Is Our Students' Digital Work Rigorous? How Do We Know?

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School Administrators of Iowa— August 8, 2012

My name is Kristin F.
And long before I became a professor at the University of Michigan, I was something else.

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A principal's kid.

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And long before I became a professor at the University of Michigan, I was something else.

A principal's kid.

So you can imagine the combination of trepidation and revenge coursing through my veins this morning.

Image: http://en.wikipedia.org/wiki/File:Bell_and_Howell_Apple_II.jpg by Jeff Keyzer, used with a Creative Commons Generic Attribution 2.0 License

I hope you'll permit me beginning with a soapbox moment.

It's so easy to make things look fancy...

...that sometimes we credit students what programmers behind the scenes have actually facilitated.

(Little input > Big output)

Fancy Nancy (O'Connor)

Twitter Parade

http://www.youtube.com/watch?v=_iNyt1ywrbQ

IS Parade

powered by **twitter**

Let's parade with twitter people!

Twitter ID　Keyword

activelearning　　　　　　　　　　　**START**

2,093,934 **parades have played by now**

Let's Parade!!!

IS
Parade

Popular Parade

sandwich　　内閣　　world cup　　トイデジ　　hot　　南アフリカ　　ラーメン OR 麺　　ニュース
LOVE　　なう

#isparade on **t**　｜　RT @shinyoung_park See twitter parade by keyword

Help　　Terms　　Privacy policy　　Contact　　参加者募集中！　　**IS Forum 開催** ▶

Sometimes, our students expend a disproportionate amount of **e-effort** over knowledge-building.

(Big Input > Little Output)

My Explorer's Report!!!!!!!

By Kristin Fontichiaro

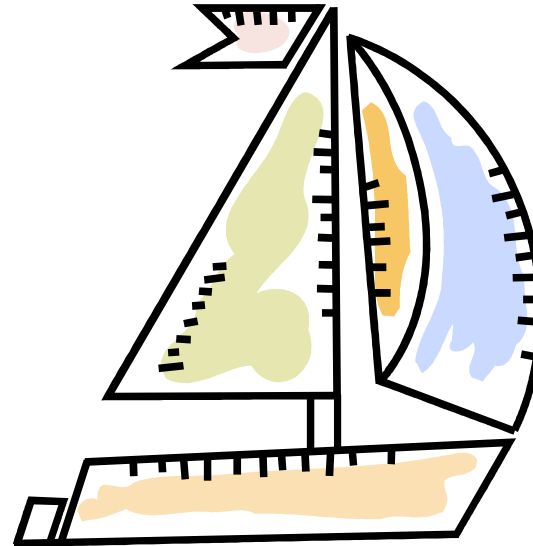Christopher Columbus was born in 1461.

HE WAS BORN IN ITALY.

HOME OF PIZZA!!!!!!! YUM!!!!
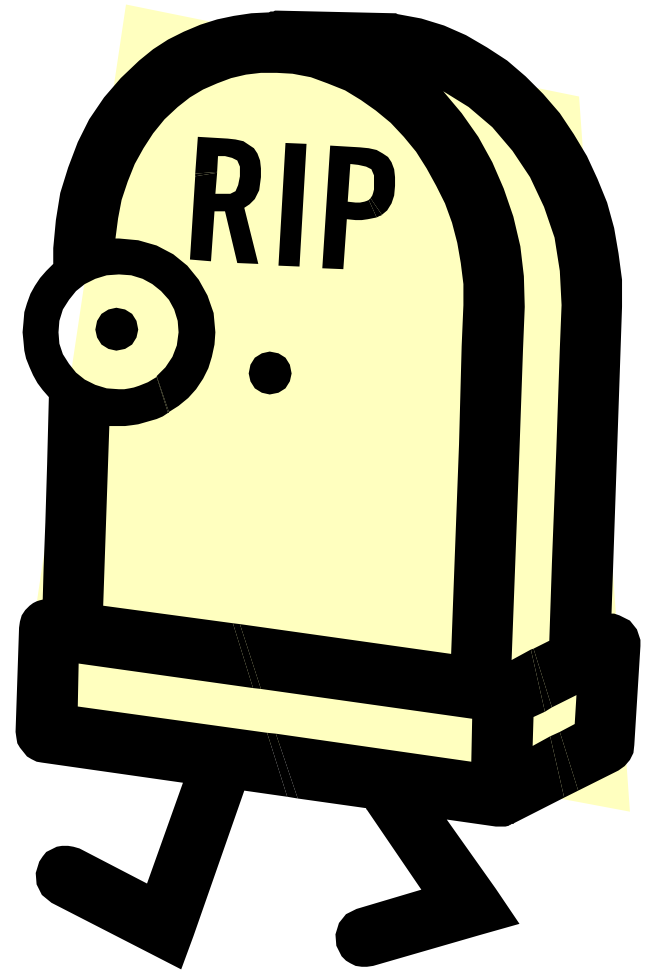
He had three boats:

Nina

Pinta

Santa Maria

He discovered AMERICA!!!

THE

END

How far have we come in using computers to promote cognitive growth in the past 35ish years?

Total information search, note-taking, and thinking time = 1 hour

Total presentation creation time = 2 weeks

What are students gaining from this experience?

Image: 'Question mark made of puzzle pieces'
http://www.flickr.com/photos/10361931@N06/4273168957

Which parts of this project could NOT be outsourced to India? (And who would buy it?)

Bernajean Porter

Where's the Beef?*
How Do We Know Rigor When We See It?

* Bernajean Porter

school of
information
M

Connecting people, information,
and technology in
more valuable ways

So we should have some agreement on what good tech looks like, right?

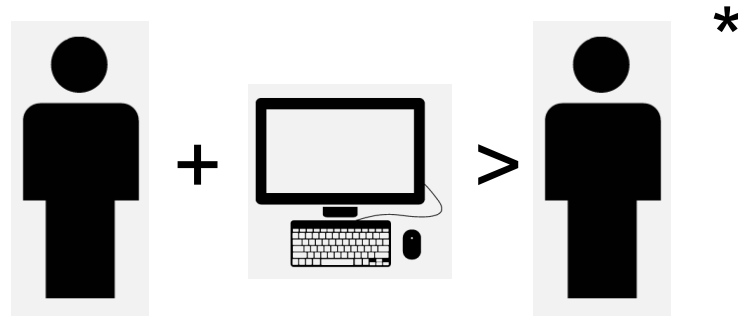Rigor means exciting challenge, not rigor mortis! !

