

# Borton Magnet School



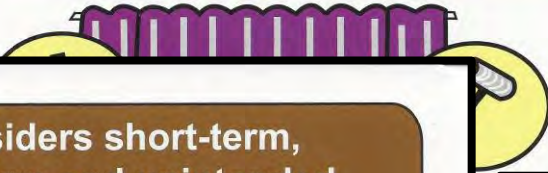
Using Project-Based Learning and Systems  
Thinking to educate children for a future yet  
unknown



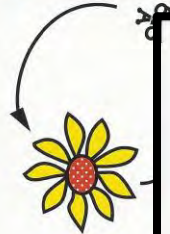
It's all about the community.



Considers how mental models affect current reality and the future



Identifies the circular nature of complex cause and effect relationships

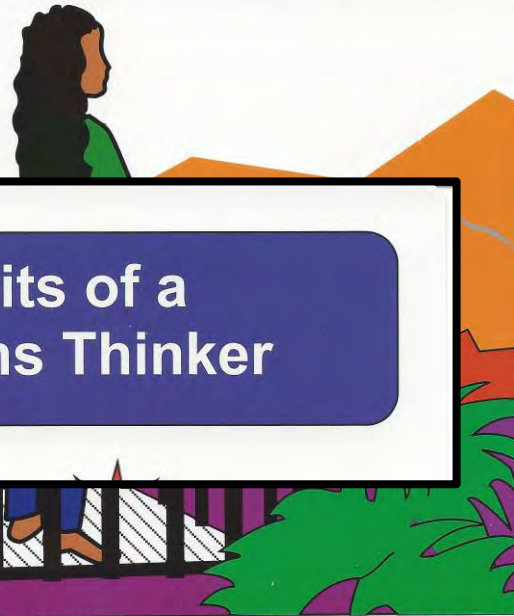


Changes perspectives to increase understanding

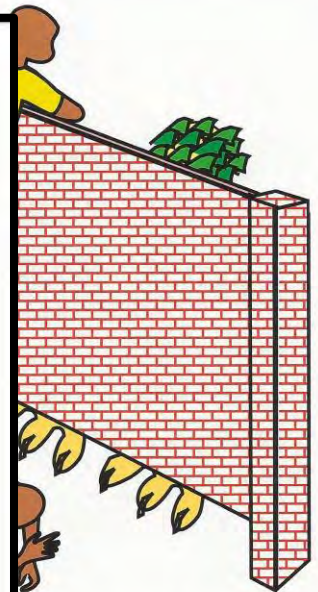
Considers short-term, long-term and unintended consequences of actions



Seeks to understand the "big picture"



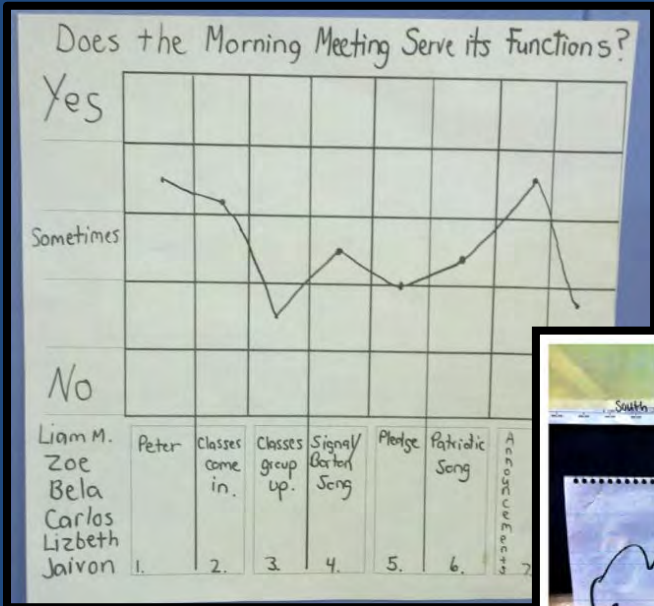
## Habits of a Systems Thinker



Systems Thinking in Schools  
foundation.org

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### Stock Flow Chart

# Sheets of Paper Used

Paper Needs: newsletters, homework, test prep, office notes, for evanage

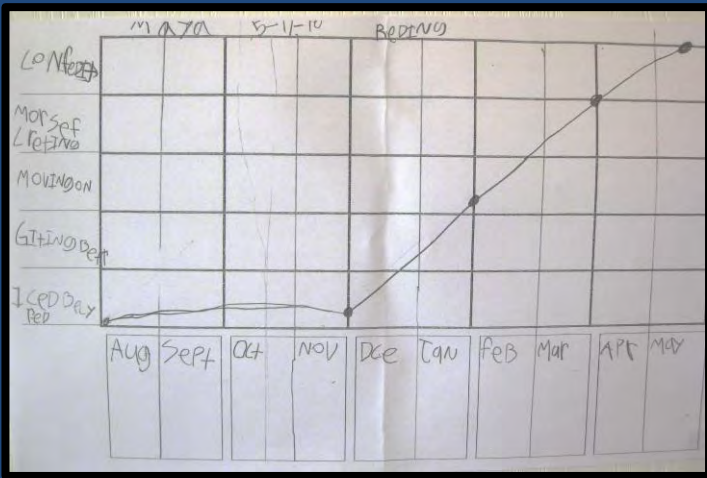
Efforts to Reduce Paper Use: Use both sides, Fill the page, Scrap paper, One per family, E-mail & website, Whiteboards

