Coding K-12

Never too young
Never too old

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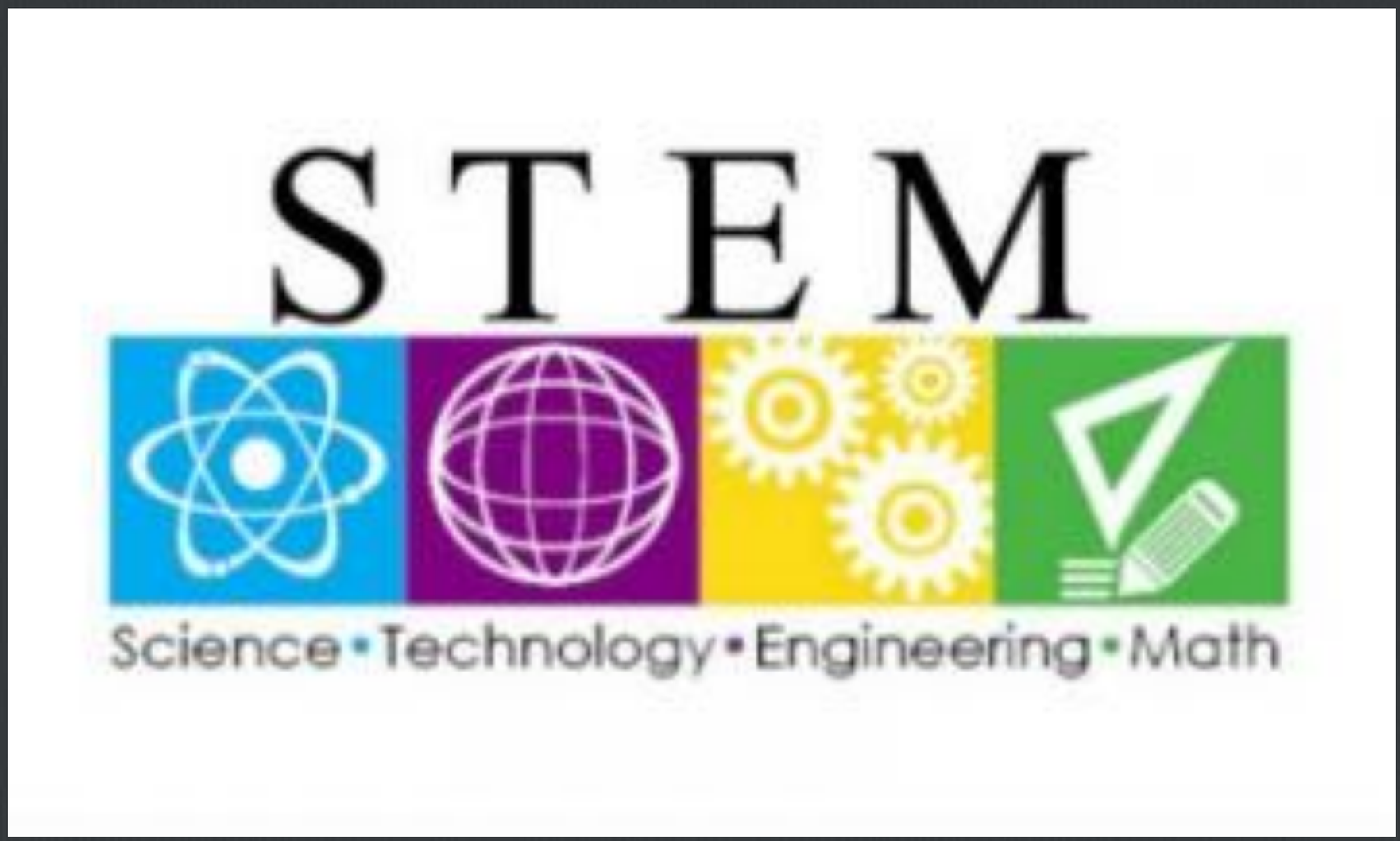
Why code?



