Taking A Cat by the Tail: Social Studies and Problem-Based Learning

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meaningful education
meaningful education

an UNIMAGINABLE future
Unraveling Complexity
Unraveling Complexity

Over the course of a year of office practice—which, by definition, excludes the patients seen in the hospital—physicians each evaluated an average of 250 different primary diseases and conditions. Their patients had more than 900 other active medial problems that had to be taken into account.

Atul Gawande
Books are published at such a rapid rate that they make us exponentially more ignorant. If a person read a book a day, he would be neglecting four thousand others, published the same day. In other words, the books he didn’t read would pile up four thousand times faster than the books he did read, and his ignorance would grow four thousand times faster than his knowledge.

Gabriel Zaid, So Many Books
The sheer magnitude of human knowledge, globalization, and the accelerating rate of change due to technology necessitate a shift in our children’s education from plateaus of knowing to continuous cycles of learning.

enGauge 21st Century Skills, 2003
passionate, engaged life long learners
creative EXPERTS
Stage 1: Romance
You start to notice what's around you, and you get very curious about how things work. How things interrelate. It's as simple as seeing a bug that intrigues you. You want to know where it goes at night; who its friends are; what it eats. *David Cronenber*
Historians are left forever chasing shadows, painfully aware of the inability ever to reconstruct the world in its completeness however thorough or revealing their documentation. We are doomed to ve forever hailing someone who has just gone around the corner and out of earshot.

Simon Schama
The causes of events are ever more interesting than the event themselves.

Cicero
Wherever we look upon this earth, the opportunities take shape within problems

Nelson Rockefeller
Stage 2: Precision
The sensation of writing a book is the sensation of spinning, blinded by love and daring. It is the sensation of a stunt pilot's turning barrel rolls, or an inchworm's blind rearing from a stem in search of a route. At its worst, it feels like alligator wrestling, at the level of the sentence.

Write Till You Drop
Annie Dillard
History is the version of past events that people have decided to agree upon.

Napoleon
Stage 3: Generalization
Creating a new theory is not like destroying an old barn and erecting a skyscraper in its place. It is rather like climbing a mountain, gaining new and wider views, discovering unexpected connections between our starting points and its rich environment. But the point from which we started out still exists and ...forms a tiny part of our broad view gained by the mastery of the obstacles on our adventurous way up.

*Albert Einstein.*
a different approach
Welcome to the Middle Ages!
<table>
<thead>
<tr>
<th>What do we know?</th>
<th>What are our Learning Issues?</th>
<th>What is our Action Plan?</th>
</tr>
</thead>
</table>

Hunches:
What is “Problem-Based Learning”?

A form of inquiry-based education, where learning is initiated with an ill-structured problem and students direct their own course of study.
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A form of inquiry-based education, where learning is initiated with an ill-structured problem and students learn to direct their own course of study.
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A form of inquiry-based education, originally invented for medical school, where learning is initiated with an ill-structured problem and students learn to direct their own course of study.
Jerome Bruner:

Experiencing Subject Matter from an Expert’s Perspective
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*Oversimplification and dogmatism are the twin enemies of creative thought.*
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- **Premature closure on a productive question can destroy imagination.**
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- **Concepts are worthless unless they lead children to new explorations.**
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- **Oversimplification and dogmatism are the twin enemies of creative thought.**

- **Premature closure on a productive question can destroy imagination.**

- **Concepts are worthless unless they lead children to new explorations.**

- **Answers have a way of killing thought.**
What is An 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.
Content: Subject Matter
Research Skills
Thinking Strategies
Problem Solving
Conceptual Reasoning
Solution Options
Reflection

Building the Apprentice’s Toolkit

Still must be Differentiated for Gifted Students

Tuesday, July 2, 13
Key Components of PBL

- Initiating Instruction with an Ill-Structured Problem
- Student-as-Stakeholder
- Teacher as (Metacognitive) Coach
Ill-Structured Problems are the Center of \textit{PBL Curriculum} because they are the Center of \textit{Expert Activity}
Ill-Structured Problems

• “...cannot be defined with a high degree of completeness... cannot be solved with a high degree of certainty

