Motivating Life-long Learners: Rigor, Relevance and 21st Century Literacy for Elementary Teachers

Presented by Peter Pappas
President, Edteck

Presented at Teach ME 2009
International Conference on Education
January 14-15, 2009 Dubai UAE

Note: Videos and images have been removed to reduced file size

Contact: Peter Pappas
web: www.peterpappas.com
blog: peterpappas.blogs.com
e-mail: peter@edteck.com
twitter: edteck

Agenda
- Rigor / Relevance
- Strategies in Action
  - Defining
  - Summarizing
  - Comparing
- How to use Strategies to Support Literacy
Staff development should model what you expect to see in the classroom.

Kaushal Mehta
Manager, K-12 Vertical
Edutech Middle East
P. O. Box 52334
Suite 301, Building No. 1
Dubai Media City, Dubai
United Arab Emirates
Dir. : + 971 4 3911469
Mobile : + 971 50 4547199
kaushal@edutech.com
www.edutech.com

Students are motivated by Rigor
Creating is the highest form of thinking.
Bloom’s Taxonomy of Thinking Skills

- **Creating** - generating new ideas
- **Evaluating** - justifying a decision or choice
- **Analyzing** - breaking into component parts
- **Applying** - using information in a new setting
- **Understanding** - explaining idea or concept
- **Remembering** - recalling information

**Creating**

A new combination of old elements... information, stories, data, art, music, literature, strategies...

**Students are motivated by**

*Relevance*

Taking responsibility for their learning
Learning is relevant to students when the student:

- understands how this information or skill has some application in their life.
- has an opportunity to follow their own process rather than just learn “the facts.”
- not just learning content and skills, but is learning how they learn.

#1 factor for improving student motivation is choice.

Not whether the student does the assignment, but how they engage in the work.

~Doug Reeves

5th graders are asked to help create a multiple choice question.
Tell me the correct answer then let’s create three wrong answers and the reasons why students might incorrectly choose them.

Justin, a second grader, talks about math:

Math is when you add or subtract numbers. And your teacher will make sure you have the right answer.

From: Math Is Language Too: Talking and Writing in the Mathematics Classroom
Phyllis Whitin

from: Teach Like Your Hair’s on Fire
by Rafe Esquith
Question: A cruise ship carries 200 passengers and crew. Each life boat carries 30 people. How many lifeboats will the ship need?

Almost one-third of the 8th graders who took the NAEP math test answered “6 remainder 20”

From a high school valedictorian:

“I could memorize very easily, and became valedictorian. But I was embarrassed that I understood much less than some other students who cared less about grades. I felt that my brain was a way station for material going in one ear and (after the test) out the other.”

~ High School Student quoted in Wiggins and McTighe Understanding by Design

Move students toward greater relevance

Using skills and knowledge in routine school setting. Using skills and knowledge for myself in the real world. Work as directed by the teacher. Figuring out my own approaches.

Rigor and Relevance Framework

High Rigor

Low Rigor

Low Relevance

High Relevance

C

D

A

B
Quadrant A
Gather and store bits of knowledge and information. Primarily expected to remember or understand this knowledge.

Example
Pick the right definition.

Quadrant B
Apply knowledge in real-life situations.

Example
Apply math skills to create a shopping budget.

Quadrant C
Use knowledge to analyze and solve school-based problems and create solutions. Work under the specific directions of the teacher.

Example: Develop categories for types of plants.

Quadrant D
Apply knowledge and skills in complex ways to analyze and solve real problems and create solutions. Confront real-world unknowns.

Example
Develop science fair project. Answer questions from your visitors.
It's not just about Quadrant D ... it's about using a variety of approaches.

Higher and lower-order reflection by students:
- Creating
- Evaluating
- Analyzing
- Applying
- Understanding
- Remembering

I can describe patterns, create my own connections, and assess my progress.
I can tell you what I did, but don't expect me to think about it.

