

# **Where Do Our Students Encounter Materials: Everywhere and Rarely**

Session AAA6.07

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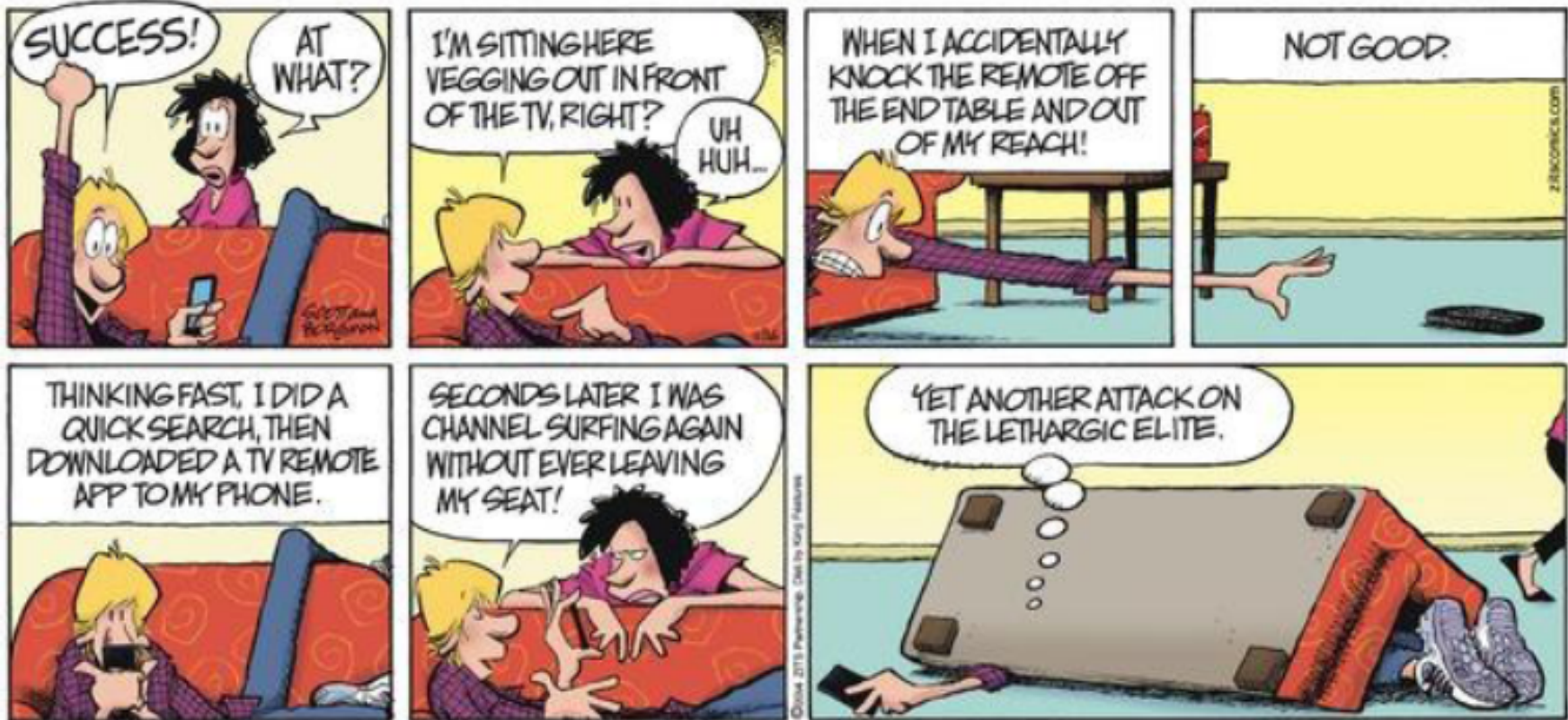
# Reason for this presentation

- In our increasingly **digitized and safety conscious society**, we tend to shield our children from real, conscious, contacts with the material world & steer them to increasingly **virtual experiences**. It is time to reverse this trend & develop methods in schools & society to **counteract this trend**.

# Example to counteract

ZITS

BY JERRY SCOTT AND JIM BORGMAN



# **Example-Shopping In the Past**

- 1) Come into the shop (e.g. a grocery)**
- 2) Select an item (e.g. flour, rice, produce)**
- 3) Get the price**
- 4) Package & weigh it**
- 5) Calculate the cost (often writing directly on the grocery bag)**
- 6) Pay by cash**



# **Example-Shopping in the Present**

- 1) Enter the Supermarket**
- 2) Select an item in a package (e.g flour, rice, produce)**
- 3) Put item(s) into a cart**
- 4) Go to the check out counter**
- 5) Have items scanned**
- 6) Pay by credit card**

# Learning in the Past

*Children experienced:*

*Mass*

*Weight*

*Quantity*

*Arithmetic that mattered (Math)*

**None of this is encountered at present**  
even if children are taken to the  
supermarket & many are not!)

# What to do?

- **Future**

**Structure the environment so that children have a visceral experience & consciously encounter materials & ways to change & manipulate them**

**Go to the Children's Museum in Boston  
or Iowa City**

# Where & How?

- “Play with better toys than are presently available”
- “Play in playgrounds that gently develop quantitative views”
- “Use tools & kits to make introductory projects”
- “Acquire information from small things: wrappers, posters , etc.”

