Why Mathematically Proficient Students Will Rule The World

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EVANSTON TOWNSHIP HIGH SCHOOL · WILDKITS ·

CiC est 2009

VE RI TAS Harvard Graduate School of Education

Ukraine/Russia Conflict

General Motors Recall

Old meat supplied to McDonalds and KFC in China

Crisis on the Border

Israel/Gaza Conflict

Homicides in Chicago

Climate Change and Air Pollution

How to right/tow Costa Concordia

Making the salary cap work

Detroit Water Shut-offs

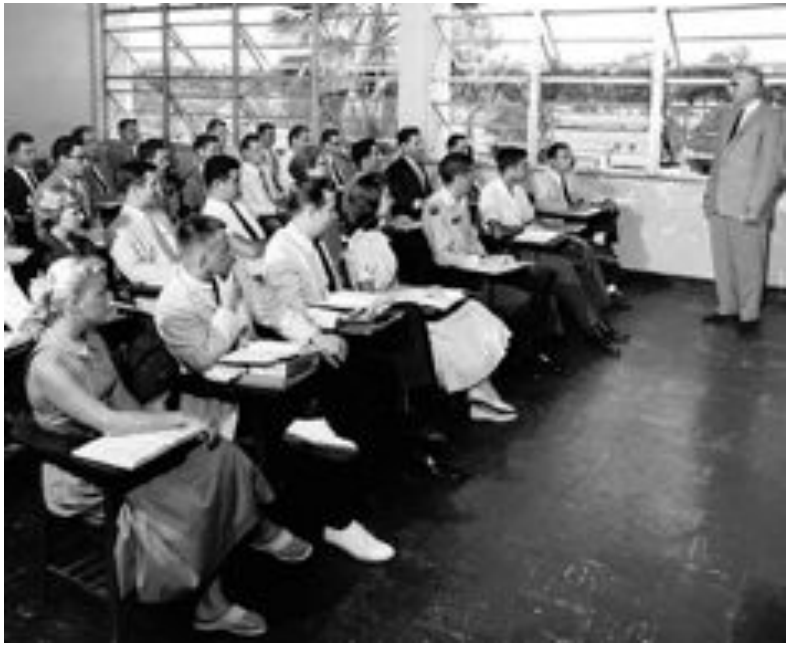
Malaysian Jet Crash

Wildfire in Washington

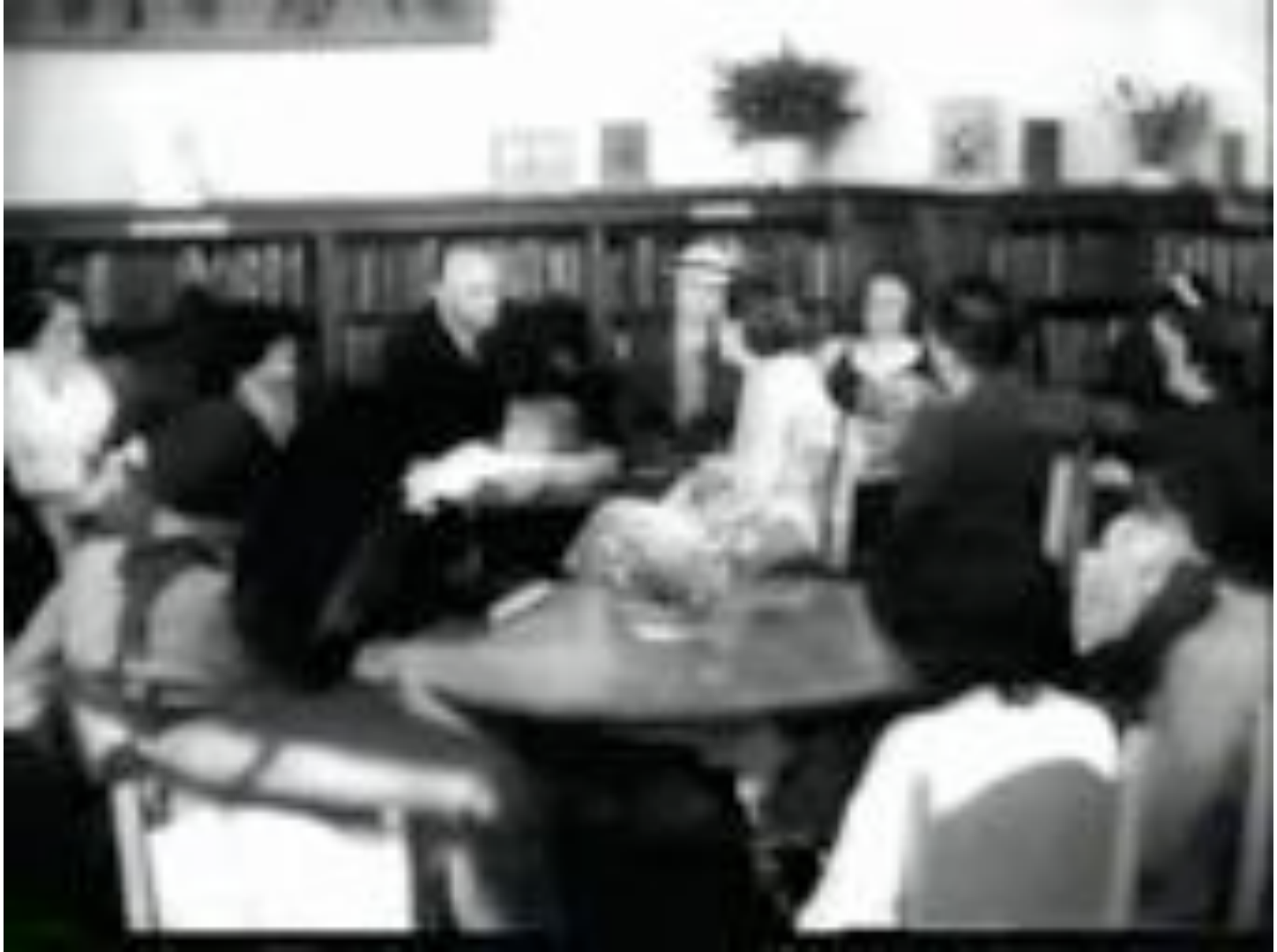
The World is Full of **Problems**.

