Meredith Cosier

Inventor and Teacher of ~~Visual Things~~ the Human Experience

- K-6 Art Specialist, Fairfax County Public Schools, VA
- Instructor, Smithsonian Associates Summer Program, DC
- Curriculum Designer, Currentlab : VCU Art Education, VA

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Work Smarter, Not Harder!
Pick up a nifty card and fancy resource pages.

"Just because it's hands-on doesn't mean it's minds-on."

-Grant Wiggins

CONSTRUCT ivisim/ionisim
MAKER EDUCATION
REGIO EMILIA APPROACH
COMPUTATIONAL THINKING
ENGINEERING DESIGN PROCESS
DESIGN THINKING
PROJECT BASED LEARNING

21st CENTURY SKILLS

(4 C's)
Critical Thinking
Communication
Collaboration
Creativity

Finding Ways to Replace Traditional Education

- Replacing "Understand and Communicate" with "Apply and Demonstrate"
- Assessing student abilities in addition to content
- Literacy and fluency expectations include technology
- Prep for unknown future careers

Important Umbrellas

ConsturctIVISM: Jean Piaget
Knowledge is constructed by combining experiences with prior knowledge.

ConstructIONISM: Seymour Papert
Knowledge is constructed by active engagement in meaningful activities using prior knowledge.

- Relationship between Passive and Active Learning

Maker Education

Building, making, prototyping, and manufacturing of ANYTHING with an emphasis on fabrication, engineering, and technology.

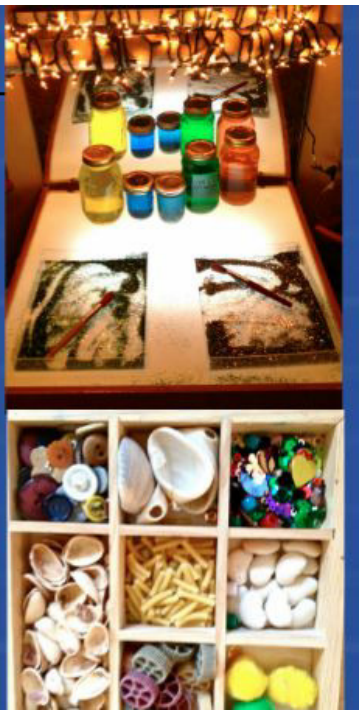
- Do-It-Yourself (DIY) culture of self-directed learning through experimentation
- Values collaboration, open source,community, and sharing resources

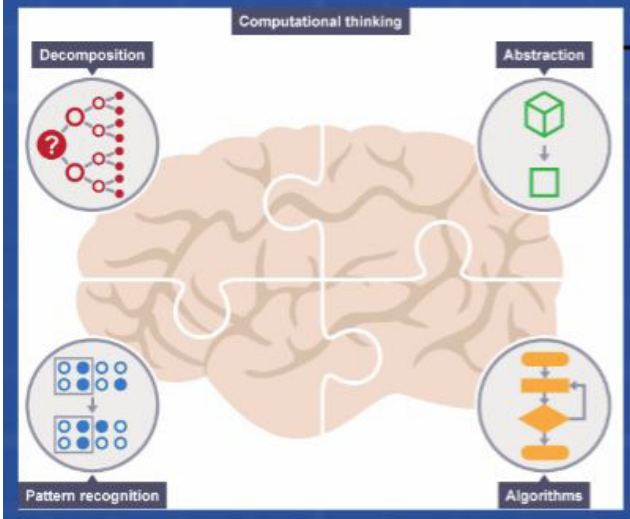
Reggio Emilia Approach

Preschool curriculum that is "child originated and teacher framed."

- Inquiry Based Education model
- Emphasis on open classroom design, nature, access to all material types, and repeated documentation of learning

Loris Malaguzzi, Reggio Emilia, Italy (1940's)





Computational Thinking

Problem solving process essential to computer science, but can be taught to develop problem solving skills across all disciplines.

