



Planting Zinnias at home



Scientizing *Daily Life* with New Social, Mobile, & Wearable Technologies



Tamara L. Clegg * University of Maryland

Foundation

Fundamentals & Findings

Seamless Scientizing



Mobile, social, ubiquitous

Scientizing the Body



Wearables

Future Foundations

My Inspiration

Levi Barnes Sr.
“Grandaddy”

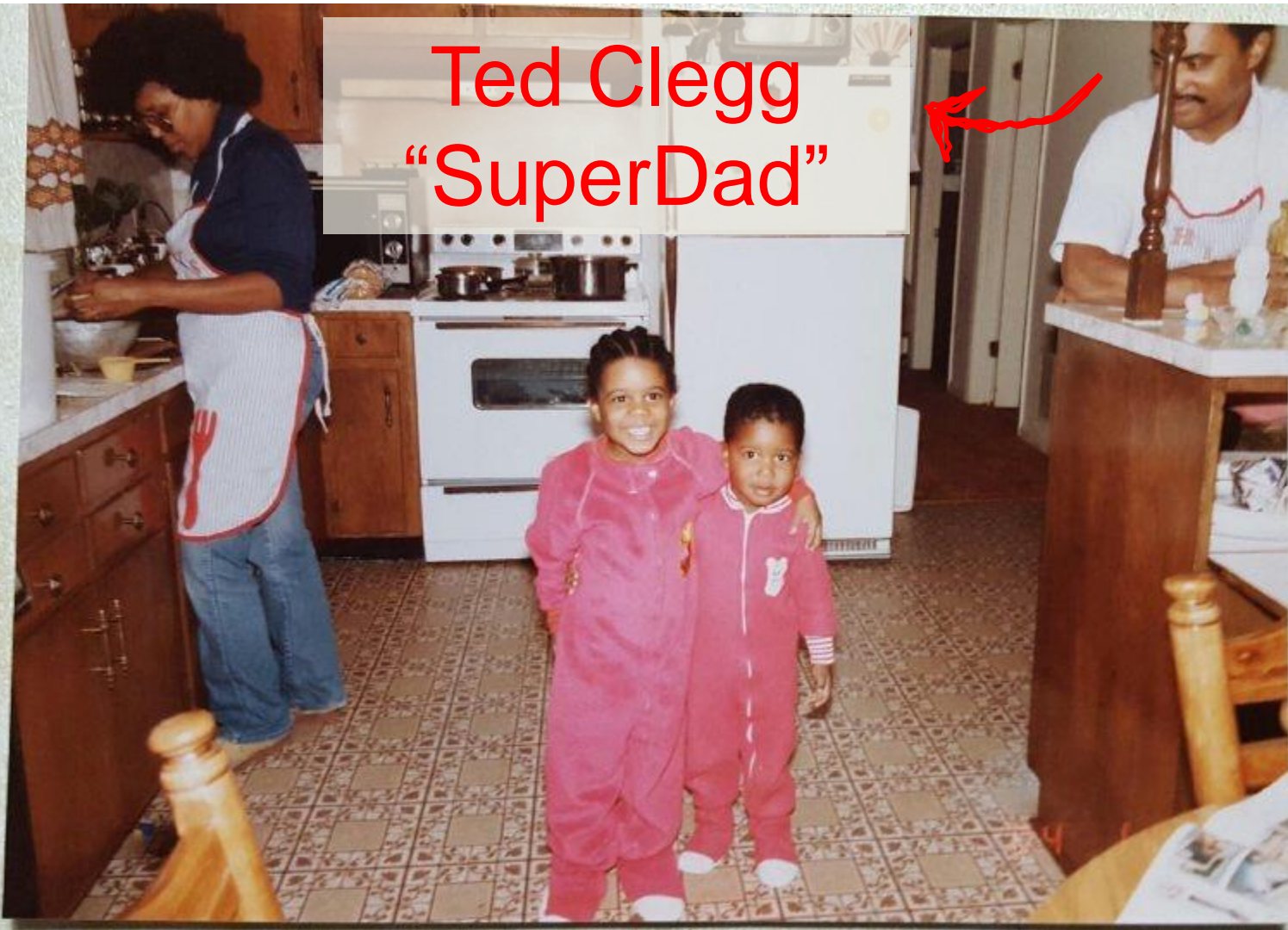




The importance
of academics and
hard work

My Inspiration

Levi Barnes Sr.
“Grandaddy”



Ted Clegg
"SuperDad"

My Coach

My biggest
supporter,
encourager, &
cheerleader

My Coach

Ted Clegg
“SuperDad”





Clegg



Bames

My Support

Aunts and Uncles

My Teachers

Larger community of teachers,
tutors, and mentors



“

*For His great, His mighty power
for His power makes, which makes
of every part of His
[trusting faith abides - He set],
spiritually transform in
them*

”

My GOD

Ephesians 2:10

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Seeing the **World** through Scientific **Lenses**



