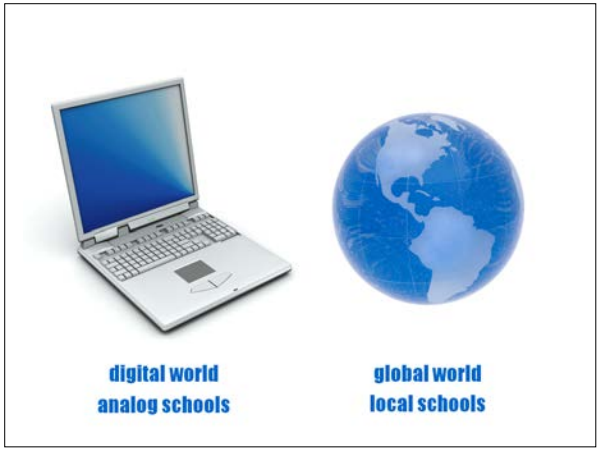
1

http://www.cu.edu/sites/default/files/Campus_DC07_6867-3.jpg

URL
at end of
keynote!

Make sure you have a discussion buddy!



4

So I'm going to make 6 arguments tonight about why I believe that we need to rethink schools and how they operate. I'll give you a quick preview of each of these here at the beginning. By the end of the evening, we will have discussed…

1 Information literacy

2 New forms of learning

3 Student engagement

4 Economy and workforce

5 Innovation

6 Equity

11

http://digitalspyuk.cdnds.net/12/24/1600x800/landscape_tech_martha_payne_neverseconds.jpg

Food-o-meter
6/10

Health rating
4/10

Pieces of hair
0

Food-o-meter
8/10

Health rating
5/10

Pieces of hair
still in the clear

"42,000 hits now …

I hope one of them
was Jamie Oliver"

May 10, 2012 & May 17, 2012

Food-o-meter
8/10

Health rating
6/10

Pieces of hair
1 (under the cucumber)

17

May 14, 2012
Taiwan

18

June 6, 2012
Canada

19

December 4, 2012
Czech Republic

20

June 13, 2012 – joins Nick Nairn at his cookery school; hosts big meeting about quality of school food
June 14, 2012 – told by head teacher that school council decided she could not take any more photos of her school lunches ‘because of a headline in a newspaper today’
June 15, 2012 – support from Jamie Oliver and others

21

October 17, 2012 – meets Jamie Oliver
November 17, 2012 – BBC and Scotland's Public Campaigner of the Year
November 22, 2012 – Liberty Awards in London – Human Rights Young Person of the Year

$220,000

22

10 million views
JustGiving site – money goes to Mary's Meals

http://i.telegraph.co.uk/multimedia/archive/02359/martha_2359060b.jpg

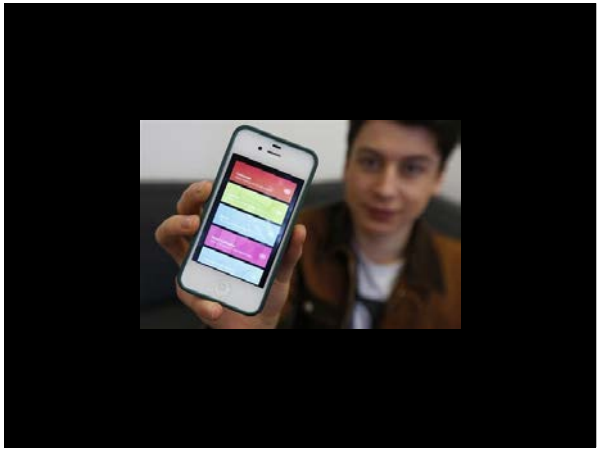
23

Emma Orlow, 17, NYC – not content with merely blogging since age 13, now working on a documentary project to show how teen girls' bedrooms are manifestations of their identity formation
http://www.nytimes.com/2013/01/10/garden/the-do-not-enter-diaries-a-new-web-site-documents-teen-bedrooms.html?pagewanted=all&_r=0

Josh, Ames, Iowa – started in 8th grade, now in first year of college
http://www.youtube.com/user/Lueroi/videos

25

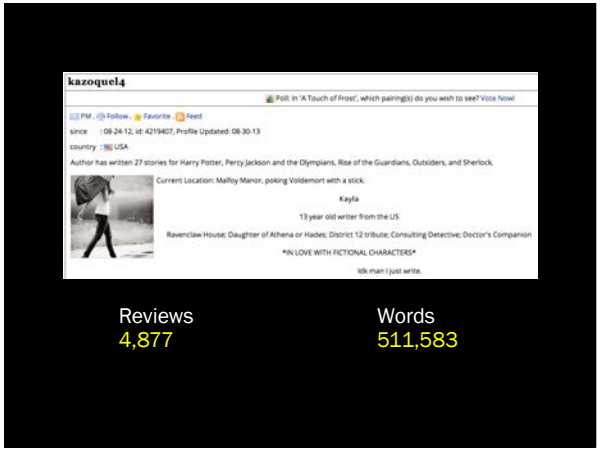
Tavi Gevinson - Oak Park, Illinois - 16-year old founder and editor-in-chief of Rookie, online magazine
http://en.wikipedia.org/wiki/Rookie_(magazine)
http://www.thestylerookie.com
http://en.wikipedia.org/wiki/Tavi_Gevinson



26

Nick D'Aloisio, Britain – developed his news-reading app when he was 15 and sold it to Yahoo! At age 17 for $30 million
http://www.nytimes.com/2013/03/26/business/media/nick-daloisio-17-sells-summly-app-to-yahoo.html

27



Reviews
4,877

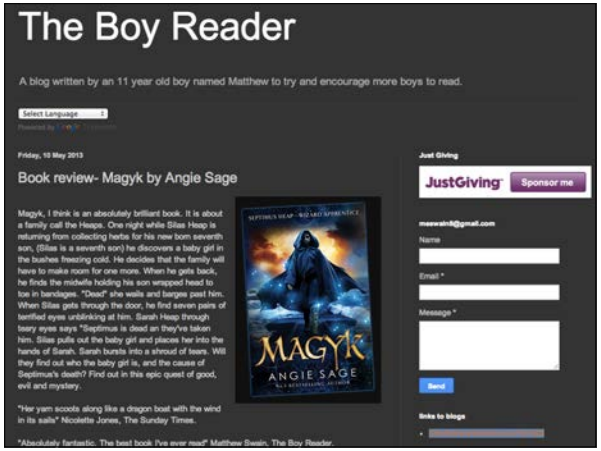
Words
511,583

Kayla, age 13 – favorite subject is science – 27 stories
As of 9/6/2013 = 4,877 reviews and 511,583 words
http://www.fanfiction.net/u/4219407/kazoquel4

28

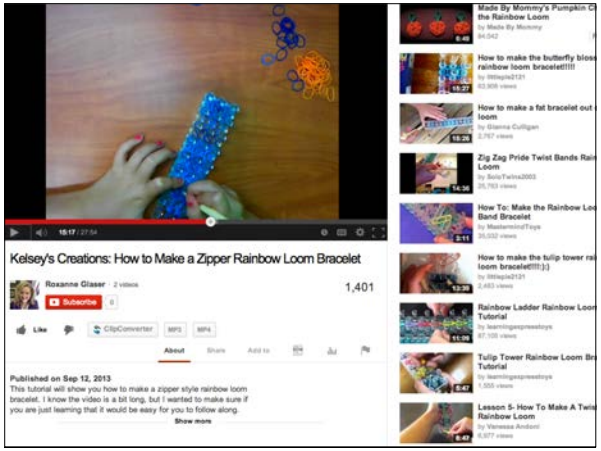
Lauren Rojas, 7th grader – Antioch, CA - had to go home to launch her Hello Kitty doll 93,000 feet into space
http://blogs.scientificamerican.com/observations/2013/02/04/watch-this-amazing-12-year-old-launch-a-hello-kitty-into-space/

At age 12, Kathryn DiMaria - Dearborn, Michigan - began to rebuild a Pontiac Fiero to drive when she's 16
The project has inspired her family and the online auto community that's guiding her
Fiero enthusiasts have followed her project online for years, offering advice, sending gifts
http://www.cnn.com/2012/10/24/tech/girl-builds-fiero/index.html



30

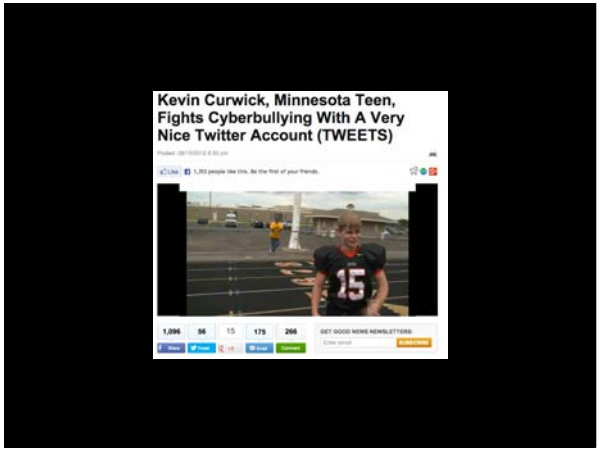
Matthew Swain – age 11 – United Kingdom - created a blog to encourage other boys to read
http://boyreader.blogspot.co.uk



31

Kelsey, age 9 - Waco, Texas
http://youtu.be/zwnEFA9Tf84

The Harry Potter Alliance has led over 40 campaigns
Buying books for libraries, fighting for immigrant rights, and advocating for chocolate that doesn't depend on child labor from Africa
http://thehpalliance.org/action/campaigns



Kevin Curwick, age 17, football captain and high school senior, Osseo High, Osseo, MN
http://www.huffingtonpost.com/2012/08/15/kevin-curwick-minnesota-osseo-nice-things_n_1784908.html
http://www.kare11.com/news/article/986868/391/Football-player-beats-cyber-bullies-at-own-game
https://twitter.com/OsseoNiceThings
https://twitter.com/ChanhassenNice
https://twitter.com/Chaskanice
https://twitter.com/MinnetonkaNice

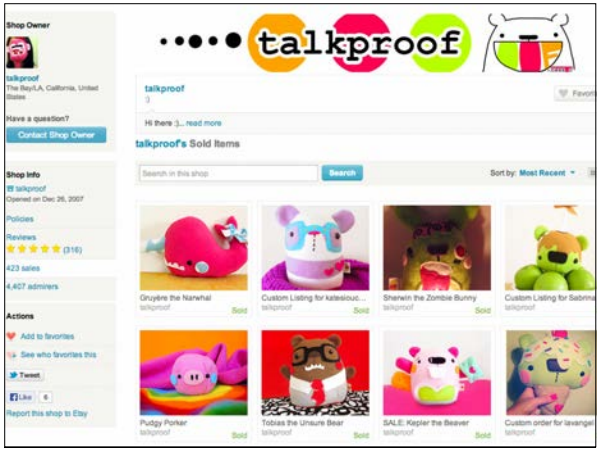
34

Sam Fathallah - Linn-Mar, IA - high schooler who makes videos that will take your breath away
http://www.youtube.com/user/ThePanicButtonBlog
http://www.samfathallah.com
https://twitter.com/samfathallah

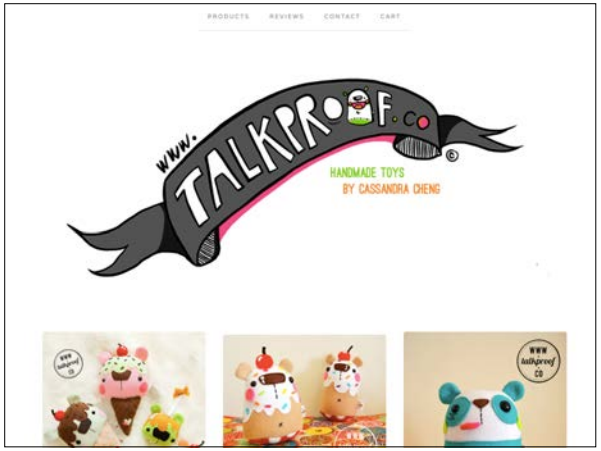
Dream
http://www.youtube.com/watch?v=aFc4iGXa9a4