Rigorous Learning with Technology

+ 💻 **>** *

Rigorous
Learning
with
Technology
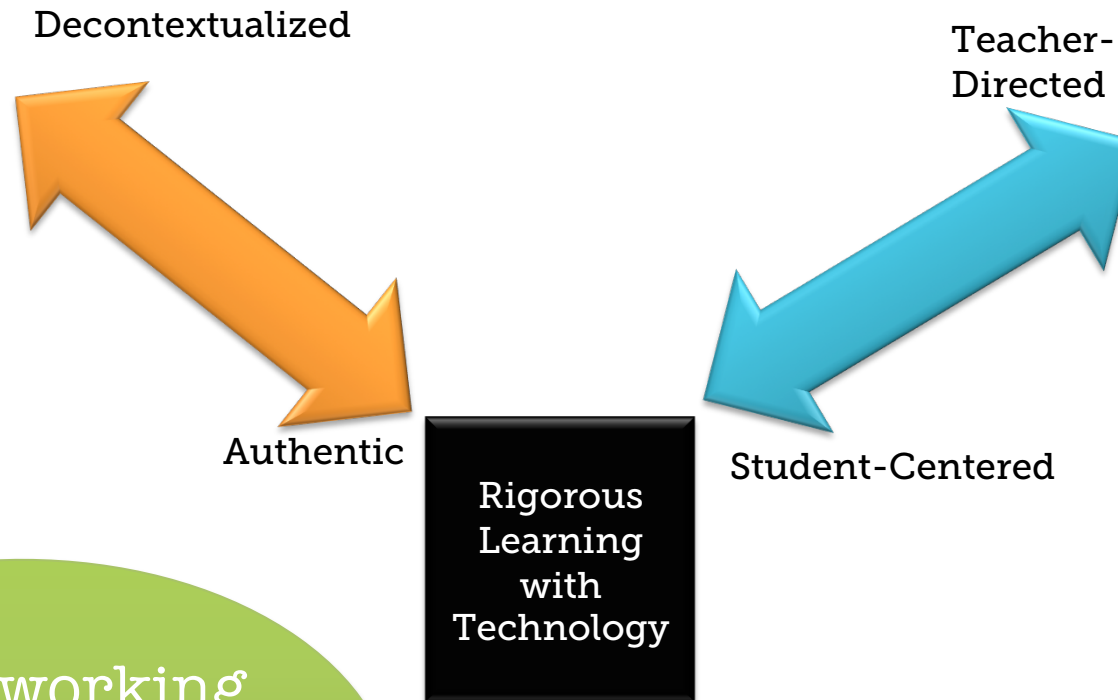
* Charles Friedman, definition of Informatics
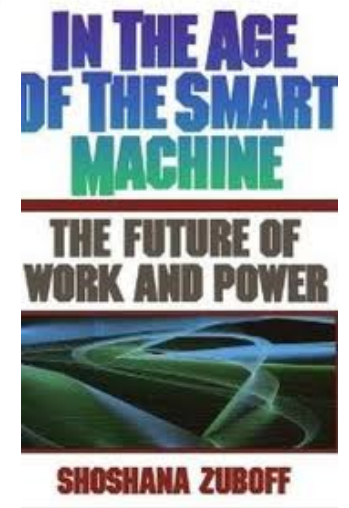
Decontextualized

Authentic

Rigorous
Learning
with
Technology

What's in it for me?
How does this apply to me? Why does this matter to me?

Decontextualized

Teacher-
Directed

Authentic

Rigorous
Learning
with
Technology

Student-Centered

Who's working harder? Who decides what is important?

(with thanks to Roberta Sibley, Laurie Olmsted, Jeff Stanzler, and Raya Samet for contributing their feedback!)

Decontextualized

Teacher-Directed

Authentic

Rigorous Learning with Technology

Student-Centered

IN THE AGE OF THE SMART MACHINE

THE FUTURE OF WORK AND POWER

SHOSHANA ZUBOFF

Informed (Value-Added)

Automated

Tech is expensive ... why pay more if we're not getting more?