Finding **practical**
applications

Using Science to Achieve
goals

Scientizing daily life activities

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Future Foundations

Science Everywhere



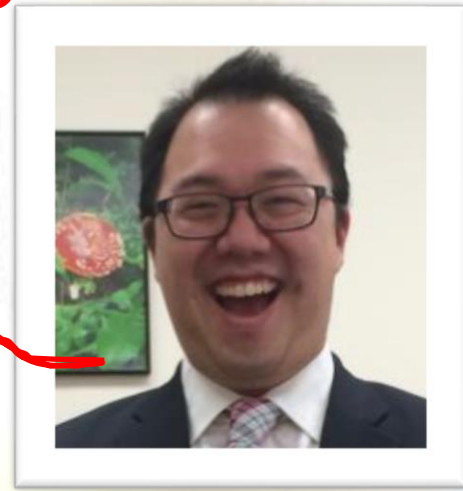
Social Media App

Interactive Displays

Home * School * After-school

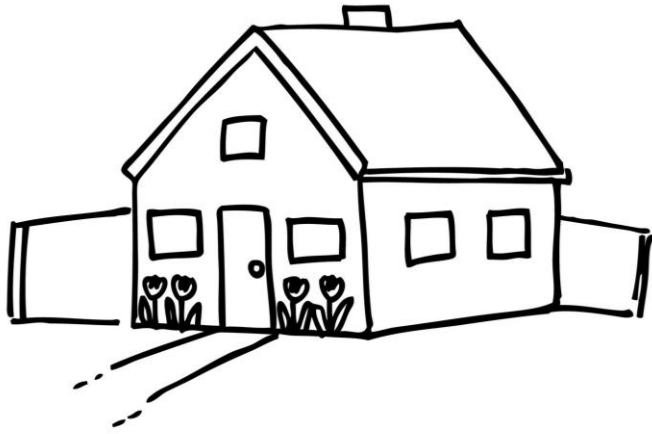
June Ahn

Jason Yip

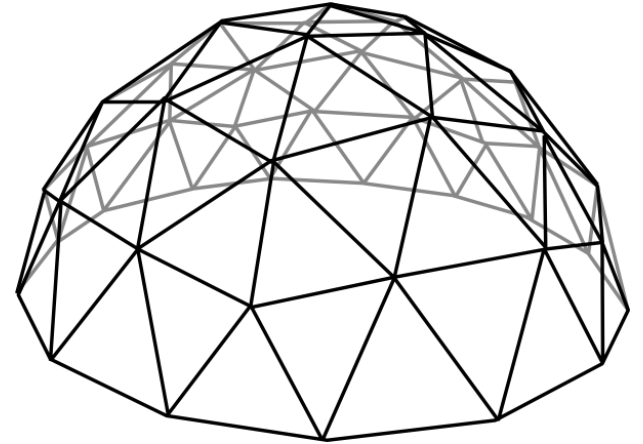
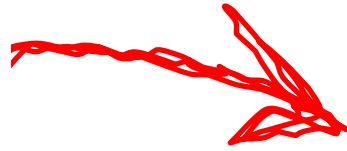


Science Everywhere

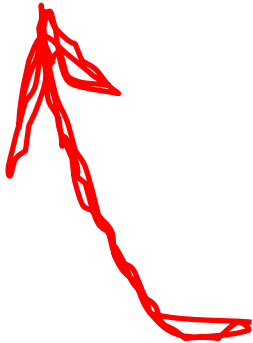
Daniel Pauw * Kelly Mills * Judith Uchidiuno * Beth Bonsignore * Austin Beck * Caroline Pitt



Home

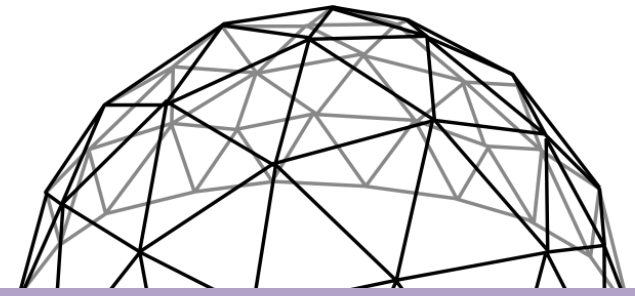


After school



School





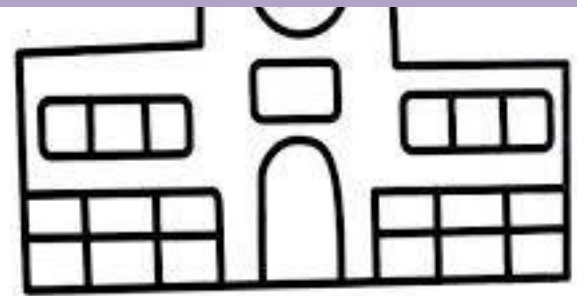
Technology alone...