Causal Loop: # Paper Used, Efforts, Paper Use

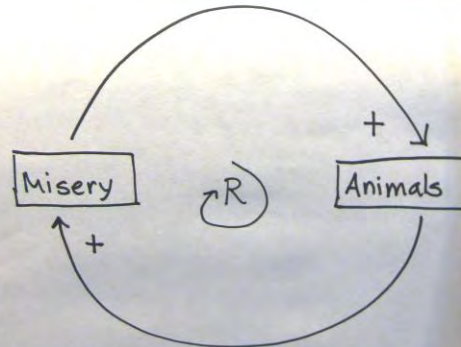
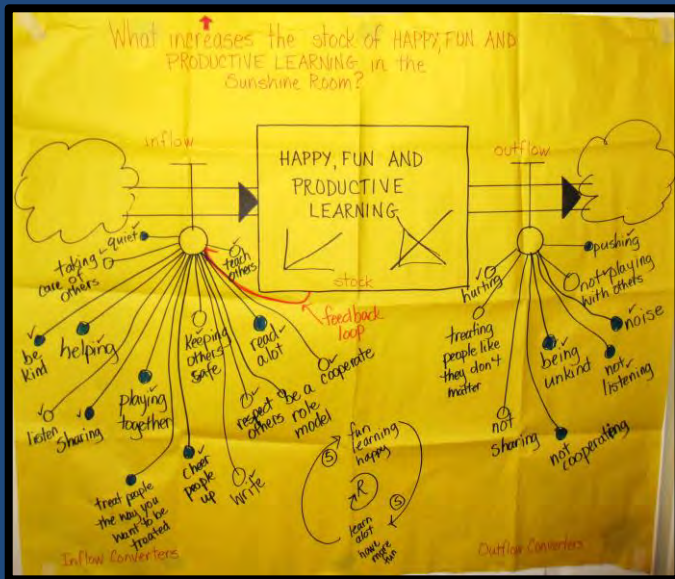
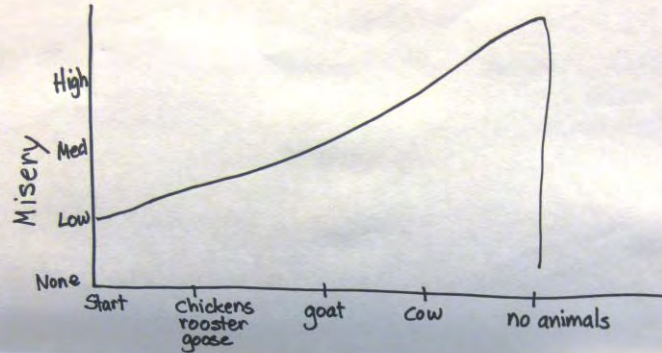
Our paper Goal

Behavior over Graph





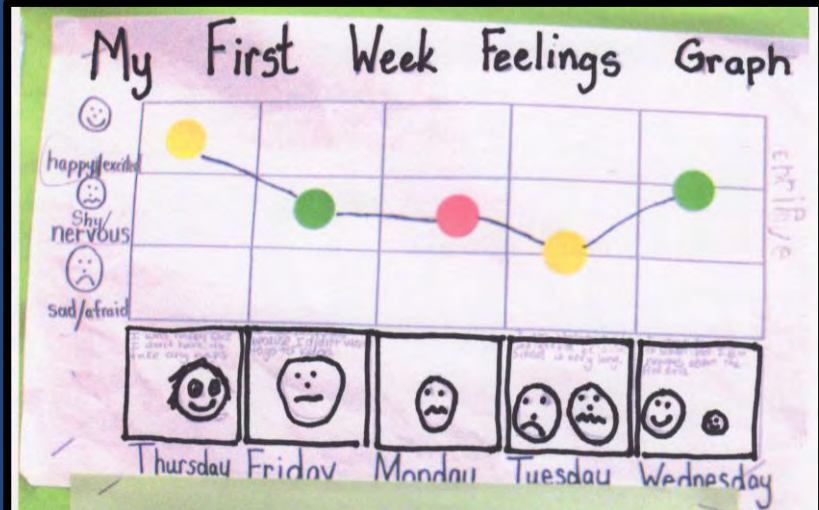
# It Could Always Be Worse by Margot Zemach