(with thanks to Roberta Sibley, Laurie Olmsted, Jeff Stanzler, and Raya Samet for contributing their feedback!)
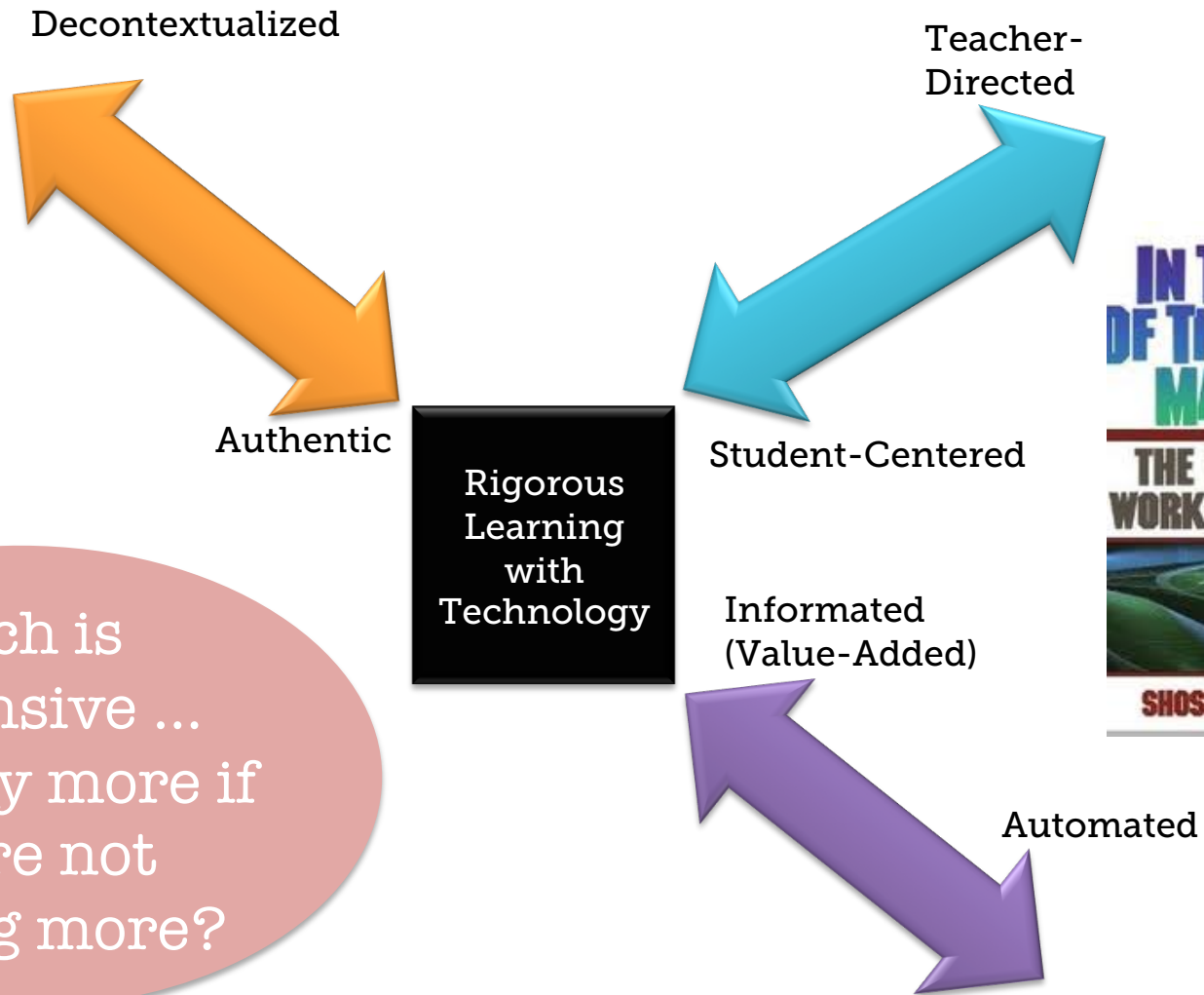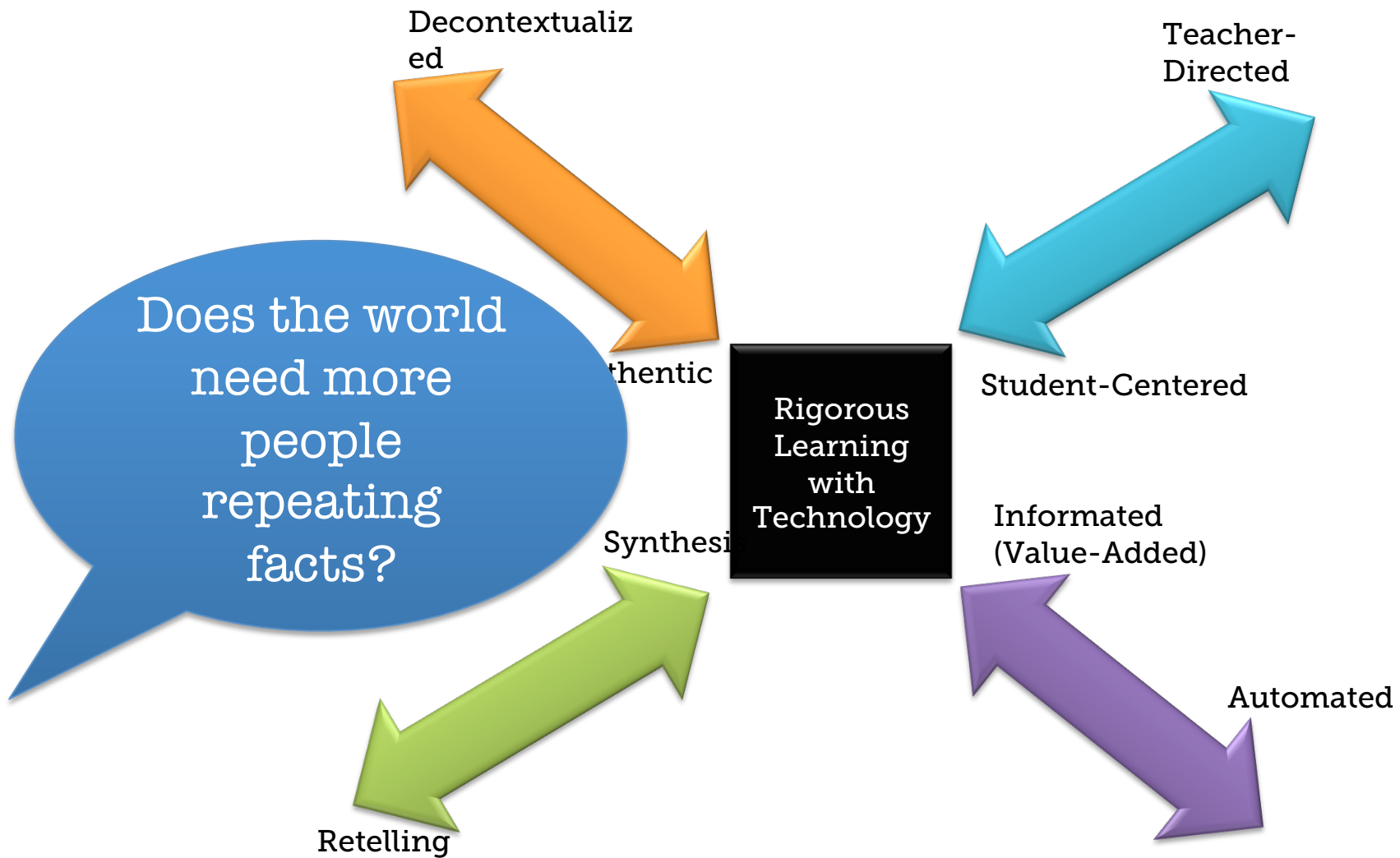
Decontextualiz
ed

Teacher-
Directed

Does the world need more people repeating facts?

thentic

Rigorous
Learning
with
Technology

Student-Centered

Synthesi

Informated
(Value-Added)

Retelling

Automated

(with thanks to Roberta Sibley, Laurie Olmsted, Jeff Stanzler, and Raya Samet for contributing their feedback!)

Content / Curriculum

Decontextualized

Teacher-Directed

Authentic

Student-Centered

Rigorous Learning with Technology

Synthesi...

Informed (Value-Added)

Automated

R...

