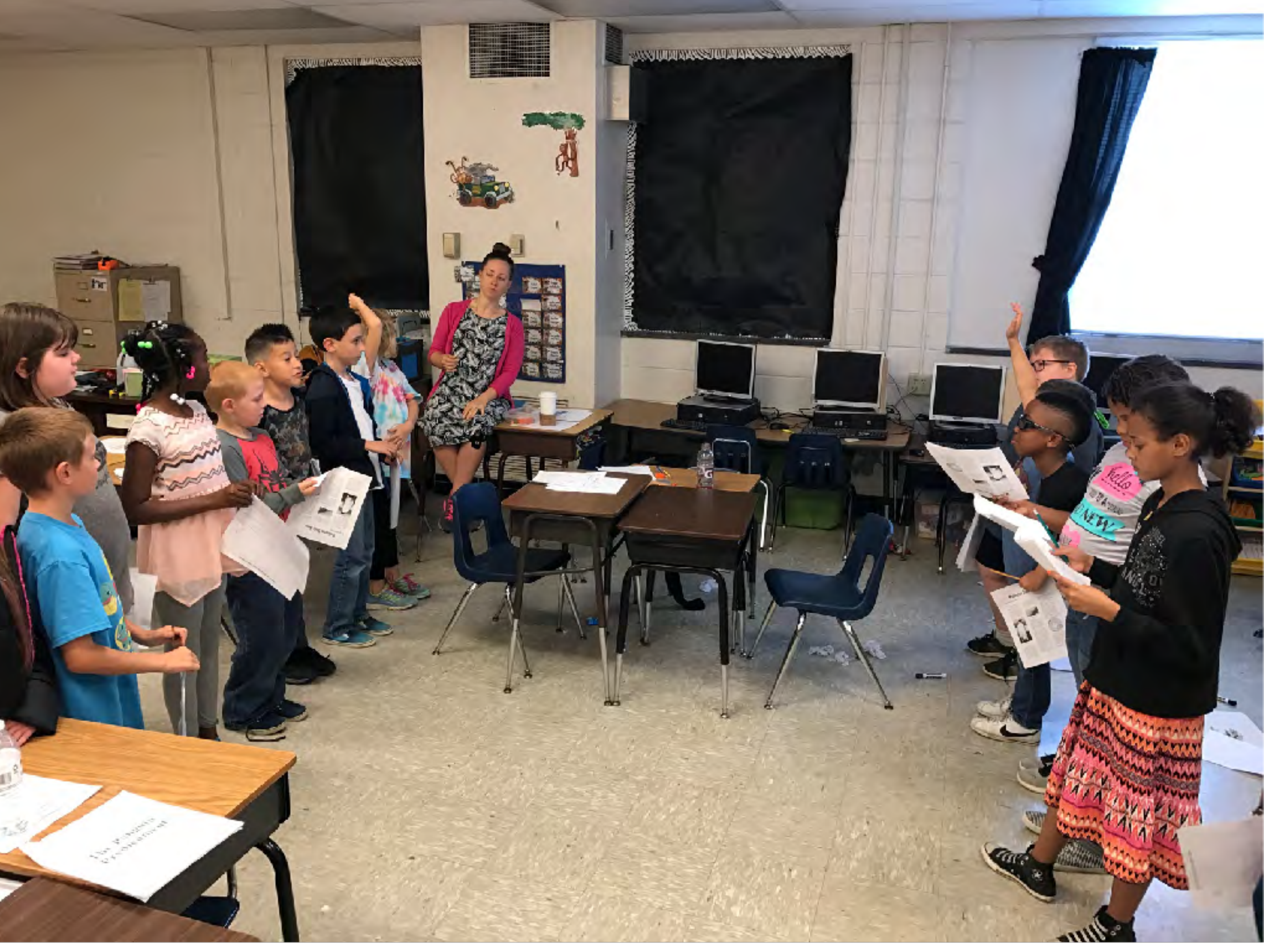
Wave

A PLAN



**Plan for
THINKING**

**Intentionally Protect time to
Think and Discuss**



Reflective Moment: Thinking about Systems

- **What are some negative consequences of an unbalanced system? What are some possible consequences of having the system go out of balance?**

6.