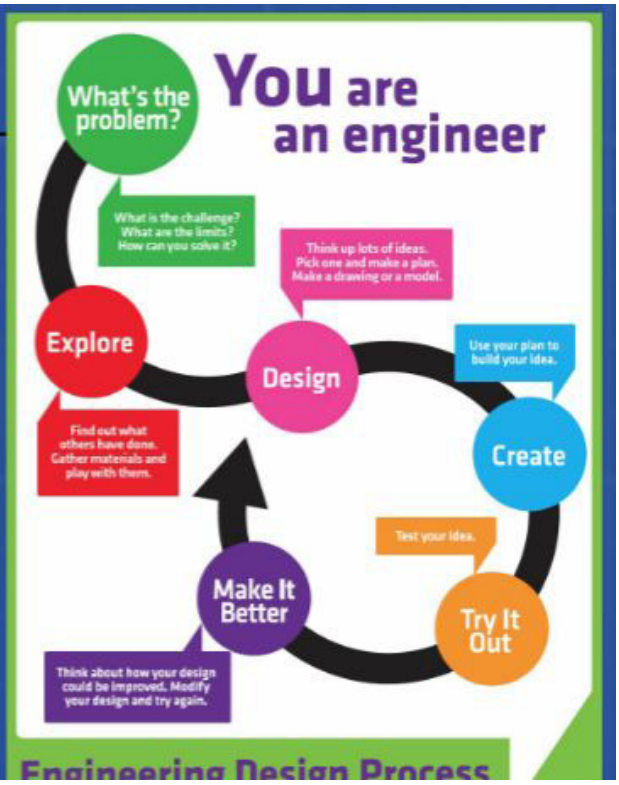
Mental processes and strategies:

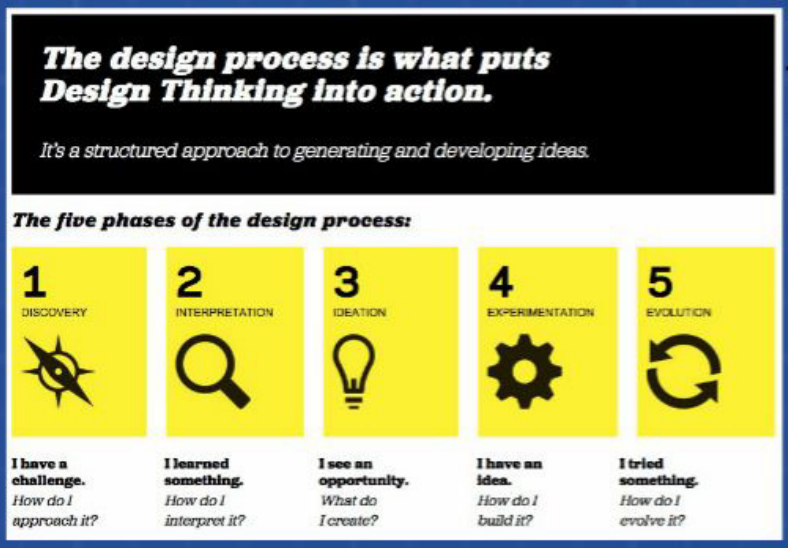
-Decomposition -Abstraction
-Algorithms -Pattern Recognition

Engineer Design Process

Iterative process that can be applied to most projects for a meaningful tangible product.

- Flexible model
- Students create connections between prior knowledge and documentation of learning



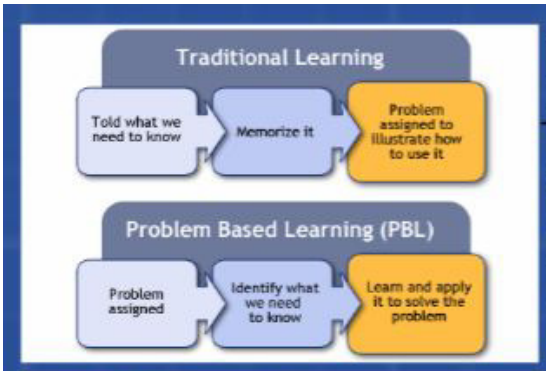


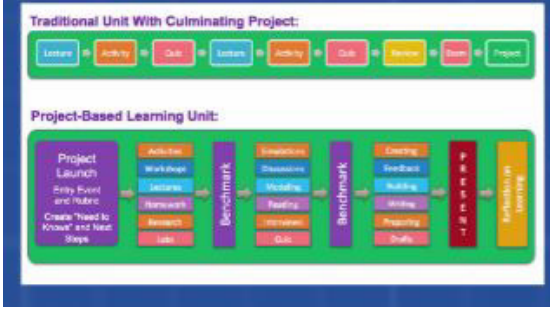
Design Thinking Process

Human centered design approach with focus on ideation and morphing ideas into active solutions for human concerns.

