


WHY ROBOTICS?

We Understand the Challenges


IT'S ESTIMATED
THAT BY 2030,



38%

JOB'S CURRENTLY
HELD BY US WORKERS
WILL BE AUTOMATED.

BY THAT TIME, THERE WILL BE



**500
BILLION**

DEVICES IN THE WORLD
CONNECTED TO THE INTERNET.

PLUS, HOUSTON . . . WE
HAVE AN ENGAGEMENT
PROBLEM.



**ONLY
49%**

OF US PUBLIC
SCHOOL
STUDENTS ARE
ENGAGED IN SCHOOL.

FROM CONTENT TO ROBOTICS





CONTEXT AND RELEVANCE: WORK IS PRESENTED TO STUDENTS IN A WAY THAT MATTERS TO THEM

- **Define the problem** -*The local theater's movie projector has broken, meaning they can no longer show movies. They want to know how they can still entertain people using only their large theatre light, screen and general items found in the theater.*





DISCOVER THE RESEARCH AND DIGGING BEGINS. THIS INVOLVES OBTAINING THE BACKGROUND INFORMATION THAT GIVES THE PROBLEM ITS CONTEXT, AND IDENTIFYING WHAT YOU NEED TO KNOW AND WHAT YOU NEED TO BE ABLE TO DO TO SOLVE THE PROBLEM



Students are allowed to explore how shadows are made, what makes them bigger or smaller, and how the light source impacts the objects. They shared their results and discussed what they learned about creating shadow such as placement of light source, what caused the change of size and why some light sources did not work.

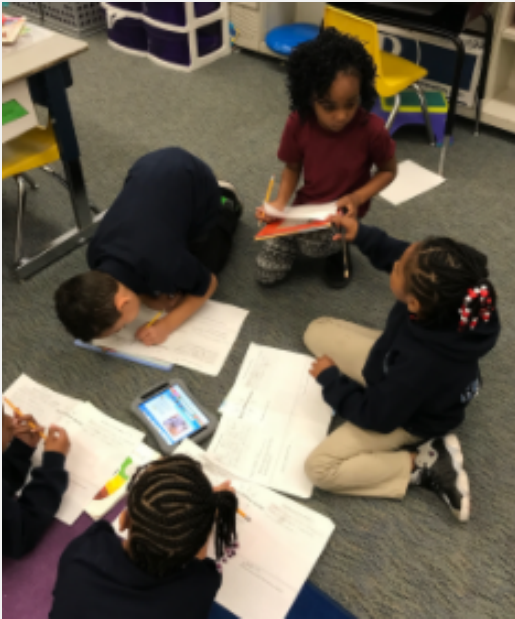


Students then began an exploration about how they could project light on various material and whether or not you can see shadows through the materials.



DREAM STUDENTS BEGIN TO USE THEIR
KNOWLEDGE TO VISUALIZE CREATIVE AND APPROPRIATE
SOLUTIONS.

*HOW DO WE USE LIGHT AND SHADOWS TO BRING TO LIFE
A STORY?*





DESIGN NEXT THE STUDENTS DESIGN THE VISUALIZED SOLUTION IN MEASURABLE, ACHIEVABLE STEPS.

Product: Shadow puppet theater operated by the hummingbird kit presenting your final story. You must also provide a final written copy of story.

Criteria for Success:

Use two motors

Can see puppets clearly

Movement works for the story

Story has two events

Read story like you talk

Story has beginning, middle, and end



DELIVER STUDENTS ARE AT THE PLACE WHERE THE DREAM BECOMES A REALITY, THEY ACTUALLY IMPLEMENT THE DESIGN TO COMPLETE THE SOLUTION TO THE PROBLEM IN TWO SEPARATE STEPS: **PRODUCE** AND **PUBLISH**



GRADE I

Sample Expectations:

Reading: Reads with voice and expression

Reads fluently

Understands that pictures support the words in the story

Writing: Prewrites to generate ideas

Produces multiple drafts to improve writing

Revises to edit text

Uses appropriate style to enhance the story

Writes narrative with two or more appropriately sequenced events

Includes details to support the story

Math: Understand numbers and can recognize more and less

Understands zero as more than a place holder

Recognizes that there are numbers below zero that are represented by –

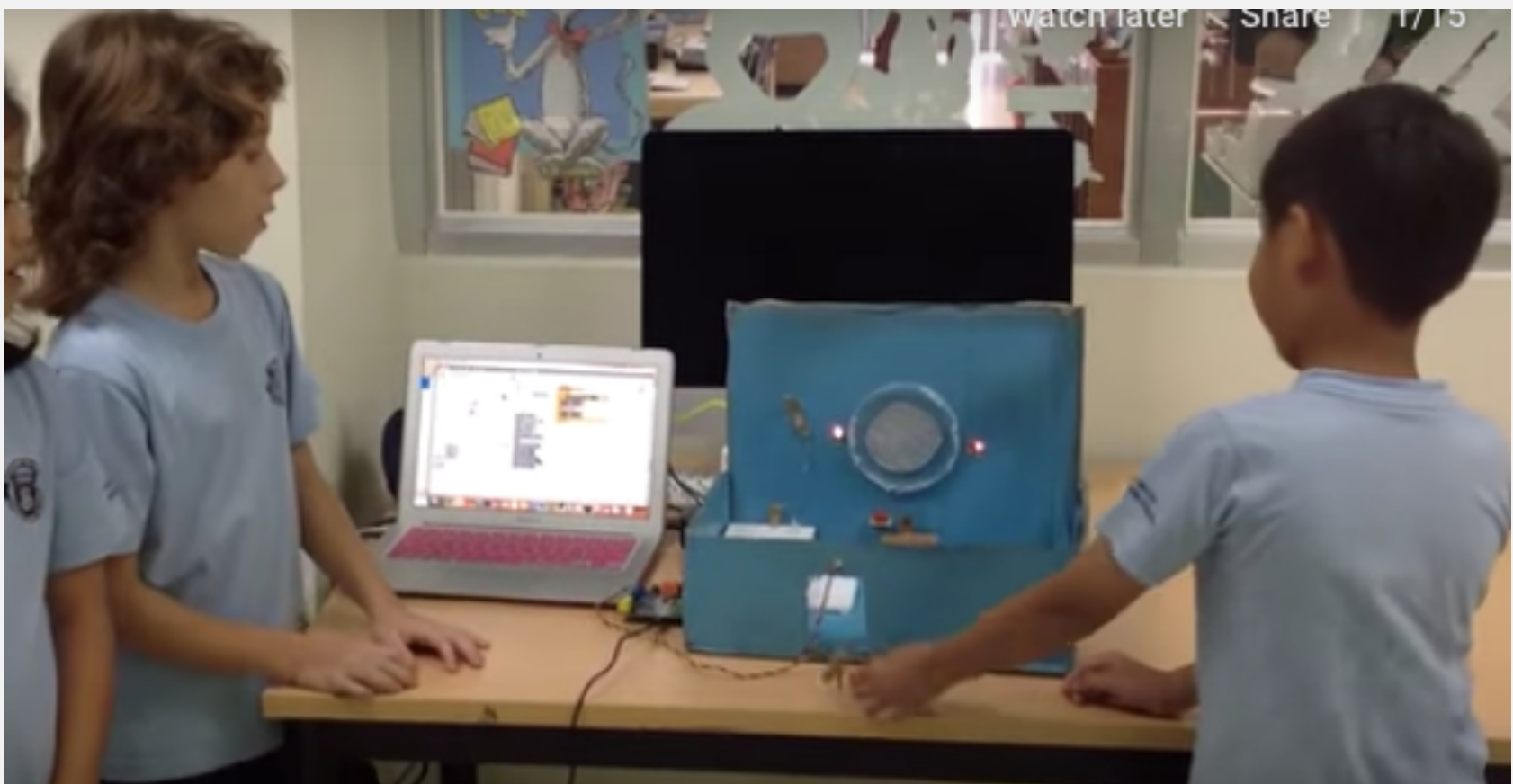
Science: Makes observations to gain understanding that objects can only be seen when illuminated