Home

Information
Practices

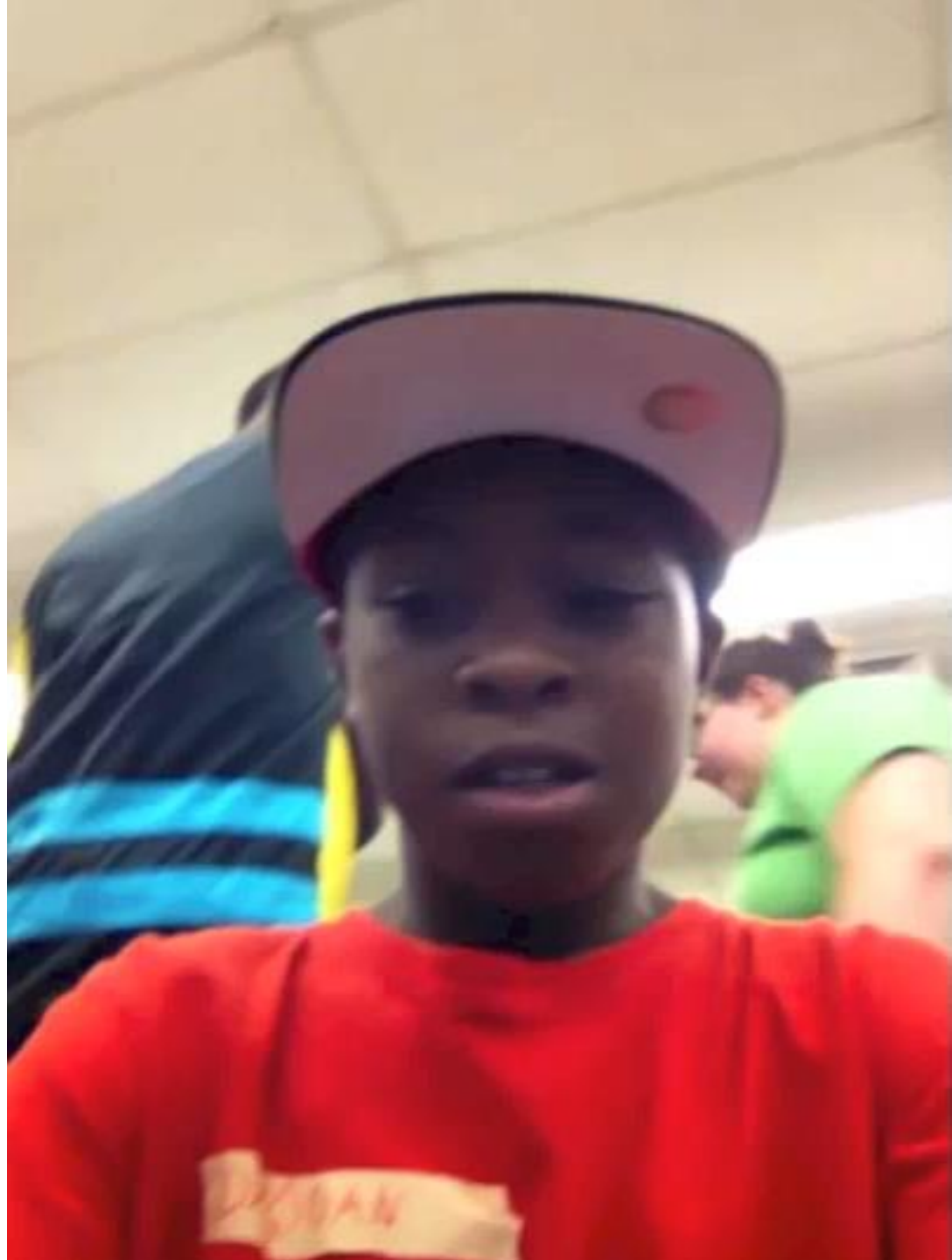
After school

is not enough



School

**Social media
can make resources
visible**

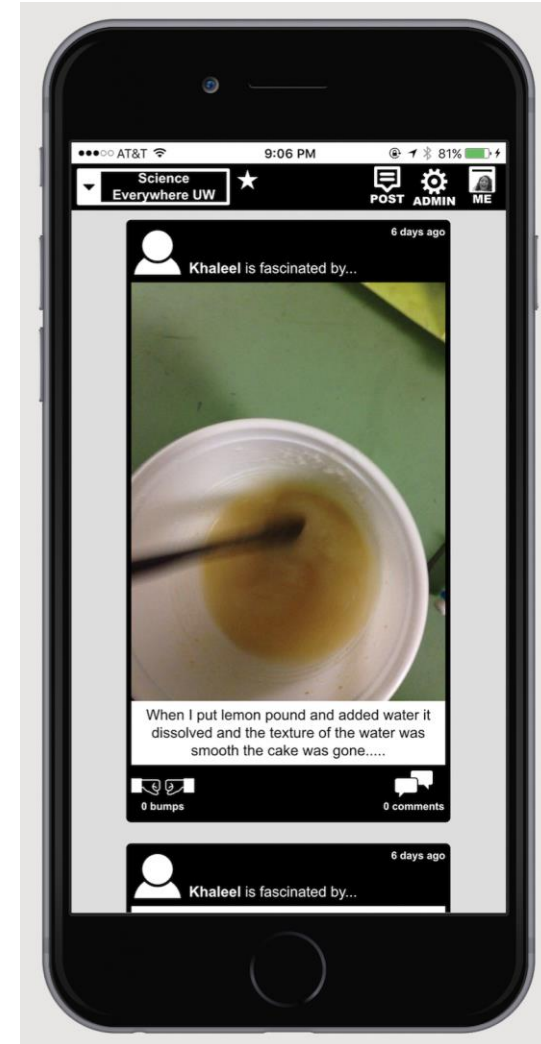




How do we design **new technologies** to
connect **entire neighborhoods** to
science?



Tangible, community displays



Mobile social media

Science Everywhere Mobile App

17 days ago

Migue

EVERYONE, can you please lend me your help on a good science project idea. I need one for my science (stem) fair

5 bumps 4 comments

Hi Michael, you could do a project on air plane designs!!!

What a great question, Michael! I have a couple of ideas - wanna talk about it on Thursday? Or, if you like, go to the website, sciencebuddies.org and it has lots of ideas!!

Sciencebuddies.org is a really good website that is were I got all my science projects from 😊