We are in the business of making ***Problem Solvers***.

Learning **Environments** Matter



What kind of **environments** help students learn how to **solve problems?**



21st Century Survival Skills	Standards of Mathematical Practice
Effective oral and written communication	Construct viable arguments and critique the reasoning of others.
Assessing and analyzing information	Reason abstracting and quantitatively
Agility and adaptability	Use appropriate tools strategically
Critical thinking and problem solving	Make sense of problems and preserver in solving them

Collaboration across networks and Leading by influence

Initiative and Entrepreneurship

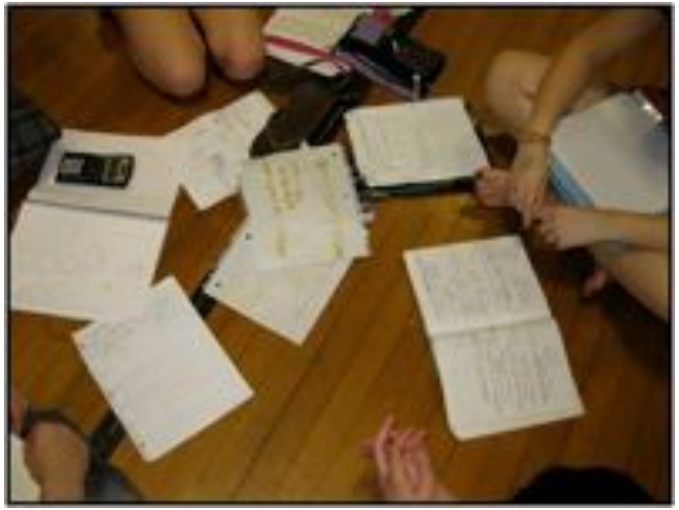
Curiosity and Imagination

Where do ***these*** fit in?

Three Examples

1. Ambitious
2. Stretch
3. Monday

Inflatables Project



Students struggle with ***the same challenges*** adults struggle with when they tackle these problems:

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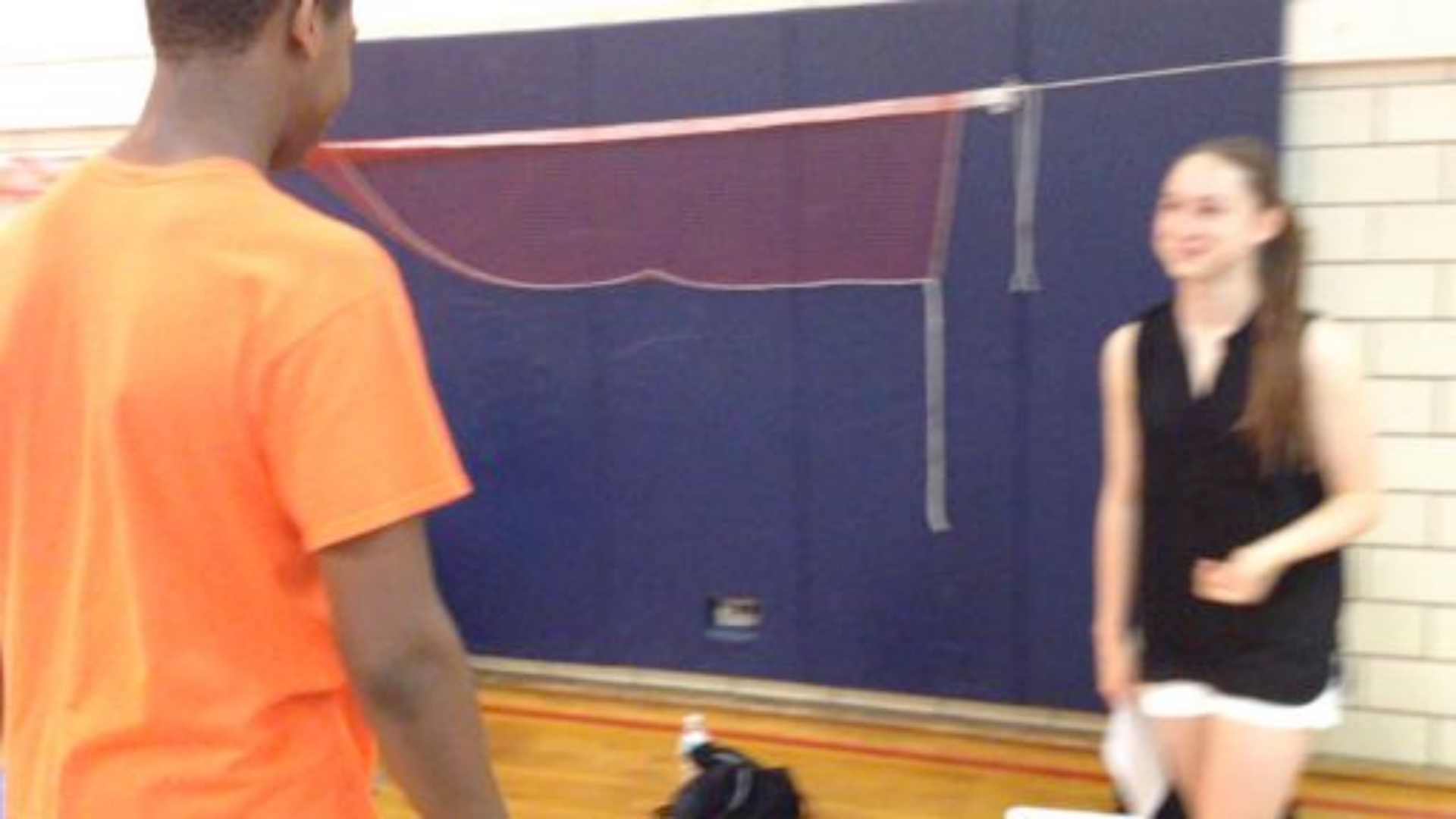
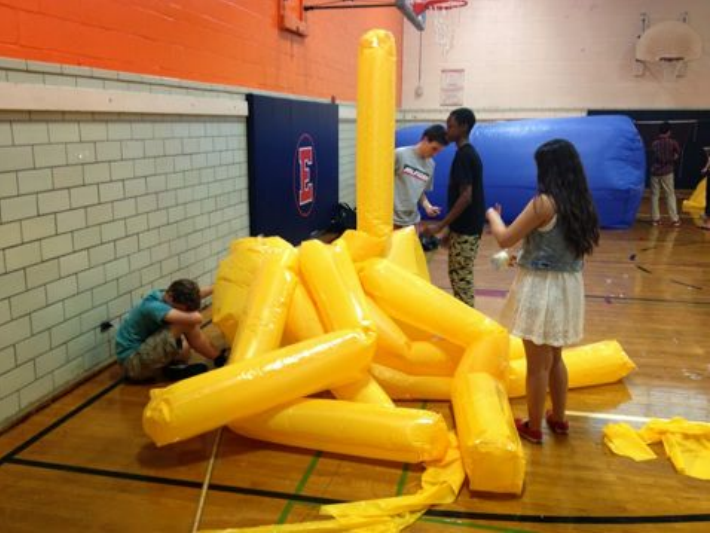
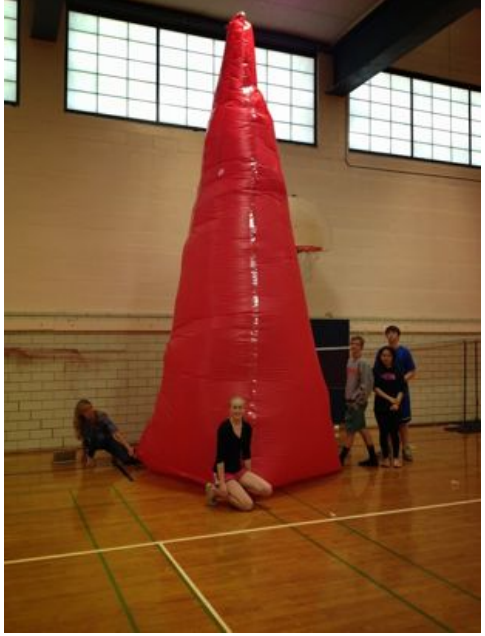
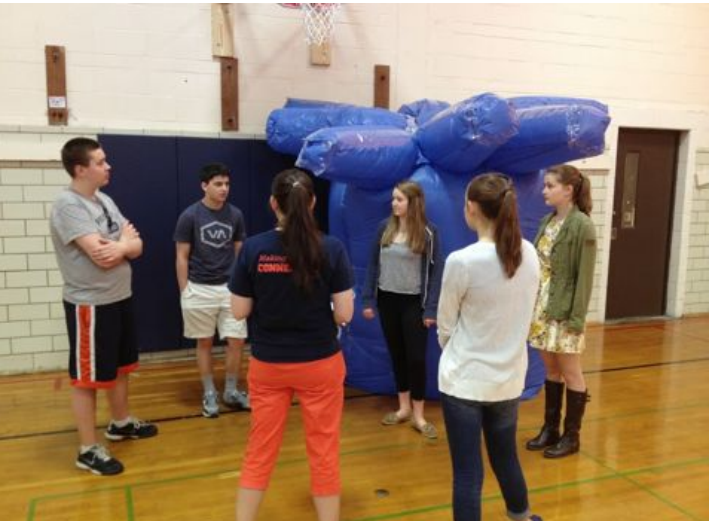
Teaching Students how to Solve Important Problems