"We swim in the pool of content."
- Raya Samet
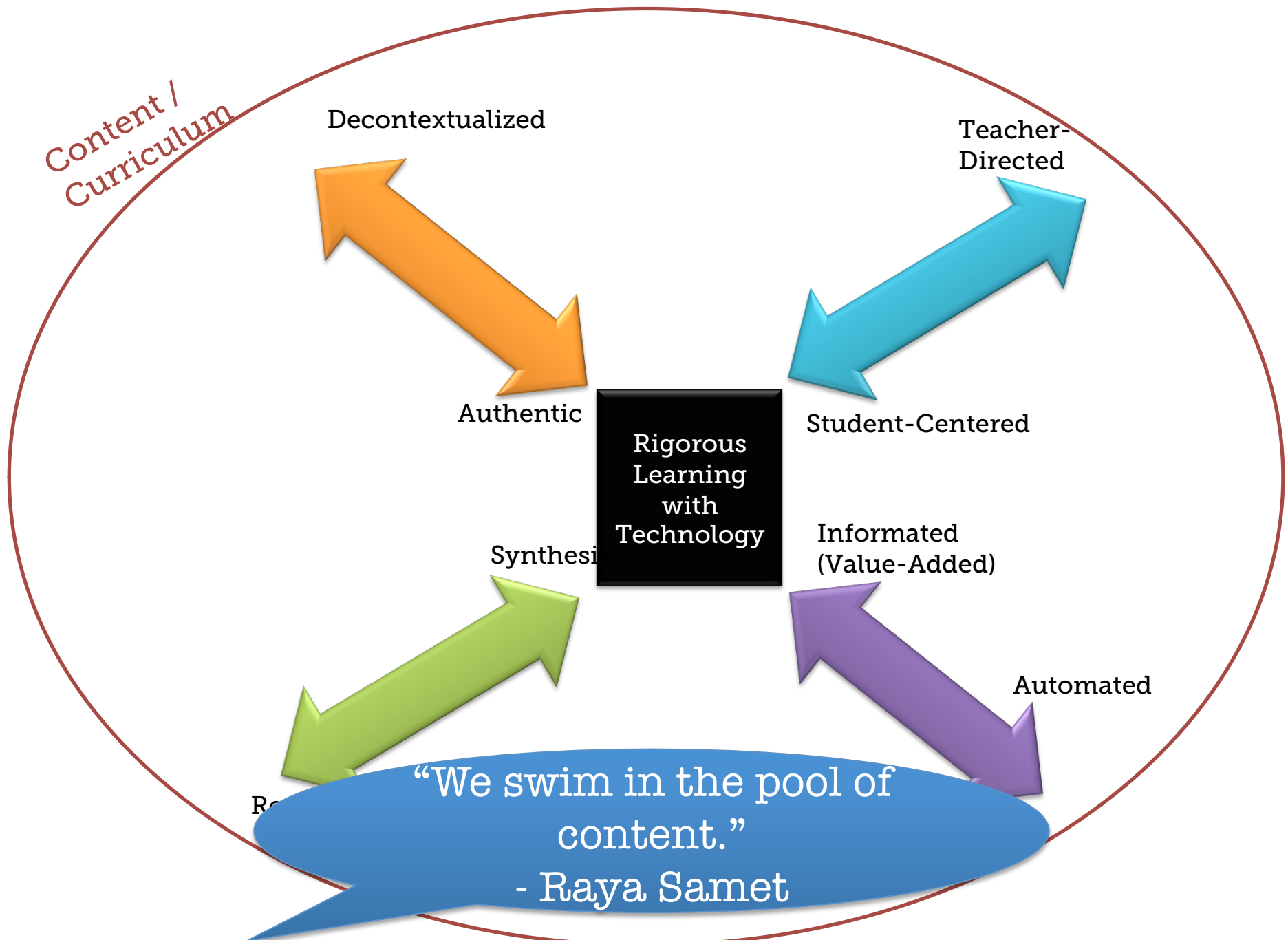
(with thanks to Roberta Sibley, Laurie Olmsted, Jeff Stanzler, and Raya Samet for contributing their feedback!)

The Silent Partners

**Creativity
Motivation
Enthusiasm
Engagement
"Hands on keyboards"**

Image: 'Talk Shows On Mute'
http://www.flickr.com/photos/44538772@N00/67865829

Testing
Our Lens:
Student
Work Samples

http://bit.ly/sofia-otter
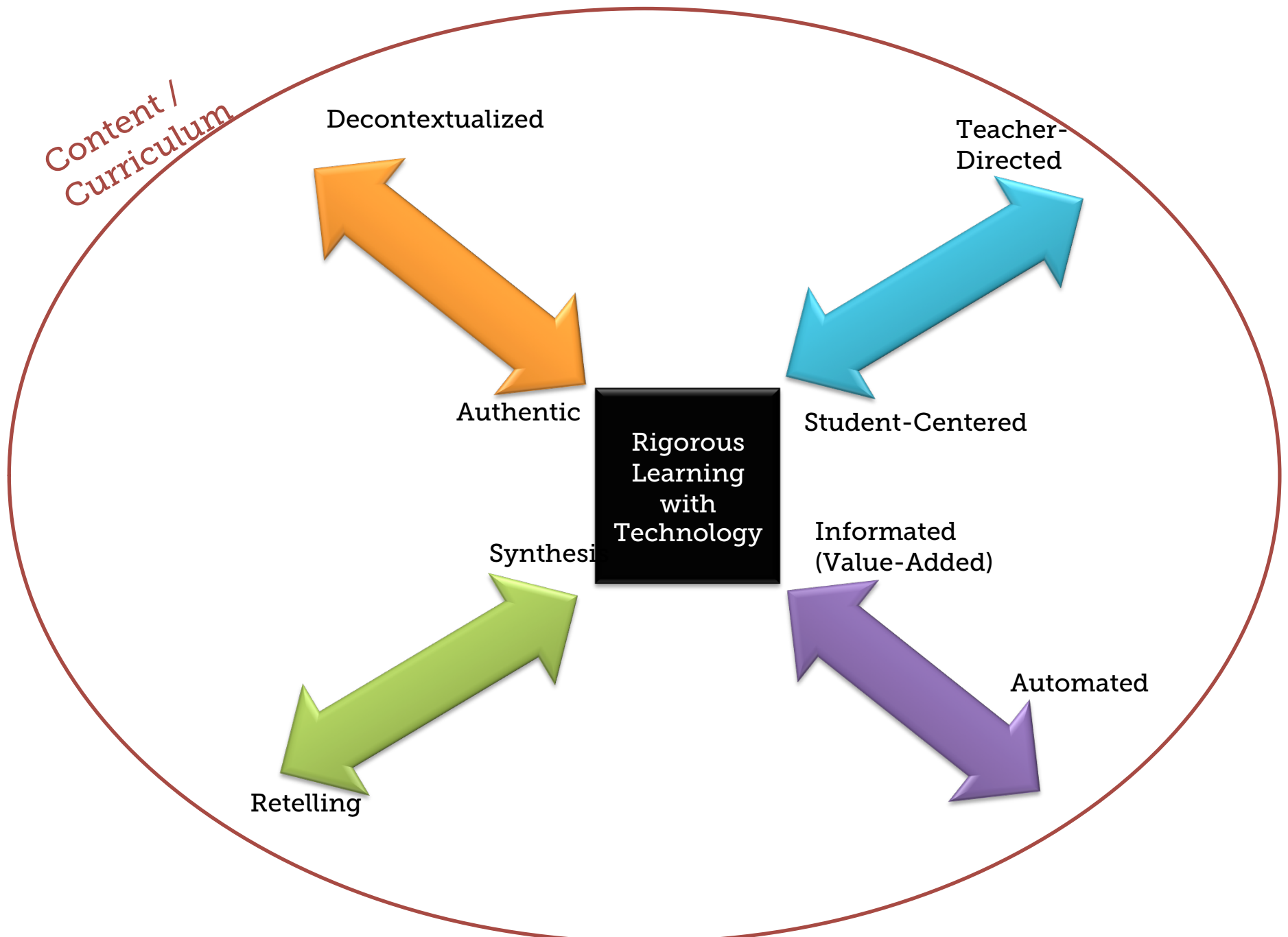
Content / Curriculum

Decontextualized

Teacher-Directed

Authentic

Student-Centered

Rigorous Learning with Technology

Synthesi

Informed (Value-Added)

Retelling

Automated

This is the movement of the plates over millions of years.