Maya! That's awesome!! 😊😊





Home



School



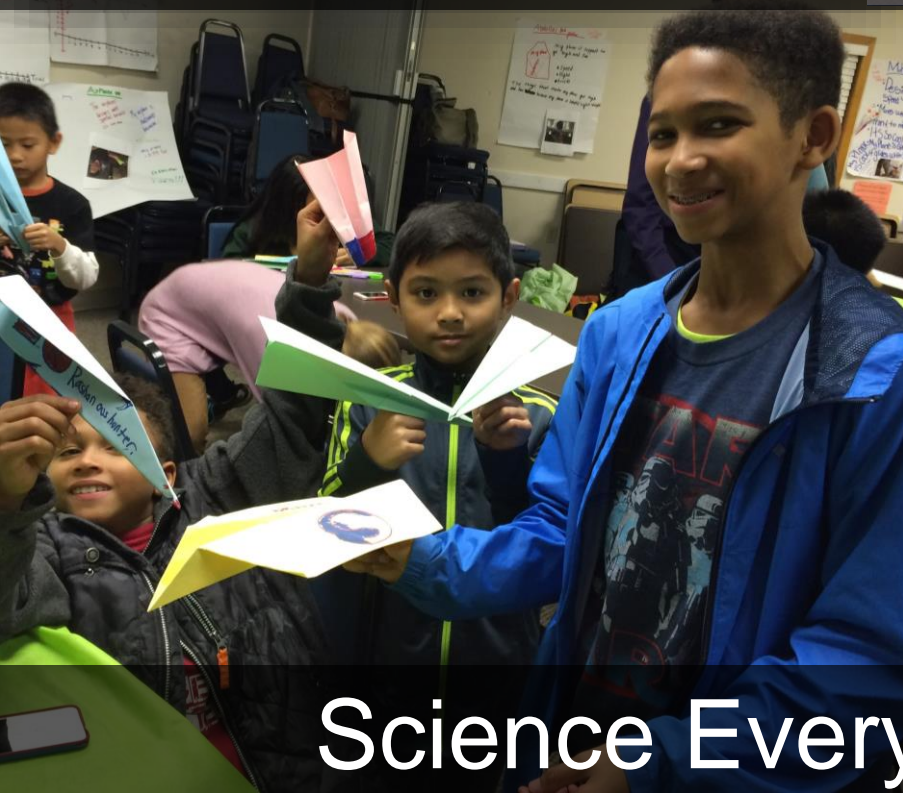
Community



Kitchen Chemistry

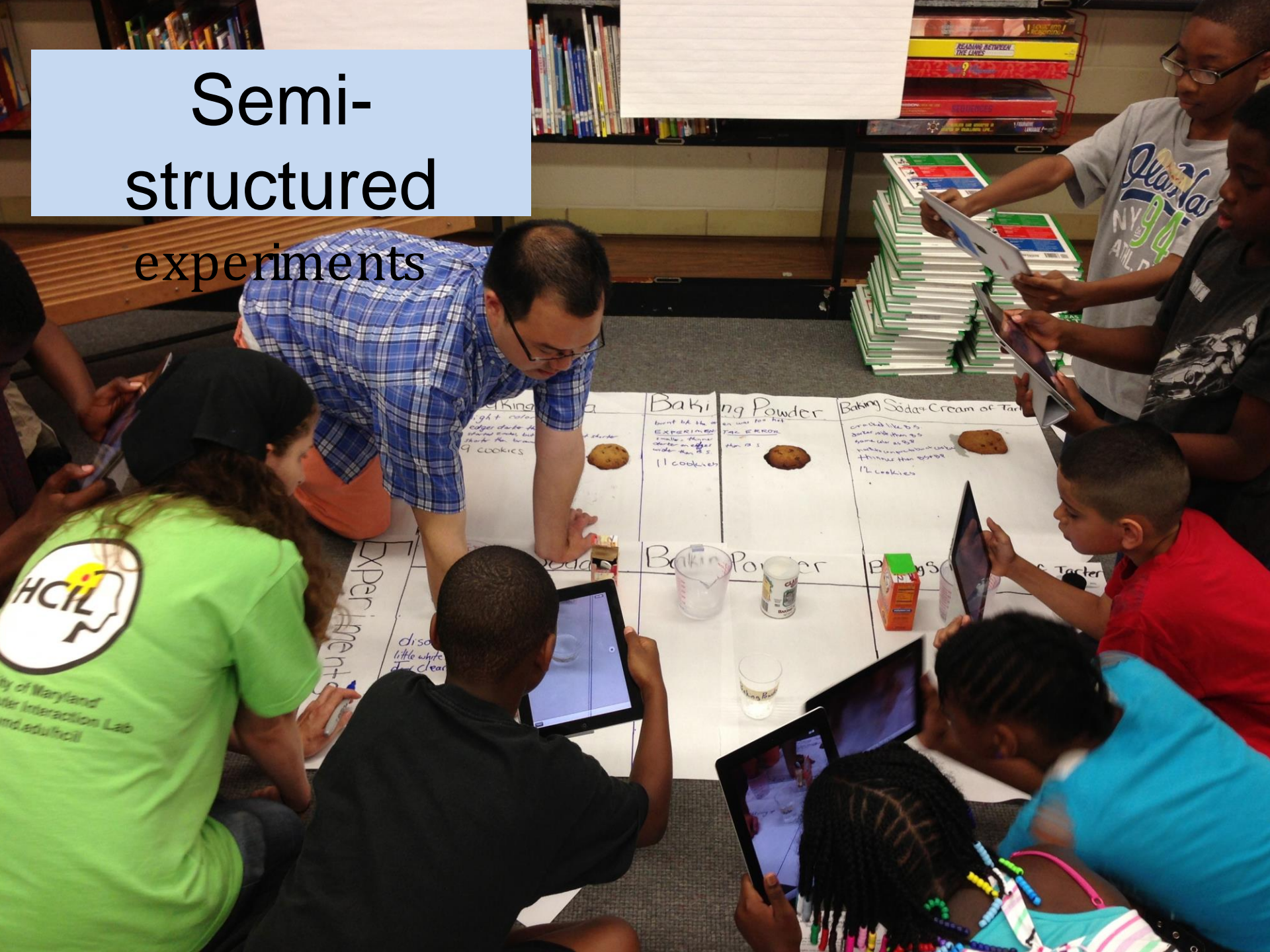
* Engineering *

Fun



Science Everywhere Meetings

Semi-structured experiments





Choice Days: designing new experiments





Small Group P

Shopping!!!

