

# Nudging Toward Inquiry Practice

Follow along with today's slides  
at <http://bit.ly/fontblog> or the  
SAI conference website

School Administrators of Iowa – August 8, 2012

Kristin Fontichiaro  
[font@umich.edu](mailto:font@umich.edu) ~ @activelearning

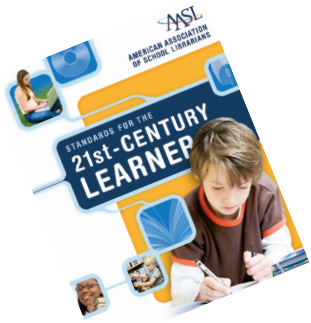


Image: wide web!  
<http://www.flickr.com/photos/20375052@N00/9500503>

“What works best in *our* schools  
with *our* students?”

“Let’s stop talking about *test scores*  
and start talking about the *lives of*  
*children.*”

- Doug Reeves



- Inquiry, thoughtfulness, problem-solving
- Using and evaluating information
- Social, collaborative teaching and learning
- Authentic work tasks, products, and audiences
- Librarian as instructional partner throughout process

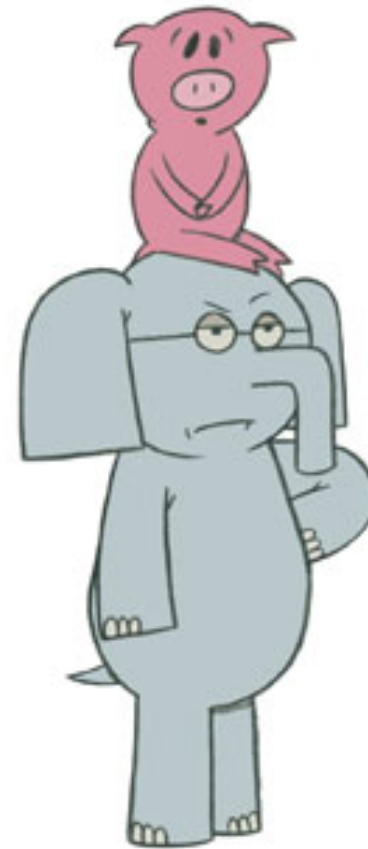
- “Dump and go”: finding answers to specific close-ended, teacher-generated questions
- Finding information
- Isolated, individual learning
- Contrived tasks without resonance to student
- Librarian as an accessory to learning (“a clerk could do it”)

But what is inquiry?



26

Ummm, yeah.



27

# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



# Stripling's Inquiry Model

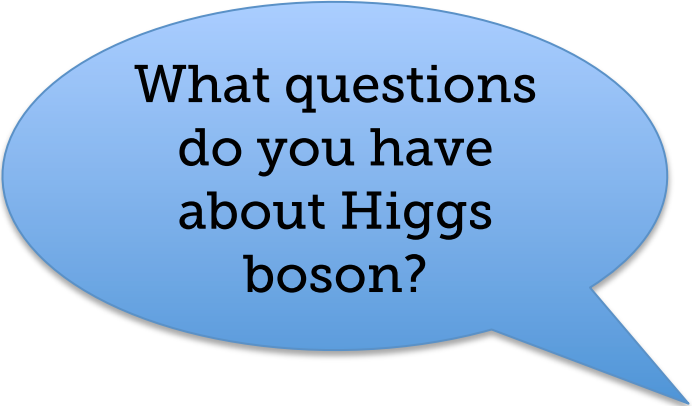
(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)

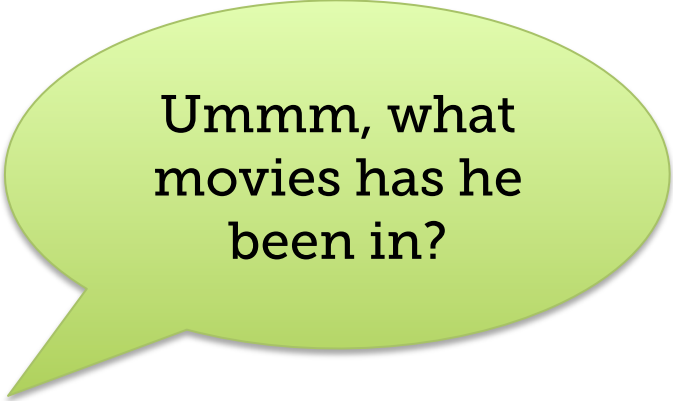


# If I don't know anything, I can't build good questions.

	K	W	L
Ogle 1986	What do I know?	What do I want to know?	What have I learned?
KWL a la Sandy Buczynski	What do I <i>think</i> I know?	What do I wonder?	What have I learned?



