CODING ACROSS THE CURRICULUM

Gail Lovely
Suddenlyitclicks.com
GailLovely@Suddenlyitclicks.com

WE STARTED WITH DECODING.

- In groups we used a cypher to decode a secret message
- We discussed what sorts of thinking we had to use to accomplish the task of decoding the message

THE "CODES" USED:

PigPenCodeFont	
Morse Mountain Code Regular	
Hello Phonic Doodles Medium	
Morse Regular	

WE DEVELOPED

- Age Group Specific Working Definitions of coding and shared these on a padlet

- Continued Wonderings

HTTPS://PADLET.COM/GLOVELY/CODINGDEFINED

CODING

Computational Thinking

- The underpinnings of Coding. Ways of thinking and solving problems

Coding

- The action of coding human language into "tech language" to achieve an action/goal

COMPUTATIONAL THINKING

A foundational skill for more than coding

They can be successful... this sort of problem solving is a life skill, maybe more than coding.

Make lunch...

Share cookies...

Convince parents to get a pet...

Write a story...

Create code

Sort shoes...

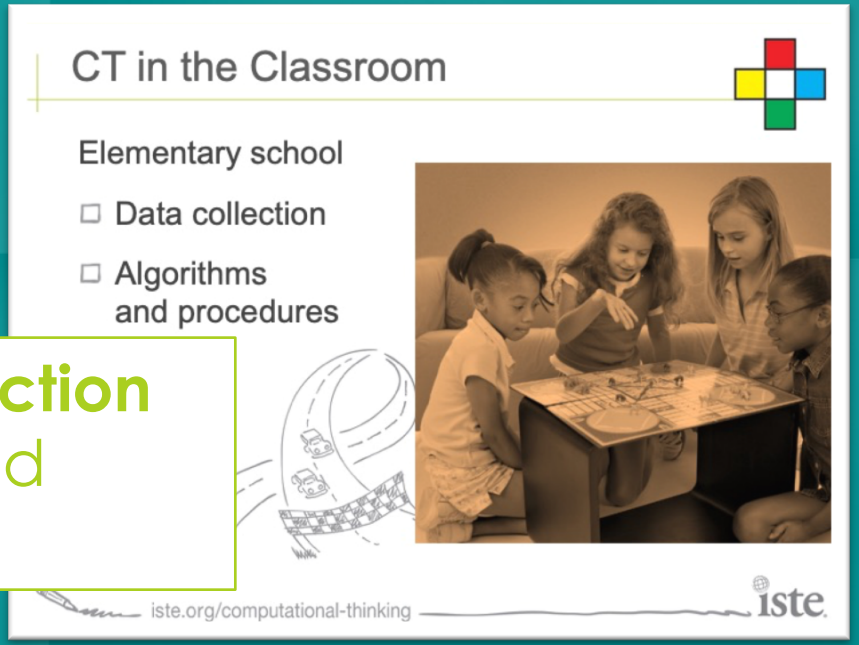
COMPUTATIONAL THINKING

"Formulating things with enough clarity, and in a systematic enough way, that one can tell a computer how to do them"

- Stephen Wolfram

COMPUTATIONAL THINKING WITH AGES 4-10

From ISTE's site:



A focus on **data collection** and **algorithms** and **procedures**

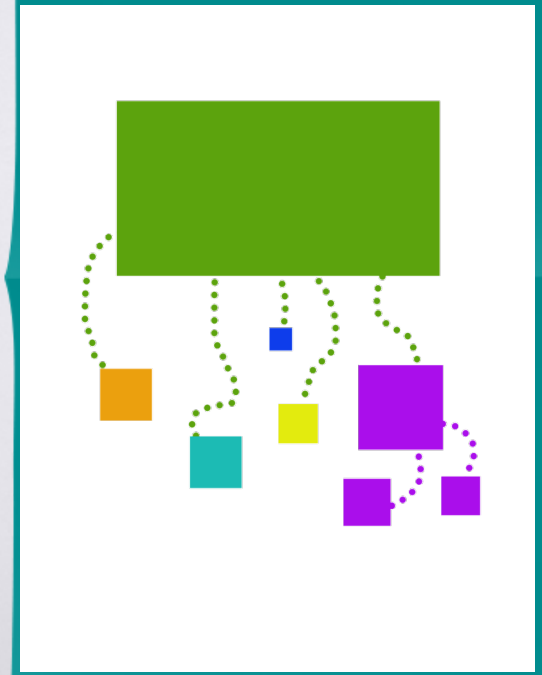
https://www.iste.org/explore/Solutions/Computational-thinking-for-all