A Reinforcing Loop

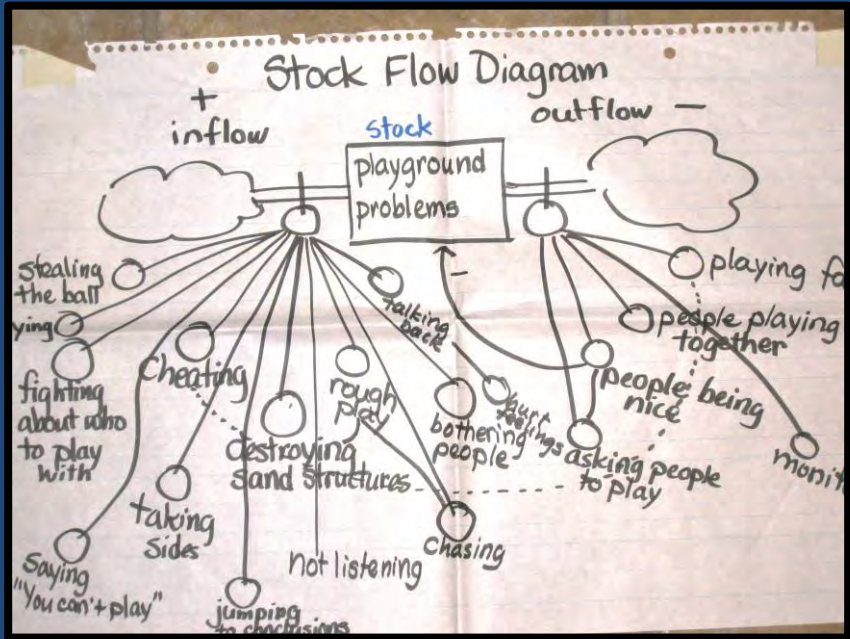
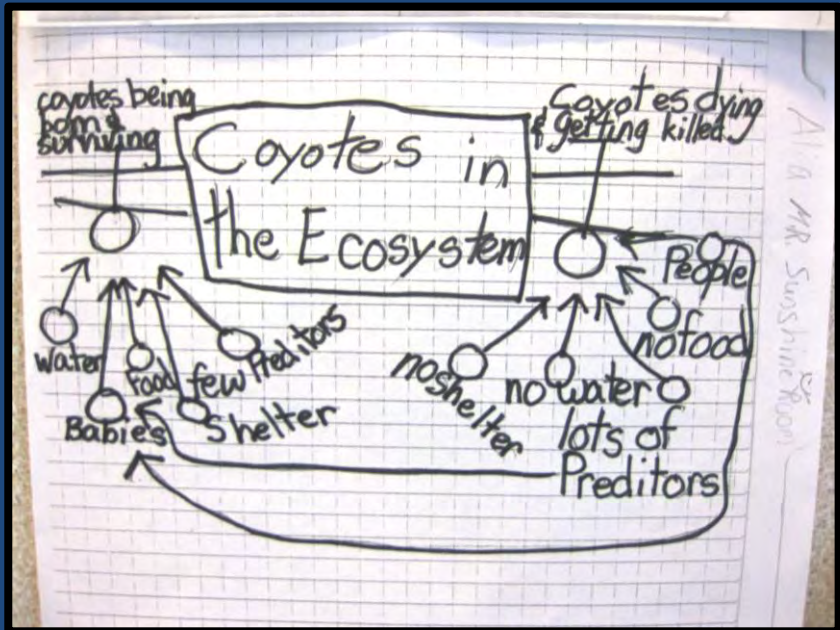
"At the end of the story, both the pluses change to minuses," said Annalyn.