CONCEPTS: **MORE** than just a BIG IDEA

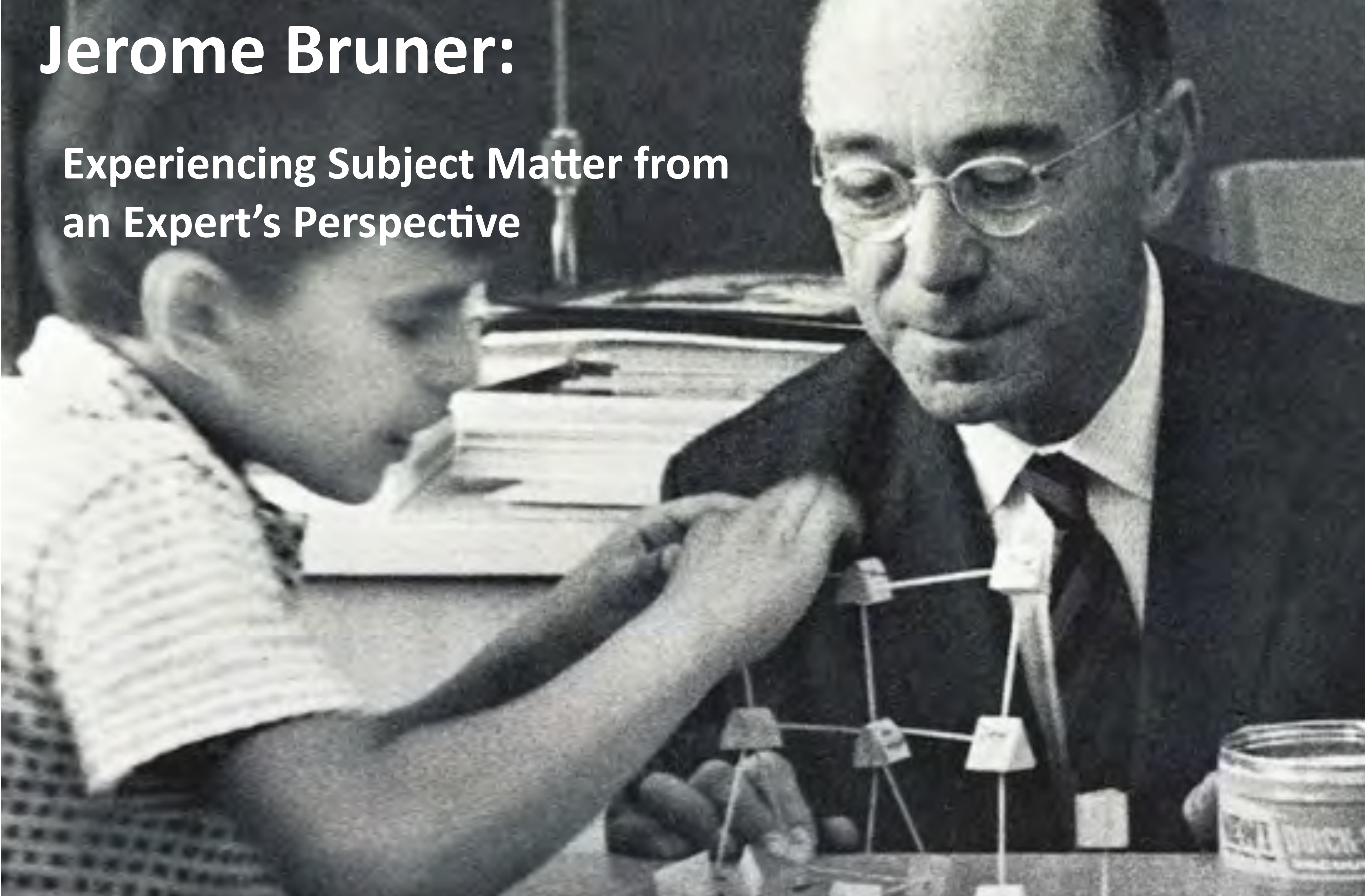


CONCEPTS are
TOOLS Experts use to
Understand the World



Jerome Bruner:

Experiencing Subject Matter from
an Expert's Perspective

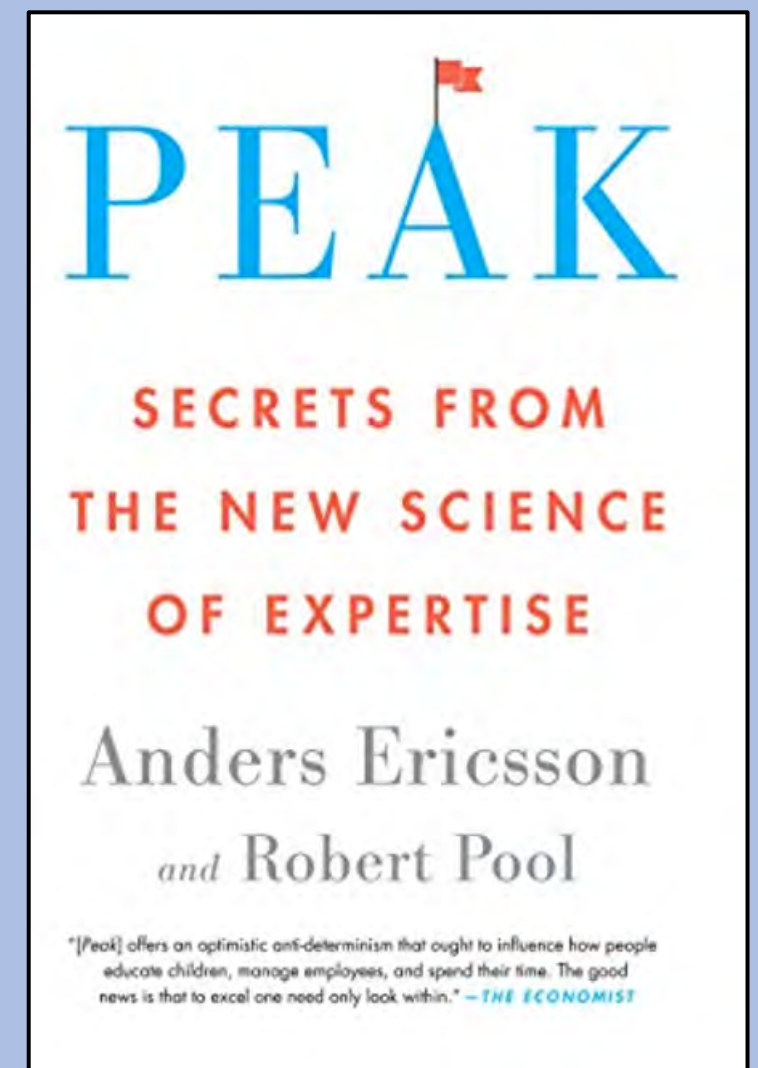
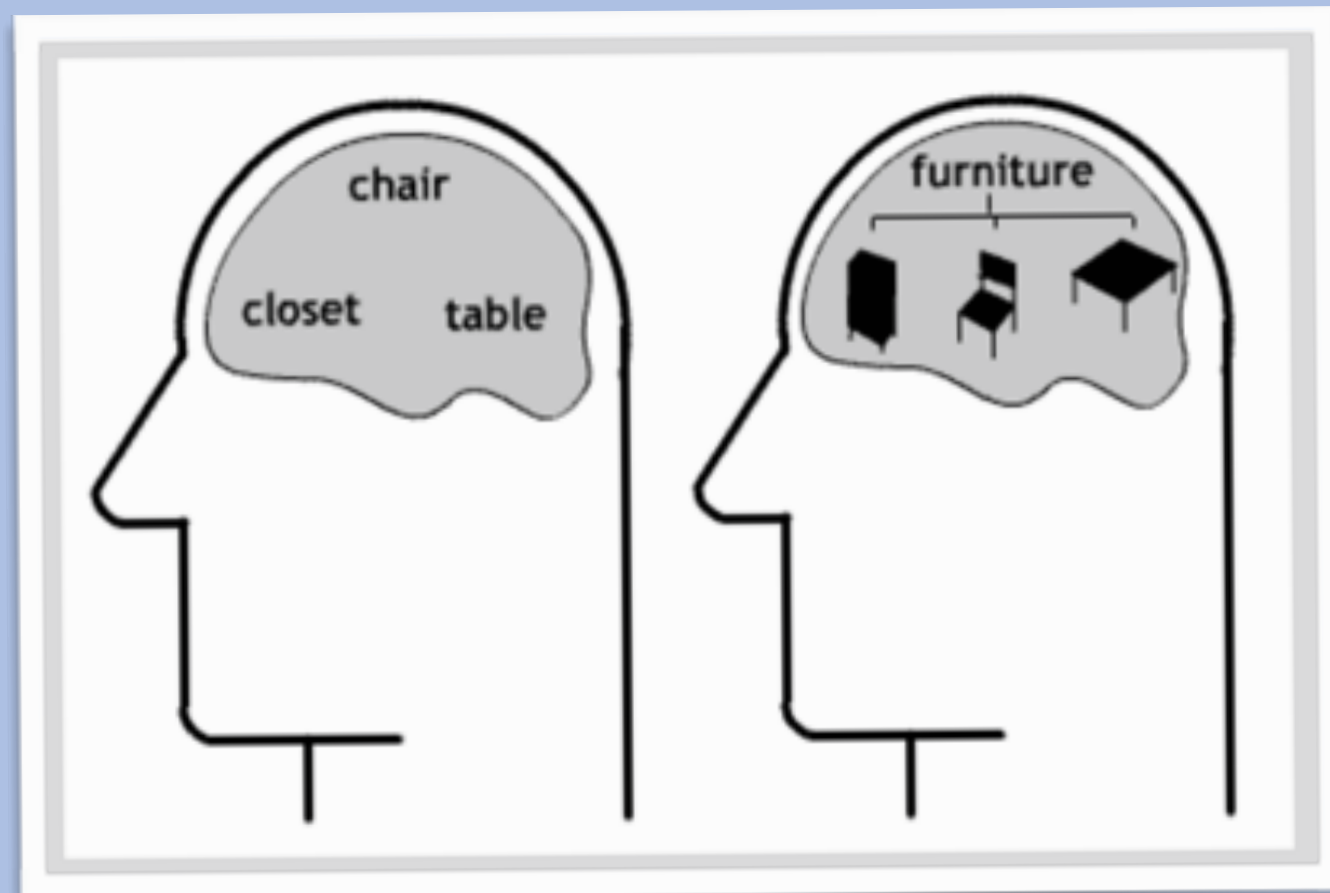