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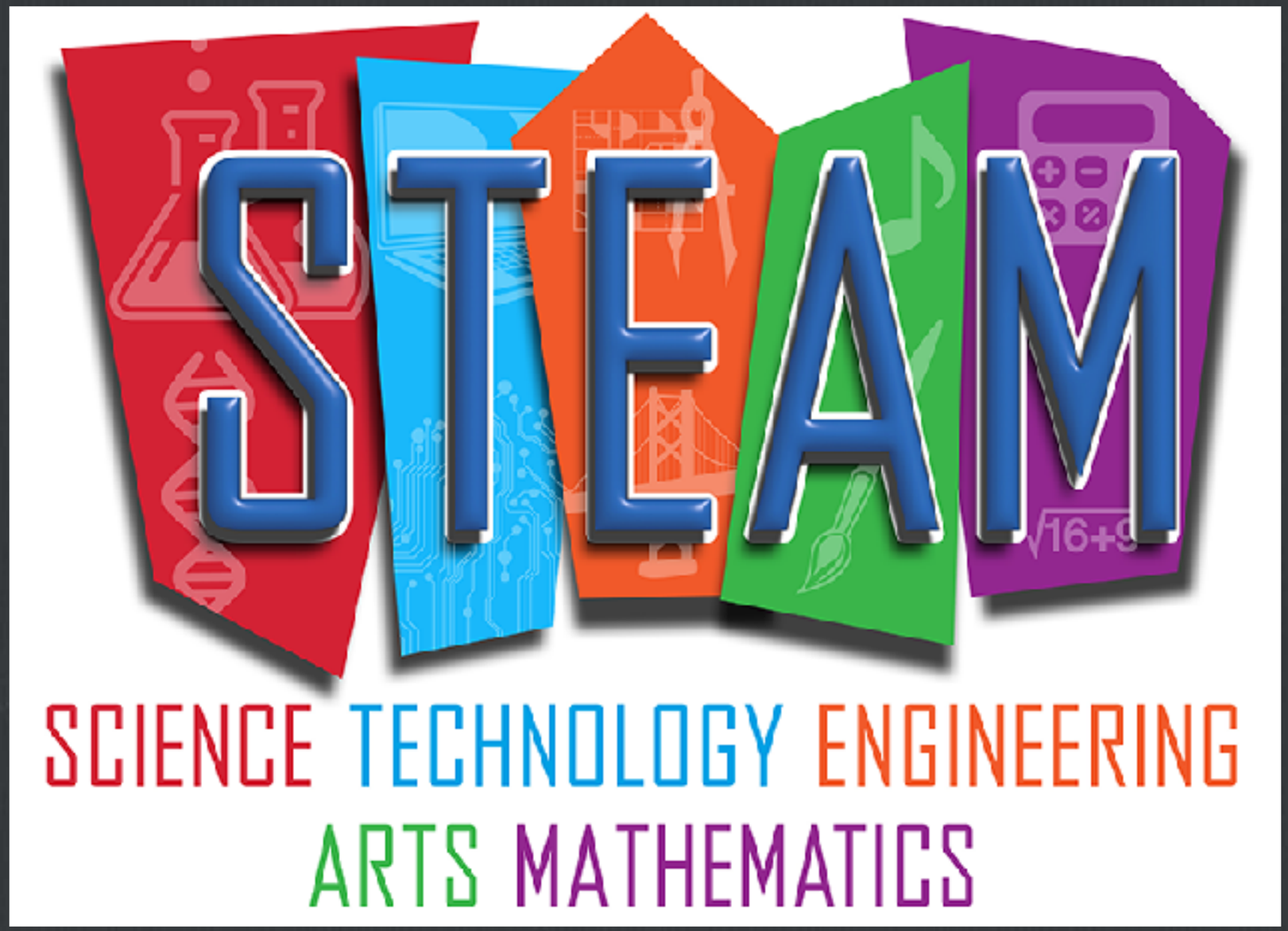
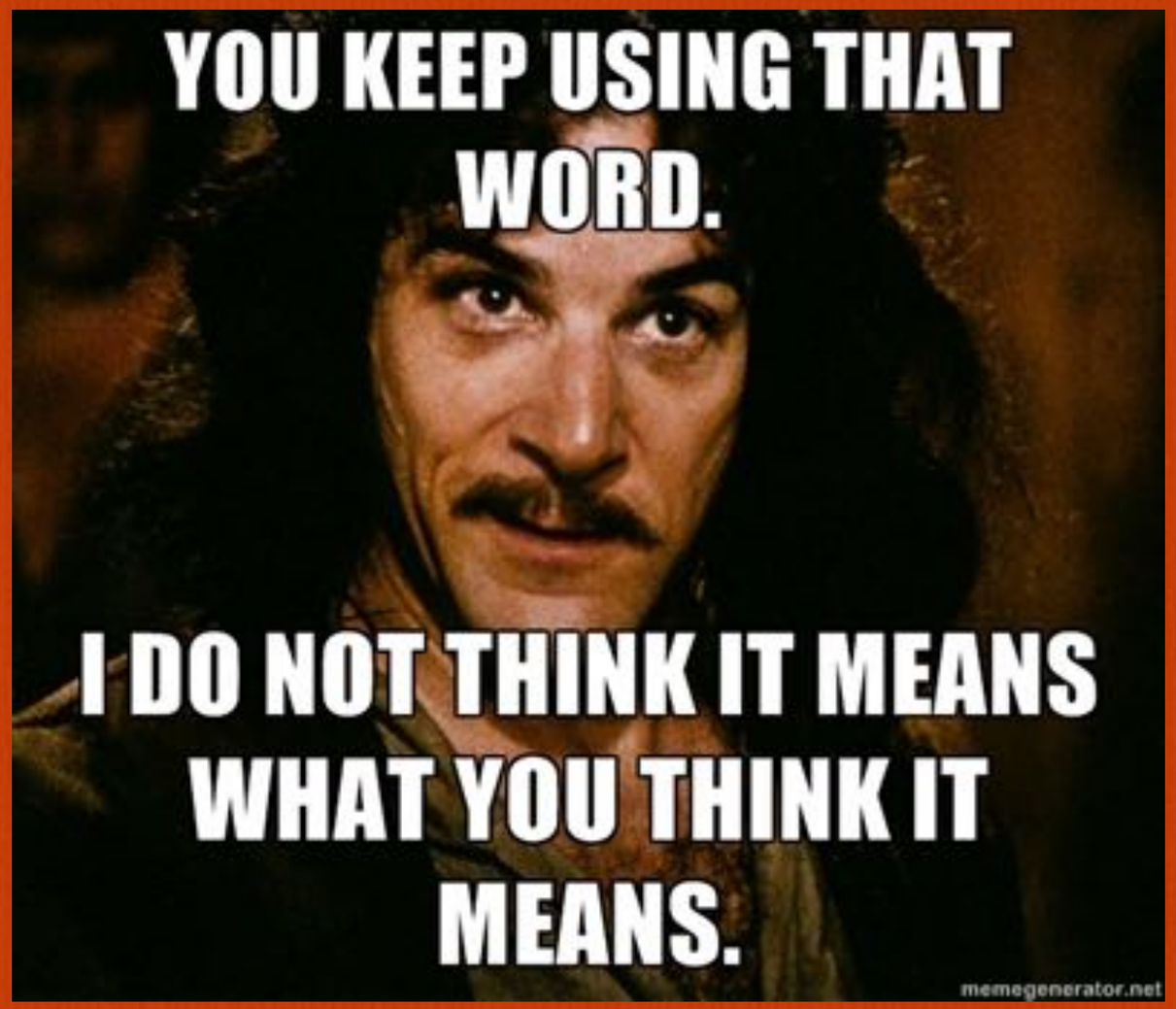
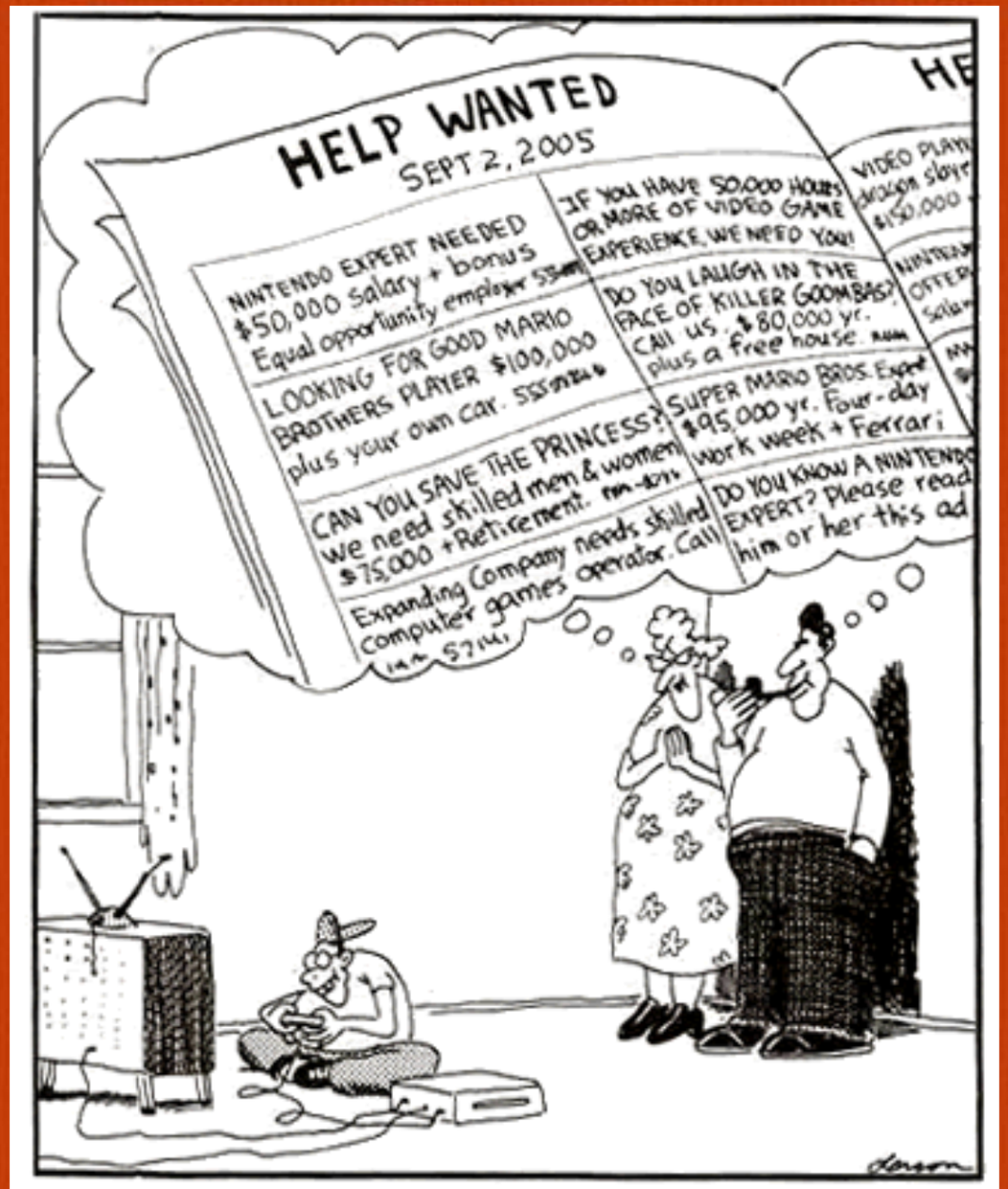