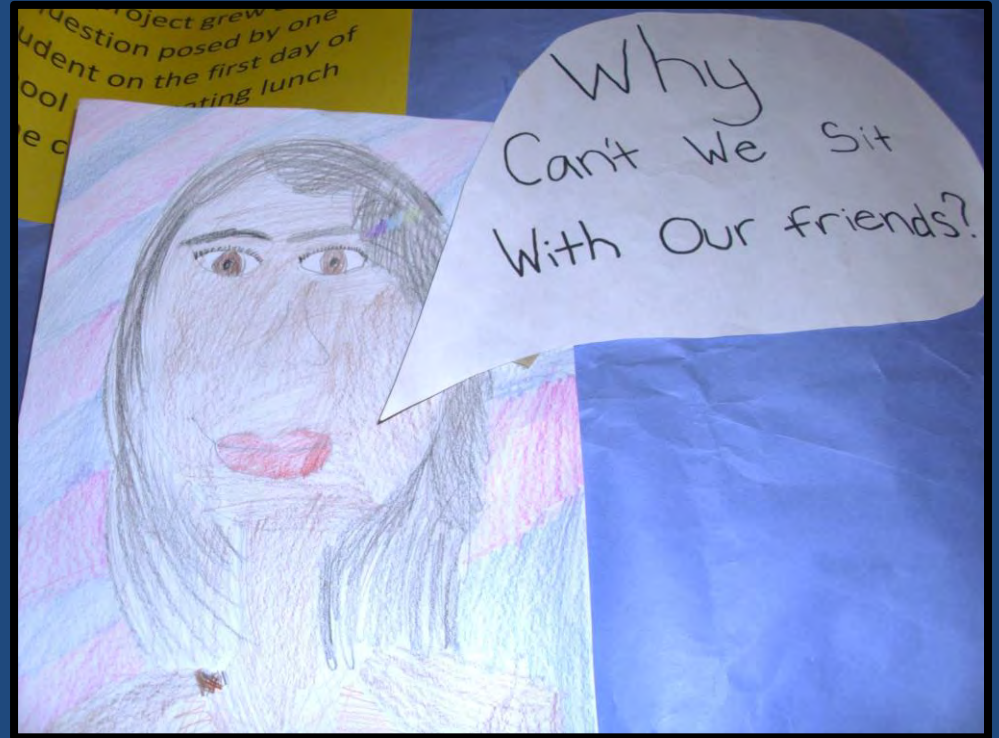
ENRiPue  
On the first day I felt HAPPY

At the end of the week  
I felt HAPPY because I LIK SKI.



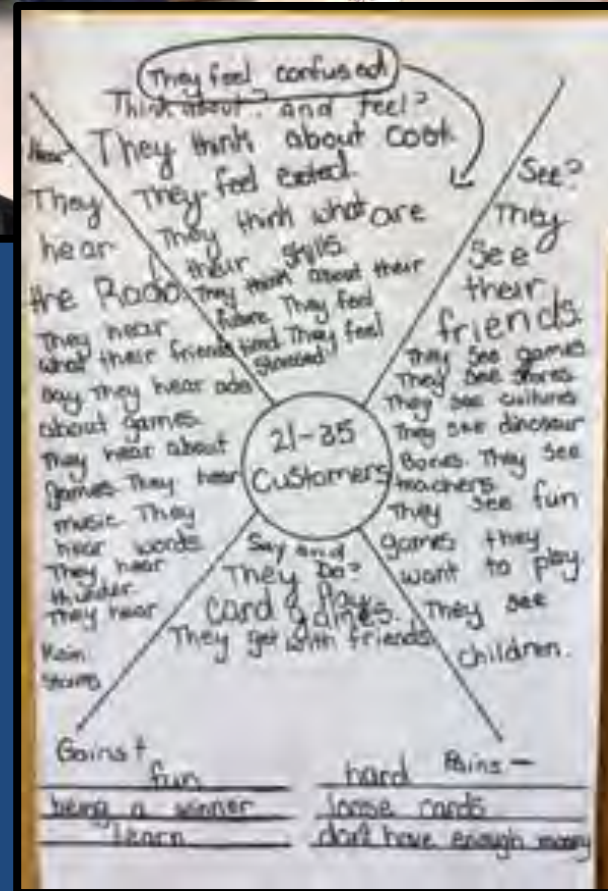