- Can be in conjunction with Engineering Design Process
- Structured approach with Free Teacher Education Toolkits available from IDEO

Rolf Faste, Professor Design School at Standford
David Kelley, IDEO Founder and Faste's Collegue



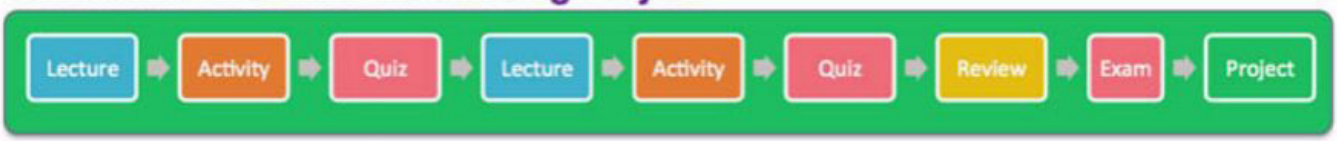


Project or Problem Based Learning (PBL)

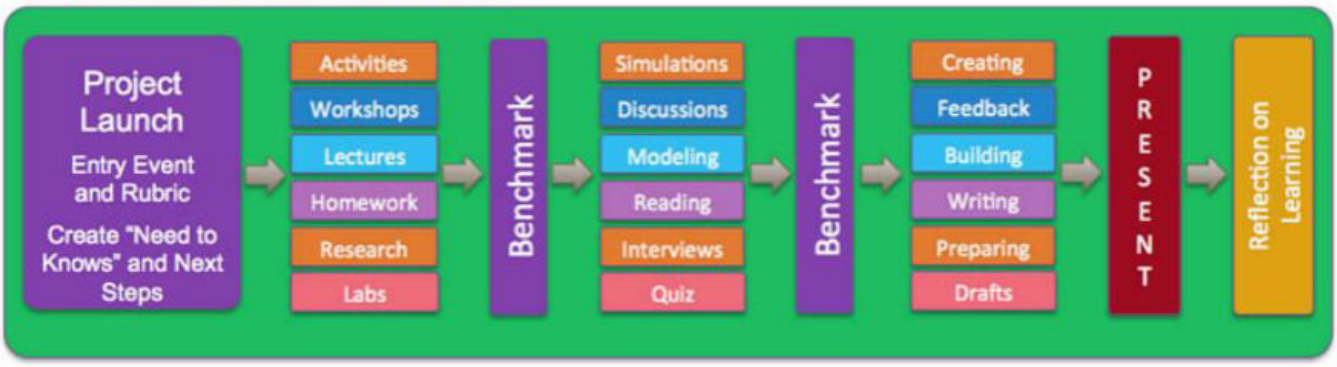
Starts with a problem or driving question and develops a solution through active research and engagement.