What it isn't

something done in basements nor computer labs



Hopeful parents

What?

how funny! Imagine getting paid to play video games….

Techie State of Mind

TECHIESTATEOFMIND.BLOGSPOT.COM

What it is

a mindset for critically/creatively/collaboratively composing communications

Centres Approach

- ☐ Time limited
- ☐ Frustration limited
- ☐ Delayed gratification
- ☐ Opens into "free choice"

Why K?

Too much screen time
Not independent
Too hard
Not enough devices

consuming
vs
creating

tools
vs
toys

Coding state of mind

- ☐ Collaboration
- ☐ Community
- ☐ Problem solving
- ☐ Curiosity

Collaboratively Personalized Learning

The mental piece

- ☐ It's a mindset
- ☐ Knowledge (digital literacy)
- ☐ Scaffolding
- ☐ Many entry points
- ☐ Part of Self Regulation

Gradual Guided Release of Responsibility

"Everybody in this country should
learn how to program a computer...
because it teaches you how to think."

-Steve Jobs

1:1ish

1 station per student
scaleable

samples of the stations

crossy road

to learn that fails happen and you can learn from your mistakes
(and that technology disruptions happen in many places)

graffiti

to learn others may (and should) write over top of yours, change your work, invade your “whiteboard space” and that’s okay (and erasable too)

lego architecture

white noise
& ocd-ish identifier

lego explorations

this ain't the lego we grew up with

garageband

zone of frustration & way to connect pieces together

kinetic sand

self-regulation tools are essential when coding
(frustration happens….but shouldn't stick)