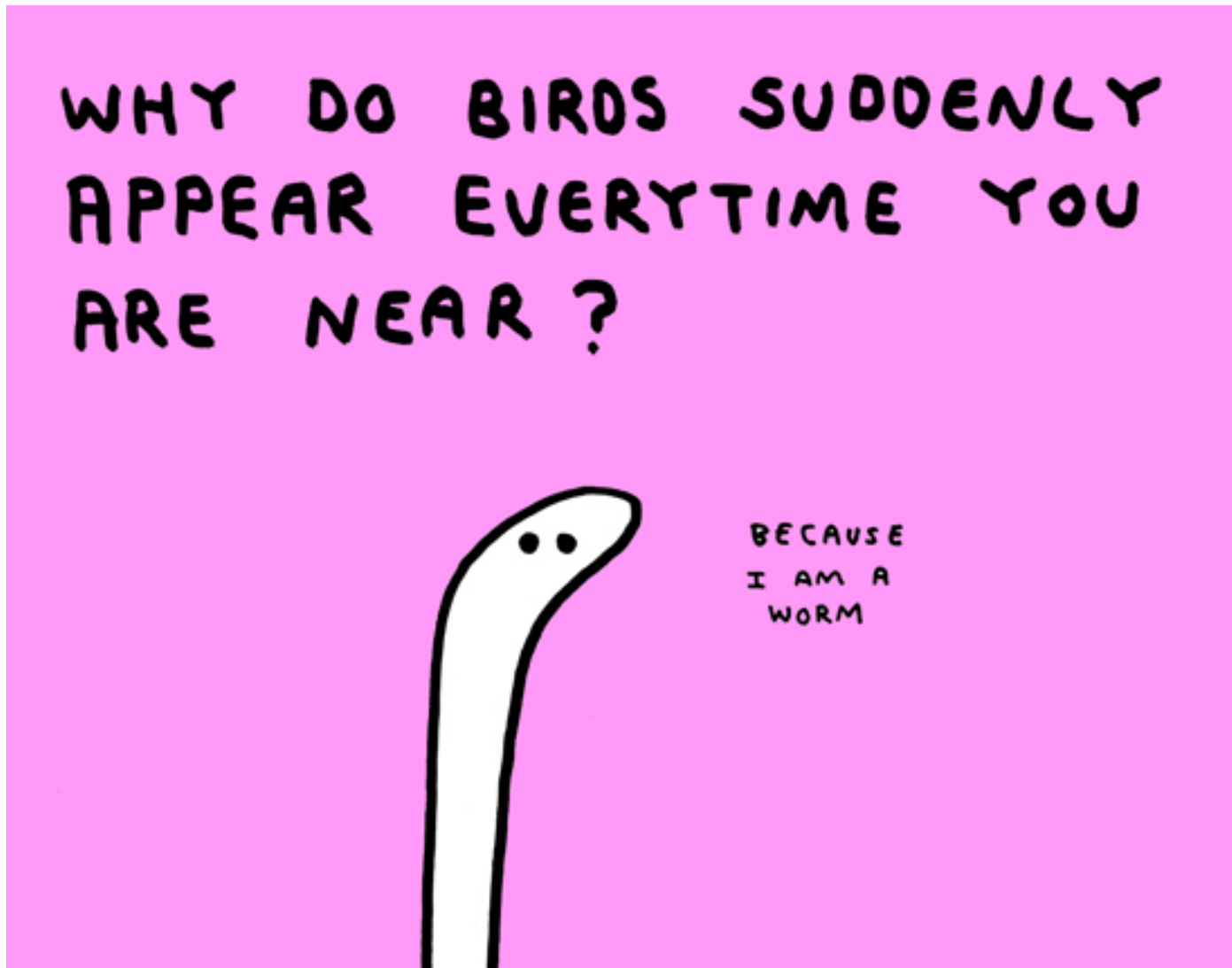
What questions do you have about Higgs boson?



Ummm, what movies has he been in?

Connect ~ Wonder ~ Investigate ~ Construct ~ Express ~ Reflect

Is This Funny? If so, why?