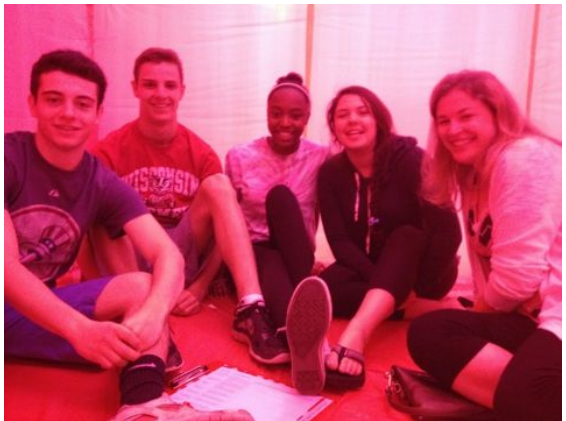
- Daily Progress Logs
- Group Roles
- Constant Feedback
- Accountability

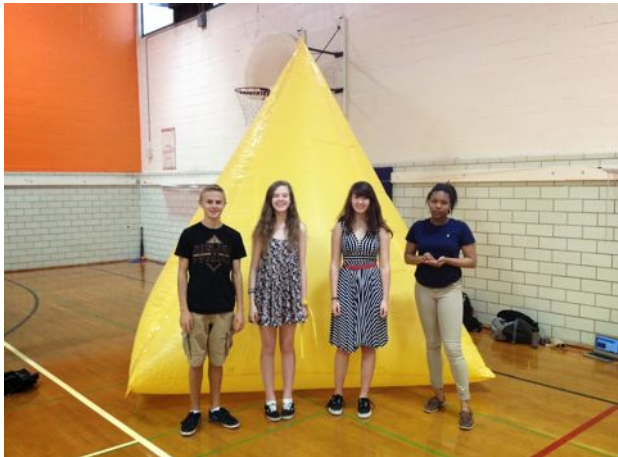


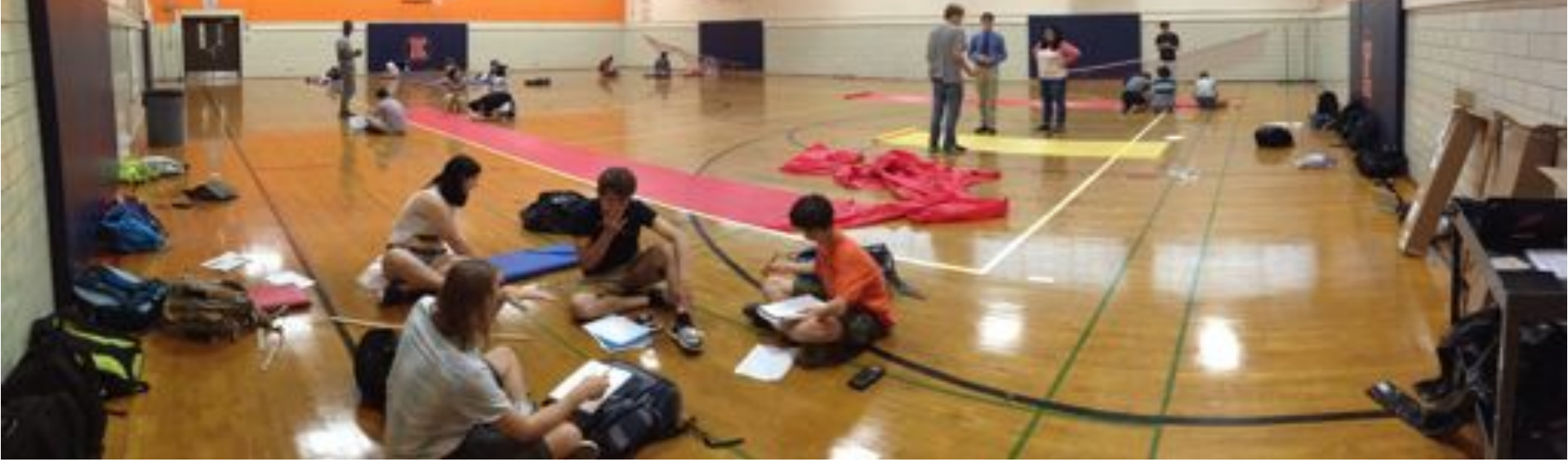












The Inflatables Project is a real world problem because the ***way*** students must work to complete the project mirrors the ***way*** they must work to solve problems in the real world.

MMn'M Inflatable Project

Search this site