other self-regulation centers for exploration

magnets
puzzle
putty
blocks
quiet vs loud

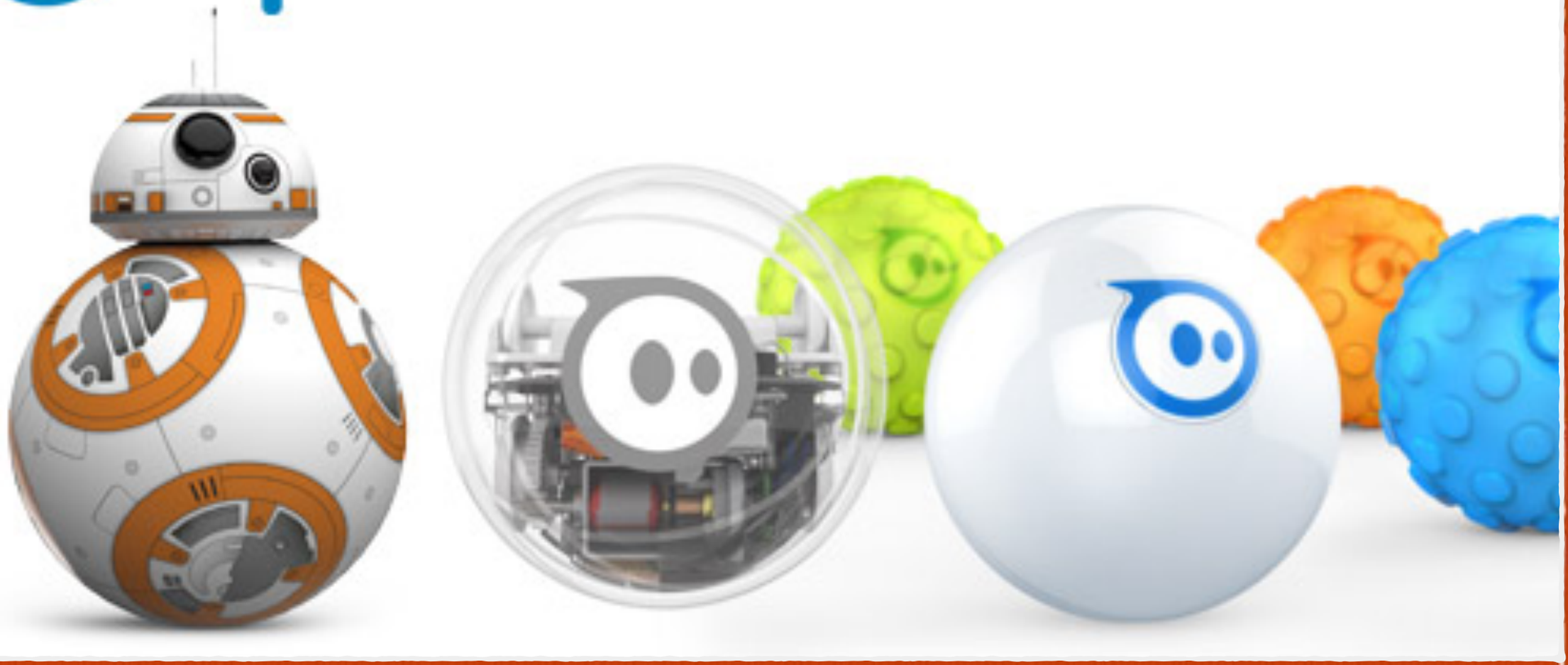
keva planks

building possibilities
free play or challenge activities

snap circuits

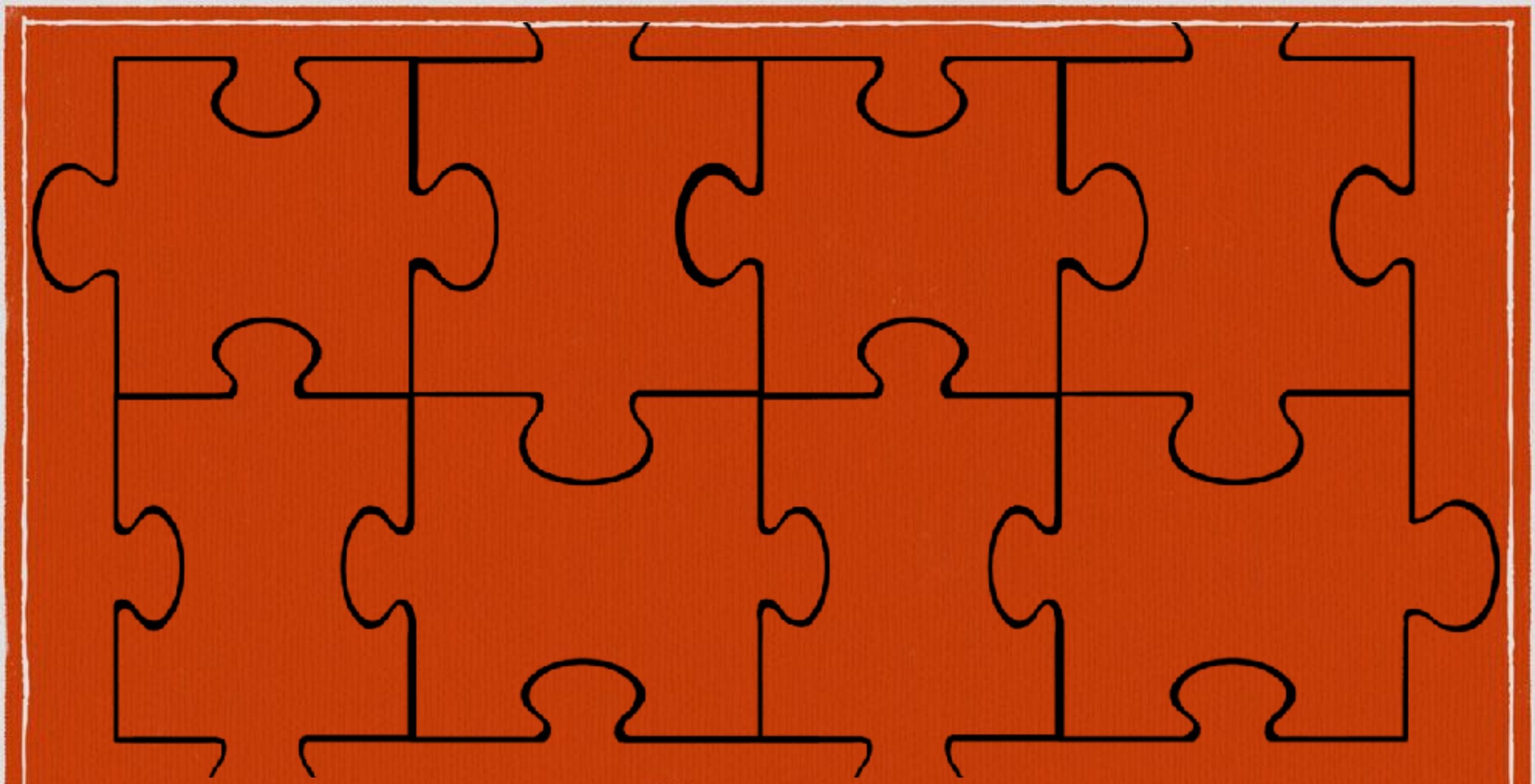
seeing how one set of tools can lead to many end-products