Im thinking about tectonic plates!!
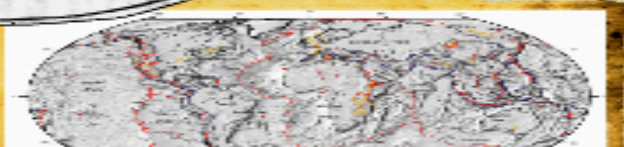
Here is the three tectonic plate types.

There was 7.0 in Haiti, a 8.9 in Chile, and a 6.4 in Taiwan.
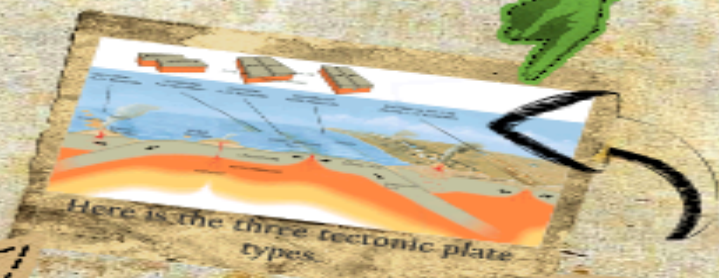
The three boundary types are transform, convergent, and divergent

This is the plate boundary lines.

Of the six sentences, four have writing errors.

This is the movement of the plates over millions of years.

Im thinking about tectonic plates!!

Apostrophe needed

S-V agreement?

Here is the three tectonic plate types.

There was 7.0 in Haiti, a 8.9 in Chile, and a 6.4 in Taiwan.

This is the plate boundary lines.

The three boundary types are transform, convergent, and divergent

Incorrect subject/verb agreement

Period?

Of the five sentences, four have writing errors.

One makes us question whether the student knows what the content means.

This is the movement of the plates over millions of years.

Im thinking about tectonic plates!!

This is the plate boundary lines.

There was 7.0 in Haiti, a 8.9 in Chile, and a 6.4 in Taiwan.

The three boundary types are transform, convergent and divergent.

Apostrophe needed

Should be "an 8.9"

Incorrect subject/verb agreement

What is a 7.0? What do these numbers mean?

Period needed

How has this project *demonstrated* that the student understands tectonic plates?
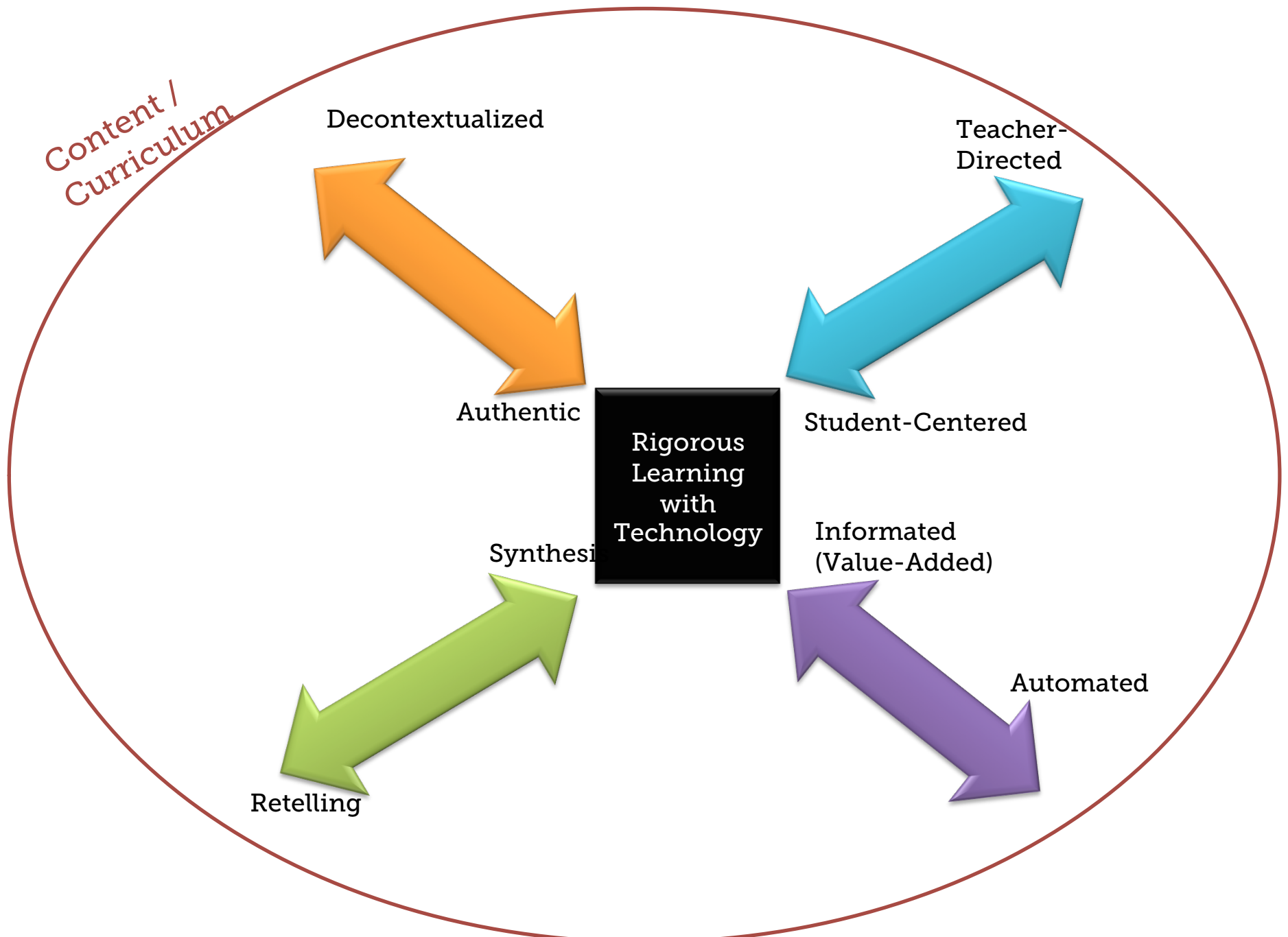
What *evidence of learning* do you see?