Reflective Questions for Students:
- **What** am I learning today?
- **Why** am I learning it?
- **How can I use** this knowledge and these skills **to make a difference** in my life?
- **How can I work** with teachers and other students **to improve my learning**?
- **How am I progressing** as a learner?
- **How can I communicate** what I'm learning with others?

**Students are motivated by Reflection**

They monitor and assess their own progress as life-long learners.
We’ll focus on three strategies:

- **Defining**: negotiating meaning
- **Summarizing**: synthesis and judgment
- **Comparing**: assessing similarities and differences

Robert Marzano: *What Works in Schools*

“35 years of research concretely identifies the factors that are the primary determinants of student achievement.”


---

**Defining**

*High Rigor*  
- Design graphic organizer to classify words
- Student works with peer to apply term in new setting.

*Low Rigor*  
- Copy definition from glossary into notebook
- Student compares their own definitions to real-world example.

*Low Relevance*  
- Design graphic organizer to classify words
- Student works with peer to apply term in new setting.

*High Relevance*  
- Copy definition from glossary into notebook
- Student compares their own definitions to real-world example.
Elements for teaching defining

Before the dictionary comes out... connect students with their prior knowledge.
After the term has been defined ... give students chances to more deeply process the term.

Pre-dictionary:
Let students work together to compare preliminary definitions.
- Students develop their own definition
- Compare to peer definitions
- Similarities
- Differences
- Use visual, verbal and text-based approaches

List, Group, Label
- Give students term
- They individually brainstorm related ideas
- They pair and share
- They put post-its into groups and label
- Turn into a poster

Personal Vocabulary Notebook
Prior knowledge plus processing

1. Term: 
2. Student Definition: 
3. Dictionary Definition: 
4. Student comparison of 2 and 3:
**Personal Vocabulary Notebook**

Prior knowledge and processing

1. **Term:** Expedition

2. **Student Definition:** A trip

3. **Dictionary Definition:** A journey taken for a specific purpose.

4. **Student comparison of 2 and 3:** I thought an expedition could be any trip, even a vacation, but now I know it’s a trip that has a goal.

---

**Building Academic Vocabulary**

Bob Marzano

---

**Personal Vocabulary Notebook**

Prior knowledge and processing

My understanding of this term is at rubric level 4

1. **Term:** Expedition

2. **Student Definition:** A trip

3. **Dictionary Definition:** A journey taken for a specific purpose.

4. **Student comparison of 2 and 3:** I thought an expedition could be any trip, even a vacation, but now I know it’s a trip that has a goal.

---

**Student Vocabulary Progress**

**Student Name ___________**

**Unit _____**

**Rubric 4**

- X
- X
- X

**Rubric 3**

- X
- X
- X

- X

**Rubric 2**

- X
- X

**Rubric 1**

- X
- X

---

**Students can measure their own progress.**

Self-evaluation is **rigorous** and **student-centered**

**Rubric**

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

I understand even more about the term than what I was taught. I know multiple meanings.

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

I understand the term and I’m not confused about any part of what it means.

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

I’m a little uncertain about what the term means, but I have a general idea.

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

I really don’t understand what the term means.

---

**Building Academic Vocabulary**

Bob Marzano
Check for understanding - 4th graders midpoint in unit on electricity

If you were discussing electricity, what words would you use?
What words might you find in a book about electricity?

In 15 minutes teacher got insight into what students knew, recognized (with some uncertainty) or never made it on either list.

“They know more than I thought about electricity!”

**Words I Use**

**Words I’d Find in a Book**

Before the dictionary comes out...
connect students with their prior knowledge

After the term has been defined...
give students chances to more deeply process the term

Defining:
a chance for reflective writing

- How is the word related to something else I learned in school?
- How is the word related to something else in my life?
- How is the word used in different situations?
- How has my understanding of the word grown?
Copy definition from glossary into notebook

Negotiating and sharing meaning in a social context

High Rigor

Low Rigor

Low Relevance High Relevance

Summarizing

Evaluating what’s important.

Sharing what you’ve learned.