35

Zev, 14-year-old from Natick, MA, who makes really interesting self-portraits
http://www.flickr.com/photos/fiddleoak/6265250935



Cassandra - middle schooler, Fremont, CA
http://www.etsy.com/shop/talkproof/sold?ref=shopinfo_sales_leftnav



37

Cassandra - middle schooler, Fremont, CA
http://www.etsy.com/shop/talkproof/sold?ref=shopinfo_sales_leftnav

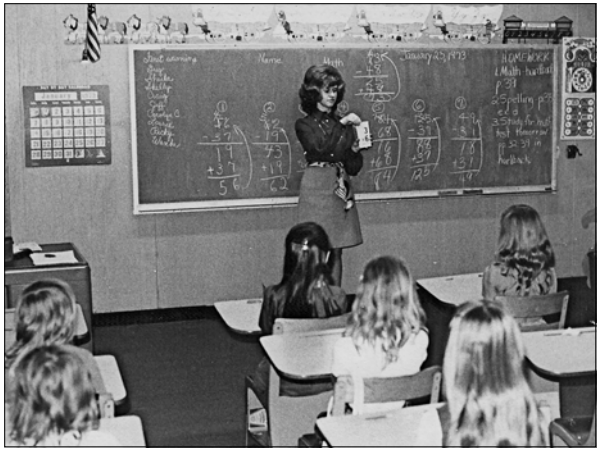
38

Todd County High School, South Dakota
ABC News – Children of the Plains
Passion – Humility - Creativity – Respect – Family - Love
By exercising voice, reclaim the power adults tried to take away from them
http://youtu.be/FhribaNXr7A
http://indiancountrytodaymedianetwork.com/article/todd-county-high-schoolers-respond-to-children-of-the-plains-with-more-than-that-67567

What adjectives might we use to describe these young people?

Most Schools

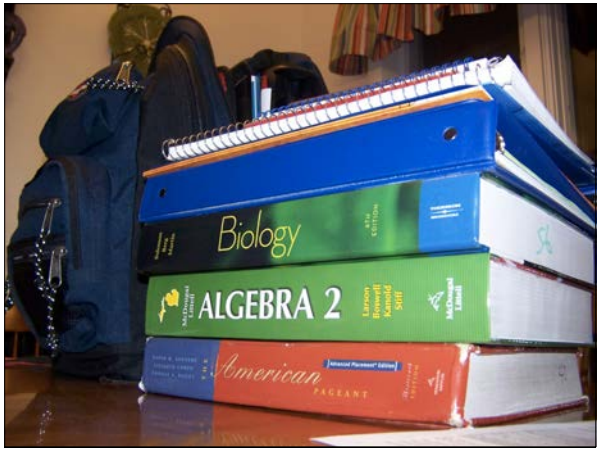
Everywhere, USA



Teacher at the front of the room

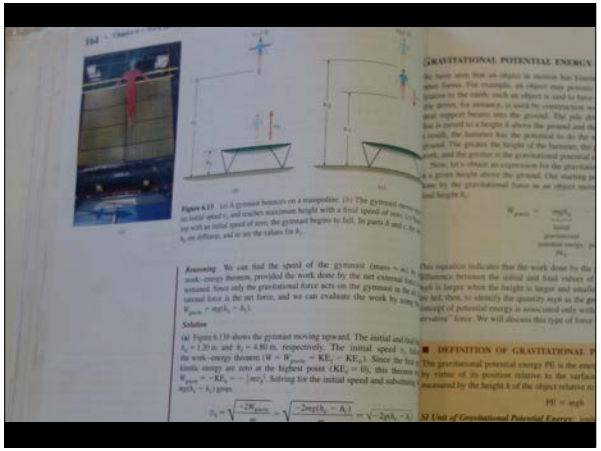
Classic call-and-response

Students sit passively, taking notes, or work in isolation at their desks



They read and do lots of review questions from the textbook

https://www.flickr.com/photos/baggis/2278591955



164 · Chapter 6 Work and Energy

Figure 6.13 (a) A gymnast bounces on a trampoline. (b) The gymnast moves with an initial speed v_i and reaches maximum height with a final speed of zero. (c) The gymnast leaves the top with an initial speed of zero; the gymnast begins to fall. In parts *b* and *c*, the heights h_i are different, and so are the values for h_f.

Reasoning We can find the speed of the gymnast (mass = m) by using the work–energy theorem, provided the work done by the net external force is determined. Since only the gravitational force acts on the gymnast in the problem, the tailored force is the net force, and we can evaluate the work by using $W_{grav} = mgh_i - h_f$.

Solution

(a) Figure 6.13*b* shows the gymnast moving upward. The initial and final heights are $h_i = 1.20$ m and $h_f = 4.80$ m, respectively. The initial speed v_i is found from the work–energy theorem ($W = W_{grav} = KE_f - KE_i$). Since the final kinetic energy and the initial kinetic energy are zero at the highest point ($KE_f = 0$), this theorem reduces to $W_{grav} = -KE_i = -\frac{1}{2}mv_i^2$. Solving for the initial speed and substituting $W_{grav} = mg(h_i - h_f)$ gives

$$v_i = \sqrt{\frac{-2W_{grav}}{m}} = \sqrt{\frac{-2mg(h_i - h_f)}{m}} = \sqrt{-2g(h_i - h_f)}$$

GRAVITATIONAL POTENTIAL ENERGY

We have seen that an object in motion has kinetic energy. For example, an object may possess energy relative to the earth; such an object is said to have gravitational potential energy. The pile driver, for instance, is used by construction workers to drive support beams into the ground. The pile driver has the potential to do the work because it is raised to a height h above the ground and then released. As a result, the hammer has the potential to do the work of driving the beam into the ground. The greater the height of the hammer, the greater the potential to do work, and the greater is the gravitational potential energy.

Now, let's obtain an expression for the gravitational potential energy of an object at a given height above the ground. Our starting point is the work done by the gravitational force as an object moves between an initial height h_i and height h_f.

$$W_{grav} = \underbrace{mgh_i}_{\substack{\text{initial} \\ \text{gravitational} \\ \text{potential energy,} \\ PE_i}} - \underbrace{mgh_f}_{\substack{\text{final} \\ \text{gravitational} \\ \text{potential energy,} \\ PE_f}}$$

This equation indicates that the work done by the gravitational force is the difference between the initial and final values of the quantity mgh. The work is larger when the height is larger and smaller when the height is smaller. We find, then, to identify the quantity mgh as the gravitational potential energy. The concept of potential energy is associated only with conservative forces. We will discuss this type of force

■ DEFINITION OF GRAVITATIONAL P

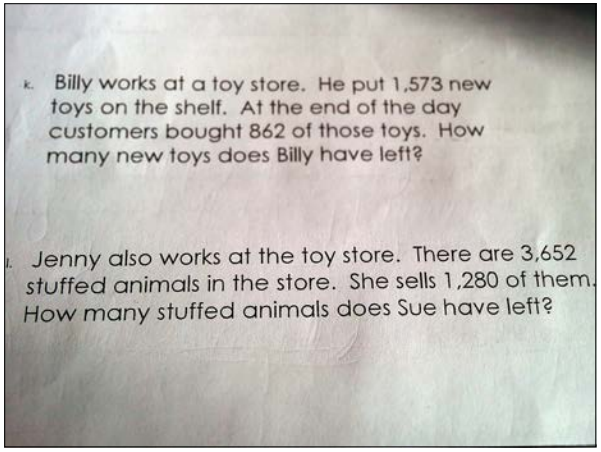
The gravitational potential energy PE is the energy

by virtue of its position relative to the surface

measured by the height h of the object relative to

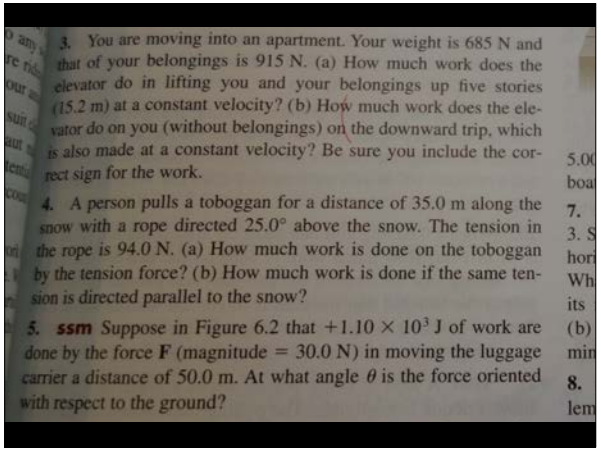
$$PE = mgh$$

SI Unit of Gravitational Potential Energy:



Questions like…

https://www.flickr.com/photos/lizzardo/12656571185



3. You are moving into an apartment. Your weight is 685 N and that of your belongings is 915 N. (a) How much work does the elevator do in lifting you and your belongings up five stories (15.2 m) at a constant velocity? (b) How much work does the elevator do on you (without belongings) on the downward trip, which is also made at a constant velocity? Be sure you include the correct sign for the work.

4. A person pulls a toboggan for a distance of 35.0 m along the snow with a rope directed 25.0° above the snow. The tension in the rope is 94.0 N. (a) How much work is done on the toboggan by the tension force? (b) How much work is done if the same tension is directed parallel to the snow?

5. **ssm** Suppose in Figure 6.2 that $+1.10 \times 10^3$ J of work are done by the force **F** (magnitude = 30.0 N) in moving the luggage carrier a distance of 50.0 m. At what angle θ is the force oriented with respect to the ground?

or… who cares?

They do worksheets

https://www.flickr.com/photos/pandachessacademy/6879902264/

And more worksheets

https://www.flickr.com/photos/pandachessacademy/6879909854/

And more worksheets

https://www.flickr.com/photos/pandachessacademy/6879905328/

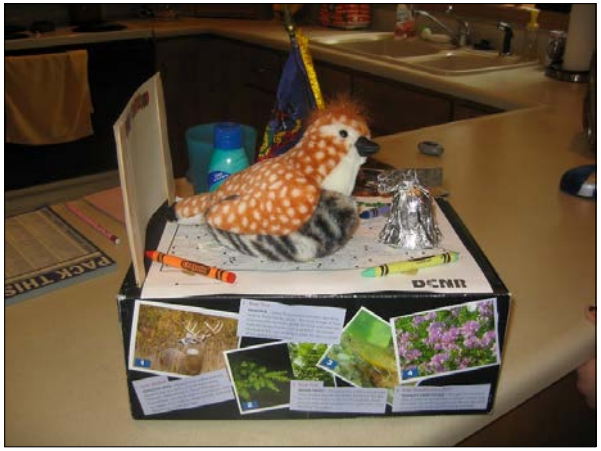
50

We love our worksheets…

https://www.flickr.com/photos/pandachessacademy/6879909590/

… maybe because student enthusiasm for them is so high

https://www.flickr.com/photos/pandachessacademy/6879904664/



52

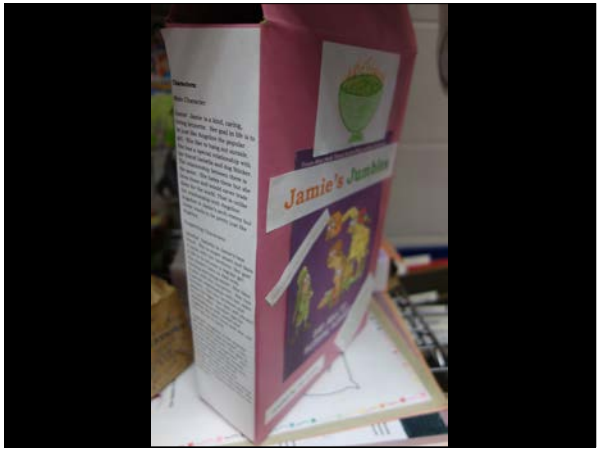
Sometimes we spice things up with a so-called project

4th grade state float full of low-level facts about the state

(state fish of Pennsylvania?)