Comic source: <http://awaytogarden.com/doodle-by-andre-close-to-you>



Do you know what this zone is for?



# Milwaukee Airport: Where you go after going through security to put your belt/shoes/jacket back on



[http://4.bp.blogspot.com/\\_S1W53qHqyUG/SS54xtTDTI/AAAAAAAAAJyw/fvyWKAGJ03M/s1600/discombob1070908.jpg](http://4.bp.blogspot.com/_S1W53qHqyUG/SS54xtTDTI/AAAAAAAAAJyw/fvyWKAGJ03M/s1600/discombob1070908.jpg)

# And for the hipsters ...



# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

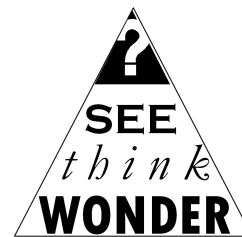
- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



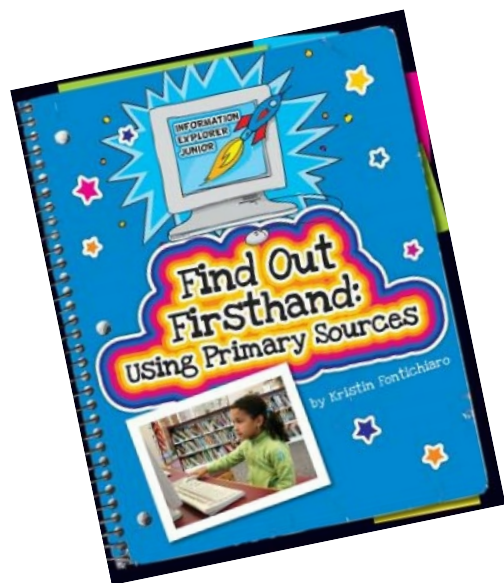
# Wonder



- Questions
- Hypotheses
- Class graphic organizer based on discussion
- Brainstorming in groups
- Outline objective, then give questions

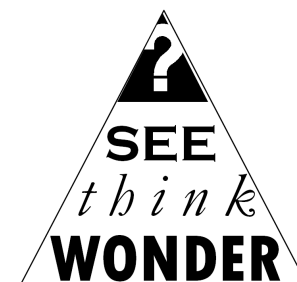


Connect ~ Wonder ~ Investigate ~ Construct ~ Express ~ Reflect





<http://www.loc.gov/rr/rarebook/guide/ra023001.html>



**What's a  
Hooverville?**







THESE HOOVERVILLE CHILDREN ARE ASHAMED OF THEIR HOME —

CAN YOU BLAME THEM?

I LIVE IN ONE ROOM. AND IT SMALL ROOM AT THAT!

S.E.R.A. PHOTO 4/17/35

[Back](#)

**Title:**

These Hooverville children are ashamed of their home - can you blame them? 7 live in one room, and a small room at that! S.E.R.A. Photo, 4/17/35