*From the acceptance speech for the 2000  
Oersted Medal by John King, of MIT,  
American Journal of Physics*

# **Need to Know**

- **WE NEED TO EXPOSE CHILDREN-(STUDENTS) TO HANDS-ON EXPERIENCES**
- **WE USED TO REPAIR THINGS :** In order to do so we needed to know how things worked.
- **WE NOW REPLACE THEM:** All we need to do is know whom to call or what store to go to.

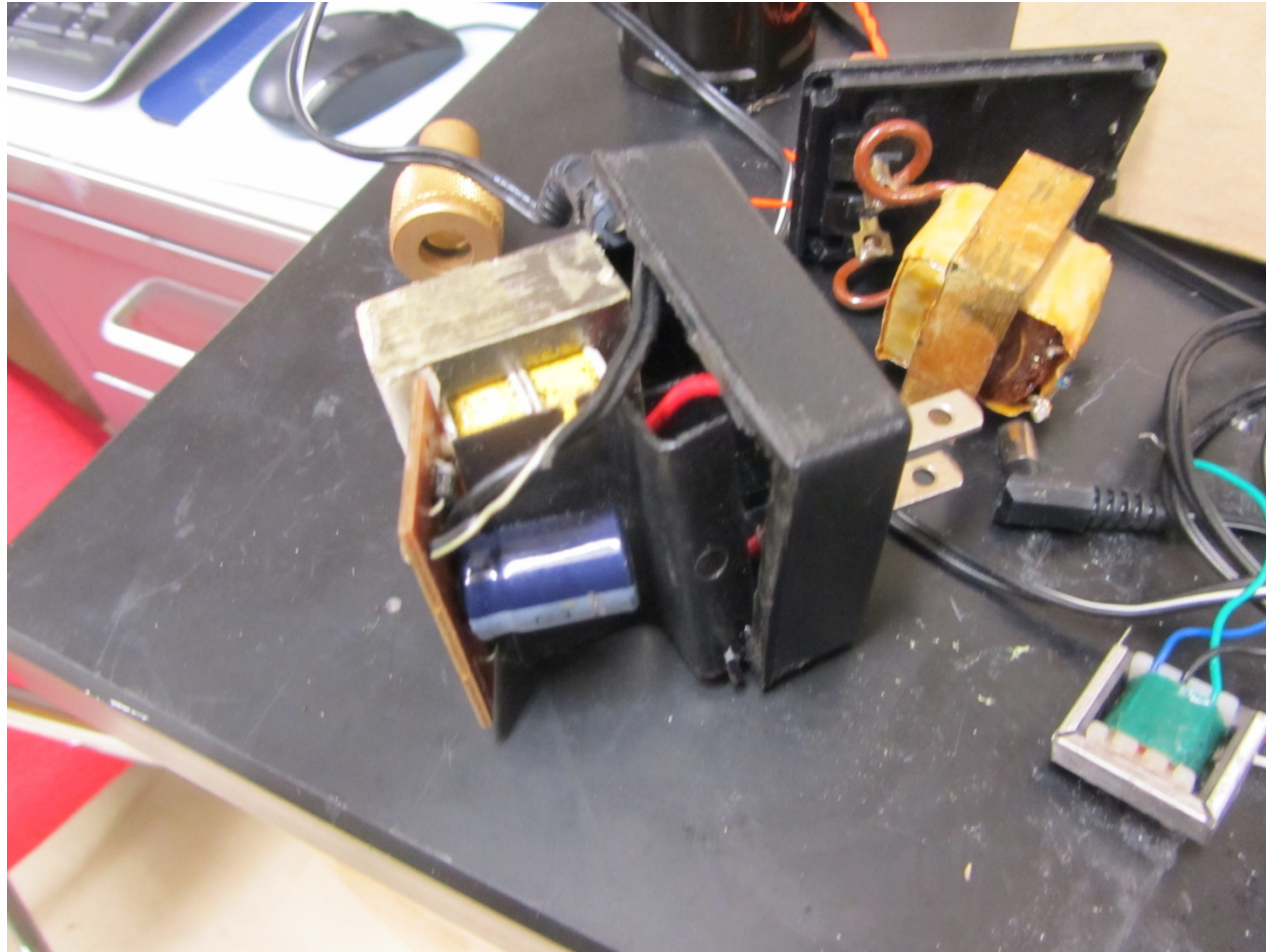
# What to do

- Let children/students **take things apart**
- Let them **break** things
- If possible, let them **put them back together/repair**
- (That is what **GOZ** does with students in his lab).