KEY COMPUTATIONAL THINKING SKILLS

- Decomposition
- Pattern Recognition
- Algorithms
- Abstraction

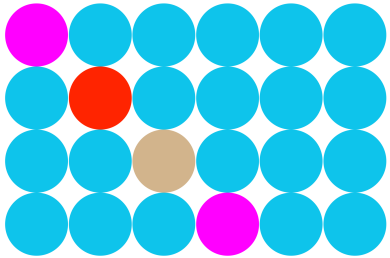
PRADA

DECOMPOSITION



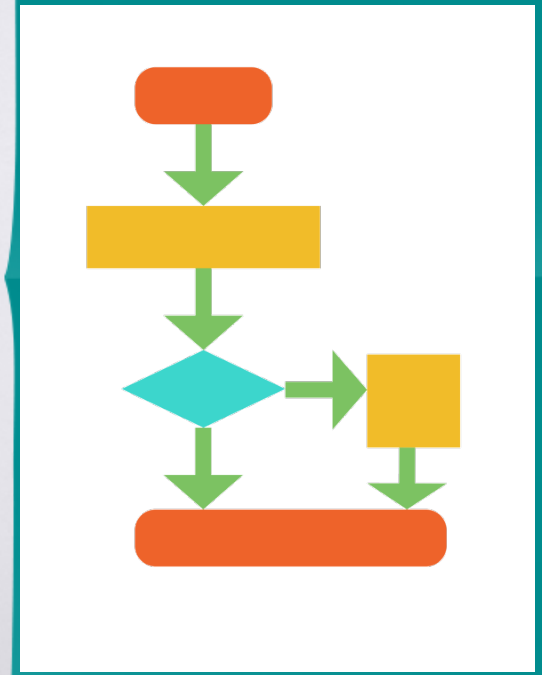
Breaking a problem into smaller "chunks"

PATTERN RECOGNITION



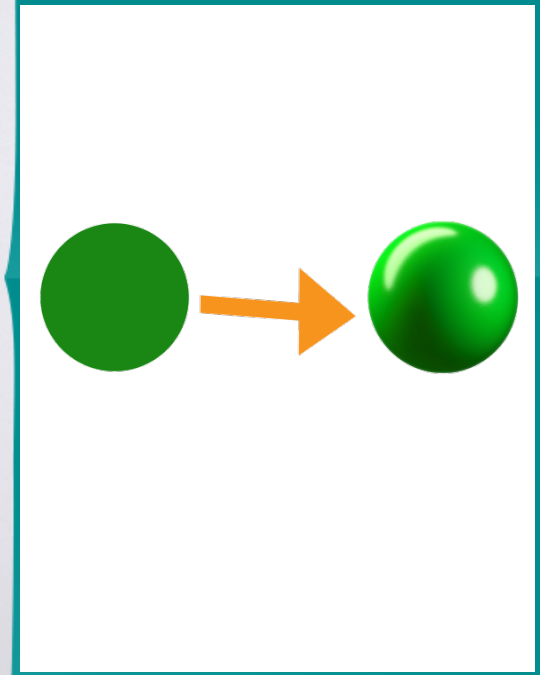
Making connections between similar problems and experience or finding patterns and testing them