sphero



sprk & BB8

intro to robotics



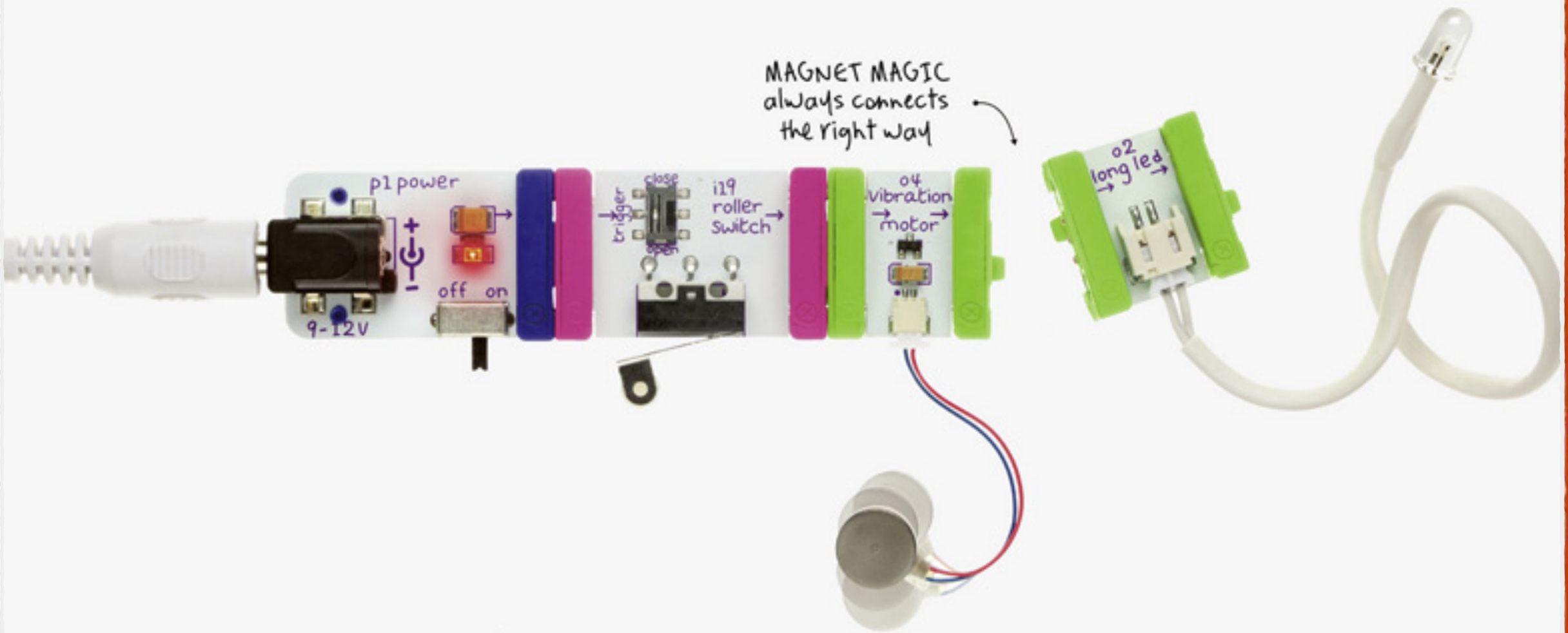
puzzles

thinking activites (patterns & systems)
plus: make your own

lego (maze or others)

lego mindsets
place a base board on a wall.....

1. START WITH A CIRCUIT



littleBits

sequencing & patterning
get the students asking the questions to uncover their learning

minecraft

wicked awesome

code.org

web based awesomeness

iPad

tetris * angry birds * notes as voice to text

androids

minesweeper * bubble burst * candy crush

- explore -


Task Cards
Geometry
games
geometry puzzles * math puzzles * picture problems * Book of Qs

3D mazes

360 degree thinking

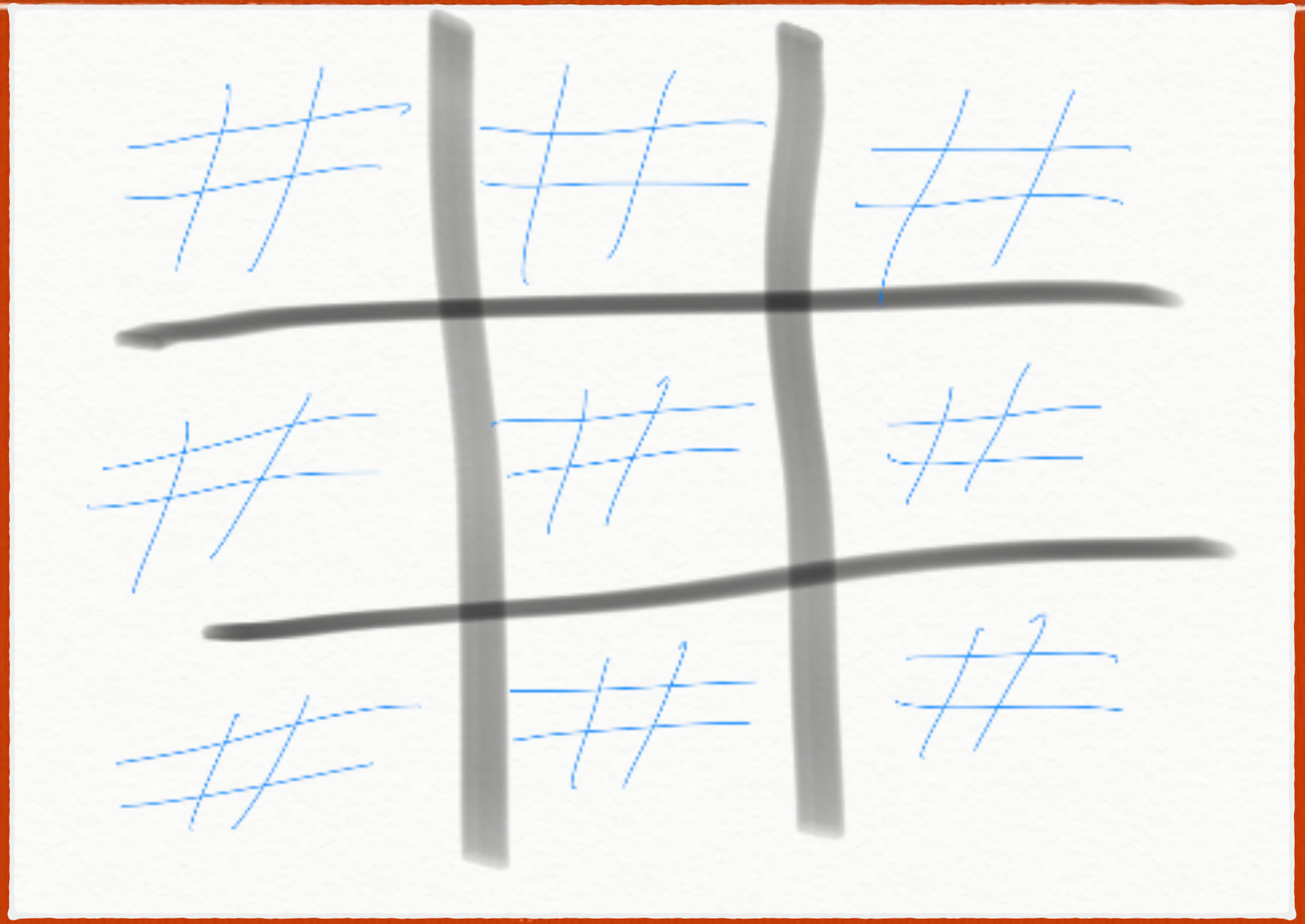
Take Apart Stations

and next time: put-together station!