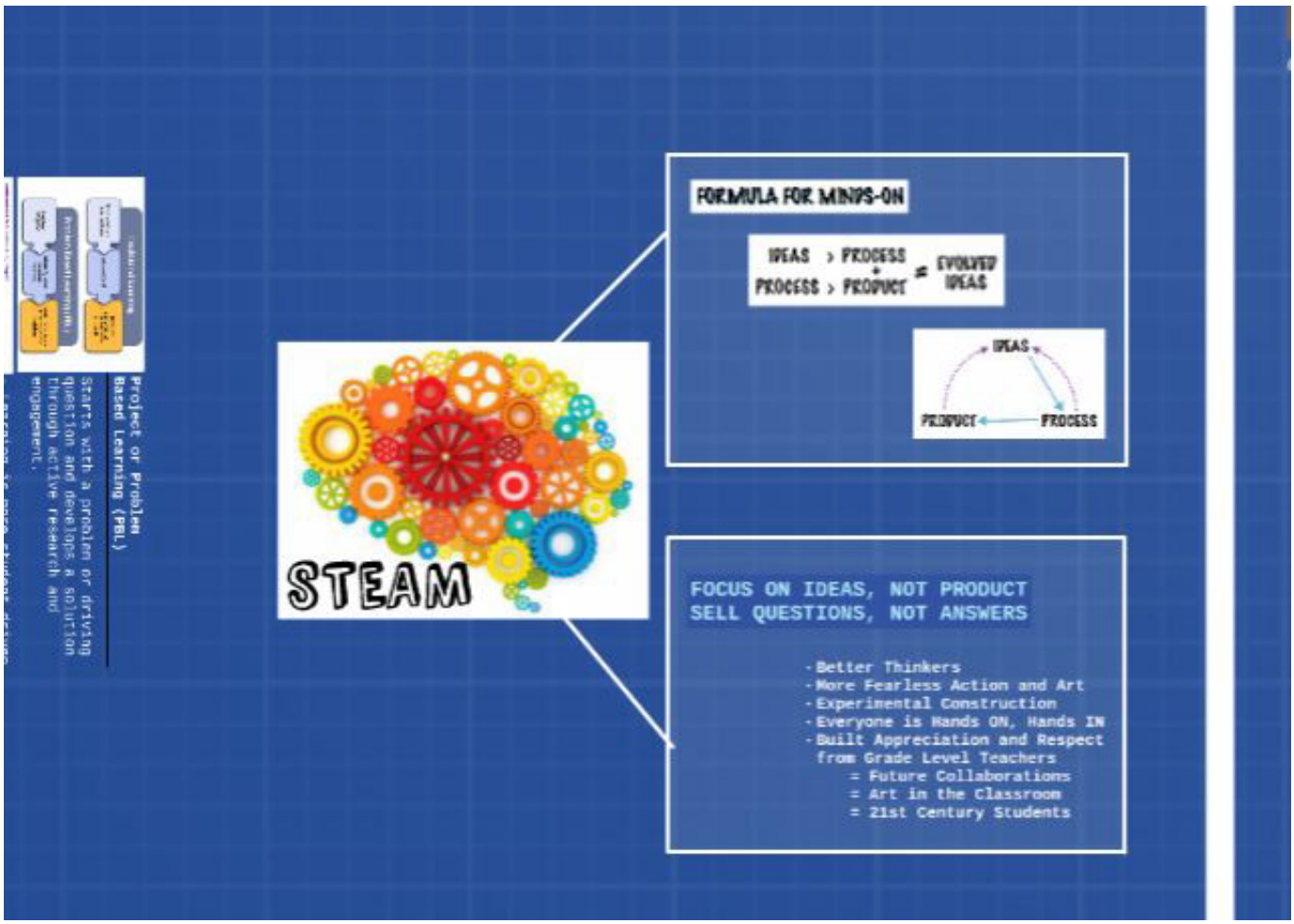
- Learning is more student driven and centered in the process
- Well developed structure that supports interdisciplinary teaching

Traditional Unit With Culminating Project:



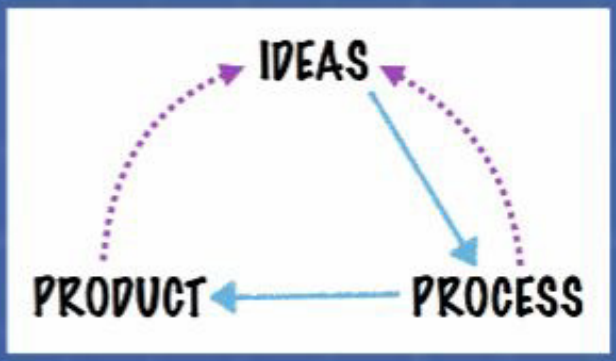
Project-Based Learning Unit:





FORMULA FOR MINDS-ON

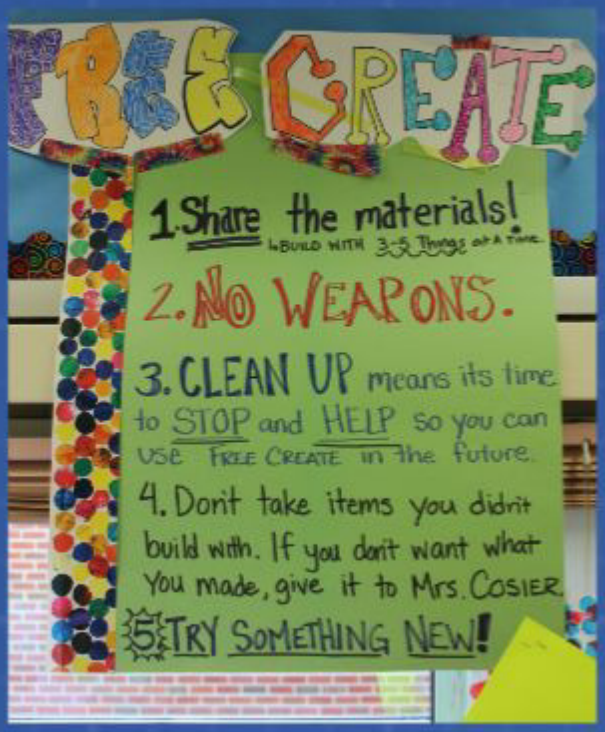
IDEAS > PROCESS
PROCESS > PRODUCT
+
= EVOLVED IDEAS

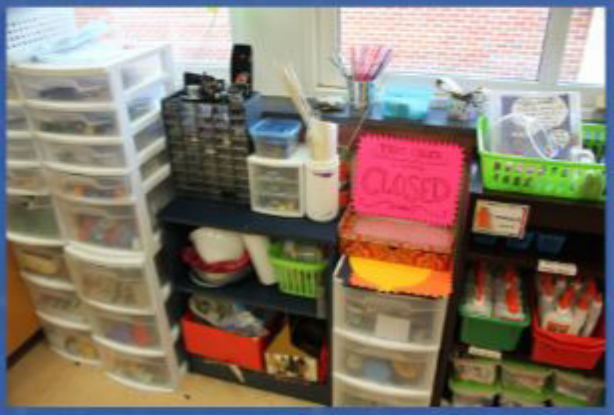


FOCUS ON IDEAS, NOT PRODUCT
SELL QUESTIONS, NOT ANSWERS

- Better Thinkers
- More Fearless Action and Art
- Experimental Construction
- Everyone is Hands ON, Hands IN
- Built Appreciation and Respect from Grade Level Teachers
  - = Future Collaborations
  - = Art in the Classroom
  - = 21st Century Students

FREE CREATE CENTER





CONSTRUCTION TOYS

Straws & Connectors, Toobers & Zots, KEVA planks

For collaborative or independent construction challenges (10-60 min)

CONSTRUCTION BASED CHALLENGES

Geodesic Domes (5th/6th)

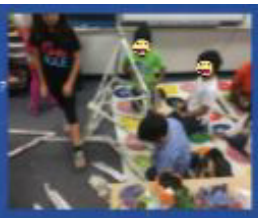
Why is a triangle so special?

Towers and Integrity (3rd/4th)

Newspaper Pyramids (3rd)

How can we use triangles to make a pyramid large enough to fit inside?

What is the difference between a pyramid and a tetrahedron?



Envious 6th Graders- Igloo Clubhouse

Maze and Energy (4th/5th)

How can we use 3D paper skills to construct a maze?

How can we add challenges for others?

Angry Bird Physics (3rd/4th)

How could simple machines create a projectile?

Can you find the math and science in Angry Birds? How does it create challenge and strategy for the player?

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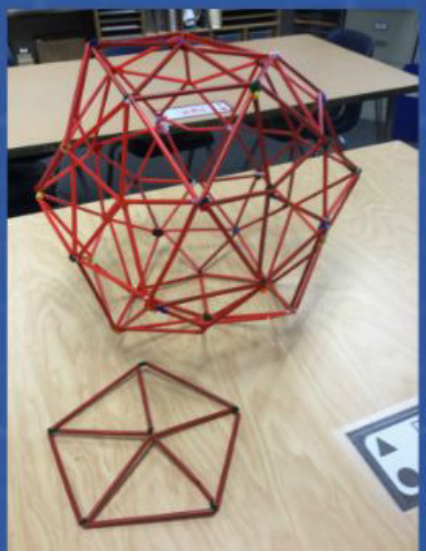