53

Coat hanger mobiles



54

Cereal box book reports

Sugar cube pyramids

Styrofoam ball solar systems

And the dioramas… oh, the dioramas

Chinese dynasty fact pagodas

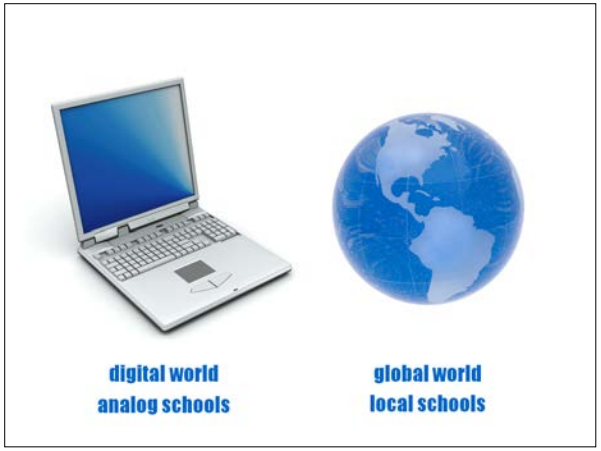
56

Chinese dynasty fact dragon

We learn what we do…

Does this describe your local classrooms?

How is this different from Martha and friends?



59

So I'm going to make 6 arguments tonight about why I believe that we need to rethink schools and how they operate. I'll give you a preview of each of these here at the beginning. By the end of the evening, we will have discussed…

1 Information literacy

Schools' primary task - other than child care while we go to work - is helping students learn how to do knowledge work. Schools have been charged from their very beginning with helping students master the information landscape of their time. First that was oral - then it was written - and now it's… much more than that. Much more than that because we're seeing some tremendous changes in our information landscape, right?

1

ink on paper

v.

bits in the ether

Drop textbook, pull out smartphone!

1

expensive

v.

free or low cost

1

filter, then publish

v.

publish, then filter

1

consumption

v.

creation

1

experts only

v.

participatory

1

scarcity

v.

abundance

1

ownership

v.

sharing

1

slow to change

v.

real time

1

static

v.

interactive

1

limited reach

v.

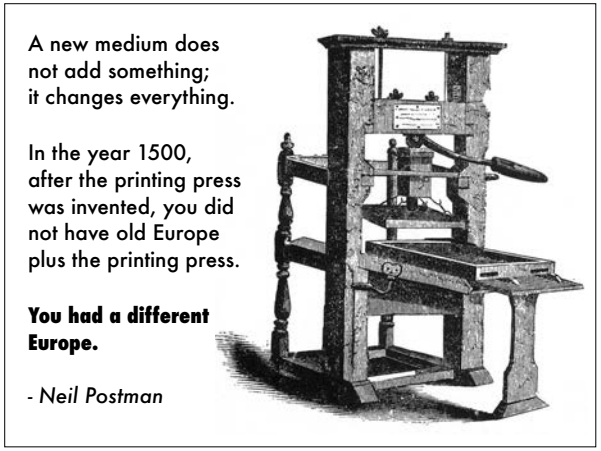
exponential reach

1

isolated

v.

hyperconnected

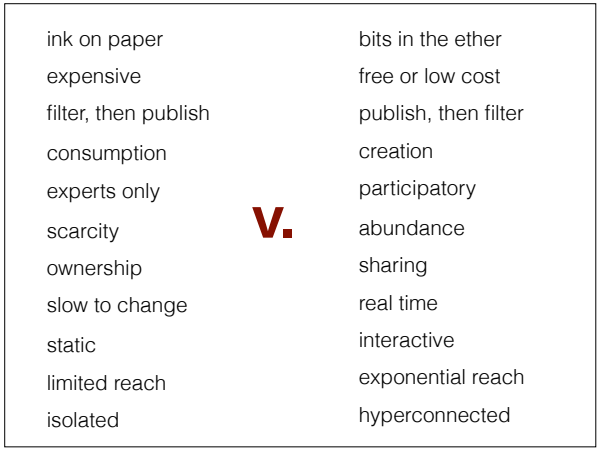


http://bi9he1w7hz8qbnm2zl0hd171.wpengine.netdna-cdn.com/wp-content/uploads/2014/08/benjamin-franklins-printing-press-science-source.jpg

Think about those big shifts in our information landscape that I just outlined for you. Now consider that in most schools…

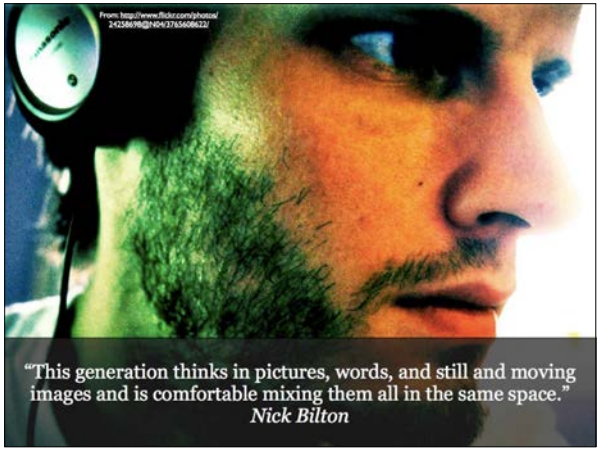

Students are often chastised
when they forget to bring pencils
while being punished for bringing devices.


Flickr CC http://flickr.com/photos/saschaaa/152502539
If you generally think of the Internet as a place to "look up stuff" you're missing the best part

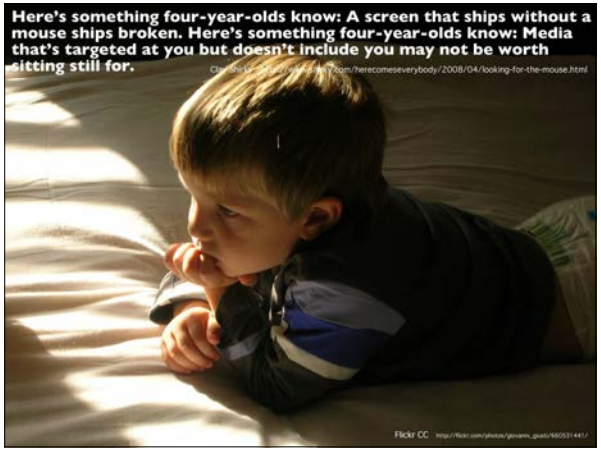


I think it's very hard to argue that schools are preparing students to master the things on the right hand side, the essential characteristics and shaping parameters of what it means to be information fluent today. And it's only going to get more challenging in the years ahead as these technologies continue to accelerate and permeate all that we do.

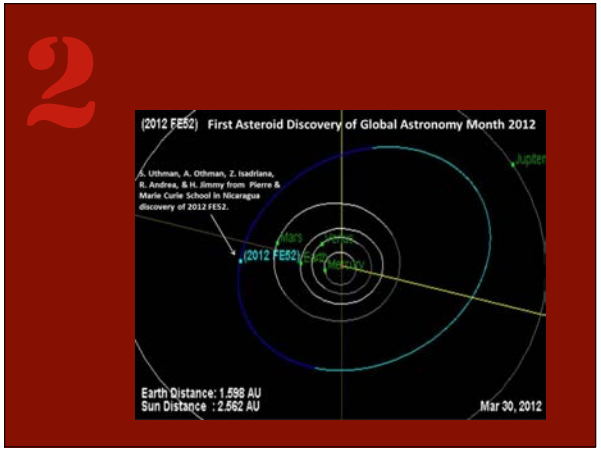
2 New forms of learning



Think back to those empowered youth I described who were using technology in interesting and powerful ways at home. Wouldn't it be great if we saw more of that kind of creative, self-directed work at school? It's not the kids that are the hold-up. Kids these days are very comfortable in our tech-infused environments. They've never known anything different. It's like the tale of the two fish. One says, 'how's the water?' and the other says 'what the heck is water?' For those of us who can remember when the news ONLY came on the doorstep or when our TV channel choices could be counted on one hand, the Internet is a place we go to…



What's exciting for me…

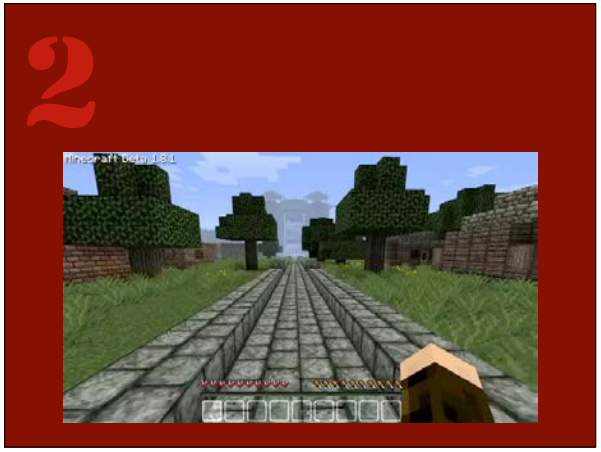


Students at Curie School in Nicaragua discovered a new asteroid in February 2012 and got to name it

Institutional collaboration with International Astronomical Search Collaboration (IASC) and they officially registered the asteroid after it was confirmed by the Harvard Minor Planet Center

http://www.eupmc.edu.ni

http://iasc.hsutx.edu



Ninch – middle

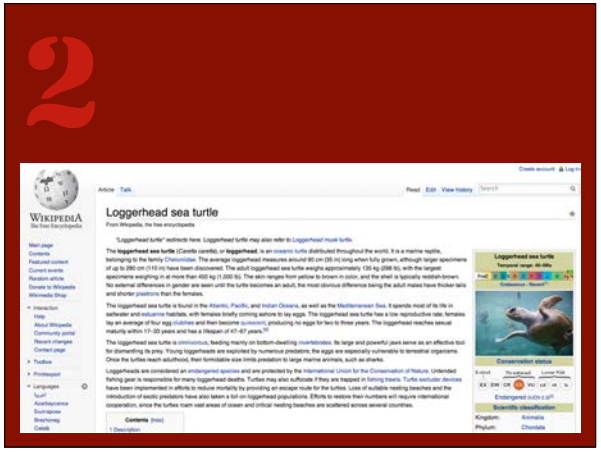
Geography and the History of the World class, Achieve Virtual Education Academy, Indiana

http://www.youtube.com/watch?v=At4XPKQlHjs

http://minecraftteacher.tumblr.com/post/11871350389/student-uses-minecraft-to-bring-history-to-life

http://forums.yogscast.com/showthread.php?27928-My-Minecraft-History-geography-Project!