• (King & Kitchener, 1994)
The Ill-Structured Problem

- Needs more information before it becomes clear
- Can be solved in more than one way
- Has more than one resolution
- Changes sometimes with new information
- Is ambiguous and unclear
- STIMULATES QUESTIONS
Educational Value of Ill-Structured

• Reveal why information is necessary
• Allows for interconnections within and between disciplines
• Provides the full scope of a field (habits of mind, values, and tacit knowledge)
• Allows student questions to drive learning, controlled by careful problem design
• Triggers deep-level, sophisticated reasoning
• Support authentic use of conceptual reasoning
PBL Curriculum

is Storytelling

Narrative is Memorable
Student-As-Stakeholder

- Real world problem solvers are not objective
- Increases ownership
- Provides a form of apprenticeship in a discipline
The PBL “Coach”
The PBL "Coach"

- Cruise Director
The PBL “Coach”

- Cruise Director

- Socrates
Engagement

Inquiry and Investigation

Problem Definition

Problem Resolution

Problem Debriefing

The Flow of the Problem

Tuesday, July 2, 13
Laying out the Plan...

Problem Engagement
1. Welcome to the Middle Ages!
2. The Plague is Coming!

Inquiry and Investigation
• When Will it Get Here?
• What Could Happen?
• Risk

Problem Definition
What are Our Options?

Resolution
• What Will We Do?

Debriefing
• The Aftermath
# Goals for *Black Death*

<table>
<thead>
<tr>
<th>PBL Goal</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Middle Ages, Social Structure, Black Death</td>
</tr>
<tr>
<td>Concept</td>
<td>Risk</td>
</tr>
<tr>
<td>Research</td>
<td>Primary Resources</td>
</tr>
<tr>
<td>Dispositions</td>
<td>Open-Mindedness</td>
</tr>
<tr>
<td>Thinking Skills</td>
<td>Critical Analysis</td>
</tr>
<tr>
<td>Ethics</td>
<td>Individual v. Group</td>
</tr>
</tbody>
</table>
Embedded Instruction

• Research Skills
  – Primary Resources
  – Pictoral and Print Information
  – Maps
• Analysis
  – Comparing/Contrasting Points of View
  – Direct and Indirect Effects
  – Analyzing Consequences
• Creating Criteria
• Comparing Options
Investigation
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...
Integrate visual information (e.g., in charts, graphs, photographs, videos or maps) with other information in print and digital texts.
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

Directions: First, find Lucca on the detailed map, and mark it on this blank map. Next, draw the three routes that start in: (1) Ragusa, (2) Naples, and (3) Rome, and 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.
Cite specific textual evidence to support analysis of primary and secondary sources.

Learning Issue Question: ____________________________________________

MLA CITATION STYLE:
Last name, First name. “Title of Work.” Source. City of Publication: Publisher, Year.
Type (circle one): Book Magazine Website Other ______________________
(Include PAGE NUMBERS in your notes, especially if you write down a QUOTATION from the text).
1. Citation: __________________________________________________________

____________________________________________________________________

Information Related to my Question: _______________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Tuesday, July 2, 13
Inquiry
What Could Happen?

Town Infection Record

<table>
<thead>
<tr>
<th>Members</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
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<tr>
<td>2</td>
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<td></td>
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<tr>
<td>3</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Ironmonger

Weaver
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.
### Wisdom from the Doctor and the Priest Chart

**Directions:** Use the space provided to record the most important information from the doctor and the priest. Briefly describe why each fact is important to our problem.

<table>
<thead>
<tr>
<th>Doctor</th>
<th>Fact</th>
<th>Importance to Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>4.</td>
</tr>
</tbody>
</table>
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?
Conceptual Reasoning
Risk and Vulnerability

<table>
<thead>
<tr>
<th>Impact</th>
<th>Quadrant II: Significant but Unlikely</th>
<th>Quadrant I: Significant and Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tuesday, July 2, 13
Problem Definition
Ordinances of Sanitation in a Time of Mortality

In the name of Christ, Amen. Herein are written certain ordinances and provisions made and agreed upon by certain wise men of the people of the city of Pistoia elected and commissioned by the lord Anziani and the Standardbearer of Justice of the said city concerning preserving, strengthening, and protecting the health of humans from various and diverse pestilences which otherwise can befall the human body. And written by me, Simone Buonacorsi, notary...in the year from the Nativity of the Lord MCCCXLVIII, the first Indiction.