**Identifier:**

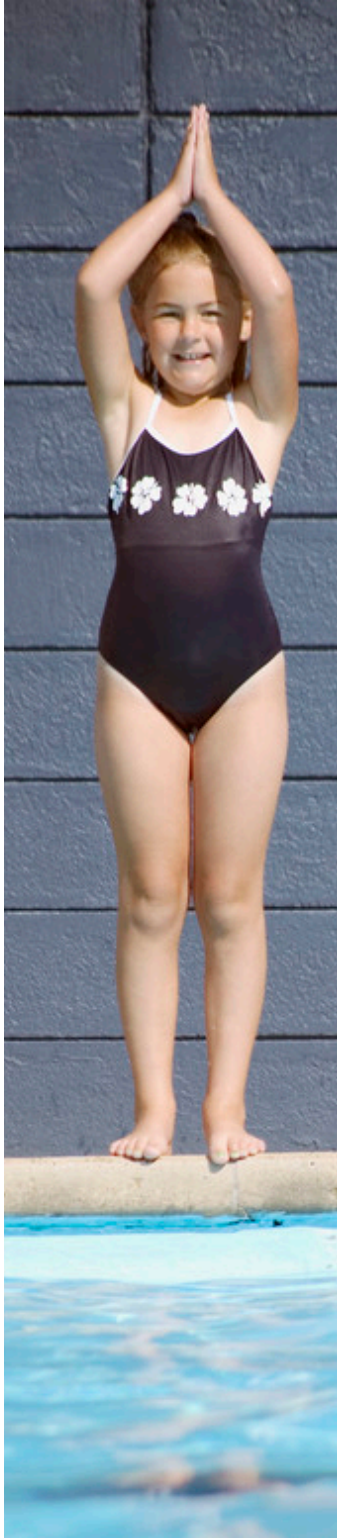
BANC PIC 1954.013:61--PIC

**Collection:**

Migrant Labor Camp Photographs from the Harry Everett Drobish Papers,

**Contributing Institution:**

UC Berkeley, Bancroft Library



# Pool Your Knowledge!

- Analog
  - Whiteboard (*bansho*)
  - Sticky notes
- Digital
  - Wallwisher.com
  - iEtherpad.com
  - Dabbleboard.com
  - Wiki page
  - Google Docs



# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



# Frame the Project

**Scenarios**

**Project-Based Learning**

**Problem-Based Learning**

**Real-World Situations**





# Frame the Project

Select a lighthouse. Tell us the history of the lighthouse, its first keeper, the kind of lens it has, where it is located, and whether it is on the mainland or an island. *Spelling and grammar count!*

OR

The Governor of Michigan has proposed selling off ten lighthouses in order to reduce state costs. Identify an existing lighthouse that could be turned into a new kind of business to profit our state. Use PowerPoint to create a proposal you can share at her next open meeting. Think about your audience when planning!



# Framing Strategies

- Situate the topic in the student's home, work, school, or social life.
  - How would this impact your family?
  - What if this were in your backyard?
  - How should the principal react to \_\_\_\_?
- Tell a story. Ask students to do research to finish it.
  - The three pigs want to build another house. The hardware store is out of straw, wood, and brick. What would be another good insulator? Why?
- Flip history.
  - How might the U.S. be different today if the war had ended at Gettysburg instead?

# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)





# Investigate (Info Lit)

- Search strategies
- Credibility
- Open Web
- Popular vs. Scholarly Sources
- Is a personal blog legit?  
(Is a *NY Times* blog legit?)



<http://www.flickr.com/photos/21943179@N06/3145066465>

# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



# Construct



- What patterns in data/info do I see?
- What does all of this mean?
- New round of graphic organizers for sensemaking
- Pooling knowledge (*bansho*, discussion, wikis/Google Docs)

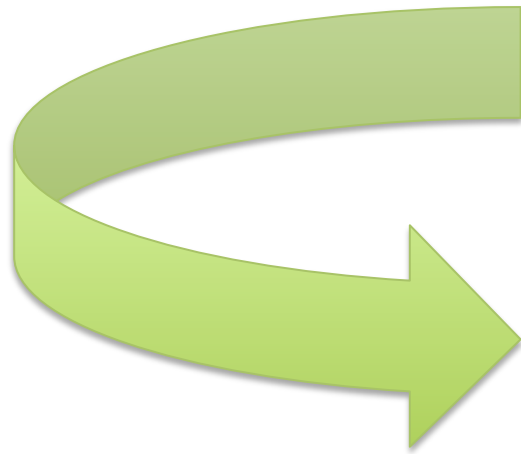
Connect ~ Wonder ~ Investigate ~ Construct ~ Express ~ Reflect

# Giraffe

From Wikipedia, the free encyclopedia

*For other uses, see [Giraffe \(disambiguation\)](#).*

The **giraffe** (*Giraffa camelopardalis*) is an [African even-toed ungulate mammal](#), the [tallest living terrestrial animal](#) and the largest [ruminant](#). Its [specific name](#) refers to its



- Giraffa camelopardalis
- African
- Even-toed
- Ungulate
- Mammal
- Tallest
- Largest
- Ruminant

# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



# Express

- Choice in expression
- Authentic products/ audiences
- Care in collaborative work