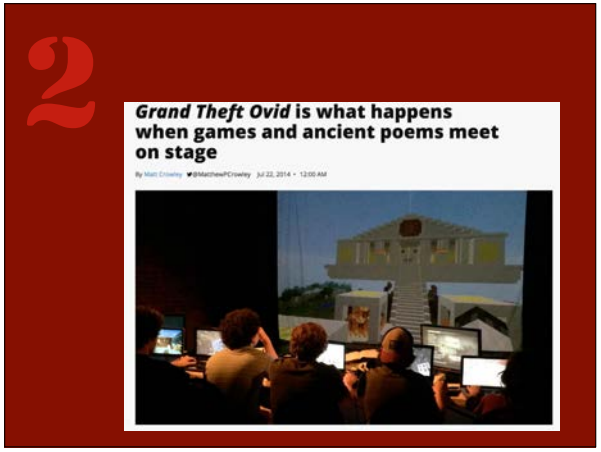
http://thatfergusonkid.imgur.com/minecraft_historygeogrphy_project



Timothy Hatfield, 17, North Carolina, AP Bio class - 476 edits – article receives featured status

http://en.wikipedia.org/wiki/Loggerhead_sea_turtle

http://blogs.kqed.org/mindshift/2011/11/students-contribute-to-wikipedia-content-and-credibility



Drama teacher Eddie Kim and his students at the Pierrepont School in Connecticut

Grand Theft Ovid, telling stories from Ovid's Metamorphoses by combining live acting, digital puppets, voiceovers, and video game scenes and performing them for live audiences at a local theater

2

Twitter in the kindergarten classroom - connecting classes in the U.S., Canada, Indonesia, and elsewhere

http://www.coetail.com/bsheridan/2011/05/15/twitter-in-the-kindergarten-classroom

http://www.emergingedtech.com/2011/04/inspiring-learning-outcomes-with-twitter-in-the-kindergarten-classroom

http://kindergartenaroundtheworld.blogspot.com/p/sign-ups-project-description-faq.html

Hole in the Wall project, Khajuraho, India

http://www.ulrikereinhard.com/wp-content/uploads/2012/04/hole-in-the-wall-wt-640x360.jpg

Hole in the Wall project, India

2

Hole in the Wall project, India

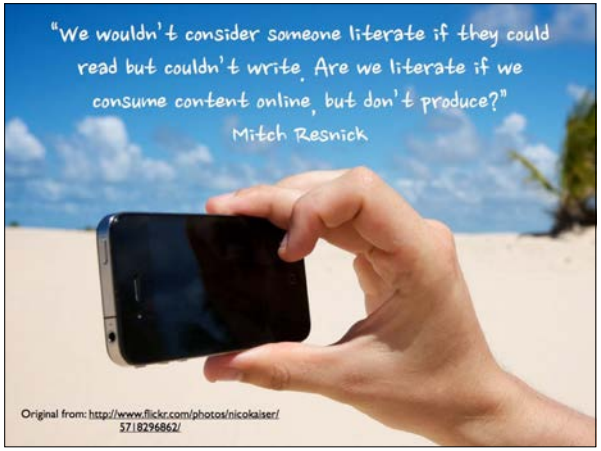
https://www.youtube.com/watch?v=dk60sYrU2RU

https://www.youtube.com/watch?v=9YzfeBjRbTw

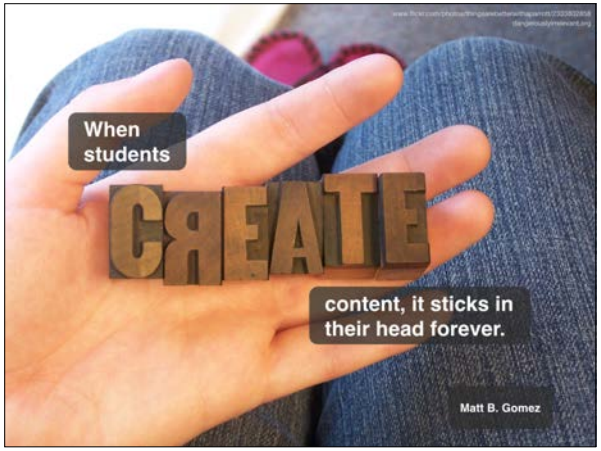
2

Poudre High School in Fort Collins

Geometry and Construction course



The common themes here are… creaction v. consumption (they're doing things and making things, not just sitting passively) and they're interacting with others to make meaning and do good work (not just regurgitating things in isolation for a quiz or test)


When students
CREATE
content, it sticks in their head forever.
Matt B. Gomez

The tools also allow for a variety of new learning modalities: time, place, path, pace

The smartest expert in the room… And it's not just outside experts.

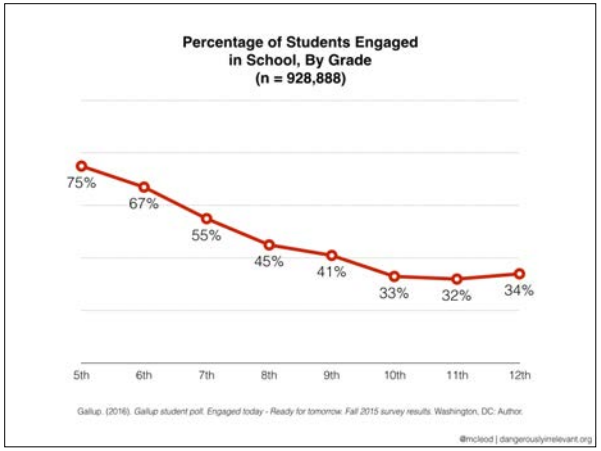
And what about those students in that other class somewhere with whom we could be learning and collaborating?

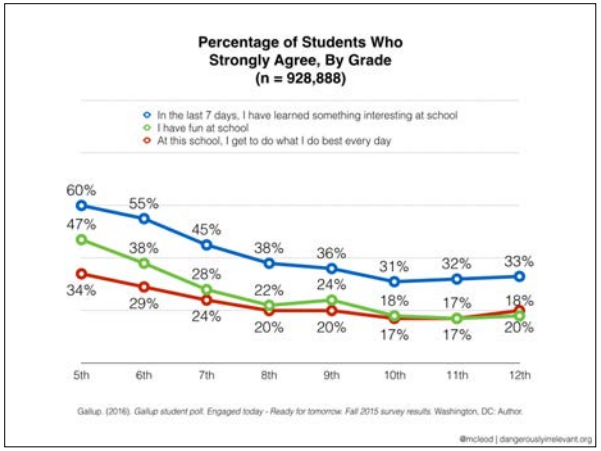
And how about that nonprofit or company that we could be working with to make a real impact on our community?

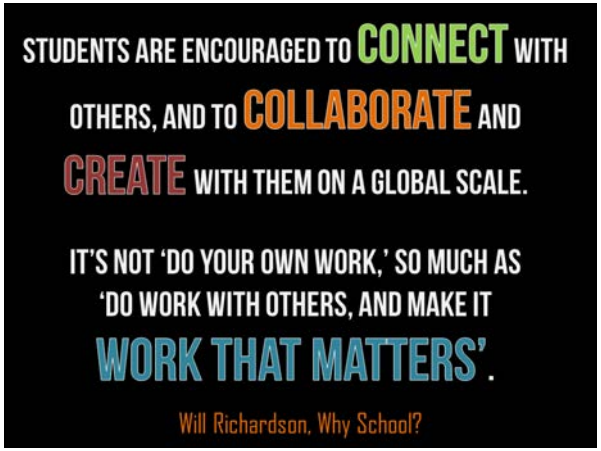
What do you think? Are your local schools preparing students for our new information landscape?

3 Student engagement

Now, just to pile on even further… Gallup poll… kids are bored out of their minds


Percentage of Students Engaged
in School, By Grade
(n = 928,888)
75%
67%
55%
45%
41%
33%
32%
34%
5th
6th
7th
8th
9th
10th
11th
12th
Gallup. (2016). Gallup student poll. Engaged today - Ready for tomorrow. Fall 2015 survey results. Washington, DC: Author.
@mcleod | dangerouslyirrelevant.org


Percentage of Students Who Strongly Agree, By Grade (n = 928,888)
In the last 7 days, I have learned something interesting at school
I have fun at school
At this school, I get to do what I do best every day
60%
55%
45%
38%
36%
31%
32%
33%
47%
38%
28%
22%
24%
18%
17%
18%
34%
29%
24%
20%
20%
17%
17%
20%
5th
6th
7th
8th
9th
10th
11th
12th
Gallup. (2016). Gallup student poll. Engaged today - Ready for tomorrow: Fall 2015 survey results. Washington, DC: Author.
@mcleod | dangerouslyirrelevant.org

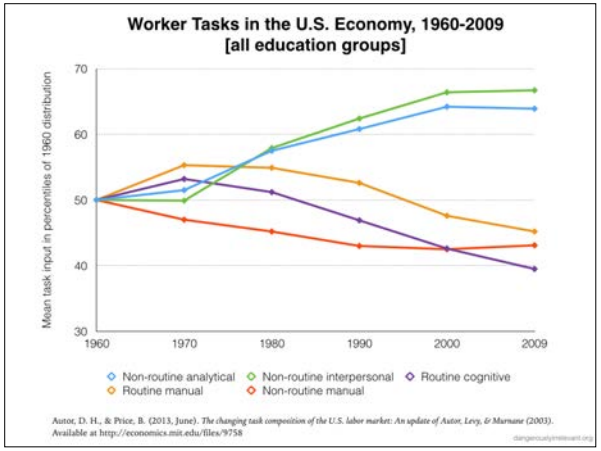


To sum up this section…

96

The longer we take to figure this out, the larger the relevance gaps are between what we're doing in school and what kids and society really need

4 Economy and workforce

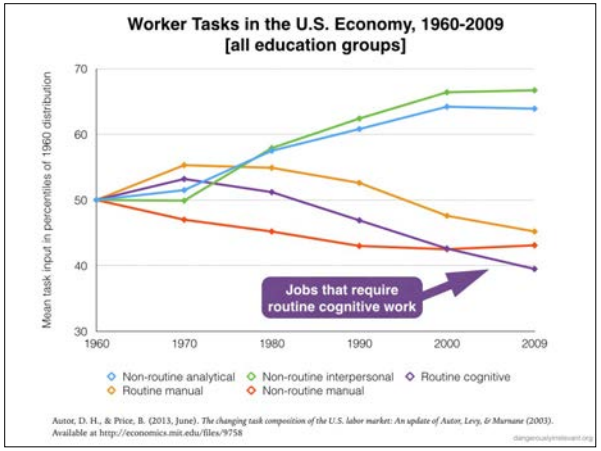


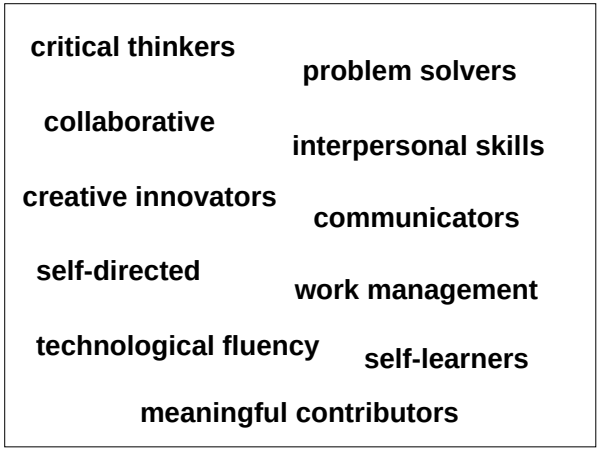
Routine manual tasks – activities like production and monitoring jobs performed on an assembly line; easily automated and often replaced by machines; picking, sorting, repetitive assembly (p. 2)

Non-routine manual tasks – activities that demand situational adaptability, visual and language recognition, and perhaps in-person interaction; require modest amounts of training; activities like driving a truck, cleaning a hotel room, or preparing a meal (pp. 2-3)

Routine mental tasks – activities that are sufficiently well-defined that they can be carried out by a less-educated worker in a developing country with minimal discretion; also increasingly replaced by computer software algorithms; activities like bookkeeping, clerical work, information processing and record-keeping (e.g., data entry), and repetitive customer service (pp. 1-2)

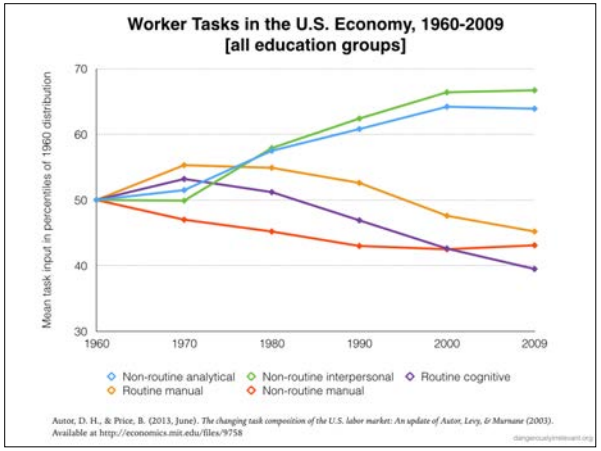
Non-routine mental tasks – activities that require problem-solving, intuition, persuasion, and creativity;