Home | Design | Process | Analysis | Photos

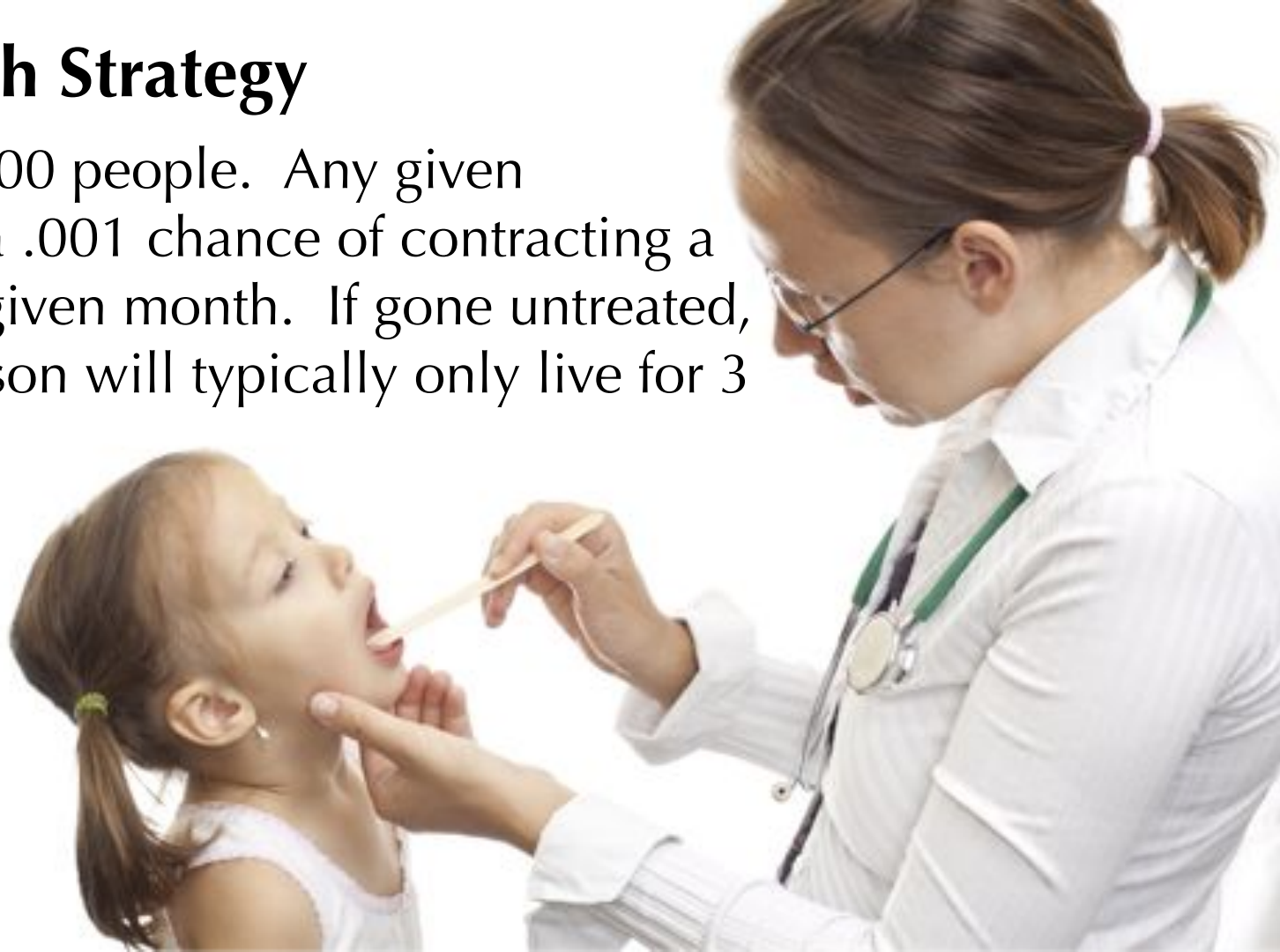
Home

Welcome to our Inflatable Project Website. Here you will see how we, Lauryn M., Maria M., Lia N., and Julius M., collaborated to create a large inflatable solid for Mr. Herrmann's 2014 7th period Geometry Class. We used skills and concepts learned during class mixed with our previous knowledge of design and creativity to compose this inflatable. Enjoy!