Express

Construct

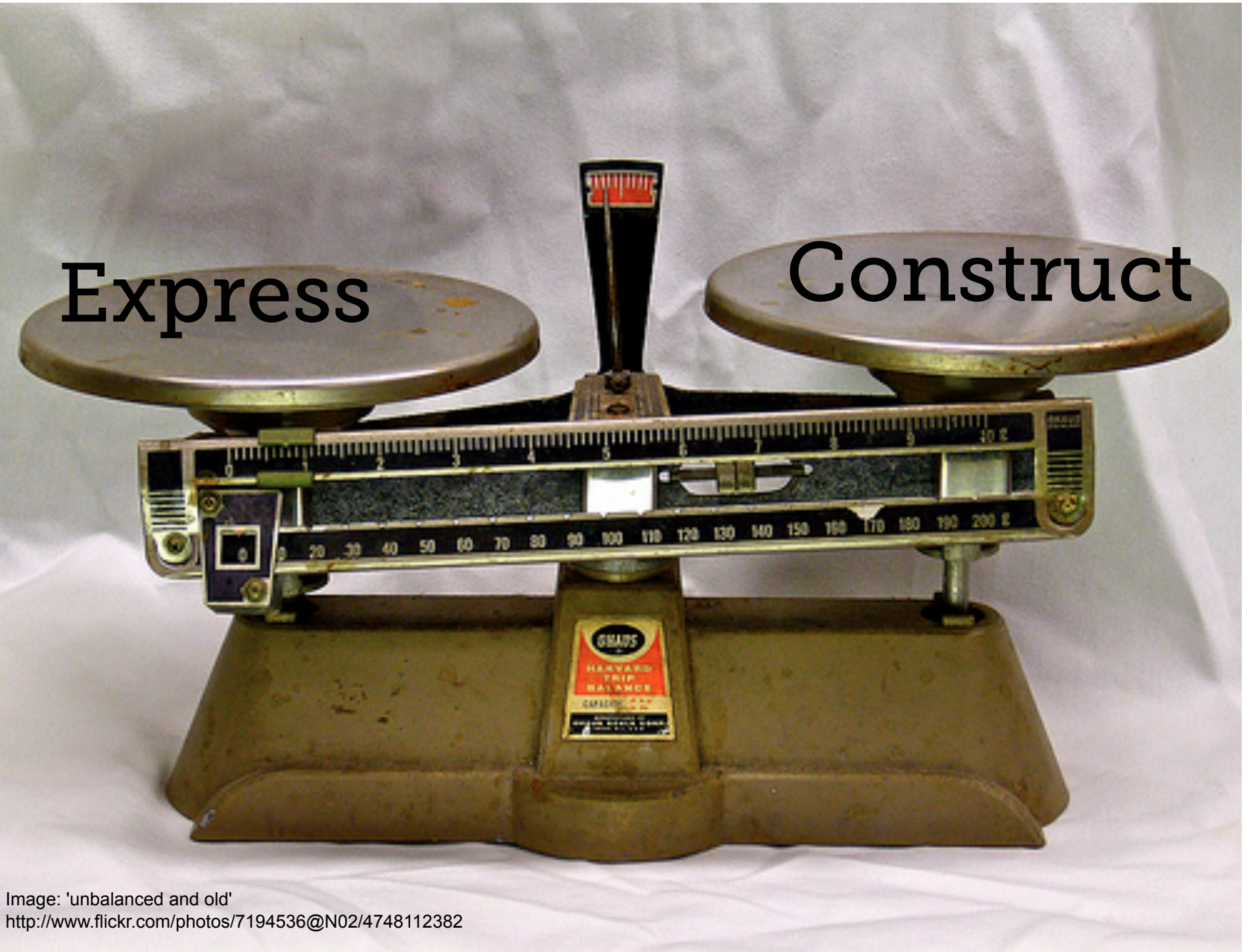
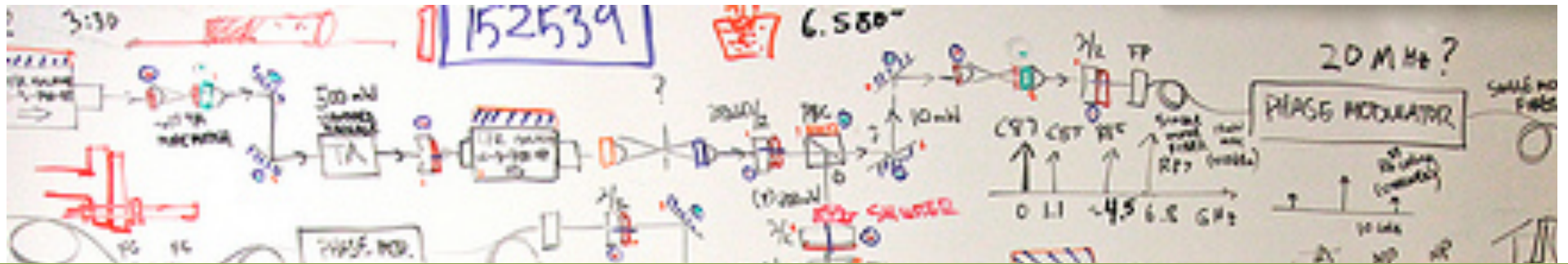