Worker Tasks in the U.S. Economy, 1960-2009
[all education groups]
Mean task input in percentiles of 1960 distribution
70
60
50
40
30
1960
1970
1980
1990
2000
2009
Jobs that require routine cognitive work
Non-routine analytical
Non-routine interpersonal
Routine cognitive
Routine manual
Non-routine manual
Autor, D. H., & Price, B. (2013, June). The changing task composition of the U.S. labor market: An update of Autor, Levy, & Murnane (2003).
Available at http://economics.mit.edu/files/9758
dangerouslyirrelevant.org


critical thinkers
problem solvers
collaborative
interpersonal skills
creative innovators
communicators
self-directed
work management
technological fluency
self-learners
meaningful contributors

80 to 85%

low-level mental work



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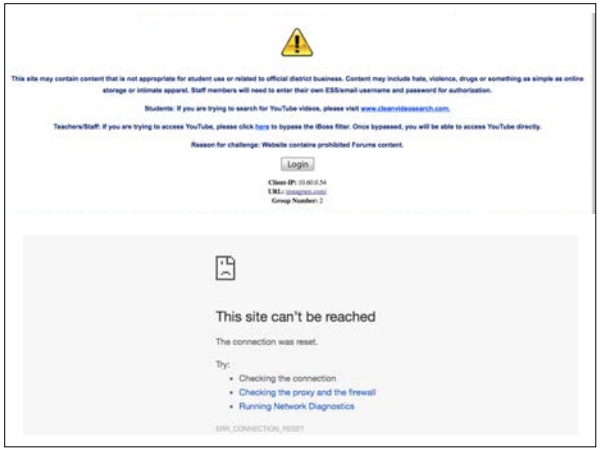
Non-routine mental tasks – activities that require problem-solving, intuition, persuasion, and creativity;

5 Innovation

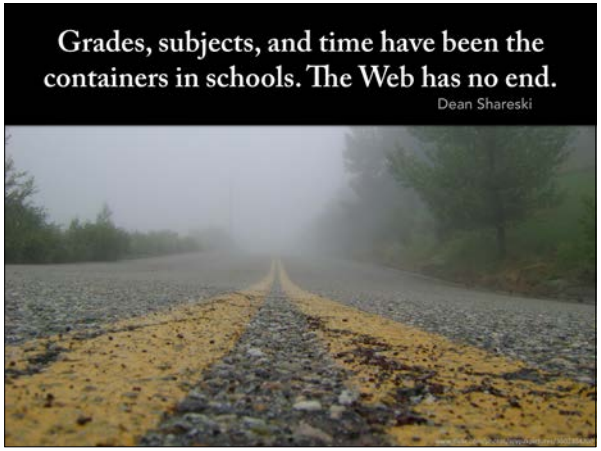

TECHNOLOGY
IS A
GIVEN
NOT A
DEBATE


The newest technology devices are providing options for innovation never before possible.


This site may contain content that is not appropriate for student use or related to official district business. Content may include hate, violence, drugs or something as simple as online storage or intimate apparel. Staff members will need to enter their own ESS/email username and password for authorization.
Students: If you are trying to search for YouTube videos, please visit www.clearvideosearch.com.
Teachers/Staff: If you are trying to access YouTube, please click here to bypass the iBoss filter. Once bypassed, you will be able to access YouTube directly.
Reason for challenge: Website contains prohibited Forums content.
Login
Client-IP:
URL:
Group Number: 2
This site can't be reached
The connection was reset.
Try:
Checking the connection
Checking the proxy and the firewall
Running Network Diagnostics
ERR_CONNECTION_RESET

Question asking will always take a back seat when **QUESTION ANSWERING** is the primary method of assessment in our schools.

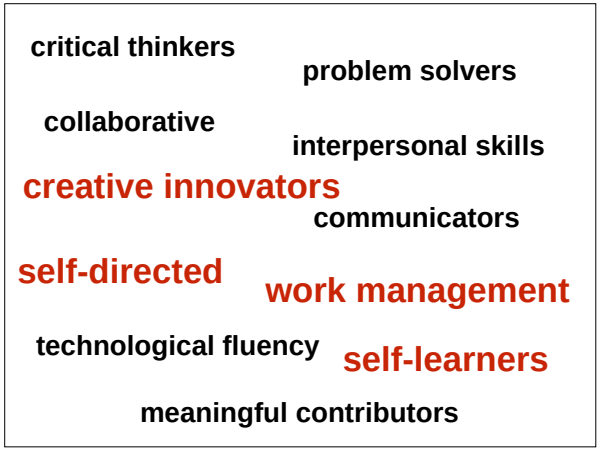
John T. Spencer


Grades, subjects, and time have been the containers in schools. The Web has no end.
Dean Shareski

Schools usually are nice places. The people there are friendly, most of them care about kids, they're trying to do right by the children and families that they serve, and they generally are trying to do their very best to meet the needs of individual students as well as society at large, often despite being underfunded, under-resourced, and underappreciated. In other words, they are making genuine and sincere attempts to prepare our youth for their futures. But it's hard to think of environments in which timely innovation takes more of a back seat. The old joke is that if Rip Van Winkle fell asleep 100 years ago and woke up today, he would be bewildered by all of the changes that have occurred until he walked into a classroom and felt instantly at home…

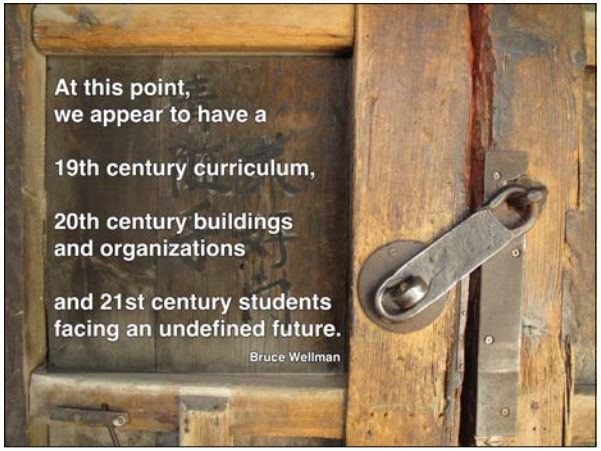
Instead of rethinking many of our basic assumptions about learning, teaching, and schooling, we continue to tweak the factory system. In many ways it's as if we're trying as hard as we can to do the wrong things even better. As my buddy Will Richardson says,

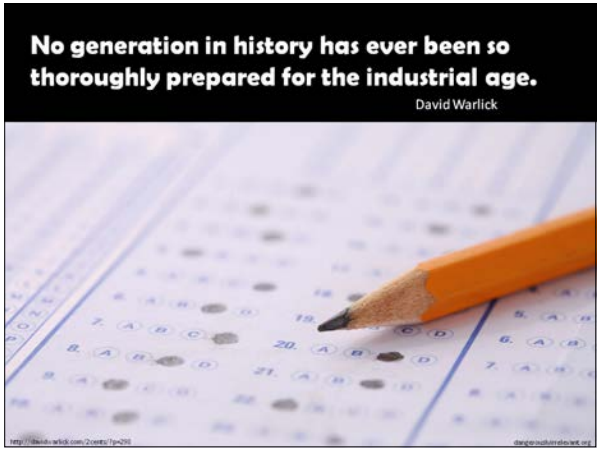
- Do kids learn better when we separate out the content into different subjects, or is it just easier for us?
- Do kids learn better in 50 or 90 minute blocks, or is it just easier for us?
- Do kids learn better when we have every one of them pretty much go through the same curriculum in the same way, or is it


critical thinkers
problem solvers
collaborative
interpersonal skills
creative innovators
communicators
self-directed
work management
technological fluency
self-learners
meaningful contributors

Compliance, control, discipline, punishment… the themes are heavy in almost any school you walk into. We tell kids in school what to do every minute of every day, despite all of the research that clearly shows that human dignity and control and agency and ownership are essential elements of motivation and learning. How is our overwhelming emphasis on compliance supposed to spark self direction? or engagement rather than boredom? or any kind of student agency that can help spark motivation to learn?

And it's just not technology… it's everywhere in the system.


At this point,
we appear to have a
19th century curriculum,
20th century buildings
and organizations
and 21st century students
facing an undefined future.
Bruce Wellman


No generation in history has ever been so thoroughly prepared for the industrial age.
David Warlick

6 Equity

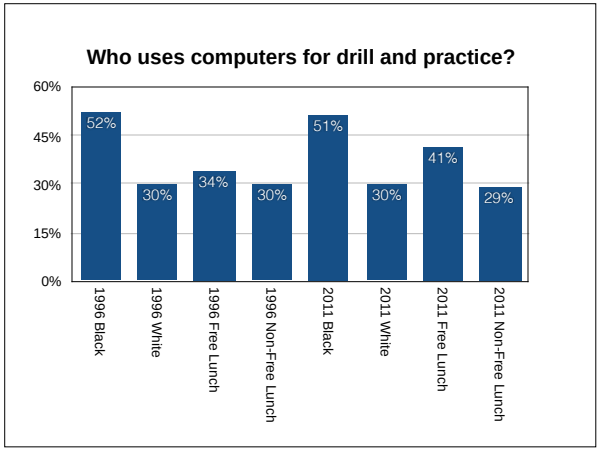
6 The digital divide

Next time you question whether one-to-one is relevant, count the number of devices you use in a day.

http://www.flickr.com/photos/wafer/5533140316/

6

access
v.
usage



"Students who are black, Hispanic, or low-income are more likely to use computers for drill and practice, whereas students who are white or high-income are more likely to use computers for simulations or authentic applications"

http://gseweb.oit.uci.edu/person/warschauer_m/docs/tpdd.pdf

6

Who gets to control the computers?

6

Who gets opportunities to think, make, create, and contribute?

How are your local schools doing with student engagement? workforce preparation? innovation? equity?

7

Wrap-up

1 Information literacy

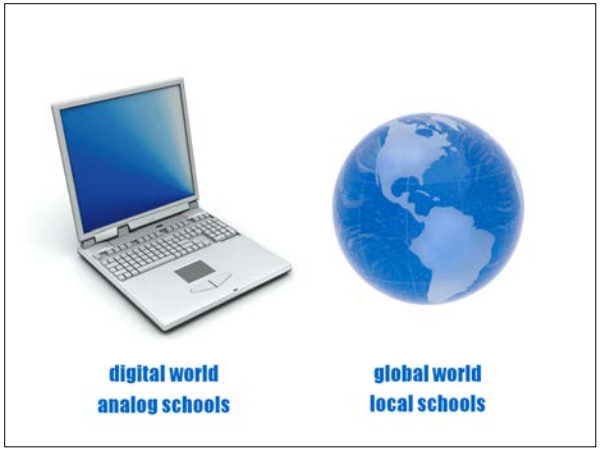
2 New forms of learning

3 Student engagement

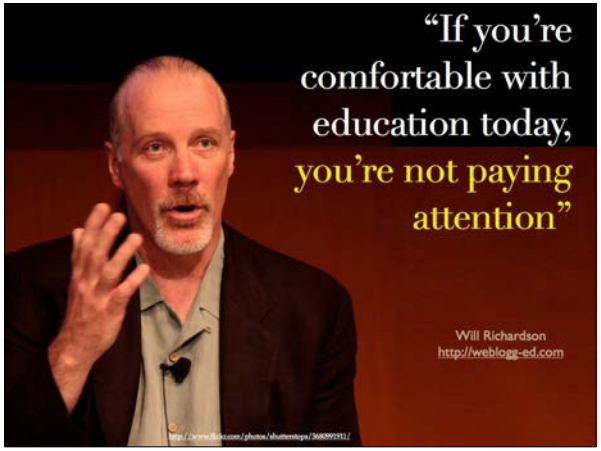
4 Economy and workforce

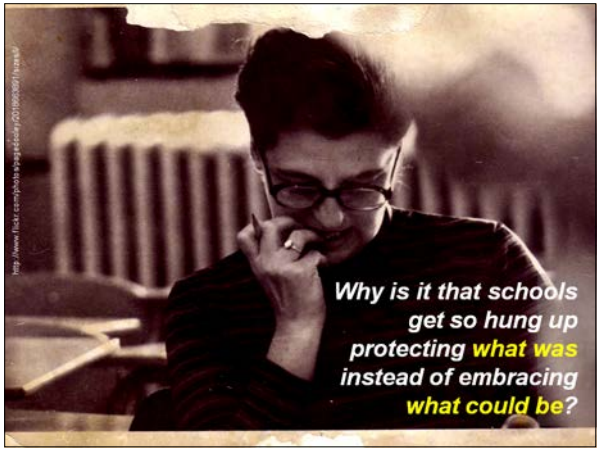
6 Equity

5 Innovation

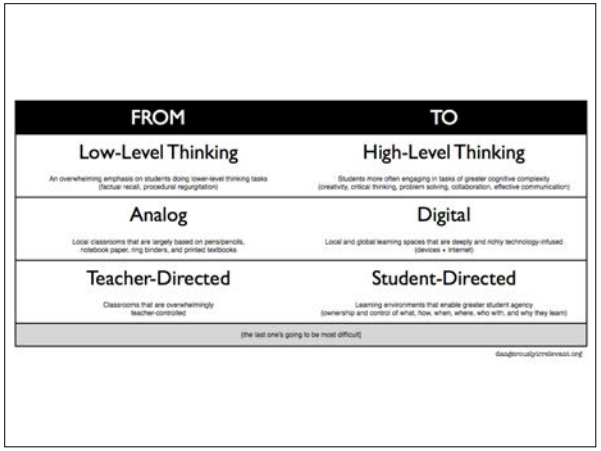


Meanwhile, the twin forces of technology and globalization march on, upending and transforming everything around us.