Concepts are worthless unless they lead children to new explorations.

**“WHAT SETS EXPERT PERFORMERS
APART FROM EVERYONE ELSE IS THE
QUALITY AND QUANTITY OF THEIR
MENTAL REPRESENTATIONS. ...**

CONCEPTUAL REASONING

**THESE REPRESENTATIONS ALLOW THEM
TO MAKE FASTER, MORE ACCURATE
DECISIONS AND RESPOND MORE
QUICKLY AND EFFECTIVELY IN A GIVEN
SITUATION.**



Students must be able to

both

DEFINE concepts

and WORK WITH THEM

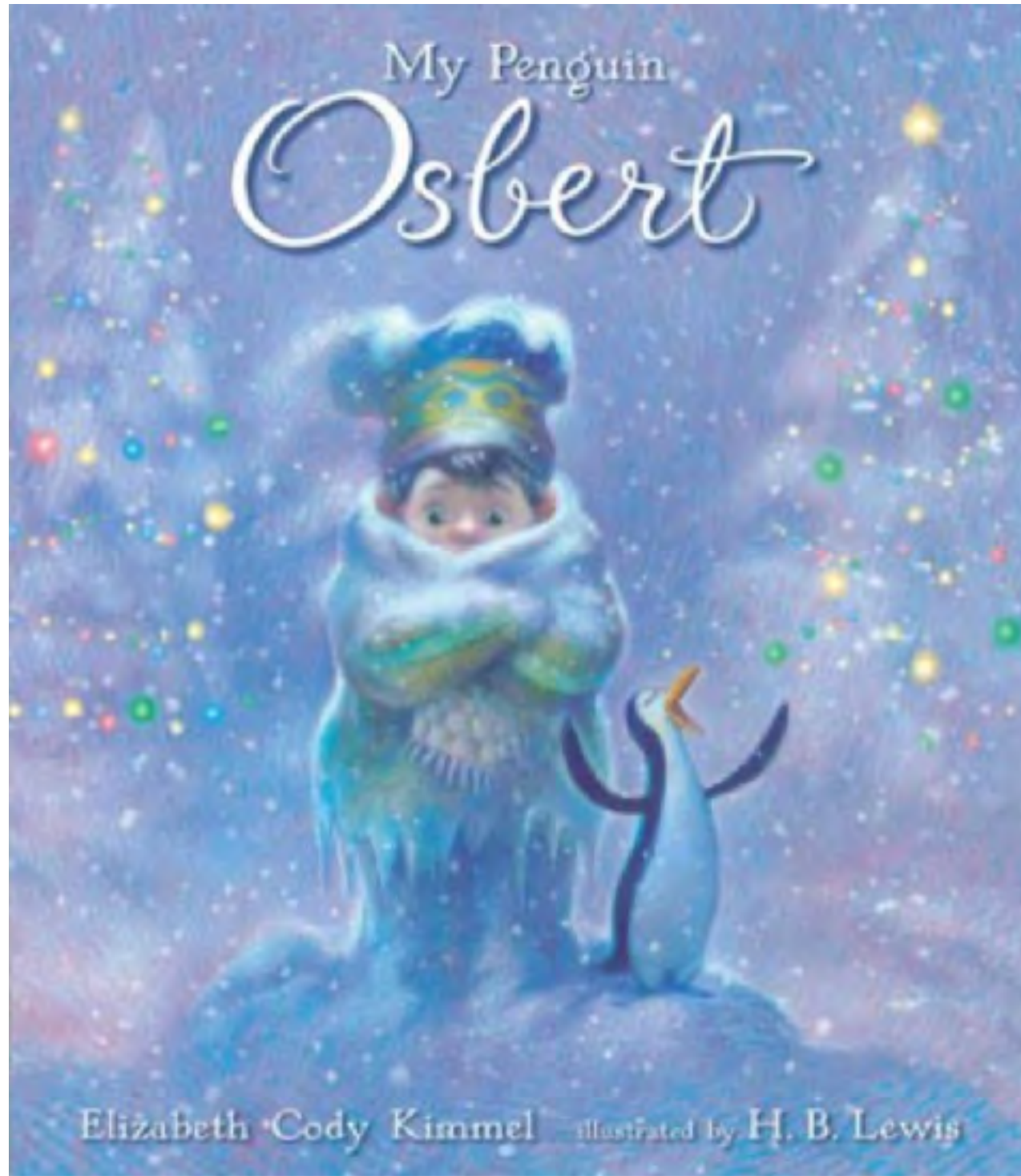
Risk

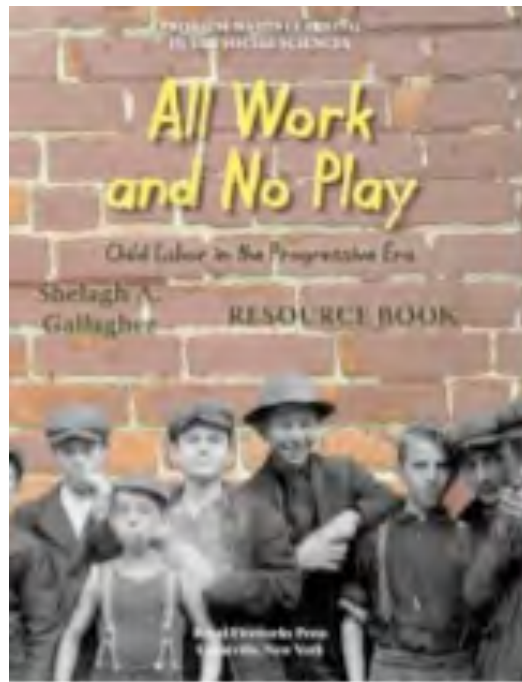
Vulnerability increases the potential impact of risk.