bit.ly/hPn588

Content / Curriculum

Decontextualized

Teacher-Directed

Authentic

Student-Centered

Rigorous
Learning
with
Technology

Synthesi

Informed
(Value-Added)

Retelling

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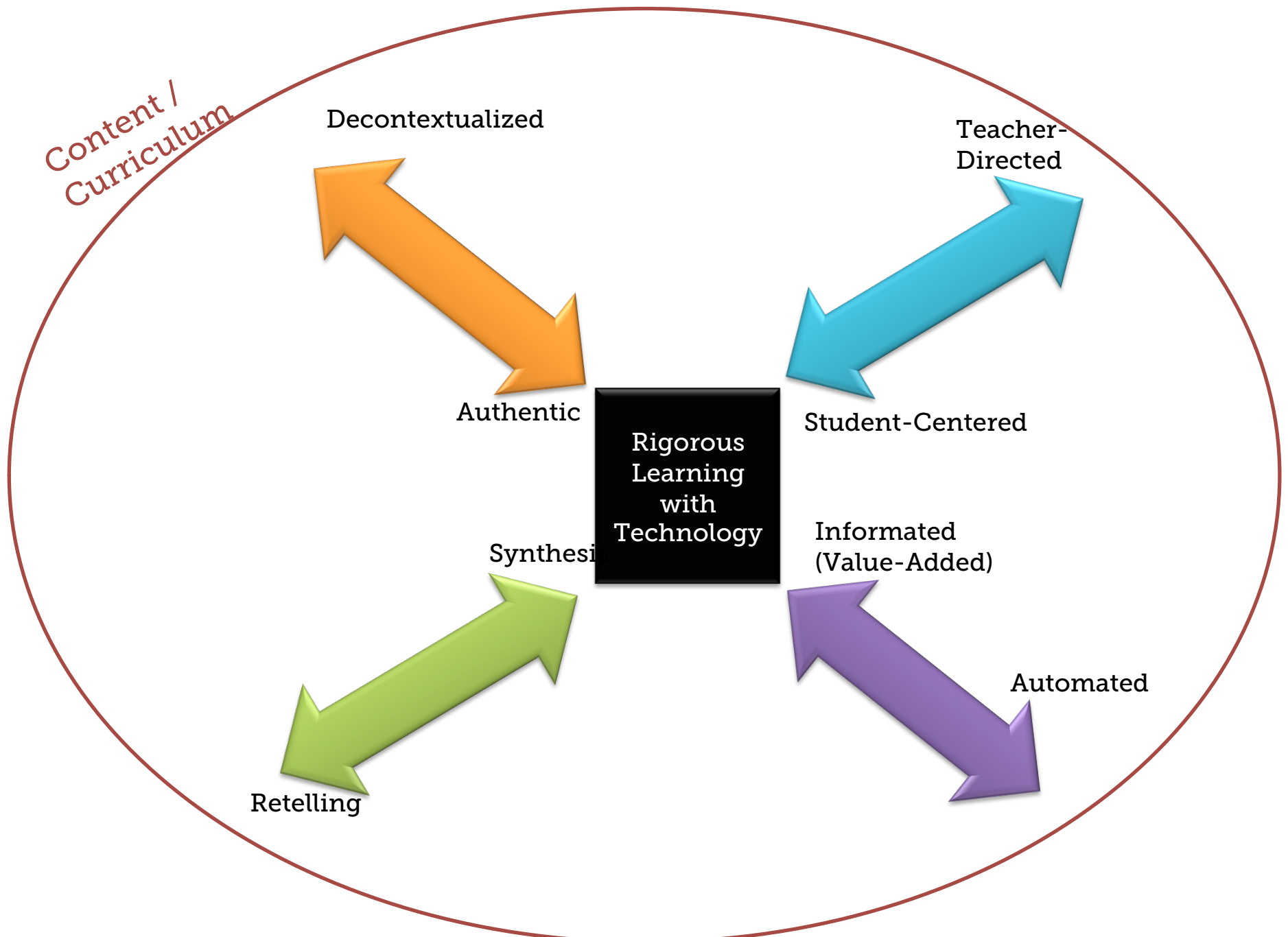
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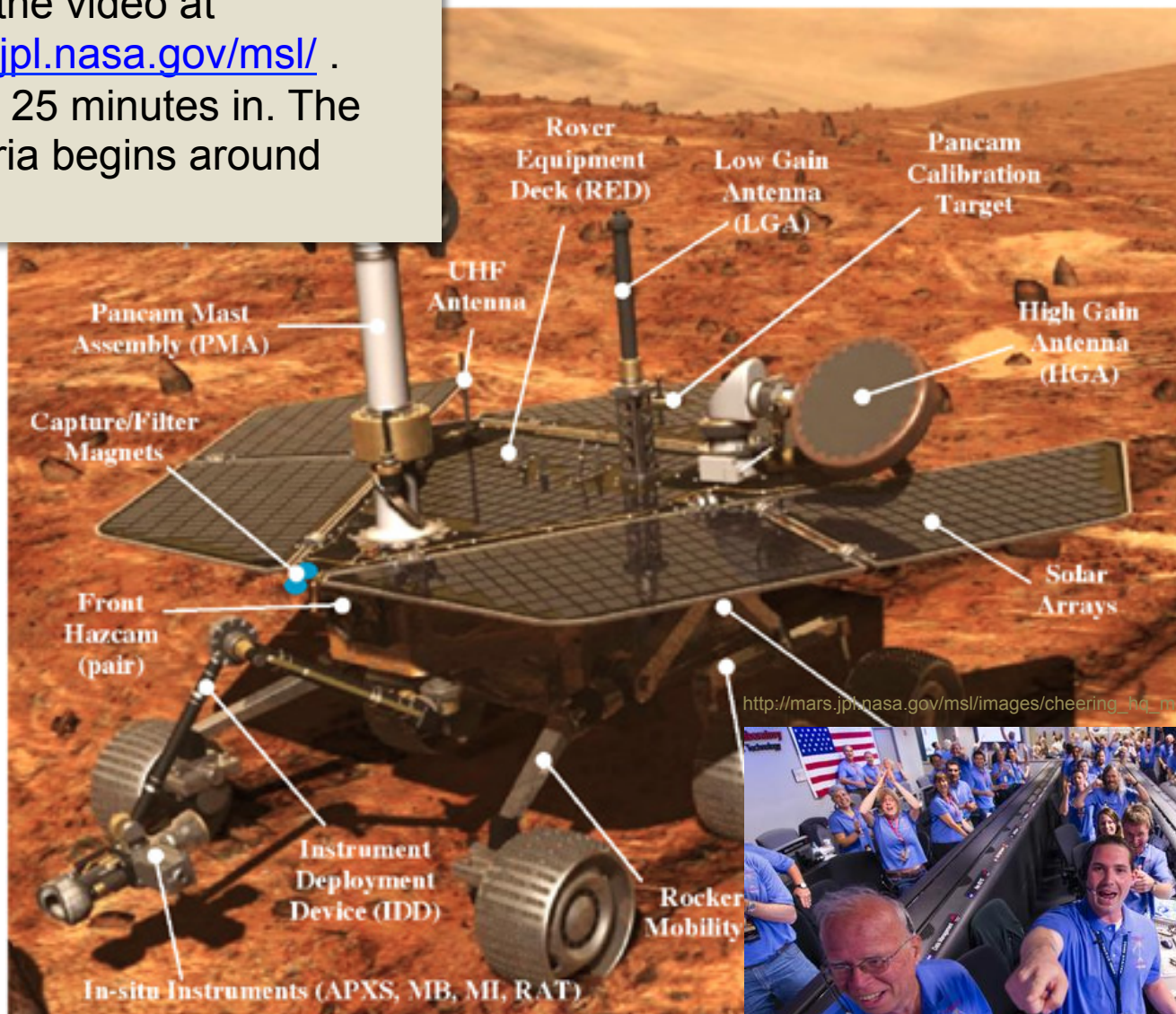
And just in case we have some extra time