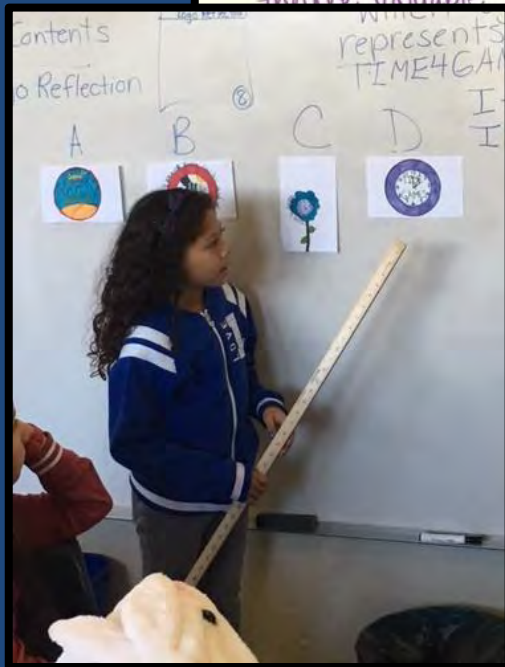
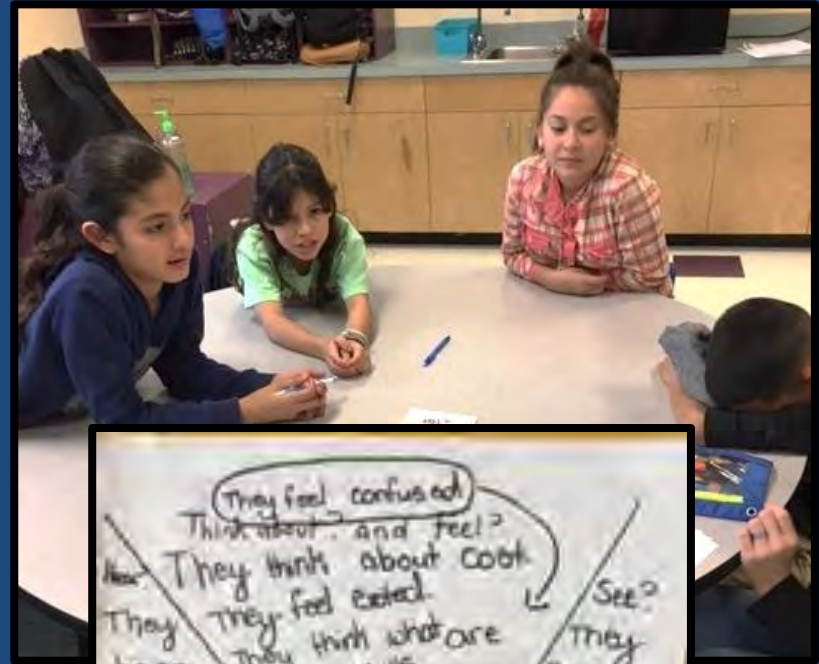
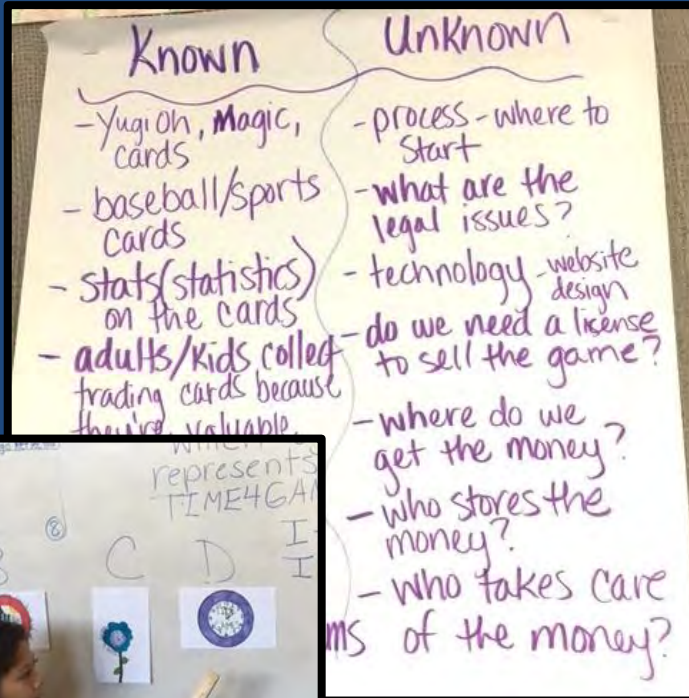
# Essential Elements of PBL