Choice Day

At home

Choice Day Showcase



9 March 2016

EDIT Anya

Looking good

4 bumps 2 comments

10 March 2016

EDIT Donald

Time to experiment

5 bumps 1 comment

Science Everywh e App

Documenting the experience at home

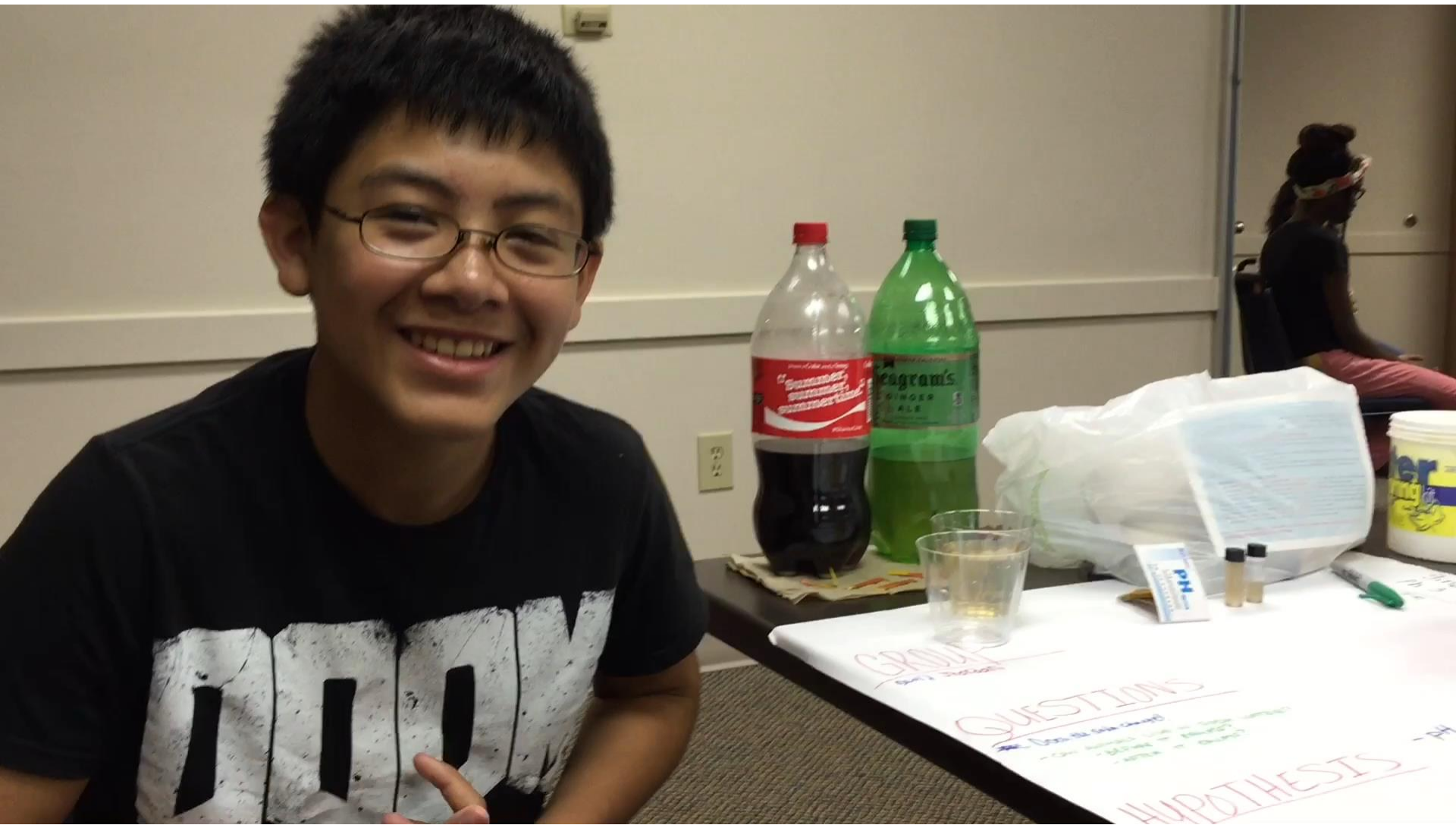


Science Everywh e App

Documenting the results



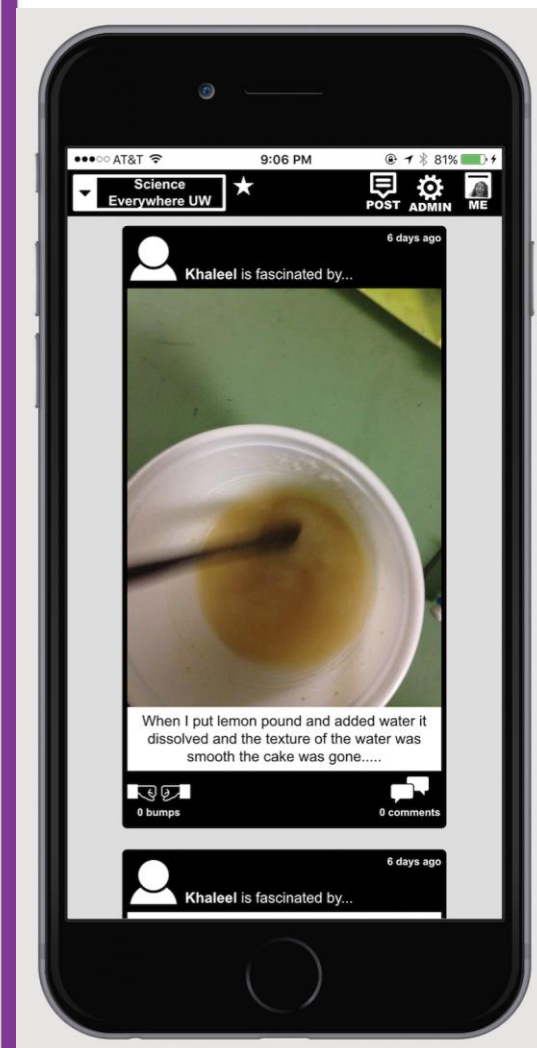
Summer Jam 2016: Water Testing



Choice Day Investigations



Tangible, community displays



Mobile social media

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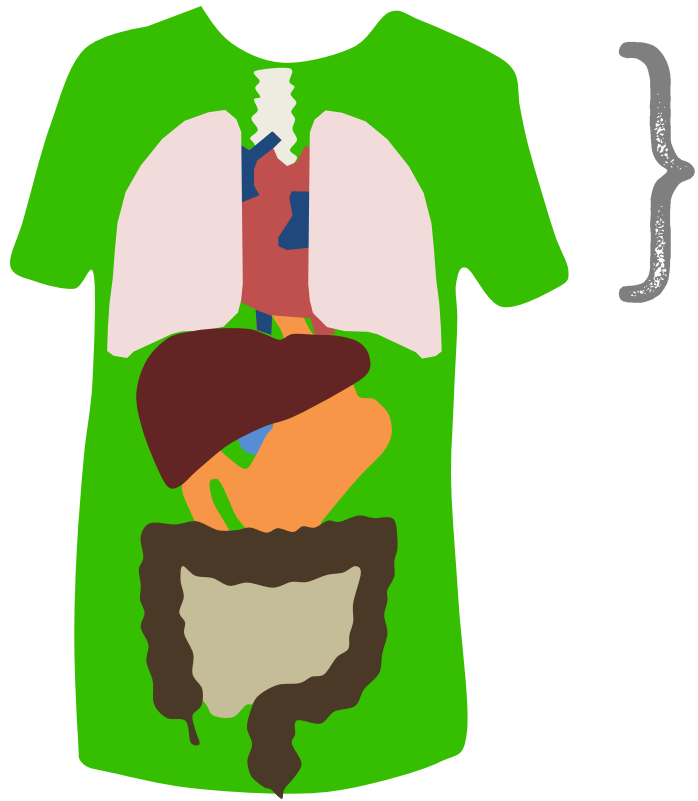
Mobile, social, ubiquitous

Scientizing the Body



Wearables

Future Foundations



What if our clothes revealed how our body's **functioned**?

How could this **change** the way **children learn** about and understand their bodies?

Could a t-shirt be a **platform** for **experimentation** and **inquiry**?