(because a principal's daughter is *always* prepared ...)

Inquiry isn't just about research projects.
It's also about identifying problems and investigating solutions...

Watch these engineers celebrate! Check out the video at http://www.jpl.nasa.gov/msl/ . Start about 25 minutes in. The real euphoria begins around 28:45.

Rover Equipment Deck (RED)

Low Gain Antenna (LGA)

Pancam Calibration Target

UHF Antenna

Pancam Mast Assembly (PMA)

High Gain Antenna (HGA)

Capture/Filter Magnets

Solar Arrays

Front Hazcam (pair)

Instrument Deployment Device (IDD)

Rocker Mobility

In-situ Instruments (APXS, MB, MI, RAT)

http://mars.jpl.nasa.gov/msl/images/cheering_hd_msl-20120805-hpfeat.jpg

http://marsrover.nasa.gov/mission/images/rover1_detail_500.jpg

Google self-driving car 300,000 miles -- and counting

Company registers progress but cautions of "a long road ahead" (pun intended), especially when navigating snow-covered roadways and interpreting temporary construction signals.

by Charles Cooper | August 7, 2012 4:07 PM PDT

Follow

(Credit: Google)

Google screws around with a lot of far out, even cockamamie projects -- well, because it can and it's fun. Two good reasons that few can fault.

And it's also a good way to push the proverbial tech envelope. So it is that Google's update about the company's self-driving car project suggests this is turning into something more than Sergey & Larry's homebrew experiment.

> Our vehicles, of which about a dozen are on the road at any given time, have now completed more than 300,000 miles of testing. They've covered a wide range of traffic conditions, and there hasn't been a single accident under computer control.

http://cdn.ientry.com/sites/webpronews/pictures/magicarms_616.jpg
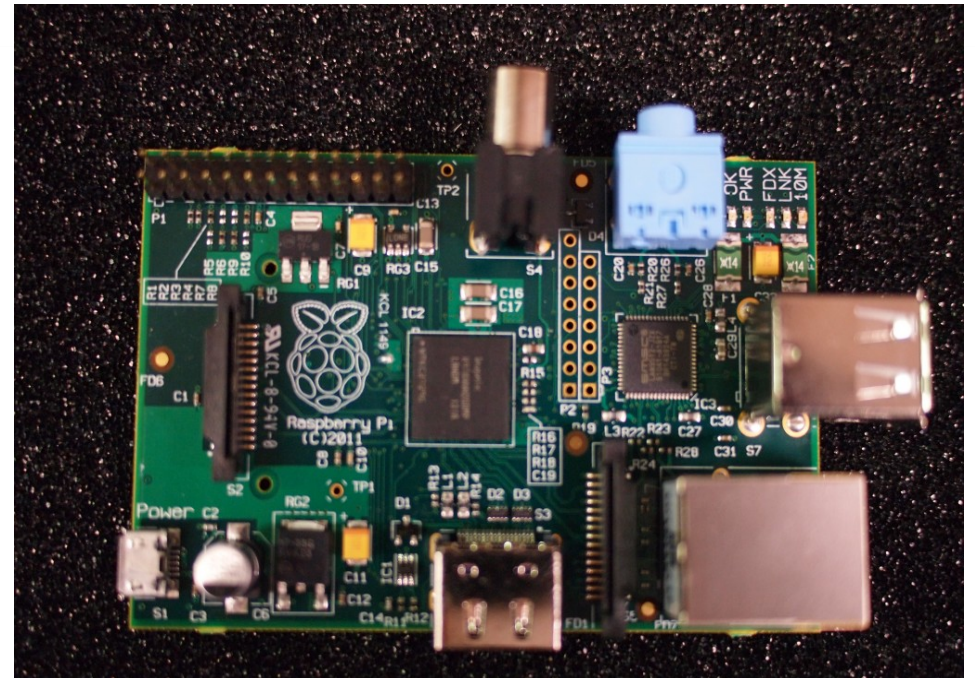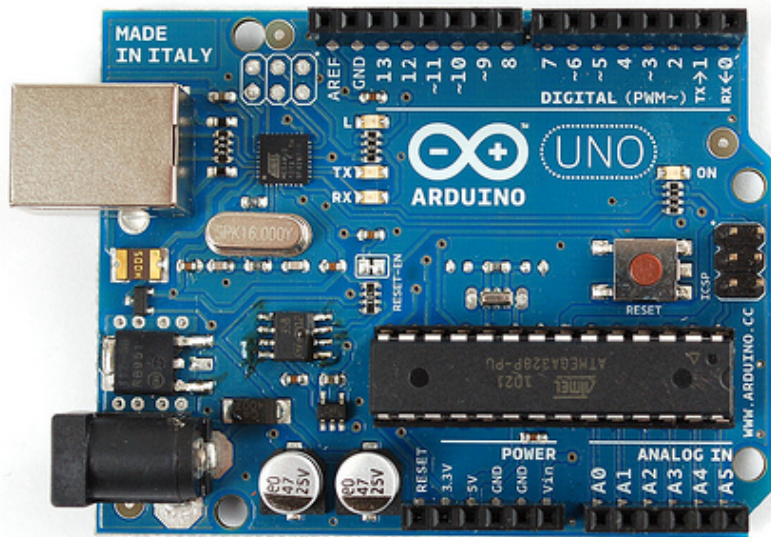
WHAT DO THESE HAVE IN COMMON?

