



Teaching and Learning STEM: The Value of Interactivity

Isa Kaftal Zimmerman

NSTA San Francisco
March 12, 2011



Why is STEM Important?

DYMO

Mimio®
Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

Need STEM-trained workers at all levels

Maintain the US economic competitive edge

Part of a good education for all

Sharpie.

IRWIN.

Goody

Rubbermaid

GRACO

Calphalon®

WATERMAN
PARIS

What is Happening in the Nation?

DYMO

Mimio®
Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

Many and varied programs

Little coordination

No single point of access for information

Redundant development

Gaps in programming

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Two MA Examples

DYMO

Mimio®
Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

Global Technology & Engineering Consortium

Harvard Medical School/High School Student Project

Sharpie.

IRWIN.

Goody

Rubbermaid

GRACO

Calphalon®

WATERMAN
PARIS

Global Technology & Engineering Consortium

DYMO

Mimio

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Team organization

Older students mentoring younger students

Diversity skills and knowledge

Engineering skills and knowledge

21st century skills and knowledge

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Harvard Medical School Project

DYMO

Mimio[®]
Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Stan (the Man-nequin) in the simulation lab

Hospital visits

Virtual hospital

Classroom instruction

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Factors at Play

DYMO

Mimio[®]

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Change culture

--Student interest

--Parental support

Change teaching and learning

--Start at elementary level

Increase cooperative planning and implementation

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Who Thinks it is Important?

DYMO

Mimio[®]

Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

The President

--Since campaign days

The Governor of Massachusetts

--STEM Advisory Council & State Plan

Who in your state?

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

What are the Key Elements of Success?



For students

- Developmental appropriateness
- Early start
- Hands on & project/problem based
- Career connected
- Related to real life

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

What are the Key Elements of Success?



For teachers

- Proper and sufficient training (including career info)
- Appropriate and sufficient materials & equipment (kits, labs, technology)
- Alignment with goals, standards

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

What are the Key Elements of Success?

DYMO

Mimio

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

For the community

- Strategic partnerships (gov agencies, businesses, organizations)

- Business & industry support & collaboration

Adoption of vetted best practices (no reinvention)

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

What are the Key Elements of Success?



For the states & nation

- A plan (for SEM); there is a T plan
- Sustained and sufficient funding
- A “search system”

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

What value can ITT add?

DYMO

Mimio[®]

Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

Teachers can:

- use open-ended questions so characteristics of inquiry-based teaching & learning can be explored through a variety of media.
- illustrate abstract concepts in various ways
- capture & record entire lessons digitally as the class collaboratively engages in it (for learning & assessment)

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Now for an Illustration

DYMO

Mimio[®]

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Objectives

1. Review the Pythagorean Theorem (content)
2. Explore uses of that knowledge (skill)
3. Connect to careers

Instructional strategy

Sharpie

IRWIN Use ITT tools

Rubbermaid

GRACO

Calphalon

WATERMAN

Now for an Illustration

DYMO

Mimio[®]

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Understanding the Pythagorean Theorem

Definition en.wikipedia.org/wiki/Pythagorean_theorem

History www.mathsisfun.com/pythagoras.html

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Now for an Illustration

DYMO

Mimio®

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

Prove that the sum of the square of two sides = the sum
of the hypotenuse

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

Now for an Illustration

DYMO

Mimio[®]

Interactive Teaching Technologies

Newell Rubbermaid
Brands That Matter

What careers need the triangle?

- a. Science**
- b. Engineering**
- c. Art**
- d. None of the above**
- e. All of the above**

Sharpie

IRWIN

Goody

Rubbermaid

GRACO

Calphalon

WATERMAN

The slide features a purple header bar at the top left. In the top right corner, there is a black box containing the logos for Dymo, Mimio (Interactive Teaching Technologies), and Newell Rubbermaid (Brands That Matter). The central area of the slide contains the text "Any Questions?". At the bottom, a horizontal line separates the footer from the rest of the slide, which contains logos for Sharpie, IRWIN, Goody, Rubbermaid, GRACO, Calphalon, and WATERMAN.

Resources

DYMO

Mimio[®]

Interactive Teaching Technologies

NewellRubbermaid
Brands That Matter

1. Science on the Big Screen, Mette Schwartz & Joan Thormann
from Learning & Leading with Technology | February 2010
2. University of Colorado <http://phet.colorado.edu/en/simulations/category/math>

Sharpie

IRWIN






Goody

Rubbermaid

GRACO

Calphalon

WATERMAN



Isa Kaftal Zimmerman

ikz1@verizon.net
www.ikzadvisors.com

www.mimio.com

www.mimioconnect.com