Image: 'unbalanced and old'  
<http://www.flickr.com/photos/7194536@N02/4748112382>



# The Parent-Teacher Conference Trap

- “We have to have something to put up for conferences!”
- Why not share process work – letting students explain where they are and where they’re going – rather than cranking out non-challenging “projects”?



Image: What's That? (94)  
<http://www.flickr.com/photos/44124348109@N01/4397463426>



# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)



# Reflect

- Exit slips
- One-minute essays
- Miniconferences
- "What new questions might you explore if \_\_\_\_ hired you to do more research?"

Image: 'Beata Zita'  
<http://www.flickr.com/photos/55593843@N00/1671699914>

Connect ~ Wonder ~ Investigate ~ Construct ~ Express ~ Reflect

# Stripling's Inquiry Model

(SLM, 4/07 and 9/09)

- **Connect**  
(awaken prior knowledge)
- **Wonder**  
(generate possible questions)
- **Investigate**  
(seek and discover info)
- **Construct**  
(discover patterns; draw conclusions)
- **Express**  
(create product)
- **Reflect**  
(consider effectiveness of process/product)






Better Ingredients.  
Better Pizza.

**LEARNING.**

How are we doing with time?

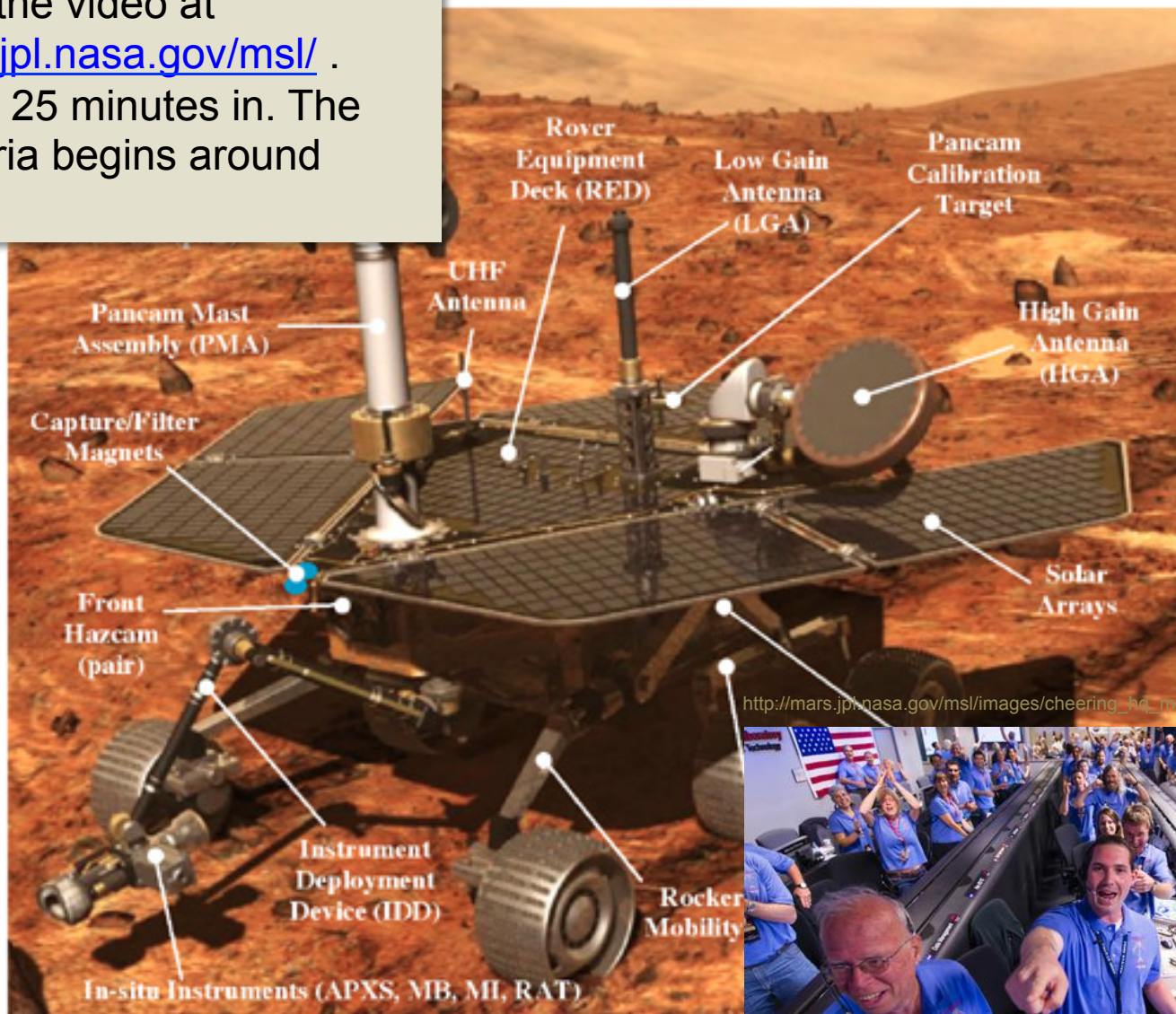
Should we go on or stop for questions?