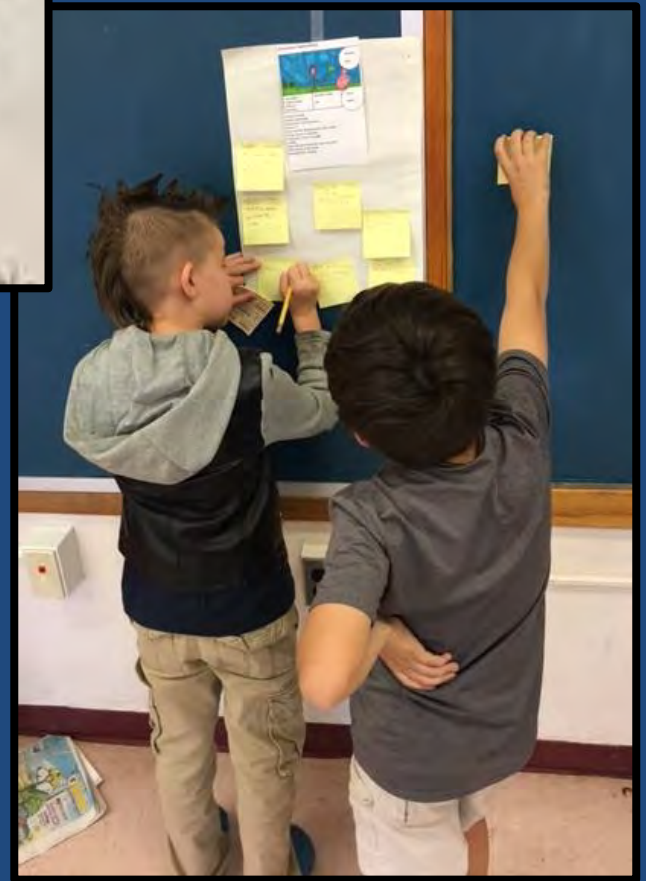
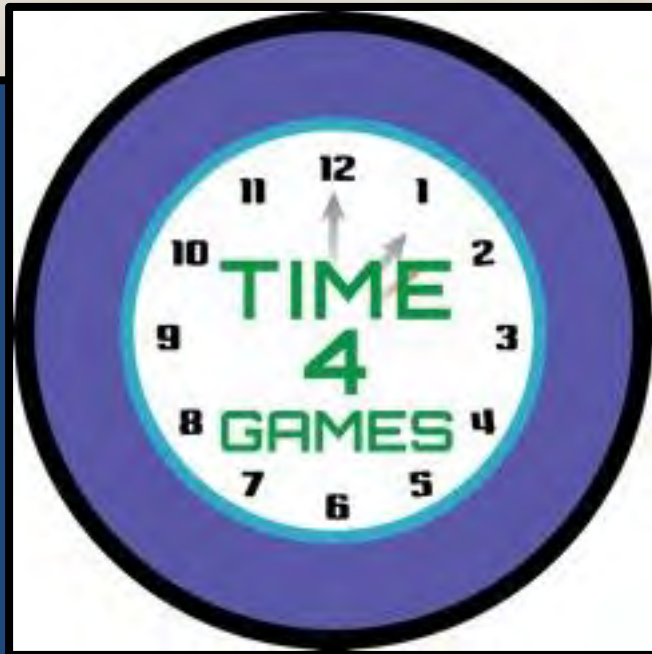
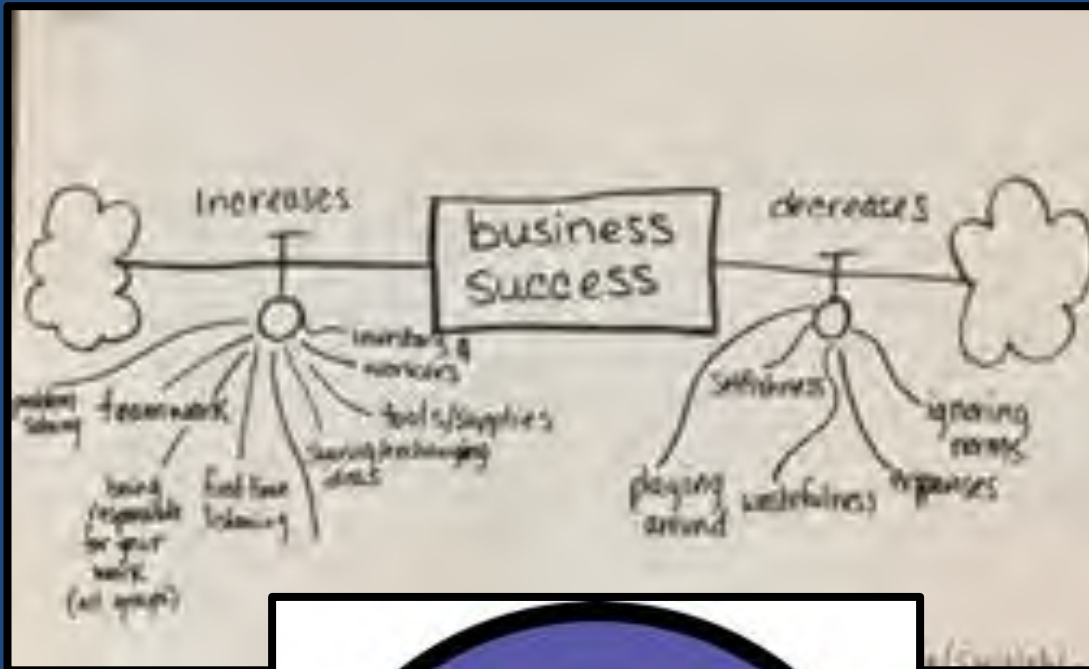
- Significant Content
- 21<sup>st</sup> Century Skills
- In-Depth Inquiry
- Driving Questions
- Need to Know
- Voice and Choice
- Revision and Reflection
- Public Audience