# Items to be broken



# More such items





# GOZ's experience

- Research Internship Program...  
created in 1978
- His Laboratory (Teachers, Students)...  
recently when he asked students to break  
spent chargers (with a hammer, screw  
driver, vise) one of the young men went to  
Google to find out how to break the  
charger!!! (See slide 15)

# Next few slides

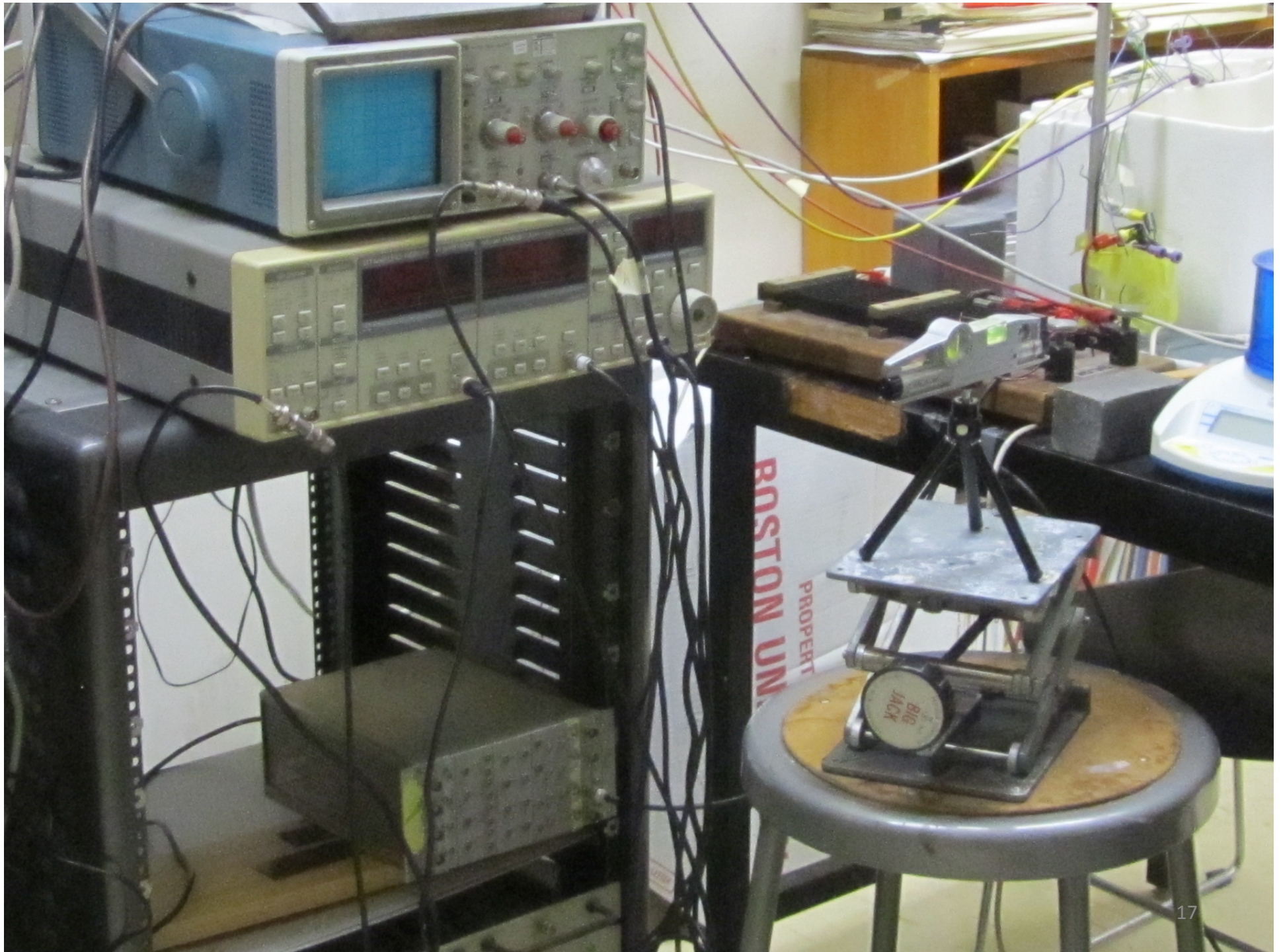
- A messy laboratory encourages students to explore & learn hands-on
- Neat tables & chairs are good for reading, speaking & googling but not hands-on exploration, the thesis of this presentation

















# We are of the older generation