Understand that some materials are opaque

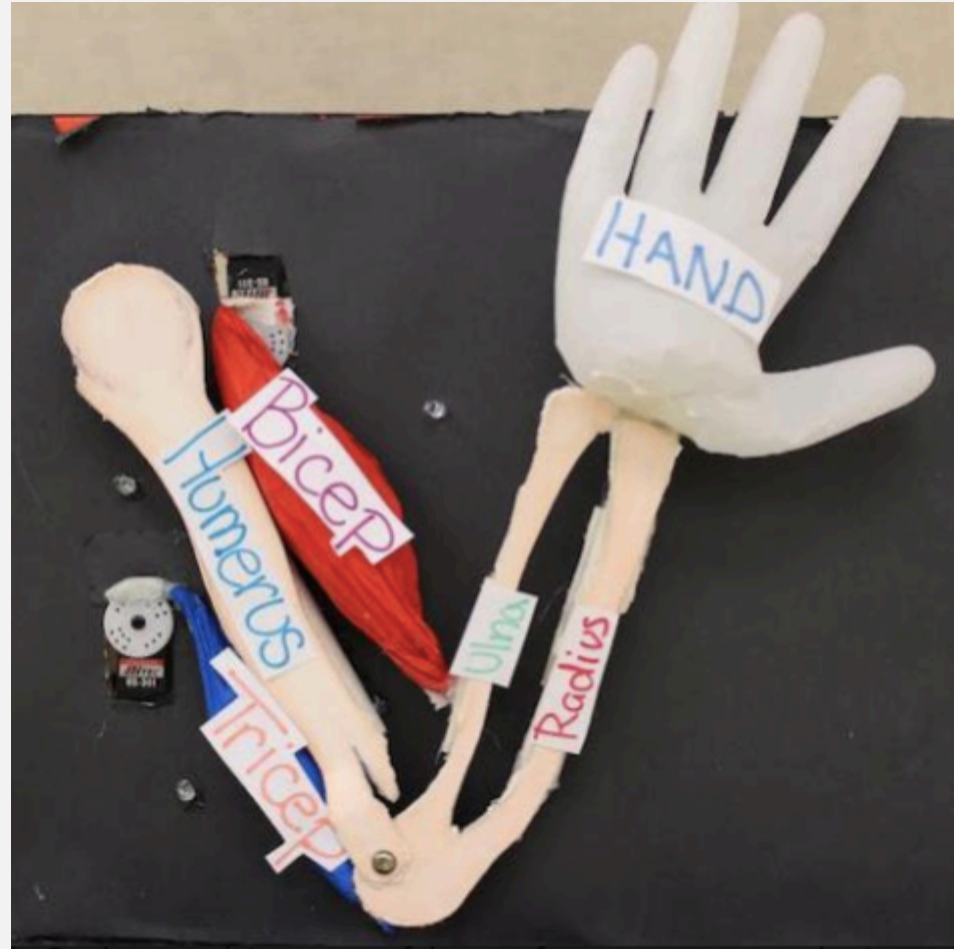
Recognizes that object can be lit from in front and behind causing different shadows

Shadows can be made bigger or smaller depending on the light source





Watch later / Share 1/15





GET YOURSELVES INTO 6
GROUPS

CREATIVITY TASK FOR YOU!

- <https://www.youtube.com/watch?v=MljxnogZgd4>

YOUR TASK:

To create a prosthetic beak for your assigned bird

Northern Parula

Ruby Throated Hummingbird

Merganser

EACH GROUP MUST CREATE THE FOLLOWING:

- Prototype for a prosthetic beak made from materials given that will function in a way that the bird requires
- Create a poster sharing the area where your bird is found, sharing what you know about your bird's use of its beak, and explaining your design.
- Beak must be able to complete the food gathering task for that the bird

YOU HAVE: 30 MINUTES TO COMPLETE
ALL OF YOUR TASKS

Product	Process
Prosthetic Beak for your type of bird	30 minutes to complete all of your tasks
Must use two robotics component	Every person on team must have a clearly defined role
Presentation (no longer than three minutes) that includes information about how your bird uses it's beak and explains your design and includes your poster	
Bird will complete the food eating challenge	
Share three ways you can think of to use LittleBits in your classroom	