# Real-world Projects

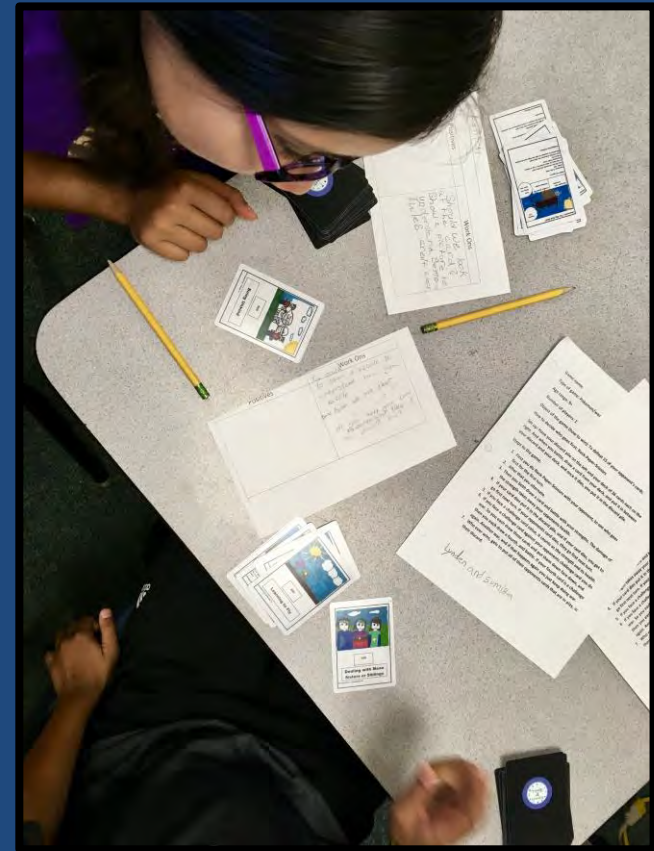


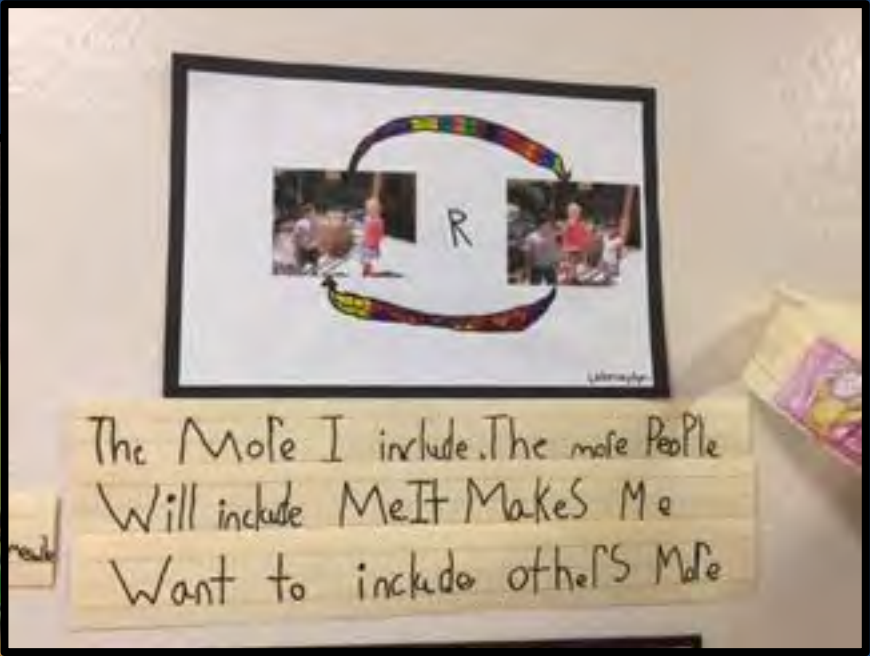
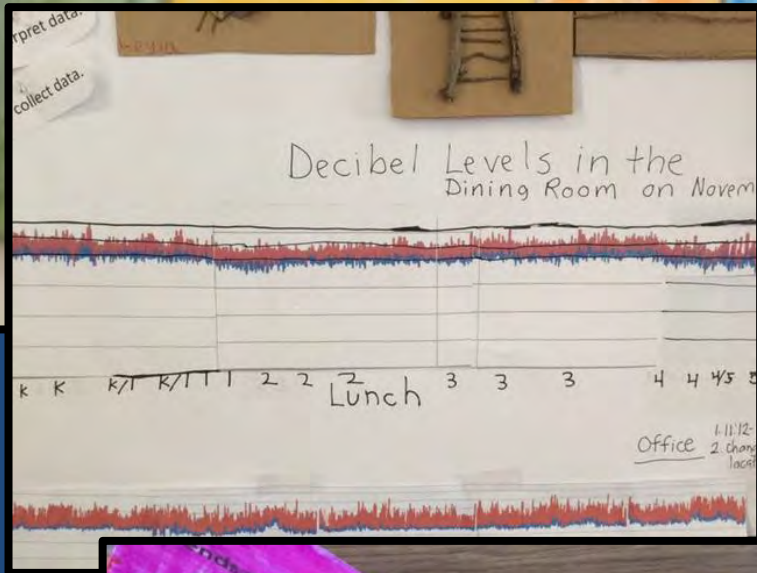


# Why Project-Based Learning?



A NEW GAME  
COMING  
SOON  
WILL YOU  
WIN?