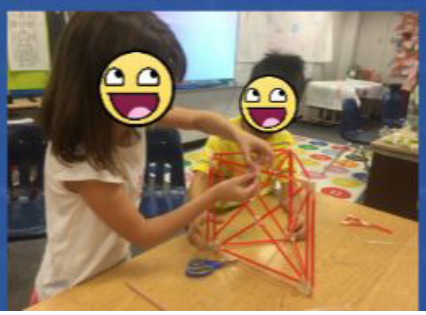

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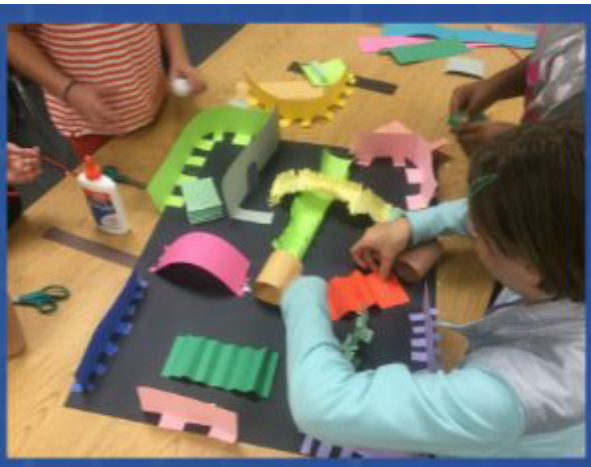


Tilt Maze (SPED Adaption)

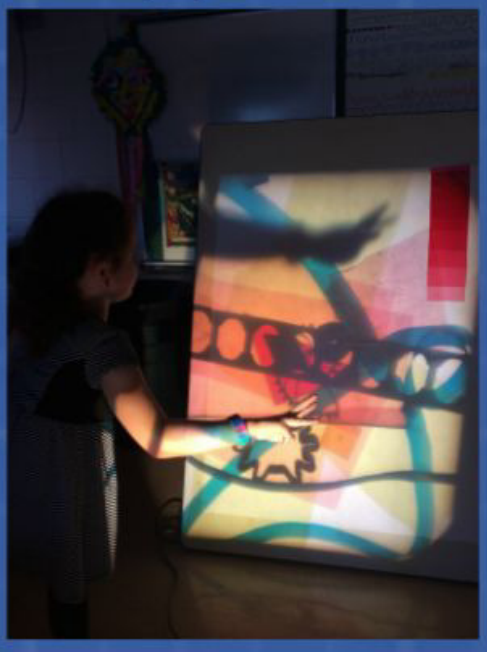
COLOR LABS

Multiple Labs (K-6th)

How does color work? How do we see and perceive color?

What is the difference between transparent and opaque?

Can we make transparent material opaque?

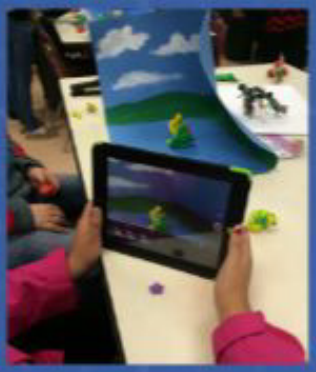


Liquid Light Show (4-6th)

ANIMATION AND FOLEY

Found Materials and Modeling Claymation (4th-6th)

How can we construct a narrative with pictures and sound?



(Free App called "Stop Motion")

MAKEY MAKEY ADVENTURES

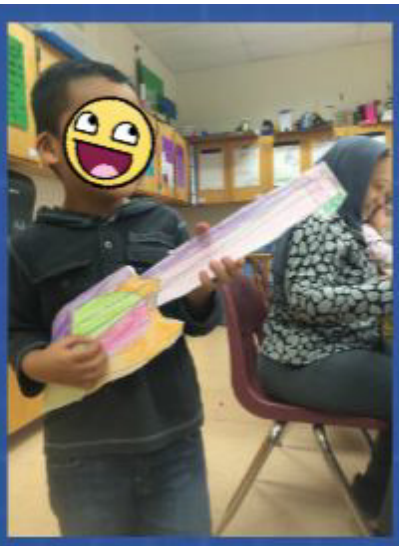
Multiple Labs and Unit Projects (K-8th)

Using conductive materials and circuitry, we restructure interactivity with computers and design for others.