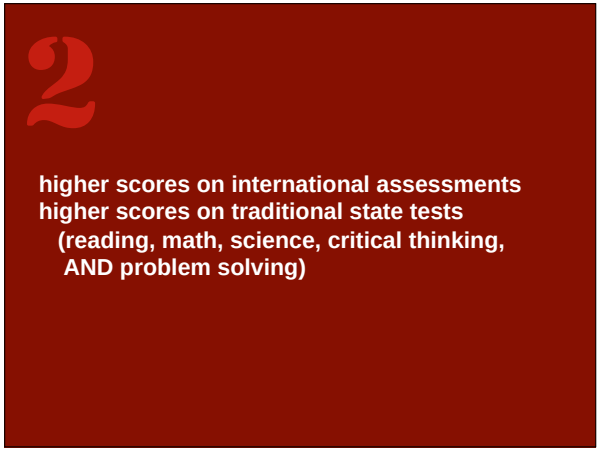

"If you're comfortable with education today, you're not paying attention"
Will Richardson
http://weblogg-ed.com



How long can schools continue to ignore these societal trends? How big are the relevance gaps going to get before we start moving in significant ways rather than just making tweaks?

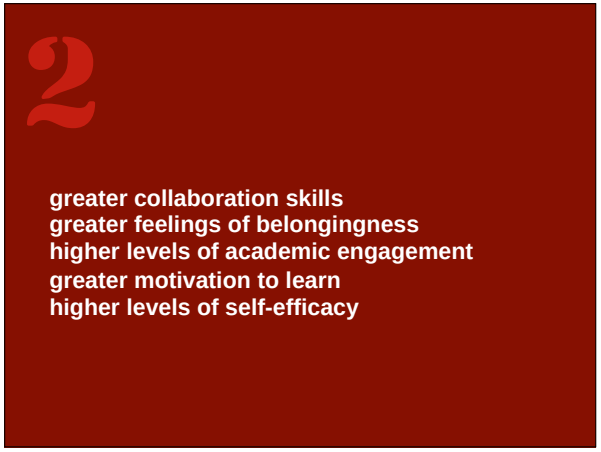


FROM	TO
Low-Level Thinking An overwhelming emphasis on students doing lower-level thinking tasks (factual recall, procedural regurgitation)	**High-Level Thinking** Students more often engaging in tasks of greater cognitive complexity (creativity, critical thinking, problem solving, collaboration, effective communication)
Analog Local classrooms that are largely based on pens/pencils, notebook paper, ring binders, and printed textbooks	**Digital** Local and global learning spaces that are deeply and richly technology-infused (devices + Internet)
Teacher-Directed Classrooms that are overwhelmingly teacher-controlled	**Student-Directed** Learning environments that enable greater student agency (ownership and control of what, how, when, where, who with, and why they learn)
(the last one's going to be most difficult)	



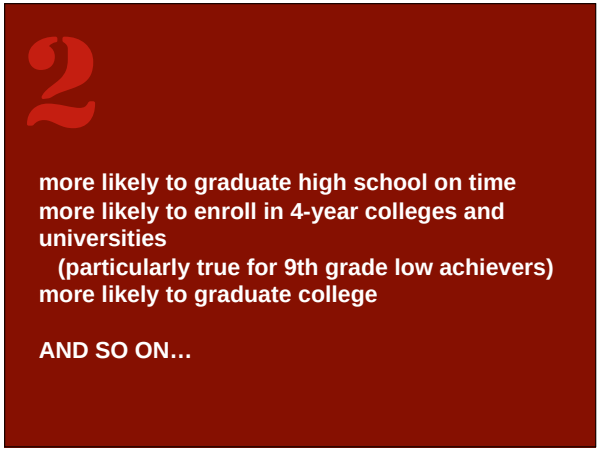
Research has proven repeatedly that deeper learning environments work. A recent comprehensive study by the American Institutes for Research, for example, found that students in school environments that focus on deeper thinking, student inquiry, and project-based learning outperform traditional public school students on international assessments of reading, math, and science core content, critical thinking, and complex problem-solving skills. They also outperform student peers on more-traditional state tests in math and English / Language Arts.

http://www.air.org/resource/evidence-deeper-learning-outcomes-3-3



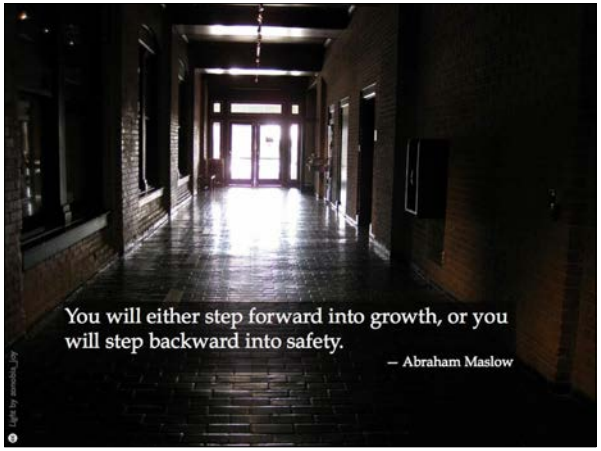
They also report greater collaboration skills and exhibit higher levels of academic engagement, motivation to learn, and self-efficacy.

http://www.air.org/resource/evidence-deeper-learning-outcomes-3-3



They also are more likely to graduate on time and more likely to enroll in four-year colleges and universities. These latter results are particularly true for students who enter high school with low achievement, which means that these schools are better at reclaiming lower-achieving youth and getting them back on track.

http://www.air.org/resource/evidence-deeper-learning-outcomes-3-3
http://www.newtechnetwork.org/sites/default/files/resources/2014ntnstudentoutcomesreport1.pdf
http://elschools.org/about-us/research-el
http://www.hightechhigh.org/about/results.php


You will either step forward into growth, or you will step backward into safety.
– Abraham Maslow

7

What kind of schools do we want?

7

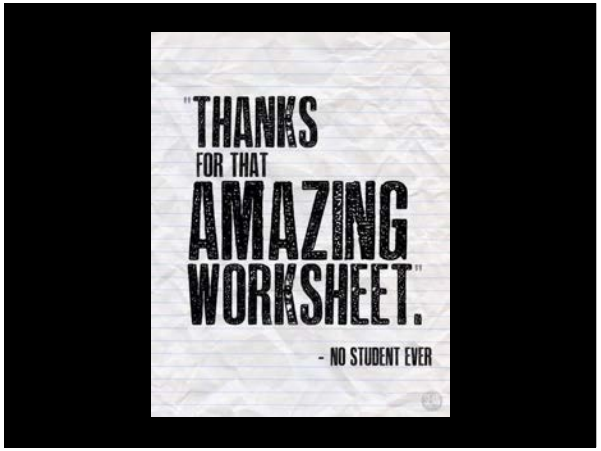
What are we willing to do to get them?

In our hearts we know that the best learning experiences are hands-on and applied, immersed in the real world

http://www.flickr.com/photos/edrethink/9053595589

We know that true, deep learning is rarely linear and is almost never neatly organized by chapters and sections

http://www.flickr.com/photos/edrethink/8253117849

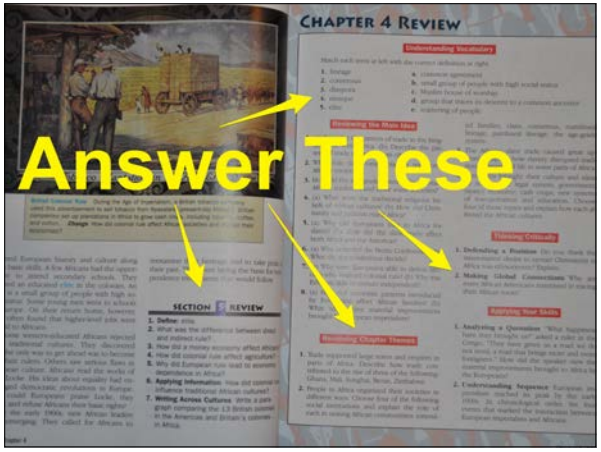


We know that authentic, powerful learning rarely takes the form of a worksheet, or end-of-chapter review problems, or a multiple choice quiz

http://www.edutopia.org/blog/teaching-history-outside-the-box-dan-carlin

Everyone is naturally interested in history. How could they not be? Oral historians for thousands of years have held audiences in the palm of their hands with this material. History is full of all the elements that make great entertainment: drama, romance, war, crime, and fascinating characters. Truth really is stranger than fiction.

We have to get past the ‘read this …

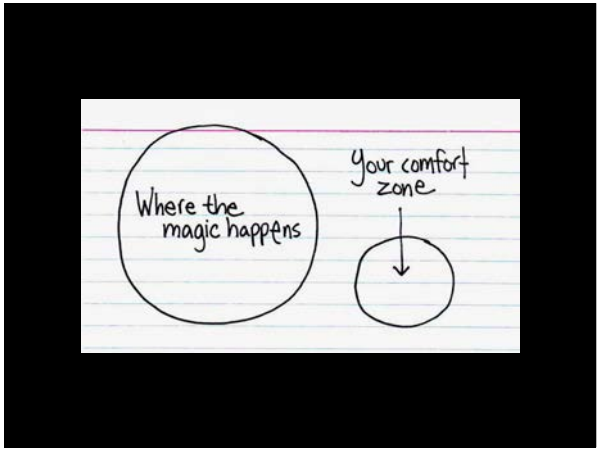


answer these' pedagogical model

145

We have to fall out of love with our own voices and enable those of our students instead

https://www.flickr.com/photos/bstern/14005572682



We've got to get out of our comfort zones

http://thisisindexed.com/2010/11/stretching-is-good-stuff

We can give kids wings

https://www.flickr.com/photos/21847073@N05/6082837815/

We can be extraordinary together

In other words, we have the ability to reclaim all of this if we so choose, and I think that's a goal worth working toward

http://www.pinterest.com/pin/491736853035622386

I hope you'll join me in this work. Thank you.