Live Physiological Sensing & Visualization

LPSV



Angelisa Plane



Amy Green



Jon
Froehlich

Vanessa Oguamanam * Seokbin Kang




Leyla Norooz

BodyVis Team

Collaborative Inquiry



Collective Inquiry

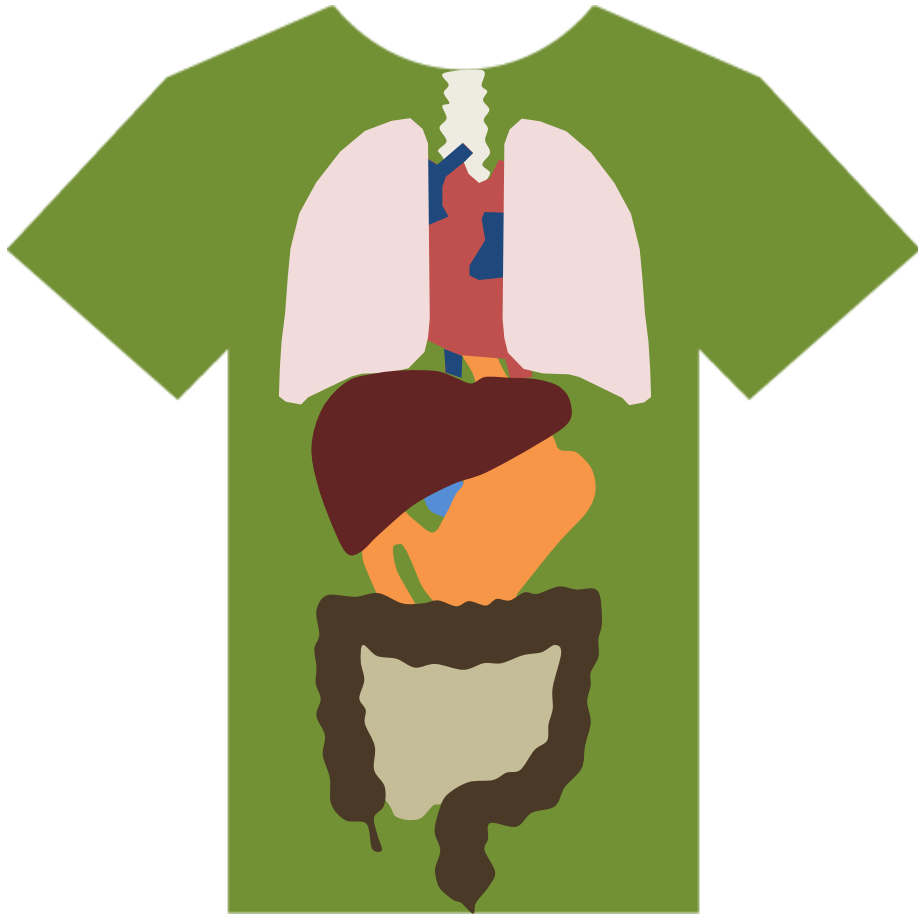
A group of children are sitting on a carpeted floor, engaged in a hands-on design activity. They are using various materials like cardboard, plastic, and markers to create prototypes. One child is writing on a large sheet of paper. The paper has handwritten notes and diagrams. The notes include 'Lungs inflate + deflate can show big & small breaths' and 'Small in to function as roller coast'. There are also drawings of a fan-like structure made of cardboard and a structure made of plastic and yellow material.

Participatory Design with Children

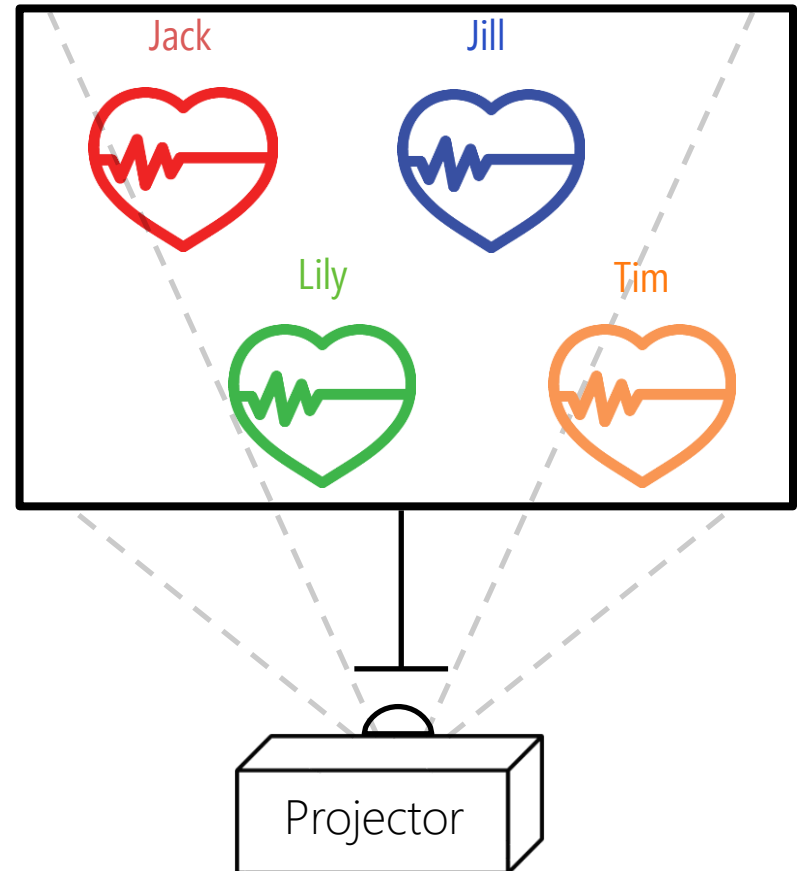
Druin, A. CHI'99

LPSV Tools

BodyVis



SharedVis





BodyVis & SharedPhys

Semi-Structured Activities



Small groups or
pairs brainstorm
activities



Make
predictions



Test with BodyVis or
SharedVis



Discuss
results



The Macarena

“I kind of felt embarrassed because all these people were staring at me. So it kind of went up.”



“Watching the nba
 ... and lungs by
 summer league [second]
 breathing hard and also
 game brought my heart
 the fact that the game
 rate down after running
 was just summer league
 because less blood must
 and not nba didn't stress
 be pumped when I am”
 me for my team to win.”
 just sitting down and not
 stressing my muscles...”

Watching the nba summer league second game brought my heart rate down after running because less blood must be pumped when I am just sitting down and not stressing my muscles and lungs by breathing hard and also the fact that the game was just summer league and not nba didn't stress me for my team to win.