I. Item. So that no contaminated matter which presently persists in the areas surrounding the city of Pistoia can enter into the bodies of the citizens of Pistoia, these wise men provided and ordered that no citizen of Pistoia or dweller in the district or the county of Pistoia...shall in any way dare or presume to
3. How *fair* is the ordinance? Justify your choice.

Very Unfair  Unfair  Neutral  Fair  Very Fair

4. How *sensible* is the ordinance, given what we know about the pestilence?

*Problem Log*

*Reflective Moment: Which Ordinance?*

If you could choose only one, which ordinance would you choose to protect your town? Use information we have learned to justify your response.

A quality response will: (1) present options, (2) identify which ordinance, if any, seems most practical, (3) provide multiple reasons why this option is better than others, (4) make an argument that is reasonable in the context of the available information, and (5) provide enough information to be clear.
Problem Resolution
### Presentation Rubric

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Exemplary</th>
<th>At Standard</th>
<th>In Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visuals</strong></td>
<td>__ Visuals are relevant and add to the viewer’s understanding of the topic</td>
<td>__ Visuals are related to the topic</td>
<td>__ Visuals are not relevant or nonexistent</td>
</tr>
<tr>
<td><strong>Use of Information</strong></td>
<td>__ Information is accurate, and detail shows understanding of complex ideas</td>
<td>__ Information is accurate and is sufficiently detailed</td>
<td>__ Information is inaccurate or vague</td>
</tr>
<tr>
<td></td>
<td>__ Information is relevant to assignment and is of high quality</td>
<td>__ Information is sufficient and generally relevant</td>
<td>__ Information is insufficient and/or irrelevant</td>
</tr>
<tr>
<td><strong>Use of Sources</strong></td>
<td>__ Information is relevant to assignment and is of high quality</td>
<td>__ Gets information from correct number of relevant sources</td>
<td>__ Gets information from irrelevant, low-quality sources</td>
</tr>
<tr>
<td></td>
<td>__ Identifies and discusses bias in own data</td>
<td>__ Identifies bias at the most basic level</td>
<td>__ Does not discuss possible bias</td>
</tr>
<tr>
<td><strong>Presenter Quality</strong></td>
<td>__ Uses conversational tone and obviously understand material thoroughly</td>
<td>__ Speaks from notes or memory using a comfortable tone; shows basic understanding</td>
<td>__ Reads from notes and shows little or no understanding</td>
</tr>
<tr>
<td></td>
<td>__ Poised and confident</td>
<td>__ Generally poised and confident</td>
<td>__ Appears indifferent, anxious, or nervous</td>
</tr>
<tr>
<td></td>
<td>__ Answers questions clearly and thoroughly</td>
<td>__ Responds to most questions with clarity</td>
<td>__ Does not know answers to questions</td>
</tr>
<tr>
<td><strong>Collaboration (If applicable)</strong></td>
<td>__ Shares time equitably with colleagues</td>
<td>__ Shares time but runs over or takes others’ points</td>
<td>__ Runs over time and/or makes other presenters’ points</td>
</tr>
<tr>
<td></td>
<td>__ Listens respectfully when not speaking</td>
<td>__ Listens most of the time</td>
<td>__ Does not listen, whispers during other presentations</td>
</tr>
<tr>
<td><strong>Overall Presentation Quality</strong></td>
<td>__ Presentation is well-organized and is structured to be interesting</td>
<td>__ Presentation is organized and fulfills all aspects of the assignment; organization is logical</td>
<td>__ Presentation is not organized and does not fulfill all aspects of the assignment</td>
</tr>
</tbody>
</table>
Problem Log Reflective Moment: Perspective

• What is the difference between solving this problem as a town leader and solving it as an individual or member of a family?
The pestilence presents a very real danger to the town, and it would be natural to be scared. What are some ways that fear might affect problem solving?
Problem Log Reflective Moment: Metacognition

• What did you learn in this unit about how people respond in high-risk situations? What is some advice you would give to others about their ideas and actions when they are in a risky situation?
National History and Social Studies Standards