http://cheezburger.com/4811062528

http://www.pinterest.com/pin/188799409349121707

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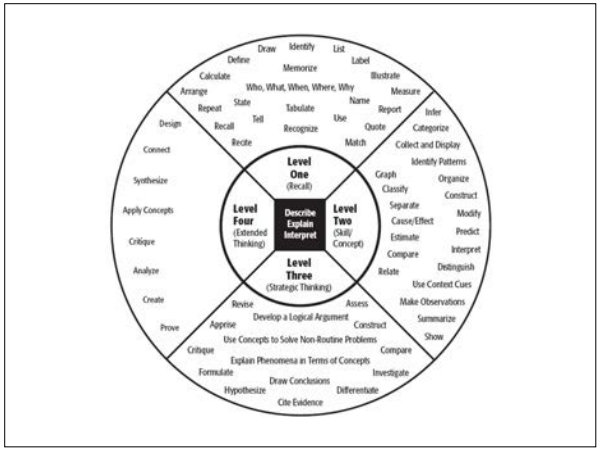
dangerouslyirrelevant.org
(click on Workshops)

Learn more about Dr. Scott McLeod

dangerouslyirrelevant.org/bio



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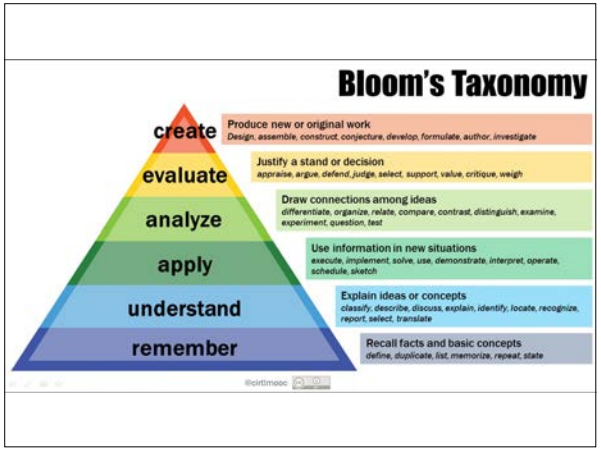
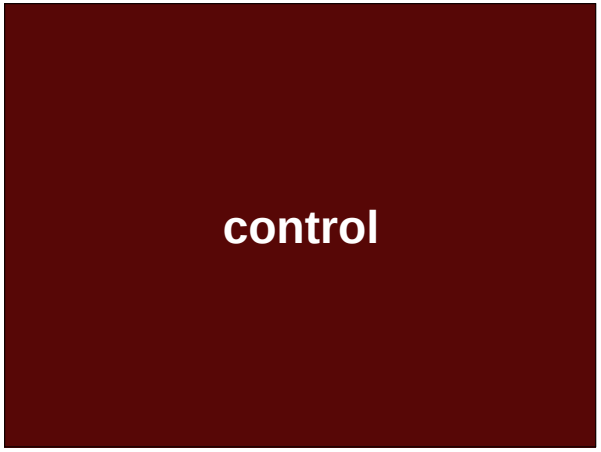


https://cft.vanderbilt.edu/wp-content/uploads/sites/59/Bloomtaxonomy.jpg

YES, BUT…

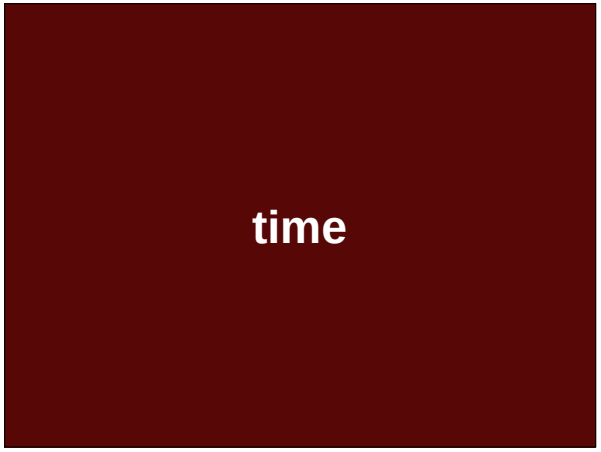

fear

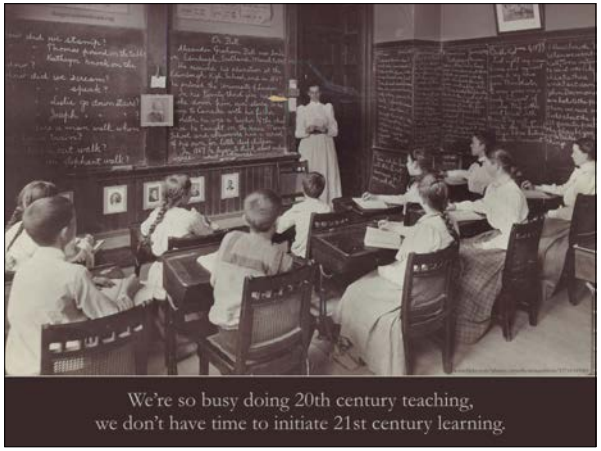

control

lack of knowledge

inertia

assumptions


time



No time, no time!

http://dangerouslyirrelevant.org/2014/10/weve-got-no-time-no-time-slide.html

permission

Feeling constrained

https://www.flickr.com/photos/brandondoran/6934155329/

When in actuality we have lots of room to run…

Still fences but…

https://www.flickr.com/photos/gord99/4487818284/

LOTS OF WAYS TO SAY

Yes, but…

Higher-level thinkers don't just magically emerge from low-level thinking spaces

Scott McLeod, dangerouslyirrelevant.org, @mcleod

Image credit: When did you last see Bobo?, Matt
https://www.flickr.com/photos/60852569@N00/233267622

SMALL CHUNKS OF TIME

Some Schools

Everywhere, USA

exploratories

quilting, anime, playing the guitar, reading science fiction, archery

20% time

genius hour

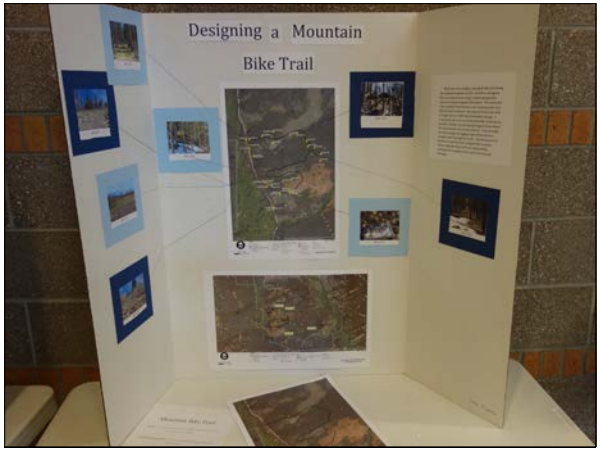
passion projects

I want to learn more about…

dinosaurs, knitting, Goth music, hydraulics so I can pimp my car, teach myself the piano…

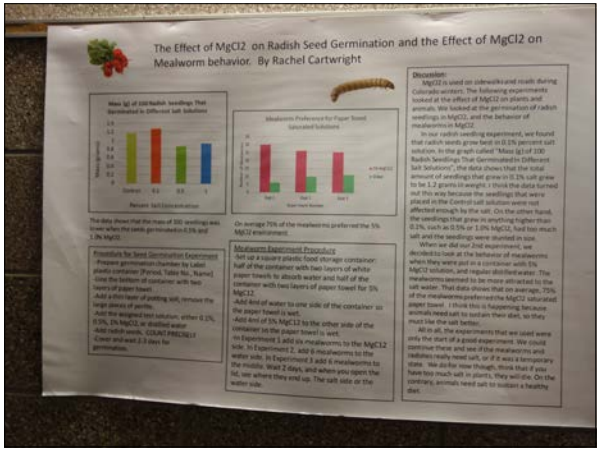
Poudre High
Preston Middle

Fort Collins, CO



172

Designing a mountain bike trail (high school project)



173

The effect of magnesium chloride on radish seed germination and mealworm behavior (middle school project)

174

Small house

J-Term (or May Term)

Spirit Lake High

Spirit Lake, IA

Luz, Cámara, Acción

Lean Engineering at Polaris

Haunted History of Iowa

Human/Animal Studies

Winter Recreation

a theatrical production in Spanish: Alice in Wonderland!

calculating cycle times using Yamazumi charts, learning about elemental spaghetti diagrams at the local snowmobile manufacturer, Polaris

using language arts and graphic design skills to create a website and map of the haunted history of Iowa

online course through the humane society about animal cruelty

public awareness campaign of winter recreation activities in their county

expanded to 9th grade academy

What do you think?

Could you do something like these?
Too scary? Too difficult?

What might these accomplish for you?

COURSE-LEVEL REDESIGN

Poudre High

Fort Collins, CO

180

Agricultural education

Culinary arts

Genius hour passion projects

181

Agricultural Ed class - passion projects plus group investigations

rabbit hair genetics

peaceful cows during slaughtering process

182

culinary arts - caters to district, outside world

183

raising funds for Fort Collins' 4th food truck

Geometry and Construction

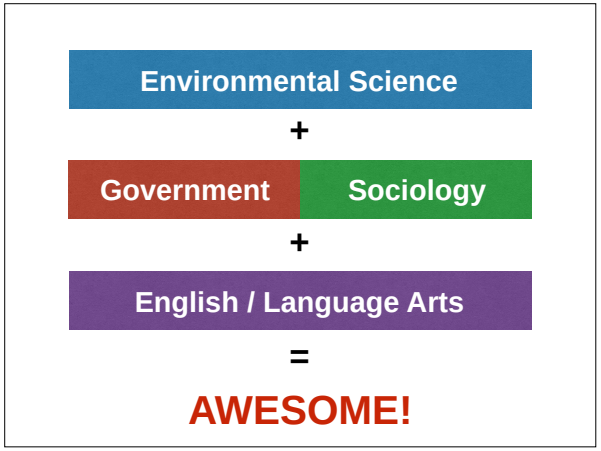
Ames High

Ames, IA

186

187

188



wading through marshes, looking for macro-invertebrates and rich soil

working with an award-winning filmmaker to create informational artworks that explain watersheds and the story of Iowa's water

talking with county naturalists, scientists, farmers, community activists, and civic leaders

tracking the lawsuit filed by the Des Moines Water Works against the upstream counties that are allowing farm chemical runoff into our state capital's water supply

at the end of the course students will be researching, designing, and conducting a community impact project of their own choosing

Iowa BIG

Cedar Rapids, IA

Example student projects include transforming the Bever Park Zoo into an interactive and educational urban farm, co-researching the evolution of grapes with the University of Northern Iowa, creating a one-handed keyboard for amputees, and redesigning Johnson Elementary School Magnet School. Other examples include development of a waterborne drone that measures plastic waste in oceans, designing arthritis-friendly utensils, creating a documentary of Linn County's first medical examiner, designing and testing an aquaponics system in North Africa, developing a recycling bin that tweets to the cloud what gets recycled, and initiating a young women's entrepreneurship community and conference.

Iowa BIG

Students spend part of day at local high school, the rest at Iowa BIG

Pool of community-created projects

- Student must choose
- Must be interdisciplinary
- Participatory, 3rd-party audience

Elective / core credits

192

Iowa BIG

Co-located with startup accelerator at former brownfield site of Iowa Steel plant

Students spend part of day at local high school, the rest at Iowa BIG

Pool of community-created projects

Student must choose

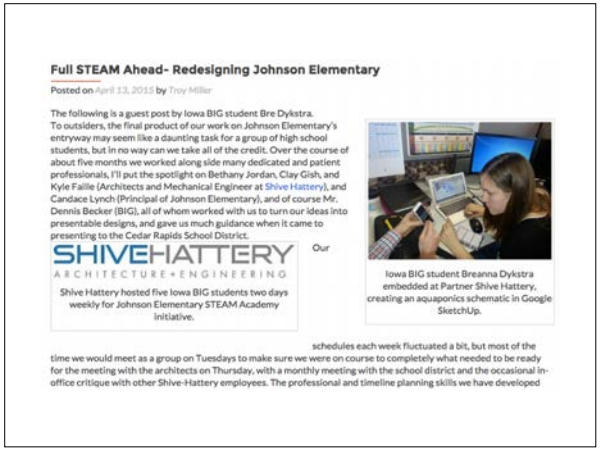
Must be interdisciplinary

Participatory, 3rd-party audience

Elective / core credits

Example student projects include transforming the Bever Park Zoo into an interactive and educational urban farm…

co-researching the evolution of grapes with the University of Northern Iowa…



Full STEAM Ahead- Redesigning Johnson Elementary

Posted on April 13, 2015 by Troy Miller

The following is a guest post by Iowa BIG student Bre Dykstra.
To outsiders, the final product of our work on Johnson Elementary's entryway may seem like a daunting task for a group of high school students, but in no way can we take all of the credit. Over the course of about five months we worked along side many dedicated and patient professionals, I'll put the spotlight on Bethany Jordan, Clay Gish, and Kyle Faille (Architects and Mechanical Engineer at Shive Hattery), and Candace Lynch (Principal of Johnson Elementary), and of course Mr. Dennis Becker (BIG), all of whom worked with us to turn our ideas into presentable designs, and gave us much guidance when it came to presenting to the Cedar Rapids School District.