Game Controllers

Talking Narratives

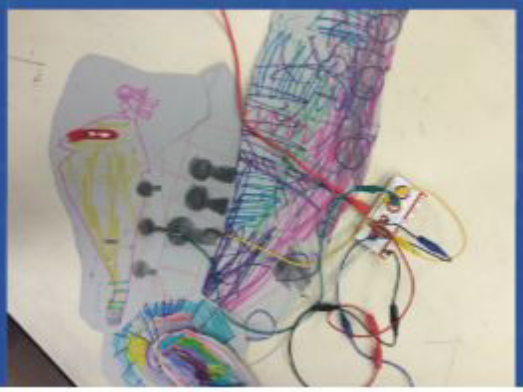
Piano Paintings



Guitar Design (K/1st)

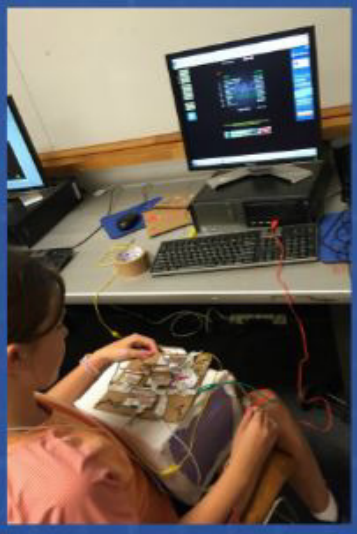
Why do instruments look so different?

How do electric instruments work?



Talking Narratives and Communities (2nd-8th)

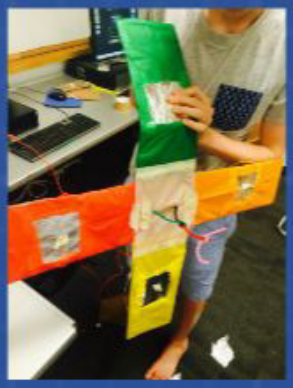
How can we use circuitry and sound to create interactions for others?



Video Game Controllers (4th-8th)

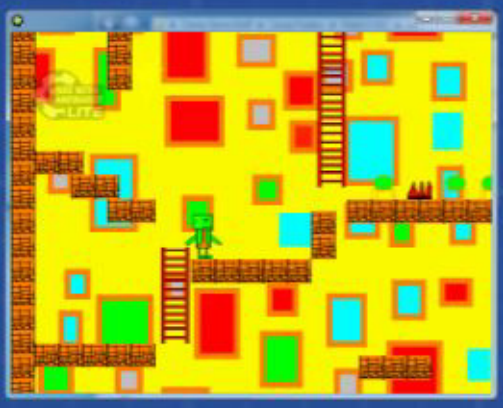
How do game controllers affect game play?

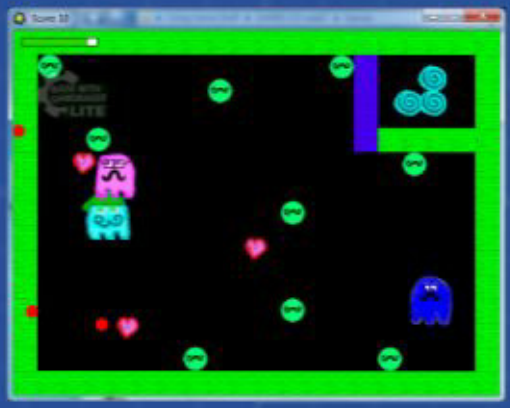
What goes into the design of a game controller?



GAME DESIGN AND PROGRAMMING

www.currentlab.art.vcu.edu





Saturday, 9 AM, N230b
McCormick Place North Building
Ludic Pedagogy: Teaching Digital Game Design for the Art Classroom

Physical Game Design (2nd-8th)

How does a game function?