### RAPID EXPERIMENTATION

<p><b>TEST IT!</b></p> <p><b>EXPERIMENTAL DESIGN:</b> List of places. What size behavior you want to measure?</p> <p><b>HYPOTHESIS:</b> If we do X, Y, or Z, who of people will do Z.</p> <p><b>EXPERIMENT:</b> What experiment will test your hypothesis?</p> <p><b>EVIDENCE:</b> What is your strongest evidence for your hypothesis?</p> <p><b>CONCLUSION:</b> What is your conclusion based on your evidence?</p>	<p><b>LEARN &amp; PIVOT!</b></p> <p>What insight did you learn from your experiment?</p> <p><b>RESULTS:</b> Did the experiment pass or fail? Why or why not? What did you learn from the experiment? What did you NOT learn?</p> <p><b>WHAT:</b> Why or why not? What did you learn from the experiment? What did you NOT learn?</p> <p><b>HOW:</b> What new program did you discover? What did you learn from the experiment? What did you NOT learn?</p> <p><b>WHEN:</b> What should you do next? What did you learn from the experiment? What did you NOT learn?</p>
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The page contains a grid for a 'Rapid Experimentation' project. It includes sections for 'TEST IT!', 'LEARN & PIVOT!', 'EXPERIMENTAL DESIGN', 'HYPOTHESIS', 'EXPERIMENT', 'EVIDENCE', 'CONCLUSION', 'RESULTS', 'WHAT', 'HOW', and 'WHEN'. The page is filled with handwritten notes, drawings of rainbows, and a central drawing of a sun with rays.

# Rock

Domink

Marcus

Flopar

Carlos

It is smooth.

It is rough.

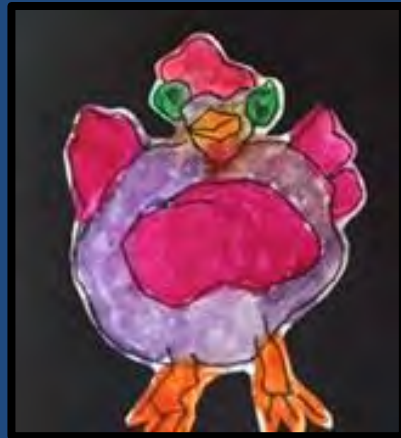
It has holes.

It has bits.

It is gray.

It is shiny.

A hand-drawn diagram of a rock cross-section, showing various layers and textures. The diagram is surrounded by handwritten labels: 'Domink', 'Marcus', 'Flopar', and 'Carlos'. Below the diagram are several handwritten observations: 'It is smooth.', 'It is rough.', 'It has holes.', 'It has bits.', 'It is gray.', and 'It is shiny.' There is also a small photograph of a group of people in the bottom right corner.



# There's more than PBL and Systems Thinking at Borton!



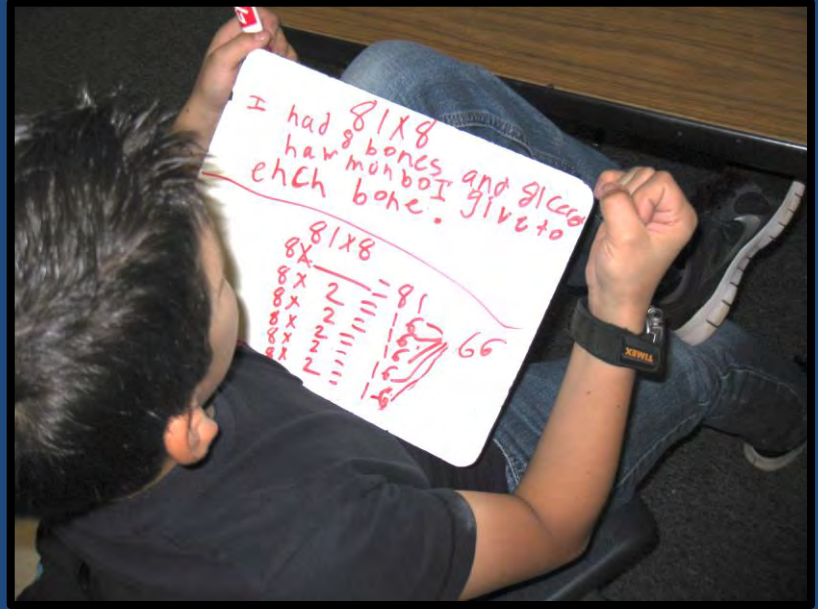
# GIS





Parents are an important part of our school community.







# We work closely with community partners.

Waters Foundation – Systems Thinking in Schools Project

Ben's Bells Kind Kids-Kind Schools Project



Trees for Tucson

Tucson Community Food Bank

RealWorldScholars - EdCorp

LeadLocal

Tucson Clean and Beautiful

University of Arizona

Community Share

Westland Resources

# Borton is an award-winning school.

Arizona Department of Education  
Early Literacy Site



Arizona A+ School

Evelyn Joy  
Award



Magnet Schools of America Award

National Council of Teachers of English  
Exemplary Literacy Program

Microsoft Innovative Teachers Award

# Come for a visit!



Learn more about Systems Thinking and Project-Based Learning on our website:  
<http://edweb.tusd1.org/Borton/>