Risks like disease can affect both physical and societal health.

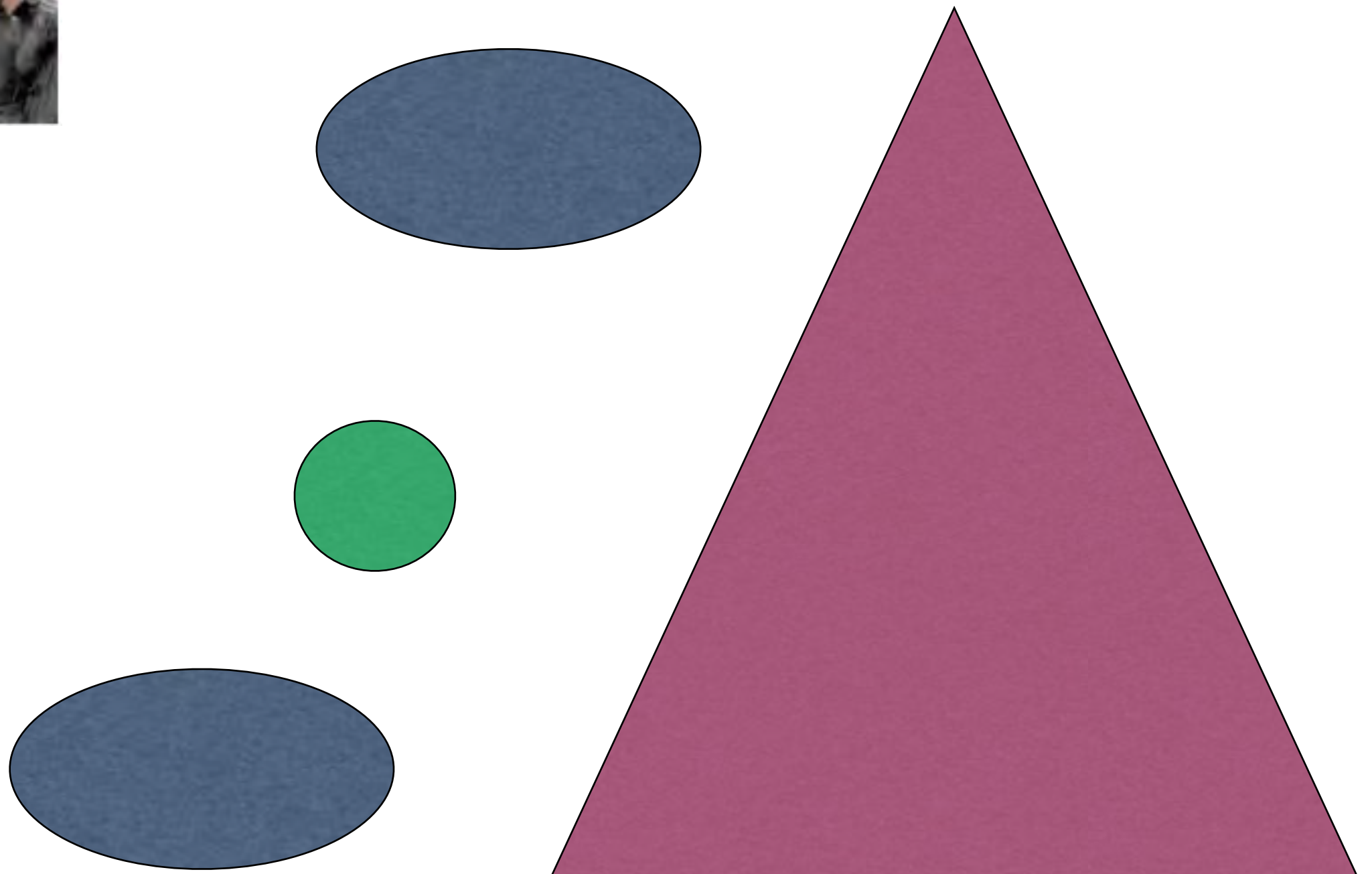
The magnitude of risk can be reduced by removing a threat or reducing vulnerability.