Photo by Nia Sims

Public Health Strategy

Rural city of 1000 people. Any given individual has a .001 chance of contracting a disease in any given month. If gone untreated, an infected person will typically only live for 3 months.



Public Health Strategy

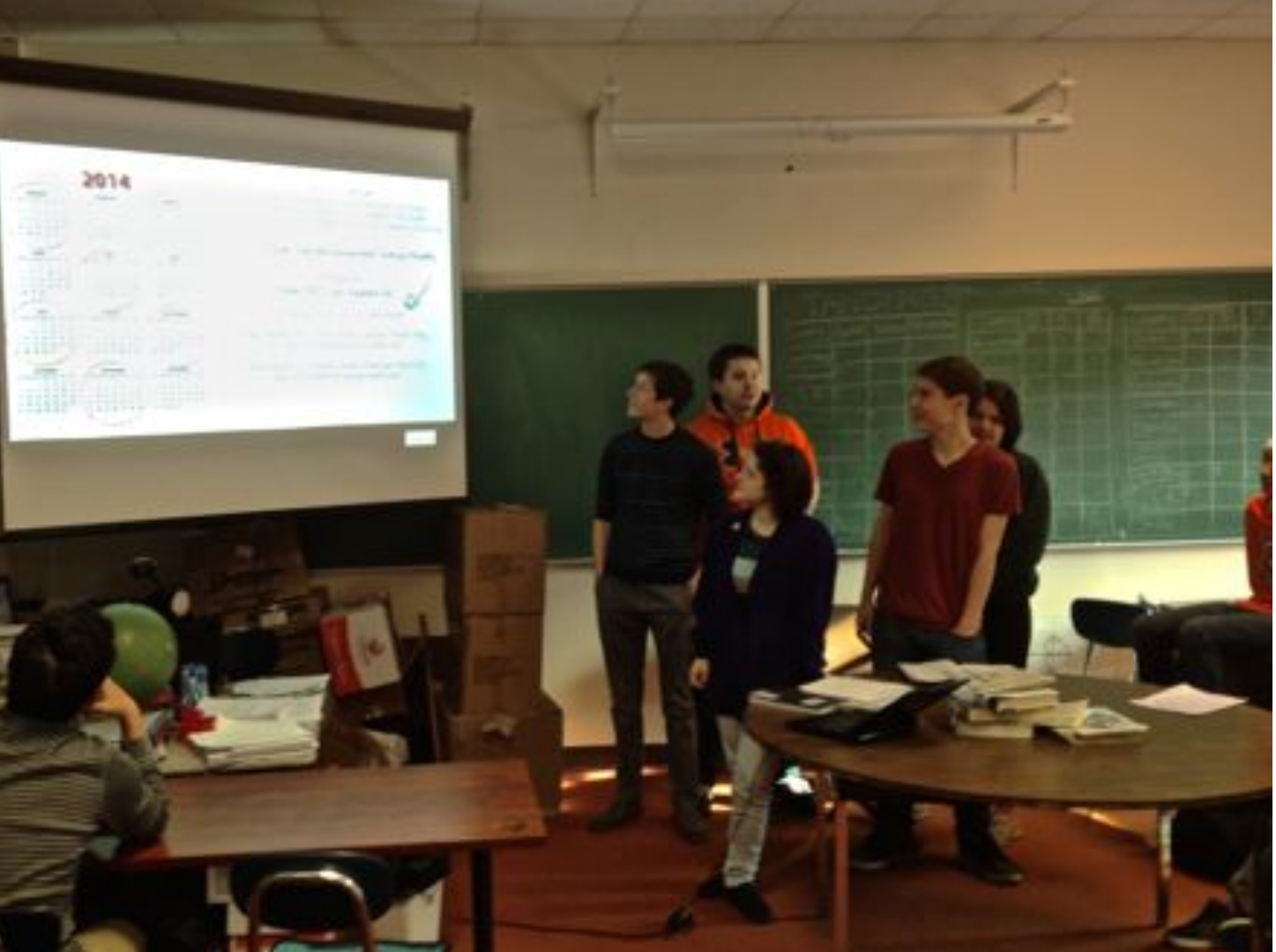
Test A: Detects disease 99% of the time. Falsely gives positive reading 2% of the time. Costs $50.