Daisy the Dinosaur	Lightbot Jr	Tynker
		

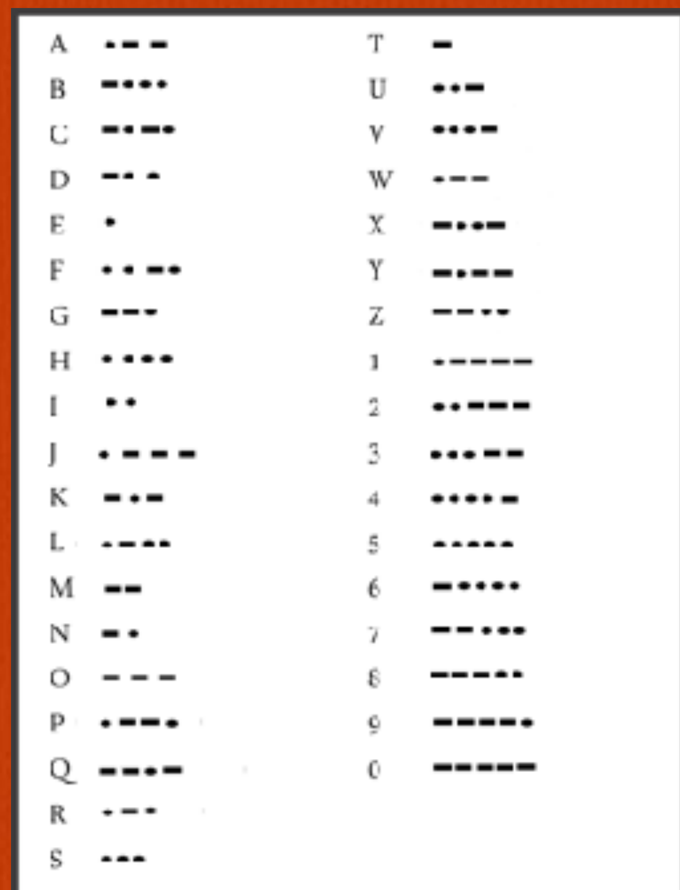
coding apps

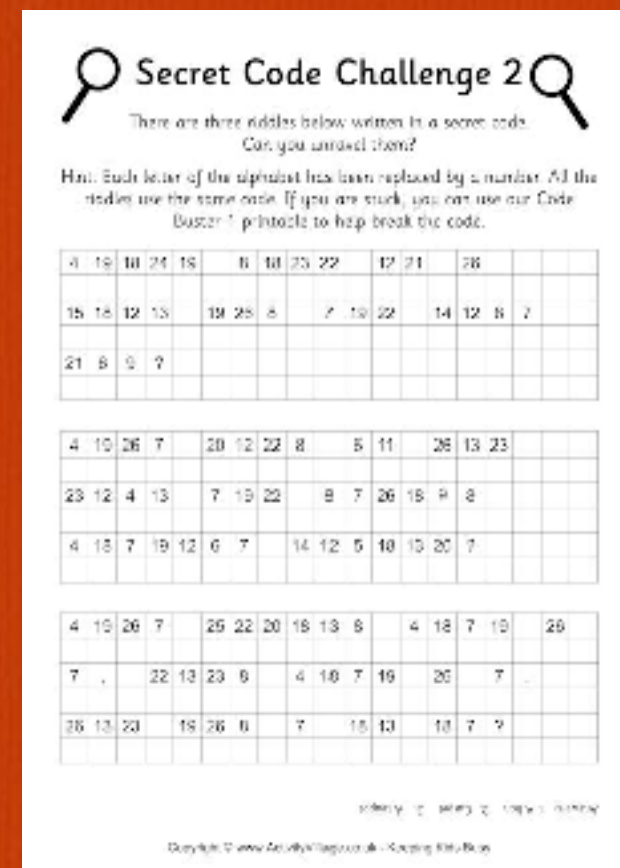
scratch * scratch jr * hopscotch * swifty * tynker * cargo-bot * lightbot



Super Tic Tac Toe

Lateral thinking with differentiation

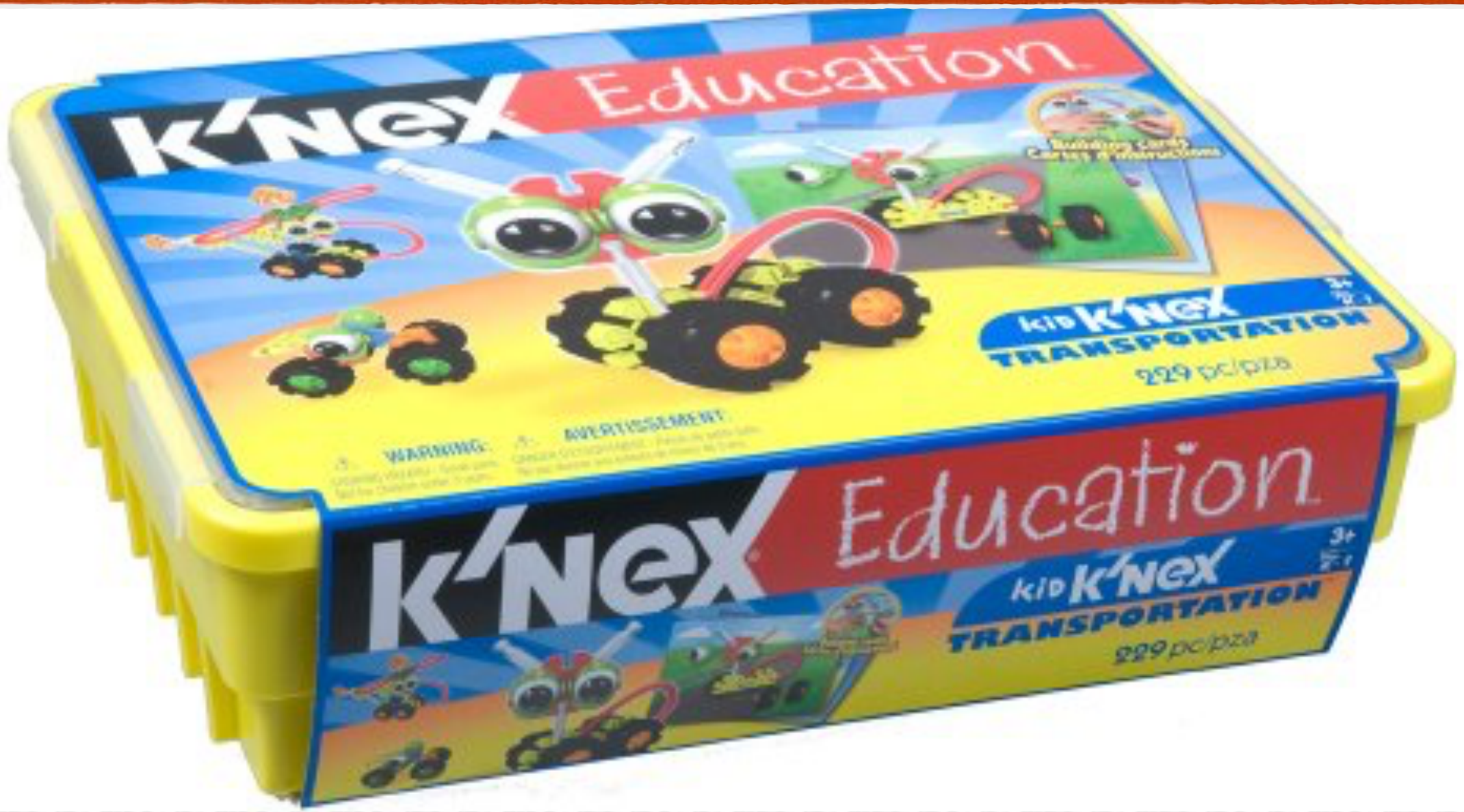




secret codes

thinking code

introduction to binary



k'nex

exploring gears & more

ozobots

new to us - enabling us to have competitions

little codr

new to us - enabling programming to be a game

learn through play

Hour of Code:

Kindergarten & K/1

1. White Lego
2. LittleBits
3. Keva Jr
4. Puzzle
5. Santa Snaps
6. Snap Circuit
7. Create a Character
8. Death Star 3D Puzzle
9. Keva Free
10. iPad angry birds
11. iPad minecraft
12. iPad garageband
13. Keva 3D
14. Snap Circuit
15. Android Bubble Break
16. Android Candy Crush
17. Android mine sweeper
18. BB8
19. code.org star wars/frozen

Hour of Code:

1/2/3

1. White Lego
2. Little Bits
3. Keva Jr
4. Puzzle
5. Santa Snaps
6. Snap Circuits
7. Create a Character
8. Brain Puzzle
9. Death Star 3D Puzzle
10. Keva Free
11. iPad Cargo
12. iPad Scratch
13. iPad Garageband
14. Keva 3D
15. Makey Makey
16. Minecraft
17. Snap Circuits
18. Android Bubble Break
19. Android Candy Crush
20. Android Mine Sweeper
21. Picture Problems
22. BB8
23. Math Puzzles
24. Tetris
25. Tynker
26. code.org star wars
27. code.org frozen
28. Lightbot

Hour of Code:

4/5s

1. White Lego
2. Little Bits
3. Keva Jr
4. Puzzle
5. Santa Snaps
6. Snap Circuits
7. Create a Character
8. Brain Puzzle
9. Death Star 3D Puzzle
10. Keva Free
11. iPad Cargo
12. iPad Scratch
13. iPad Garageband
14. Snap Circuit
15. Keva 3D
16. Makey Makey
17. Minecraft
18. Snap Circuits
19. Geometry Riddles
20. Android Bubble Break
21. Android Candy Crush
22. Android Mine Sweeper
23. Picture Problems
24. BB8
25. Math Puzzles
26. Tetris
27. Makey Makey
28. Tynker
29. code.org star wars
30. code.org frozen
31. Lightbot

32. Book of Qs
33. Cup Tower

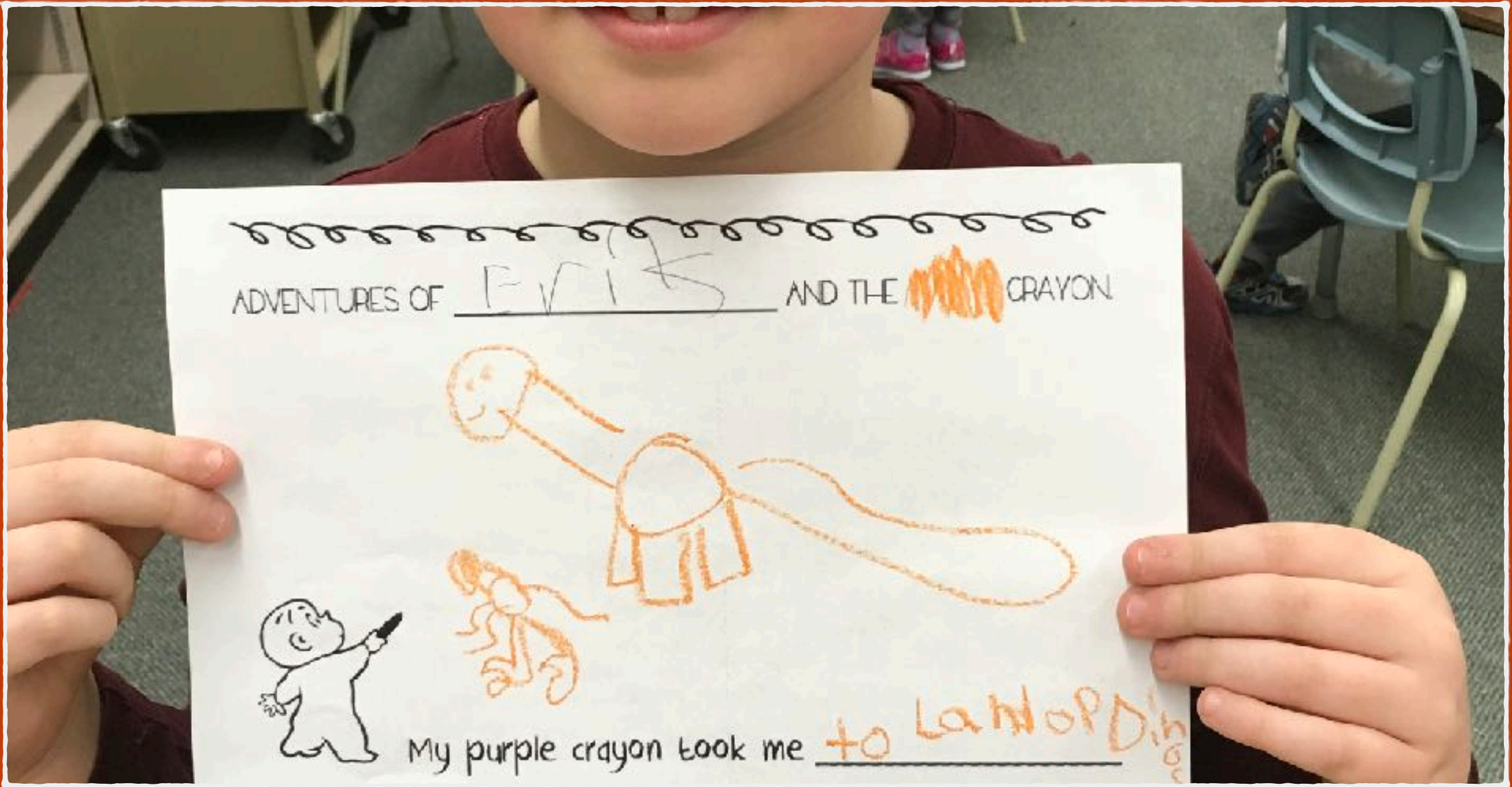
an hour of code (to start)

doesn’t mean it’s easy

- ☐ out of order
- ☐ had to go bathroom and missed
- ☐ what do I do
- ☐ where do I go next
- ☐ I didn’t have enough time
- ☐ I had too much time