Survive and Thrive





Individuals, Groups, and Institutions



7.

Teachers are not
PREPARED
for Inquiry

Even Though Inquiry is
PREFERRED
For
GIFTED STUDENTS

Cruise Director

Organize Activities

Manage Level of Difficulty

Keep the Story Alive



Socrates

Helping Students Think

Building Intellectual Toolbox

Encouraging Independence



Effective Questioning is

CRUCIAL

Key Question Sets

Key Questions:

- ◆ *What does this solution do: remove threat or reduce vulnerability?*
- ◆ *How effective would this approach be in reducing vulnerability?*
- ◆ *What do you think would happen to the healthy people inside the building? What does this approach do to their level of vulnerability?*

Key Questions:

- ◆ *Based on what we know so far, what is the likelihood that the disease will come to Lucca?*
- ◆ *What level of impact do you think the pestilence will have in our town?*
- ◆ *Where do you think the risk is greater: in the country or in the city? Why?*

Key Questions:

- ◆ *What are the possible benefits of trying to predict when the plague will arrive?*
- ◆ *What are the possible disadvantages of trying to predict?*
- ◆ *Since there is risk either way, what seems to be the wisest choice?*

8.

Well-Constructed **Curriculum**

Is Effective in Many Ways

Research

Variable	TI vs. GE			TI vs. AAP			GE vs. AAP		
	Mean	SD	d	Mean	SD	d	Mean	SD	d
End of Grade English	5.55***	1.49	0.79	3.64*	1.72	0.52	-1.91	0.99	0.27
End of Grade Math	3.10	1.45	0.38	1.93	1.68	0.24	-1.17	0.96	0.14
Insights PBL Understanding	1.46*	0.58	0.61	0.90	0.65	0.38	-0.56	0.37	0.23
Insights Science	0.61	0.64	0.25	-0.65	0.74	0.26	-1.26**	0.44	0.51
Insights Social Studies	0.84	0.53	0.36	0.08	0.6	0.03	-0.76*	0.34	0.32
Insights Teacher Ratings	0.02	0.25	0.01	-1.21***	0.28	1.11	1.22***	0.16	1.12

Table 7. Adjusted pairwise mean differences obtained from generalized linear model with classroom as dummy variable

Note: Negative values indicate direction and favor AAP students in all instances. Positive values in TI vs. GE comparison favor TI students.

Using Problem-based Learning to Explore Unseen Academic Potential

<http://docs.lib.purdue.edu/ijpbl/vol7/iss1/9>



- You don't feel like you are learning but you are, you also **remember** the important parts **better** than by just studying. We didn't have to purposely memorize everything we learned but **soaked up the information** so we could solve the problem.
- It was an **actual problem** to solve. You couldn't just turn on the computer and find the answer.
- This was **something real** people are working on and some of us got pretty **passionate** about it.



9.

**Have
Musicians
and
Composers**



Musician

Composer



10.

**You have to
do it
Twice**

**Becoming an Expert Musician is a
Life-Long Endeavor**

- 1. There's only ONE reason to Differentiate—Gifted Students are Different**
- 2. The Aims of Gifted Education should be Different: Expertise**
- 3. Kids love Stories; Ill-Structured Problems are Stories (Relevance)**
- 4. We can ENHANCE Relevance (Apprenticeship)**
- 5. Curriculum Models are Helpful Guides; Depth and Complexity Occur within Lessons**
- 6. Concepts are more than just BIG ideas, they are Expert TOOLS to understand the world**
- 7. Teachers are not prepared for Inquiry—Professional Development is requires**
- 8. Well-Constructed Curriculum is Effective in Many Ways**
- 9. Musicians and Composers**
- 10. You have to do it TWICE**