Test B: Detects disease 93% of the time. Falsely gives positive reading 30% of the time. Costs $15.

Treatment: If disease is caught within first month treatment is $500 and is 90% effective. But, if caught in the second month, treatment is only 85% effective and costs $1000.

You have $240,000 to implement a testing and treatment strategy.

“…include relevant probability calculations and expected values…mathematical justification for your procedures. How much is your plan expected to cost? How many lives is your plan expected to save? Sacrifice? Make your mathematical and ethical assumptions clear and explicit.”



Present and **defend** solution to the class

Which fits better:

A square peg in a round hole or a round peg in a square hole?

Credit: Tina Nocella

Authentic Learning Environment

"How do I do this?"

Teacher's Puzzles

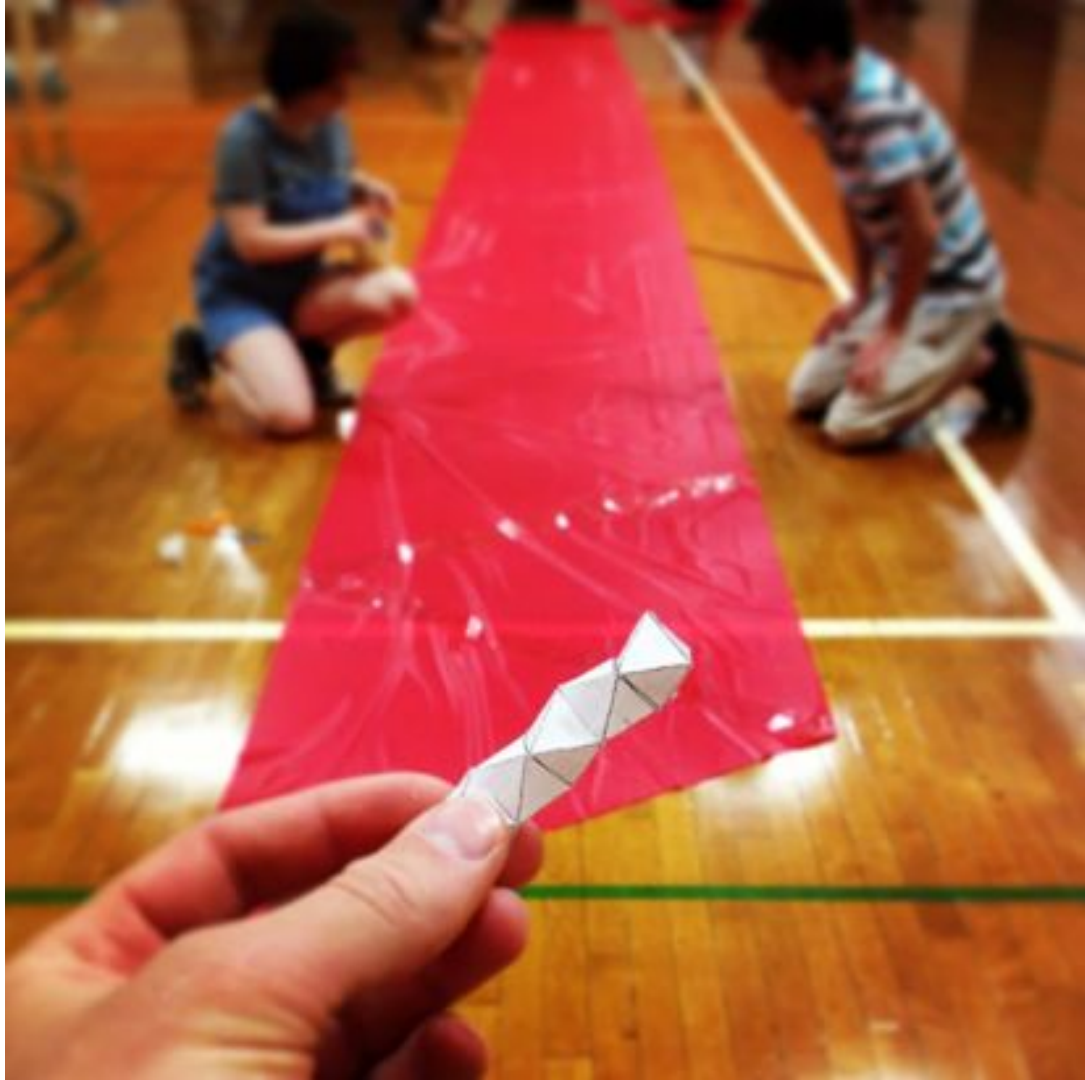
versus

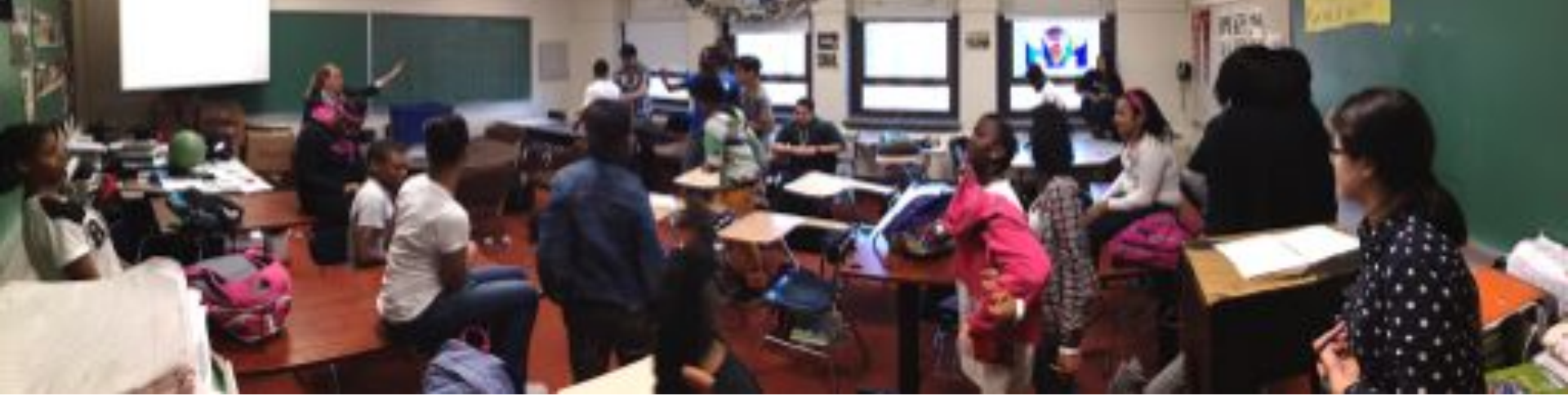
World's Problems

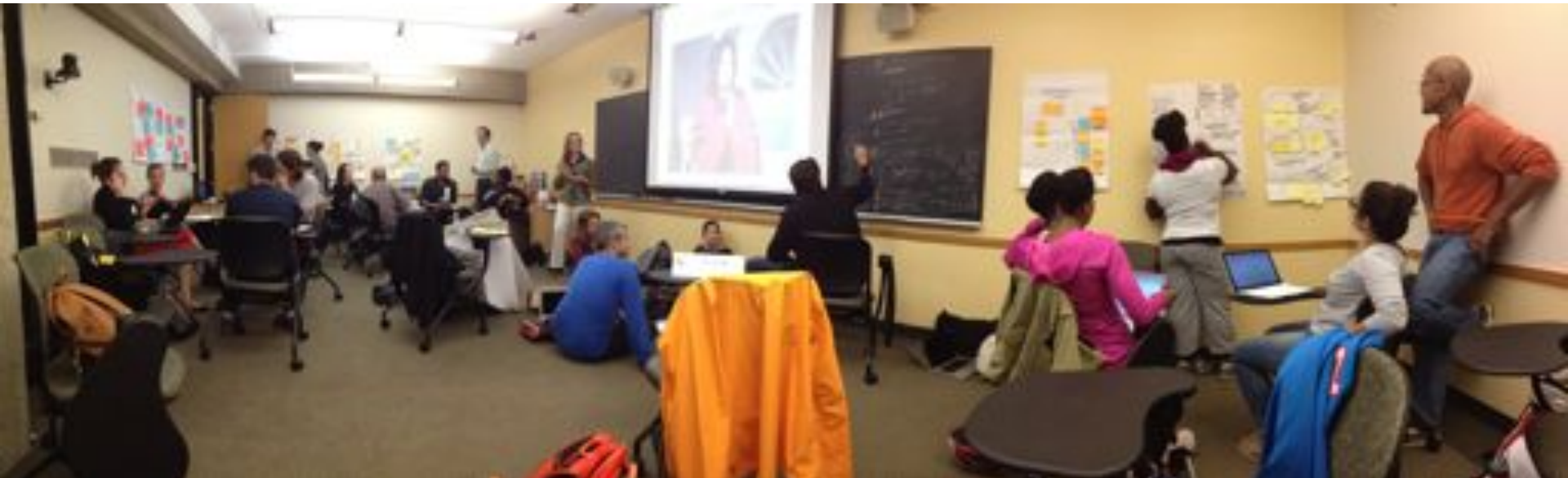
I don't know, what do you think?

I ***really*** don't know… Let's figure it out!

Non-routine, complex, interesting, important, require creativity, and have stakes…







Complex Instruction Consortium
ICTM Social

Tonight- 7PM - 9PM
Plantain Room

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