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

Shive Hattery hosted five Iowa BIG students two days weekly for Johnson Elementary STEAM Academy initiative.

Our

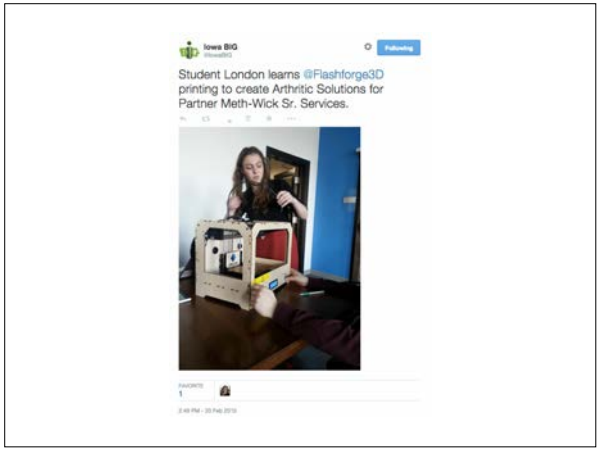
Iowa BIG student Breanna Dykstra embedded at Partner Shive Hattery, creating an aquaponics schematic in Google SketchUp.

schedules each week fluctuated a bit, but most of the time we would meet as a group on Tuesdays to make sure we were on course to completely what needed to be ready for the meeting with the architects on Thursday, with a monthly meeting with the school district and the occasional in-office critique with other Shive-Hattery employees. The professional and timeline planning skills we have developed

creating a one-handed keyboard for amputees, and redesigning Johnson Elementary Magnet School…

196

Other examples include development of a waterborne drone that will measure plastic waste in local waterways and the oceans…



designing arthritis-friendly utensils, creating a documentary of Linn County's first medical examiner…

designing and testing an aquaponics system in North Africa, and initiating a young women's entrepreneurship community and conference.

They hold hackathons

201

They build stuff and test it

They learn essential curriculum through hands-on work (and play)

203

They make and tinker and explore


Shawn Cornally
@ThinkThankThunk
Following
@IowaBIG student working on his wifi recycling bin that tells the cloud what you recycle.
RETWEETS
3
FAVORITES
10
3:25 PM - 23 Jan 2015

And they love it, right?

What do you think?

Could you do something like these?
Too scary? Too difficult?

What might these accomplish for you?

SCHOOL-LEVEL REDESIGN

New Tech High

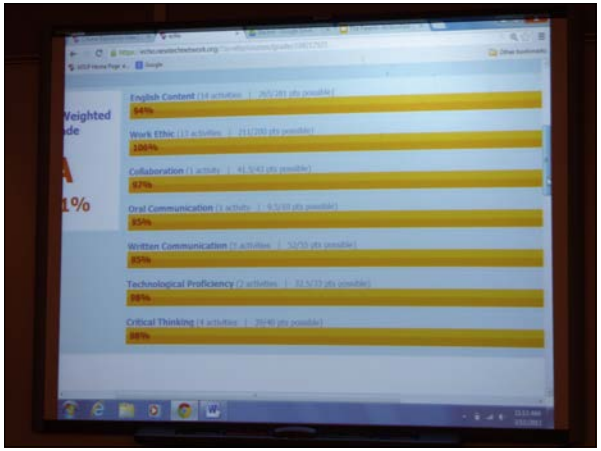
Sioux Falls, SD

Schoolwide Learning Outcomes

60% of project grade is content mastery

40% of project grade is SLOs (in varying proportions depending on project)

- work ethic
- collaboration
- oral communication
- written communication
- tech proficiency
- critical thinking


English Content
94%
Work Ethic
100%
Collaboration
97%
Oral Communication
95%
Written Communication
95%
Technological Proficiency
98%
Critical Thinking
88%

MUSE School

Los Angeles, CA

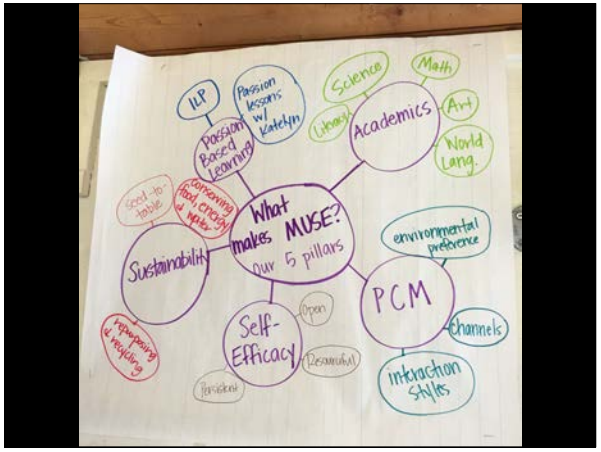
MUSE

Primarily early childhood through 4th grade

Incredibly strong emphasis on environmental sustainability

High levels of student agency, control, and ownership

Passion-, inquiry-, and project-based learning



Strong academics - using Common Core

A focus on sustainability

Passion-based learning

Self-efficacy

Process Communication Model (PCM)

213

214

Blending academics and passion-based learning


BAKING
CATS


BLUEPRINT
WHY...
HOW...
why do they have whiskers
CATS
Meyer
WHERE...
WHAT...
Tongue is
wrinkly so he can
comb his hair. - annabelle
They are small
Cats eat meat
They wash their
babies and hug themselves.
Cats have whiskers!


WHAT BEGINS AS AN INTEREST
MAY DEVELOP INTO A PASSION

New Village Girls Academy

Los Angeles, CA

New Village Girls Academy

110 girls in the only all-girls public school in California

100% live in conditions of poverty

Nearly 50% are parenting or pregnant

30% live with foster parents or in institutional foster homes

Many are English-language learners

Personal and family backgrounds of drug abuse, sexual abuse,
physical abuse, self-harm, incarceration, etc.

220

221

New Village helps its girls reclaim their lives and sends an incredible number on to college

Advisory-based relationship-building and supports

Complex, interdisciplinary, passion-based inquiry projects that require deeper thinking

Community-based internships (NOT free labor)

Mindfulness techniques to help girls re-center themselves amidst the chaos that surrounds them

Some essential questions

Should you go vegan?

Why do students drop out and what can we do about it?

How do subliminal messages control your mind?

How has torture evolved through time and impacted societies?

Can people's minds be changed through a movie?

What's the cost of being a celebrity?

Some internship locations

- AIDS Project L.A.
- ACLU
- Anthony Mongiello Photography
- Art of Yoga
- B Sweet Catering
- Bicycle Kitchen
- California Science Center
- Celebrity High Magazine
- Centro Latino for Literacy
- Charlton-Main Medical Clinic
- Computer Doctors
- East West Playhouse
- Epitaph Records
- Gay and Lesbian Center

Bicycle shop

ACLU

California Science Center

Some internship locations

- Good Shepherd Center for Homeless Women & Children
- Grace Hospice
- Harley Davidson of Glendale
- Hispanas Organized for Political Equality
- Hollywood Presbyterian Prenatal Clinic
- ILA Optometry
- Inner City Arts
- L.A. Dancefit
- L.A. Dogworks
- L.A. Youth Magazine
- Levitt & Quinn Family Law
- L.A. Police Department
- Los Angeles Public Libraries
- Matrushka Construction

Harley Davidson

Hospice

Law firm

LAPD

Some internship locations

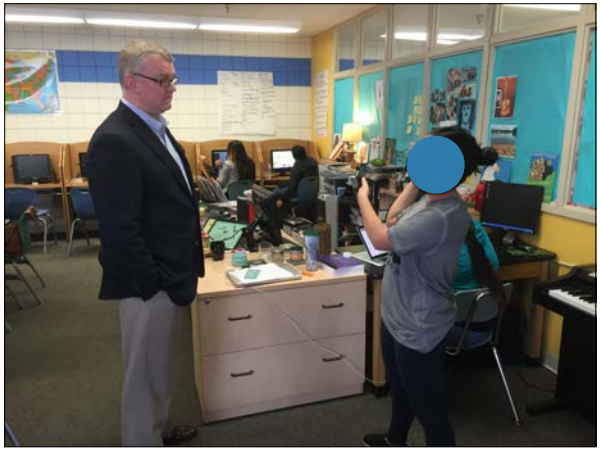
- Office of U.S. Senator Barbara Boxer
- Origami Vinyl
- Peace Over Violence
- PETA
- Prezi Income Tax
- Primrose Organics Salon and Boutique
- Reading Partners
- Rubbish Interiors
- Sante D'Or Animal Shelter
- St. Anne's Maternity Home, HR Department
- The Little Knittery
- The Lounge Theatre
- Van Nuys Self-Help Neighborhood Legal Services
- Youth Policy Institute

Knitting store

Income tax

Legal Services

U.S. Senator's office



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THE FAR END OF THE CONTINUUM

Discovery / Unlimited

Christchurch, New Zealand

230

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What do you think?

Could you do something like these?
Too scary? Too difficult?

What might these accomplish for you?

While we're saying it can't be done, someone else is out there doing it.

Why not us?!

If ever there was a place that could set a shining example for what a community and its schools can accomplish out of love for its children – let that be us, and let it be now.

- Jason Glass

http://dangerouslyirrelevant.org/resources/3-big-shifts-8-building-blocks-and-some-guiding-questions

1. From Low-Level Thinking to High-Level Thinking. From an overwhelming emphasis on students doing lower-level thinking tasks (factual recall, procedural regurgitation) to students more often engaging in tasks of greater cognitive complexity (creativity, critical thinking, problem solving, collaboration, effective communication).
2. From Analog to Digital. From local classrooms that are largely based on pens/pencils, notebook paper, ring binders, and printed textbooks to local and global learning spaces that are deeply and richly technology-infused (devices + Internet).
3. From Teacher-Directed to Student-Directed. From classrooms that are overwhelmingly teacher-controlled to learning environments that enable greater student agency (ownership and control of what, how, when, where, who with, and why they learn). THIS WILL BE HARDEST

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http://dangerouslyirrelevant.org/resources/3-big-shifts-8-building-blocks-and-some-guiding-questions

In order to make those 3 big shifts happen, there are 8 key building blocks that, at a very minimum, seem to be shaping the education systems of tomorrow (both P12 AND higher ed)

1. Project- and inquiry-based learning environments that emphasize greater student agency and active application of more cognitively-complex thinking, communication, and collaboration skills.
 - small projects, genius hour (20% time) & FedEx Days, J-Terms, g2 & Freshman Academy, Sioux Falls New Tech
2. Simulations and problem-based learning experiences that foster students' ability to engage in authentic, real-world work.
3. Competency-based education and standards-based grading efforts that shift the focus from seat time to learning mastery.
4. 1:1 computing initiatives (and concurrent Internet bandwidth upgrades) that give students powerful digital learning devices and access to the world's information, individuals, and organizations.
5. The expansion of digital and online (and often open access) information resources that increase the availability of higher and deeper learning opportunities.
6. Online communities of interest that supplement and augment more-traditional learning communities that are limited by geography and time.