Image: dogeglow.com

Image:makerbot.com

"The maker movement has the opportunity to transform education by inviting students to be something other than consumers of education. They can become makers and creators of their own educational lives, moving from being directed to do something to becoming self-directed and independent learners. Increasingly, they can take advantage of new tools for creative expression and for exploring the real world around them. They can be active participants in constructing a new kind of education for the 21st-century, which will promote the creativity and critical thinking we say we value in people like Steve Jobs.

-- Dale Dougherty, *Slate* (bit.ly/scienceed)

Verrado Middle School, Arizona

Before - $36K

Verrado Middle School, Arizona

Before - $36K

2 Weeks Later - $15K

http://makerspace.com/2012/04/10/schools-making-makerspaces-verrado-middle-school-before-after/

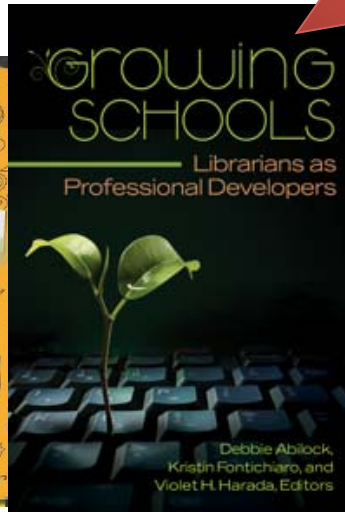Portable Makerspace +
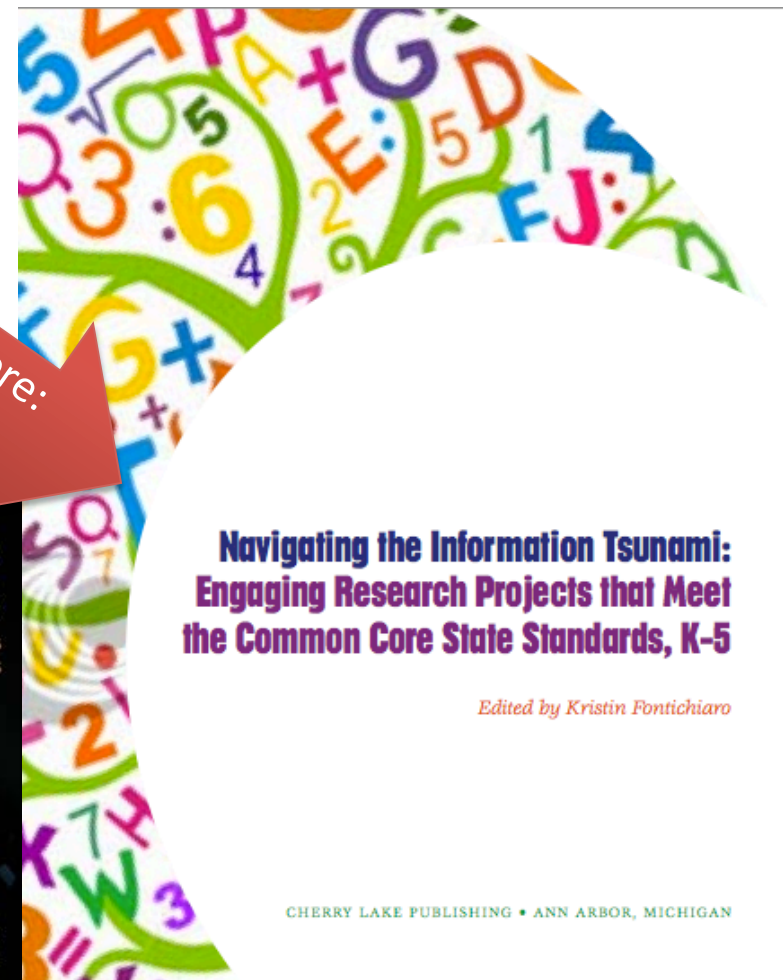Kids + Grad Students +
Hands-On Inquiry =
Think, Create, Share, Grow
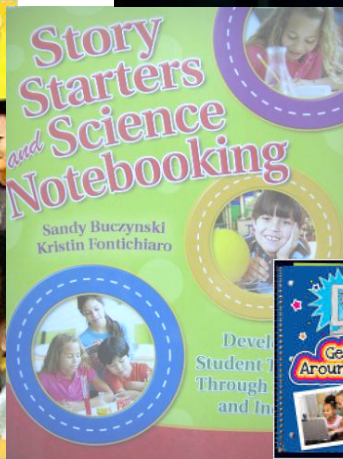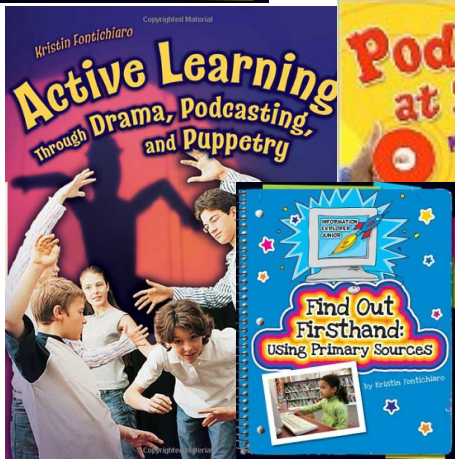
Questions?

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@activelearning

Available in Bookstore: Rm 311

Navigating the Information Tsunami: Engaging Research Projects that Meet the Common Core State Standards, K-5

Edited by Kristin Fontichiaro

CHERRY LAKE PUBLISHING • ANN ARBOR, MICHIGAN

KNOW WHAT TO ASK FOR: FORMING GREAT RESEARCH QUESTIONS

BLOG IT!

GO STRAIGHT TO THE SOURCE

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Debbie Abilock, Kristin Fontichiaro, and Violet H. Harada, Editors

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Kristin Fontichiaro

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Podcasting at School

Kristin Fontichiaro

Story Starters and Science Notebooking

Sandy Buczynski
Kristin Fontichiaro

21st-Century Learning in School Libraries

Getting Around Online

PODCASTING 101

School Libraries: What's Now, What's Next, What's Yet to Come

Edited by
Kristin Fontichiaro and Buffy Hamilton
Foreword by R. David Lankes

Information Literacy in the Wild

Edited by Kristin Fontichiaro
Foreword by Jeffrey MacKie-Mason

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