I can guess what the teacher thinks is important

Use an organizer to analyze the elements of an image

Listen to a story and draw a summary that depicts action and sequence

I can guess what the teacher thinks is important

Work with a peer to agree on a summary

Summarizing builds content knowledge

Research shows student use of summarizing skills results in a 34-percentile gain in student performance.

Group 1: Teacher lectures on the essential characteristics of mammals

34% gain in content mastery

Group 2: Teacher lectures, then students do a summarizing exercise on the essential characteristics of mammals

Classroom Instruction that Works, ASCD, 2001
Six essential summarizing skills

- **Identify details** – can you identify key symbols, words, visual elements?
- **Recognizing context** – where is this taking place, time period, who’s involved?
- **Identify relationships** – who are these people, what is their relationship to one another?

Continued - Summarizing skills

- **Identify opinions** – is there a point of view expressed in the source information?
- **Make predictions** – based on the information, what will happen next?
- **Infer meaning** – is there meaning that can be extracted from what’s between the lines?

Elements for teaching summarizing

- Allow students to make their own judgements about what’s important (instead of just repeating the details the teacher highlights)
- Students need to be able to share what they’ve learned with an audience other than the teacher.

Model active viewing, listening, and reading as a foundation for summarizing

- Getting the **visual message** right
  “So what the artist is saying is…”
- Getting the **spoken message** right
  “So what you’re saying is…”
- Getting the **written message** right
  “So what the author is saying is…”
After creating their own visual summaries, 2nd graders said:

- People were moving west. They moved by wagon at first, then but train, which is faster.
- The Indian could see the people coming. They knew their lives were changing.
- The railroad split the old way from the new way.

Elements for teaching summarizing

- Allow students to make their own judgements about what’s important (instead of just repeating the details the teacher highlights)
- Students need to be able to share what they’ve learned with an audience other than the teacher.

Explaining what you’ve learned is telling a story using a narrative structure.

- Student may need explicit training about narrative structures.
- Recognizing how information is organized helps to analyze original work and summarize it for their audience.

<table>
<thead>
<tr>
<th>Informational Pattern</th>
<th>Description</th>
<th>Cue Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Describes a topic by listing characteristics, features, and examples</td>
<td>for example, characteristics are</td>
</tr>
<tr>
<td>Comparison</td>
<td>Explains how two or more things are alike and/or how they are different.</td>
<td>different; in contrast; alike; same as; on the other hand</td>
</tr>
<tr>
<td>Cause / effect</td>
<td>Lists one or more causes and the resulting effect or effects.</td>
<td>reasons why; if...then; as a result; therefore; because</td>
</tr>
<tr>
<td>Problem / Solution</td>
<td>States a problem and lists one or more solutions for the problem.</td>
<td>problem is; dilemma is; puzzle is solved; question... answer</td>
</tr>
<tr>
<td>Sequence</td>
<td>Lists items or events in numerical or chronological order.</td>
<td>first, second, third; next; then; finally</td>
</tr>
</tbody>
</table>
Description: listing characteristics, features, and examples

Cause / Effect: one or more causes and the resulting effect or effects

“Telling Board”
Let student sequence a story in pictures, text, symbols.
Roger Essley - Author, Illustrator

Summarizing:
a chance for reflective writing

- What did I think was important?
- How did I share that with others?
- Is my summary accurate?
- Did I use my own words and style?
- What did I learn from the summarizing?

Evaluating what you think is important. Creating an appropriate summary for an authentic audience

I can guess what the teacher thinks is important.
Comparing similarities and differences.
Classifying
Sharing what you learned.

Evaluating

Comparing builds content knowledge

Research shows student use of summarizing skills results in a 45-percentile gain in student performance.

Group 1: Teacher lectures on the essential characteristics of mammals
45% gain in content mastery

Group 2: Teacher lectures, then students compare the essential characteristics of mammals to birds

“Compare the animals and climate of the rain forest and desert.”