K/1/2/3

- ☐ Designs grow out of natural curiosity
- ☐ Skills can be developed through play
- ☐ Technologies are tools that can extend human capabilities



Harold & the Purple Crayon

Design with crayon

4 & 5

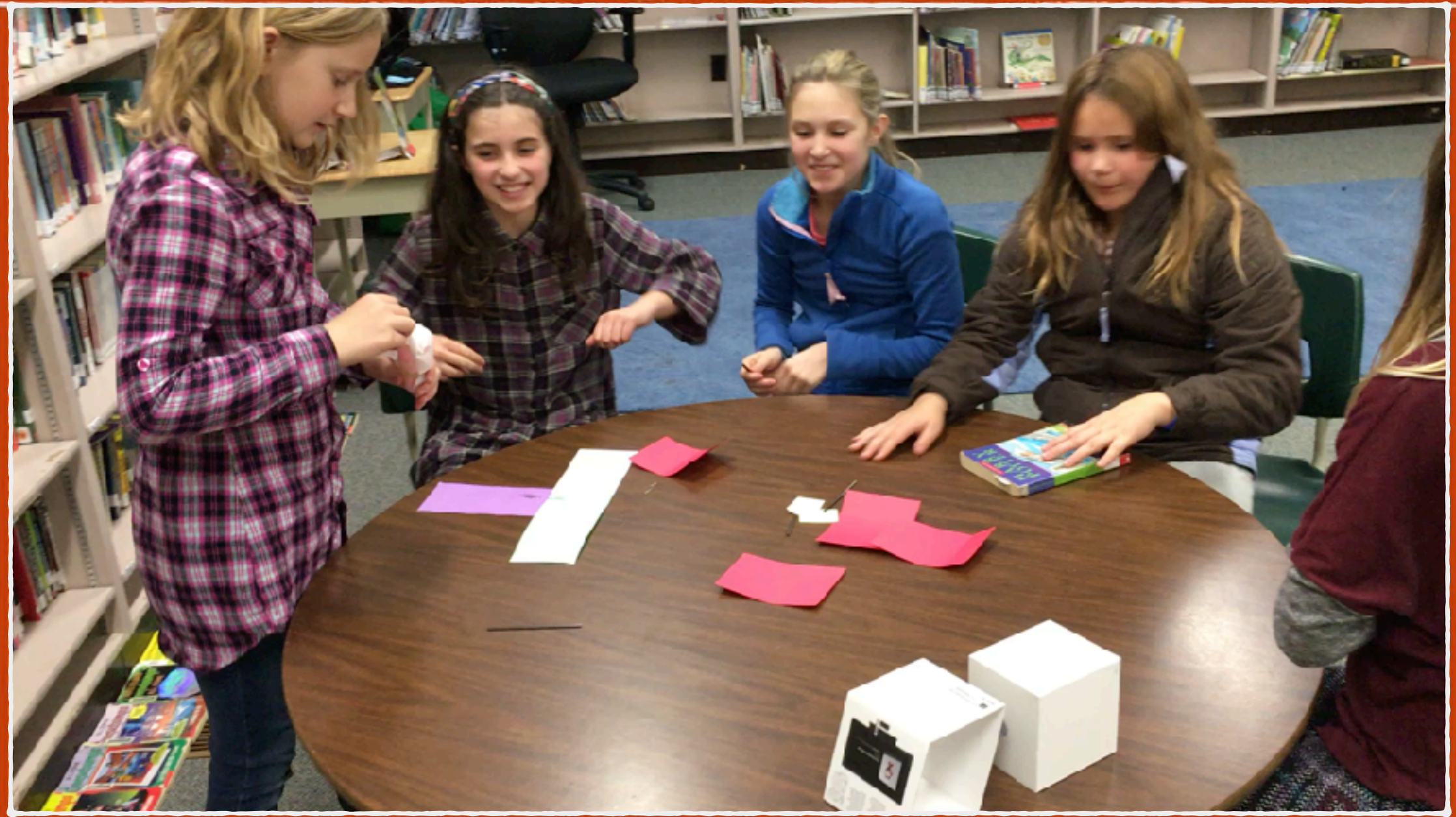
- ☐ Designs can be improved with prototyping and testing
- ☐ Skills are developed through practice, effort and action
- ☐ The choice of technology and tools depend on the task

Flight

Snap Circuits

6, 7 & 8

- ☐ Designs can be responsive to identified needs
- ☐ Complex tasks require the acquisition of additional skills
- ☐ Complex tasks may require multiple tools and technologies



Design Challenge

What can keep Mr Landy's fingers warm?

9

- ☐ Social, ethical and sustainability considerations impact design
- ☐ Complex tasks require the sequencing of skills
- ☐ Complex tasks require different technologies and tools at different stages

Design Challenge

How might we drink pure water?

- **Empathize:** The first step is to research your customer. What makes them tick? What needs do they have? Emotional or physical. What do they like?
- **Define:** This phase is the distillation of your empathy research to create a customer profile ("Who are they?") and answer the question "What do they really need?"
- **Ideate:** Explore potential solutions through brainstorming. Quantity is key here!! Sometimes good ideas can be lost when we allow ourselves to filter too early.
- **Prototype:** Prototyping takes ideas from paper to physical form. Interacting with the prototypes helps develop more empathy and learn where improvements are needed.
- **Test:** The product can be tested by using it in its final form, recording and responding to observations and talking to your customer about it.

DESIGN THINKING CHALLENGE

design thinking challenge

something tall	something alive	something to sit on
something that can be carried	something that moves	something to hide inside
something for you	something funny	something for a friend
something sweet	something to ride in	something soft

question:
create something to help keep hands warm

Design Thinking

Framework

COMPUTER PROGRAMMING IS TO WHAT THEY DO AS TYPING IS TO WHAT A NOVELIST DOES.

Bill Poucher

QUOTEHD.COM

THE GREAT GROWLING ENGINE OF CHANGE - TECHNOLOGY.

Alvin Toffler

PICTUREQUOTES.com

Discovery

Development

Deepening

even the greatest of experts start out as unserious beginners

Questions & Shares and Thank You

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