<http://www.flickr.com/photos/7820770@N07/2785267694>

A photograph showing a young elephant standing between the legs of two larger elephants. The young elephant is in the center, looking down. The larger elephants are on either side, with their legs and trunks visible. The background is a bright, open area.

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.



[http://mars.jpl.nasa.gov/msl/images/cheering\\_hq\\_msl20120805-hpfeat.jpg](http://mars.jpl.nasa.gov/msl/images/cheering_hq_msl20120805-hpfeat.jpg)



[http://marsrover.nasa.gov/mission/images/rover1\\_detail\\_500.jp](http://marsrover.nasa.gov/mission/images/rover1_detail_500.jp)





http://news.cnet.com/8301-11386\_3-57488731-76/google-self-driving-car-300000-miles-and-counting/

CNET News Cutting Edge

## 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)

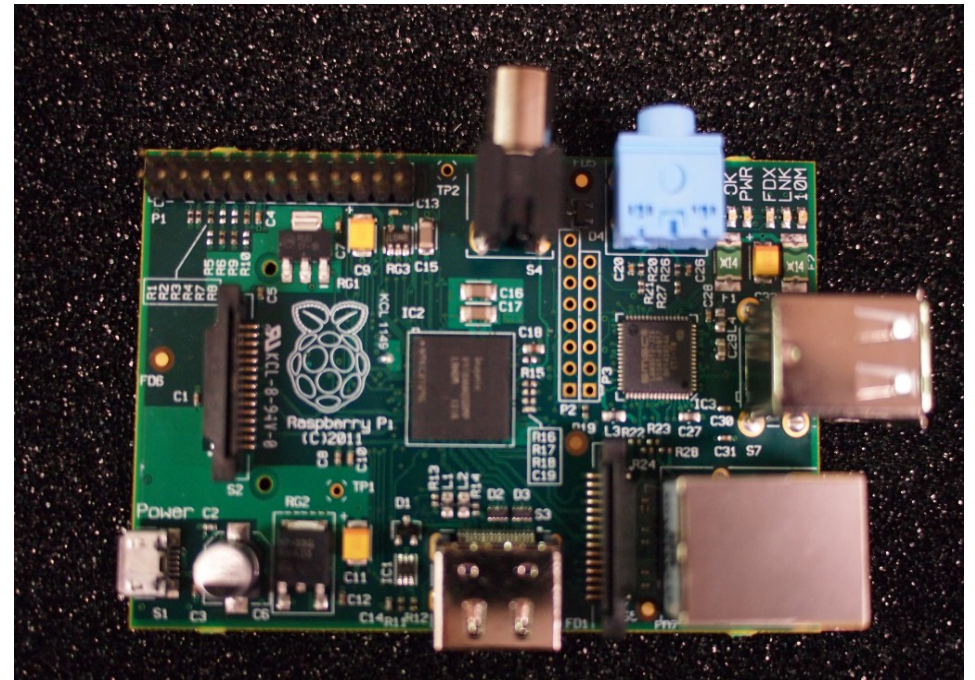
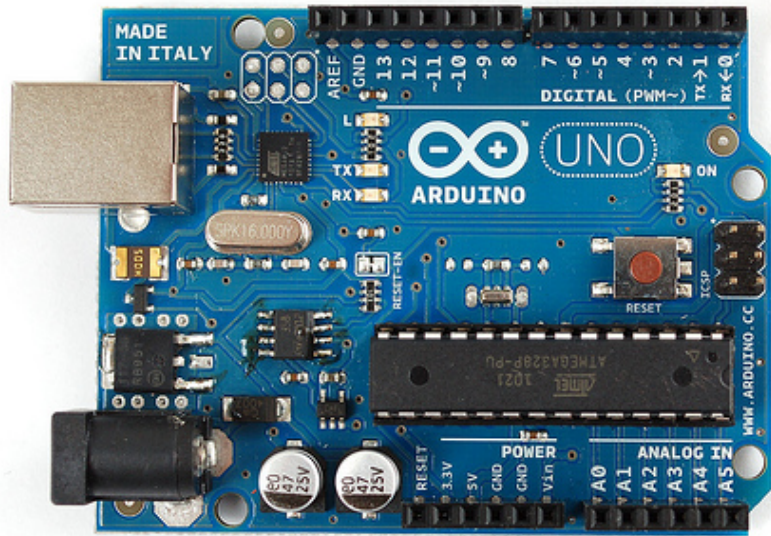
Google screws around with a lot of far out, even cockamamie projects -- well, because it can and it's fun. Two good reasons that few can fault.