<table>
<thead>
<tr>
<th>Rain Forest</th>
<th>Desert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave rainfall 450 centimeters/year High Humidity No frosts Little variation in temp-average 26°C Ave low 17°C Spider Monkey Pit Viper Three-toed Sloth Jaguar Giant River Otter Bats Iguana Ants</td>
<td>Ave rainfall 15 centimeters/year Low humidity Frequent frosts Big variation in temp Low 13°C High 48°C Bats Iguana Ants Tarantula Coyote Desert Tortoise Rattlesnake</td>
</tr>
</tbody>
</table>

Climate

Rain Forest
Desert
Both
Climate

Rain Forest
- High rainfall
- High humidity
- No frosts
- Little variation in temp

Desert
- Low rainfall
- Low humidity
- Frequent frosts
- Big variation in temp

Both
- Hot

Do you give students chances to develop their comparative models?
- They could select items to compare from a teacher-produced list.
- They could independently decide what to compare.
- Can include some combination of selecting both the items and/or characteristics.

How is the comparison useful? What does it enable us to do or see?

Student designed comparison

Which lunch is better?
How will you design your comparison?

Move students from comparing to classifying
- We typically ask students to take someone else’s classification system and apply it.
- We rarely ask students to generate a classification system of their own.

List, group, label strategy
Students create classification systems with Post-its.
Rigor and relevance in practice: Student-designed classifying exercise

- What do I want to classify?
- What things are alike that I can put into a group?
- Does everything fit into a group now?
- Would it be better to split up any of the groups or put any groups together?

Use categories with your word wall

- Rearrange by words:
  - counting
  - your family
  - your friends
  - animals

Extensions: show me what the word looks like, draw it, act out the word, verbalize it in a sentence.

Elements for teaching comparing and classifying

- We must ask students to develop the comparison, not just learn and repeat the model that we present to them.
- Student must be asked what they learned from the comparison.

Comparing and Classifying: a chance for reflective writing

- What did I compare?
- How did I structure the comparison?
- How was the comparison useful to me?
- What did I learn from it?
- How did others design their comparisons?
6th graders write ABC book

- Students study the organs of the body
- Develop a comparisons
- Create an ABC book

What process did you use to complete the project?

We organized and decided who was going to do what and how. Then we read everything over to see if everything made sense to our audience.

Analyzing components. Evaluating schema. Creating a comparison to share what you’ve learned with an authentic audience.

Comparing

I can repeat someone else’s comparison

When do we stop modeling for students and let them take responsibility for their learning?
Redefining the roles of teacher and student

Teachers work to create and assess learning activities. The student may be a passive learner.

Students work applying knowledge and skills in real-world tasks.

Students think in complex ways: analyze, compare, create, and evaluate.

Students think, create, evaluate in more complex and unscripted settings. They take more responsibility for monitoring their learning.

Move teacher from dispensing information to instructional designer

- **Rigor** - analyzing, evaluating, creating
- **Relevance** - students select their strategy
- **Reflection** - student evaluates their progress

Product that asks students to communicate their thinking

Motivating Life-long Learners

#1 factor for improving student motivation is choice.

Not whether the student does the assignment, but how they engage in the work.

~Doug Reeves

<table>
<thead>
<tr>
<th>Traditional Writing is Assigned</th>
<th>Writing Assigned with Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are asked to write only on the teacher’s topics.</td>
<td>Students can develop topics that matter to them.</td>
</tr>
<tr>
<td>Student writes for the teacher.</td>
<td>Audience and purpose for writing is identified.</td>
</tr>
<tr>
<td>Teacher grades their writing.</td>
<td>Students are asked to reflect on their growth.</td>
</tr>
</tbody>
</table>
New digital technologies have put students in charge of the information they access, store, analyze and share.

Digital age gives students access to information and higher order thinking tools.

Bloom's Higher-Order Skills
- Creating - generating new ideas
- Evaluating - justifying a decision or choice
- Analyzing - breaking into component parts

What skills will the 21st century workplace require?
- Literacy
- Numeracy
- Self-discipline

Creativity and adaptability they must be flexible independent learners

Our goal – students who will be able to function in an unpredictable world.

Learn to research, think, problem-solve and write like a - scientist, engineer, coach, artist, historian, writer, mathematician, musician ....