5 bumps



1 comment

Scientizing Later



Immediate Action

Wearers and Non-wearers



Games & Competitions

Engaging Non-Teachers



Collaboration



Physical Activity

Wearer & Non-wearer Collaboration

Connecting
**everyday physical
activity** to organ
function

Connecting **social
& emotional**
factors

**Real-time
visualizations**



Personal Relevance

Collective **noticing**
experimentation &
predictions

Collective **discussion**

Collective **physical**
activity



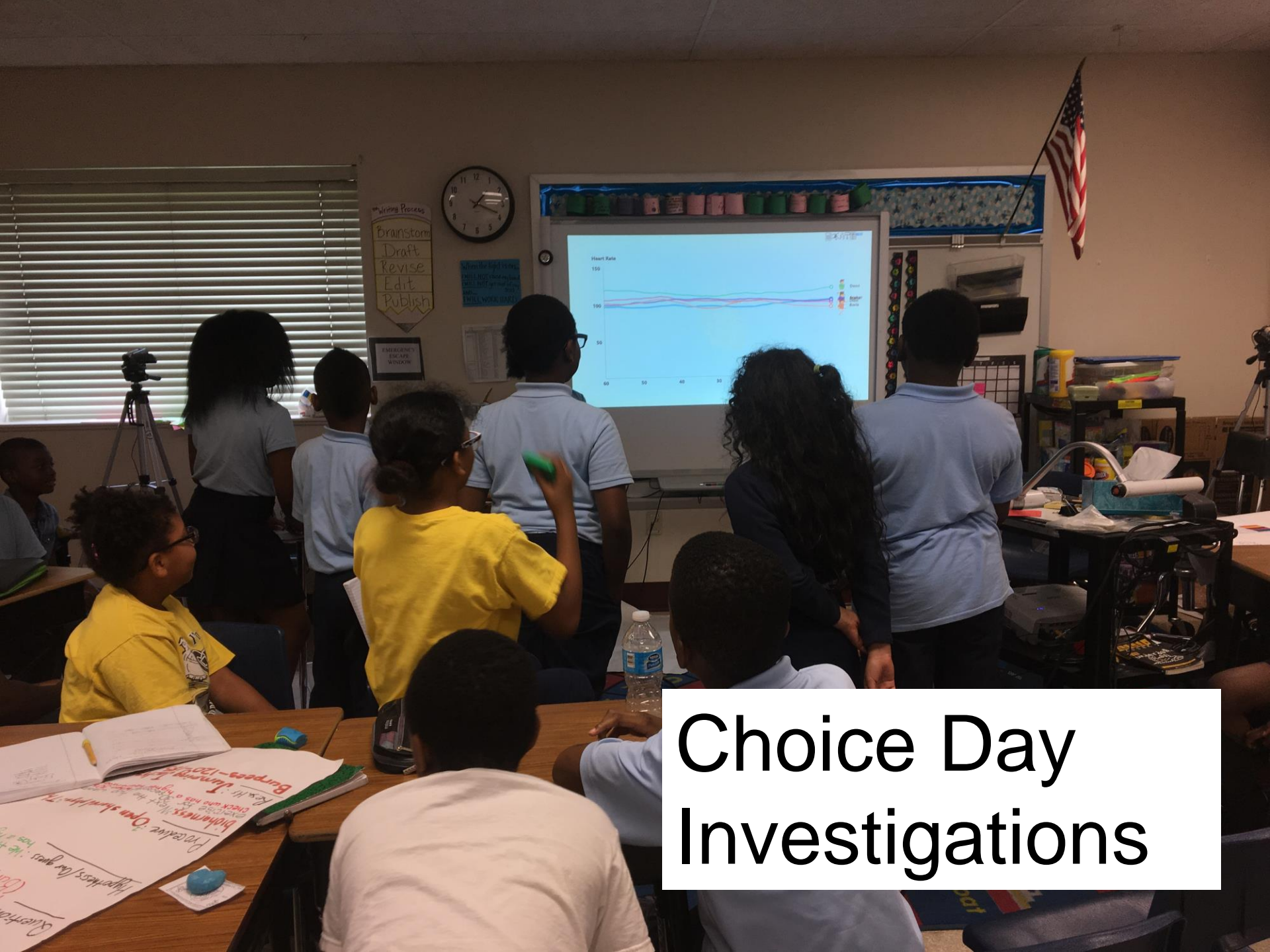
Collaboration



Multiple Session Deployment

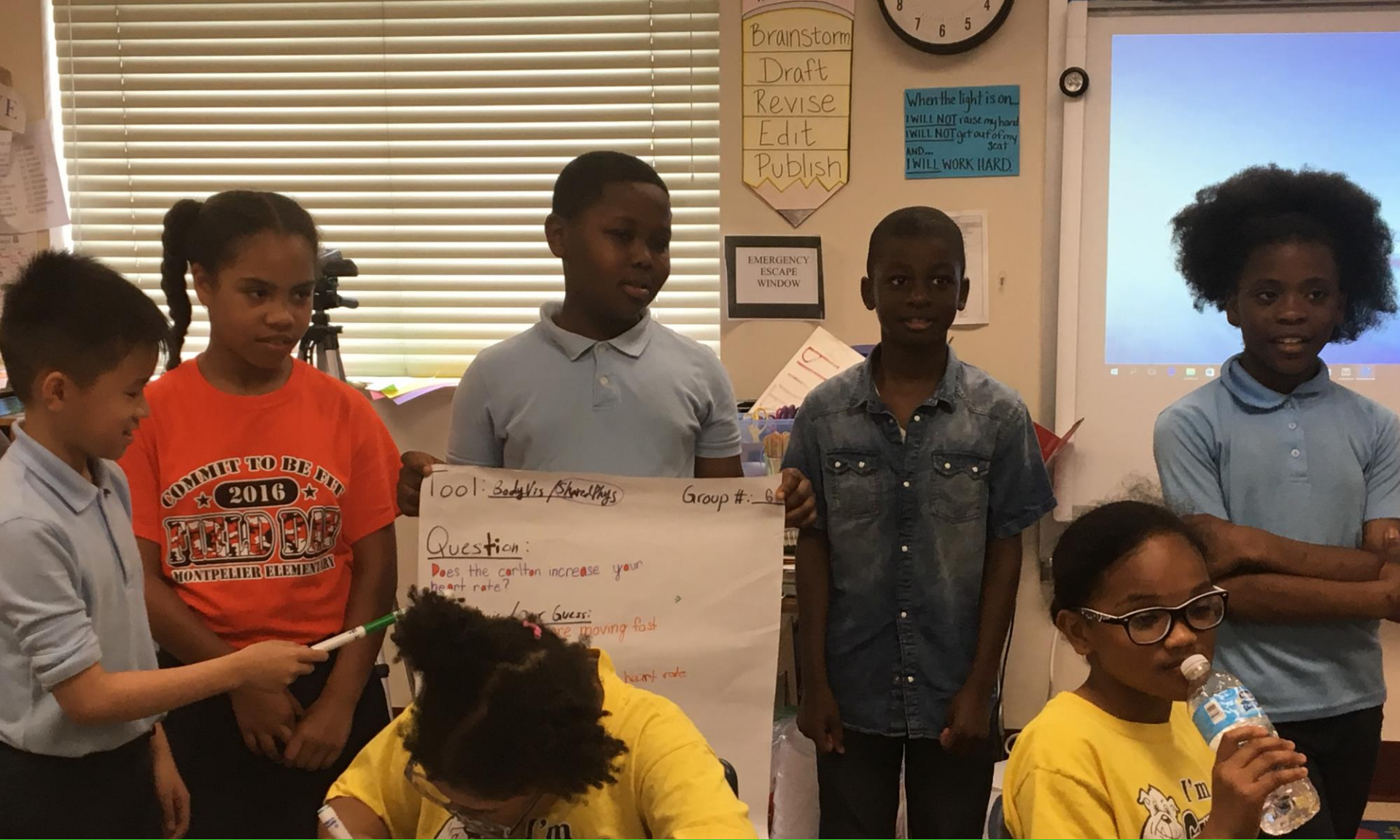
Integrated use of tools

Current Work



Choice Day Investigations

Scientific Hypothesis: As you...
Procedure: Open...
Hypothesis: Check...
Barbers-120...
Know: ...



Brainstorm
Draft
Revise
Edit
Publish

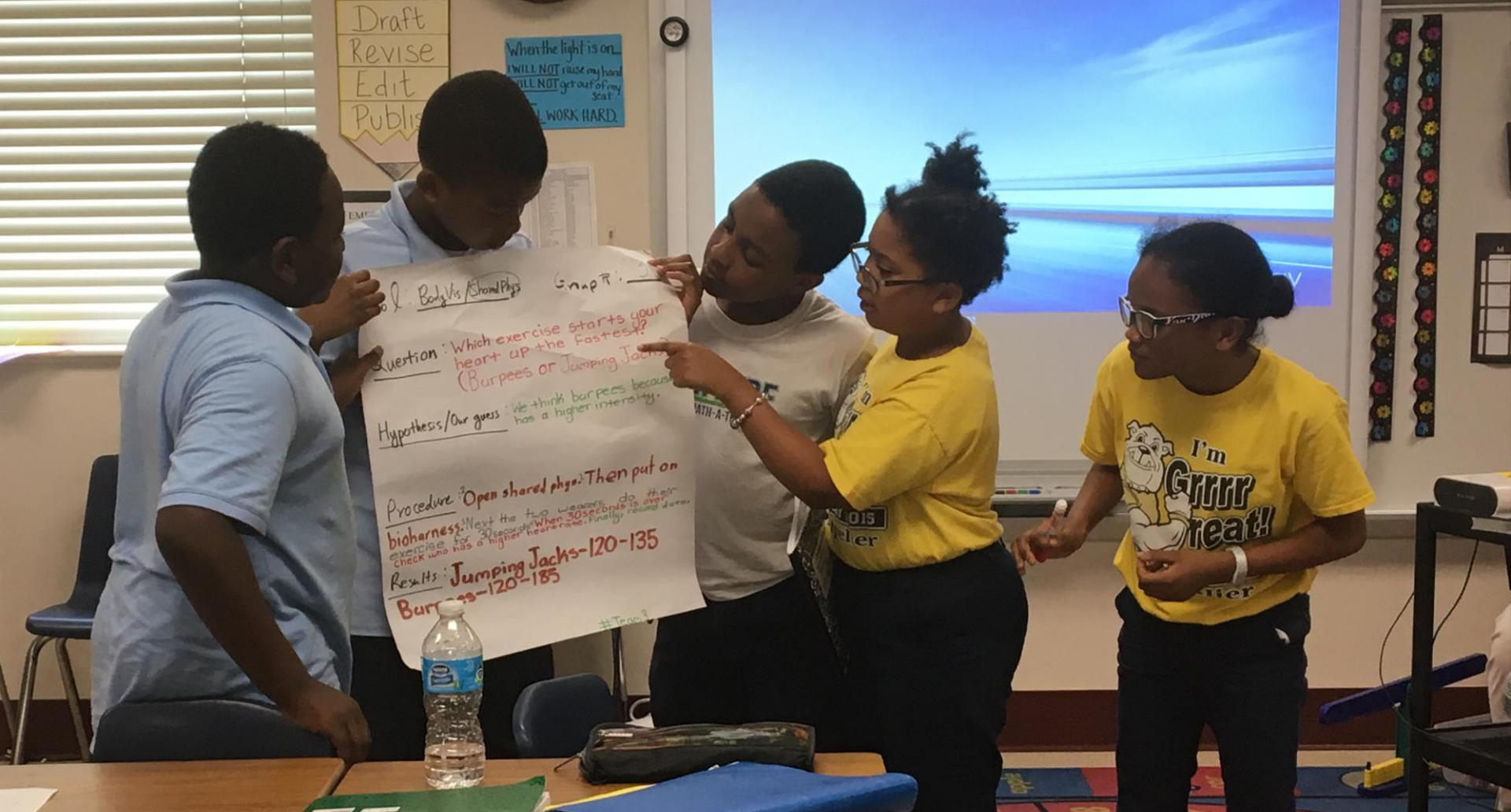
When the light is on...
I WILL NOT raise my hand
I WILL NOT get out of my seat
AND...
I WILL WORK HARD.

EMERGENCY
ESCAPE
WINDOW

Topic: Body Vis / Show Phys Group #: 6
Question:
Does the carlton increase your heart rate?
Guess:
... moving fast ... heart rate

Effects of "the Carlton"





**Burpees vs. jumping
jacks**

Testable questions

**Which excercises “start
your heart up the
fastest?”**

Take Away

Children need opportunities to connect and share everyday learning experiences with science





BodyVis



Science Everywhere

Take Away

Mentors have an important role to play

Foundation

Fundamentals & Findings

Seamless Scientizing



Mobile, social, ubiquitous

Scientizing the Body



Wearables

Future Foundations

We Need
You!!!





June Ahn *
Jason Yip * Jeff
Rick * Beth
Bonsignore *
Daniel Pauw *
Austin Beck *
Kelly Mills *
Rachael Marr
NSF #1441523

Science Everywhere



BodyVis Team

NSF #1441184



My Foundation Team

Questions

?



Maryland

Seattle



Designing with the Community



Parents



Mentors

Mentors and parents bring different contextual knowledge that influences our recognition of learning

Solid Rock

Church