<table>
<thead>
<tr>
<th>Era 5: Intensified Hemispheric Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td>Standard 2: The re-defining of European society and culture, 1000-1300 CE</td>
</tr>
<tr>
<td>Standard 2a: The student understands feudalism and the growth of centralized monarchies and city-states in Europe.</td>
</tr>
</tbody>
</table>

Selected Standards from the National Council for Social Studies Curriculum Standards

<table>
<thead>
<tr>
<th>NCSS Theme</th>
<th>Standard</th>
<th><strong>Black Death</strong></th>
<th><strong>Lessons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 2c: The student understands the patterns of social</td>
<td>Evaluate of art, a literature</td>
<td>Give examples of how experiences may be interpreted differently by people from diverse cultural perspectives and frames of reference.</td>
<td>Students consider the differences in advice provided by the doctor and the priest</td>
</tr>
<tr>
<td>Time, Change, and Continuity</td>
<td>Identify and use various sources for reconstructing the past, such as documents, letters, diaries, and artifacts</td>
<td>Describe ways in which language, stories, folktales, music, and artistic creations serve as expressions of culture and influence behavior of people living in a particular culture.</td>
<td>Students consider the impact of the plague on the art, poetry, and writing of the time period.</td>
</tr>
</tbody>
</table>

A Visit from the Doctor and the Priest

Researching Learning Issues
Parent Supports

Research Rubric

Name: ___________________________ Date: ___________ Self Rating: ___________ Teacher Rating: ___________

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Exemplary</th>
<th>At Standard</th>
<th>In Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Questions</td>
<td>Identified central issues</td>
<td>Identified important issues</td>
<td>Issues are vague or not related to the problem</td>
</tr>
<tr>
<td></td>
<td>Provided relevant and well-documented support</td>
<td>Provided support</td>
<td>Poor support or no support for ideas</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Information is accurate and provides insight into critical issues</td>
<td>Information is accurate and connects to issues</td>
<td>Incomplete or inaccurate information</td>
</tr>
<tr>
<td>Daily Work</td>
<td>Consistently engaged during independent research time</td>
<td>Behavior outside the classroom was appropriate to the situation</td>
<td>Off task and had to be prompted to complete tasks</td>
</tr>
<tr>
<td></td>
<td>Self-monitored in order to use time well (researching, organizing notes, or analyzing)</td>
<td>Work completed in a timely fashion</td>
<td>Tasks completed late</td>
</tr>
</tbody>
</table>

Problem Narrative: The Storyline for Black Death

Ideally, the direction of a Problem-Based Learning unit is decided through the questions students ask. To some extent, this is made manageable by the structure of the opening scenario presented during Problem Engagement. The opening scenario is carefully designed to point students in the direction of some predictable questions. For example, it would be hard to avoid asking questions about how the plague spreads or how people could avoid becoming infected. The narrative below and the lesson plans in this unit respond to these more predictable questions and address other desirable learning outcomes. They also provide a helpful guide for teachers new to PBL.

Experienced PBL teachers are encouraged to use this unit as a framework, selecting lessons that fit the students' questions (and, as above, many should fit) and adding other lessons to address other questions.

PROBLEM ENGAGEMENT

The unit begins with an introduction to the medieval era. Students are provided with brief descriptions of different aspects of medieval life. Using this information, they create a model of a medieval town.

Important Issues

- Medieval towns were crowded, wet, and unsanitary.

Sample Learning Issue

Hunches: People are getting the plague. They are getting sick by breathing bad air or we will all die. There is no cure.

What We Know

- It's 1348, springtime, and wet.
- People are worrying about starving.
- We are a part of the Council of Elders.
- People have seen the plague, and it's really gross.
- People die in five days, and there seems to
How to *teach* a PBL Unit
PBL Resources

See the You Tube Walk Through Videos:

A Walk Through...

A Final Appeal
Ferret it Out
Hull House
Excluded!
Black Death

http://www.rfwp.com
All it Takes to become an Expert is 10,000 Hours of

- Practice
- Practice
- Practice
...the use of our intelligence quite properly gives us pleasure. In this respect the brain is like a muscle. When we think well, we feel good.

*Understanding is a kind of ecstasy.*

—Carl Sagan