ALGORITHMS



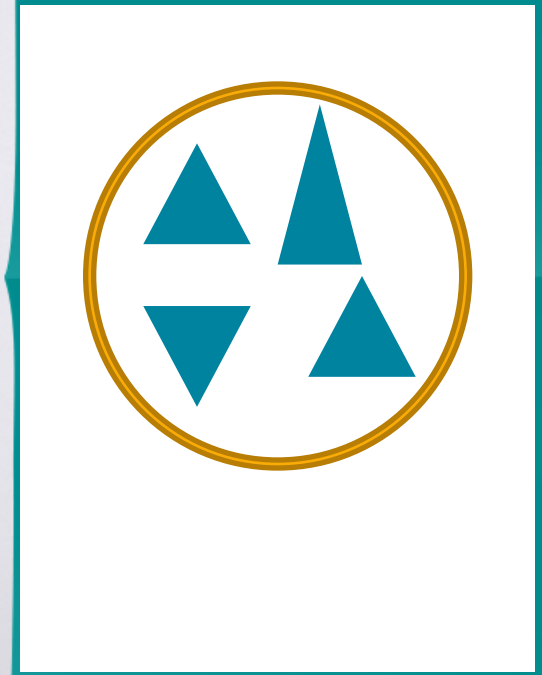
Creating and testing step-by-step plans to solve problems

ABSTRACTION



Using information and making generalizations to imagine something we cannot see or touch

ABSTRACTION



Identifying important information while ignoring unrelated or irrelevant details

So when we look at coding, we need to be looking at the underlying thinking.

WE DID A PROBLEM SOLVING TASK WITH CUT PAPER

We discussed the thinking and some of the words used during the exercise:

- Mathematical words
- Encouraging words
- Geometry words
- Emotional words
- Words about order, choice, options, procedures

Let's look at a few ways to move coding into curriculum

SPHERO

- Sphero Robot
  - App-driven
  - "remote control"
  - "draw and drive"
  - Block programming
  - Javascript

ADDING CONTEXT TO CODING AND CT

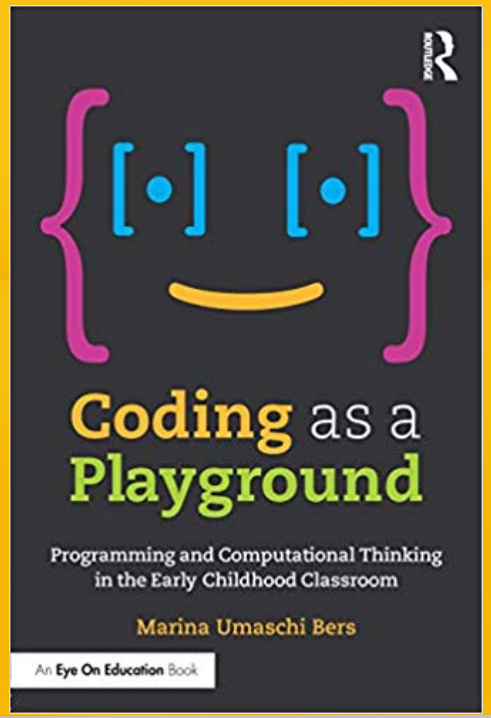
Sphero

Examples shared included:

- Mini Golf
- Jousting
- Battlebots

PLAYPEN OR PLAYGROUND?

Coding as a Playground by Marina Bers



OZOBOT AND BLUEBOT AND BEEBOT

- Let's Play!

- We explored the affordances of Ozobots and watched as new users discovered and thought about coding these small robots.
- We examined Beebots and Bluebots in a game setting

CODING IN HISTORY

- Show movement across an area by creating a map and programming bots to cross the map – like westward expansion.
- Use ScratchJr to create a scene from history.
- Using Scratch Jr to make a timeline and changes

CODING ART

- Dances
- Art (with drawing bots)

CODING IN LANGUAGE ARTS

- Code scenes in ScratchJr as definitions of words or big concepts in a unit of study.
- Use bots as characters to retell or tell a story. Include costumes, scenery, props, and a well-written script.
- Create branching stories using Powerpoint or other software.

CODING IN MATH

- Number stories acted out with bots
- Geometric shapes
- Stories in Scratch explaining math concepts, routines
- Measurement (length distance)

In the end it largely comes down to context.

Thanks!

Any questions?

You can find me at @glovely &
GailLovely@SuddenlyItClicks.com