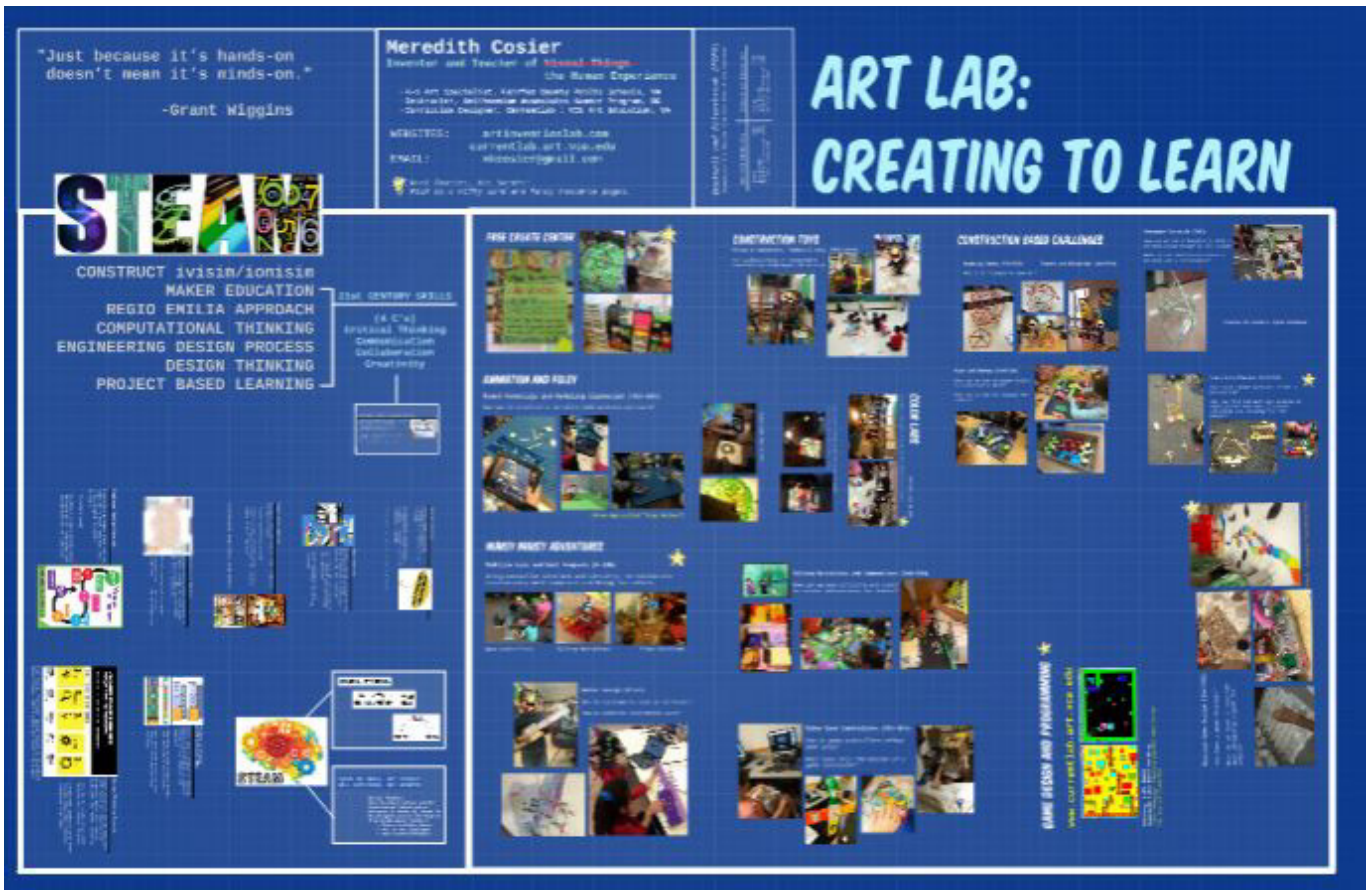
What do we have to consider when designing a game for others?

Google: Unplugged Programming Kids

Bucknell and Silverbrook (FCPS)

Exceptional K-6 Schools from Both Ends of the Spectrum

Bucknell Elementary		Silverbrook Elementary	
• Small	<300	• Large	>780
• Low Income	>78%	• Low Income	<10%
• English Proficient	<55%	• English Proficient	>93%
• 14 K-6 Classrooms		• 29 K-6 Classrooms	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