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](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](http://bit.ly/scienceed))



# Verrado Middle School, Arizona

Before - \$36K



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

# Verrado Middle School, Arizona

Before - \$36K



2 Weeks Later - \$15K



**MICHIGAN**



Portable Makerspace +  
Kids + Grad Students +  
Hands-On Inquiry =

Think, Create, Share, Grow

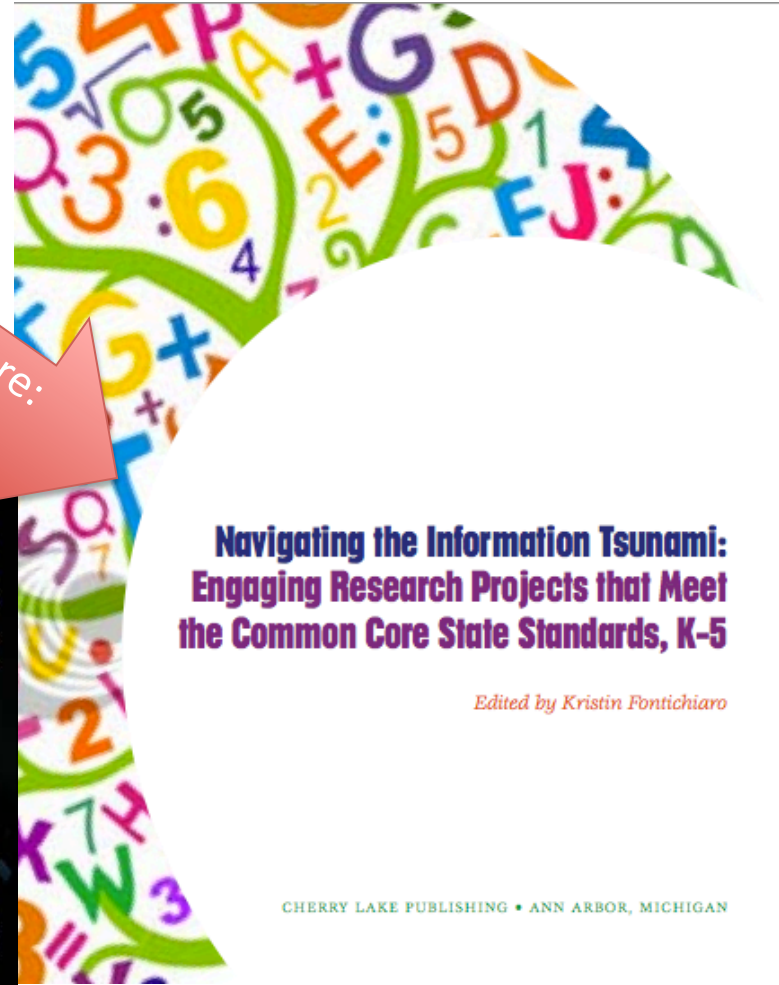
# Questions?

font@umich.edu

@activelearning

Today's slides:  
<http://bit.ly/fontblog> or  
SAI site

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

