



6 CODE-FREE CS ACTIVITIES PERFECT FOR MIDDLE SCHOOL


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[illegible]


Computational Thinking

- Data Collection, Analysis
- & Representation
- Problem Decomposition
- Abstraction
- Algorithms & Procedures
- Automation
- Simulation
- Parallelization



A hand-drawn robot on a notepad. The robot has a rectangular head with two circles for eyes and a horizontal line for a mouth. Its body is also rectangular with a small square in the center. It has two arms with circular hands and two legs with rectangular feet. The drawing is done in black ink on a white notepad. A hand is visible at the bottom right, holding the notepad.

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Computational Thinking Guides

- ISTE Standards for Students
- ISTE Computational Thinking Competencies
- ISTE Computational Thinking Toolkit

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CT Vocabulary and Progression Chart				
	Definition	Grades PK to 2	Grades 3 to 5	Grades 6 to 8
Data Collection	The process of gathering appropriate information	Conduct an experiment to find the fastest way to get down an incline and record the order of cars across the finish line in a chart.	Review examples of writing to identify strategies for writing an essay.	Design survey questions to gather appropriate information to answer questions (e.g., asking fellow students if they were absent from school in the past month and whether they were suffering from the flu).
Data Analysis	Making sense of data, finding patterns, and drawing conclusions	Make generalizations about the order of finishing a toy car race based on the characteristics of the car with a focus on weight. Test conclusions by adding weight to cars to change results.	Categorize strong and weak examples of writing samples to develop a rubric.	Produce and evaluate charts from data generated by a digital probe and describe trends, patterns, variations, and/or outliers represented in the chart.
Data Representation	Depicting and organizing data in appropriate graphs, charts, words, or images	Create a chart or a line drawing that shows how the speed of a toy car changes when its weight is changed.	Match each writing sample to the topic and create a chart showing which example best fits in each category of the rubric.	Plot data using different charting formats and select the most effective visual representation strategy.
Problem Decomposition	Breaking down tasks into smaller, manageable parts	Create directions to a location in the school by breaking the directions down into smaller geographical zones, join the sections of directions together into a whole.	Develop a plan to make the school "green." Separate strategies such as recycling, paper and card, reducing use of electricity, and composting food waste.	In planning the publication of a monthly newsletter, identify roles, responsibilities, timelines, and resources needed to complete the project.

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Computational Thinking Guides

- ISTE Standards for Students
- ISTE Computational Thinking Competencies
- ISTE Computational Thinking Toolkit
- CSTA Computer Science Standards

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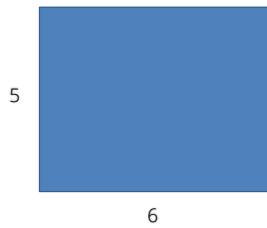
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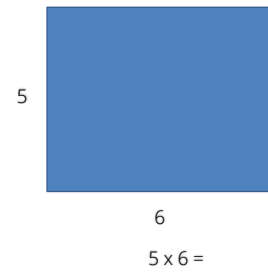
Finding Area



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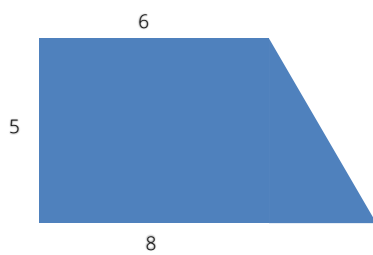
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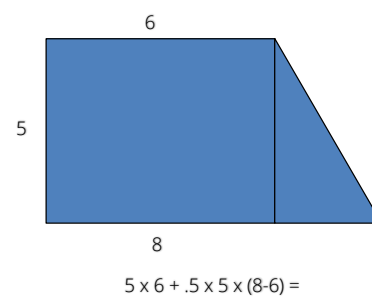
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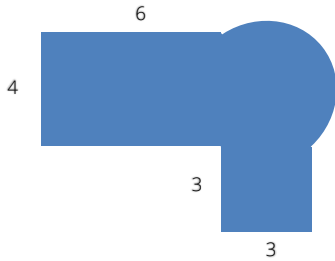
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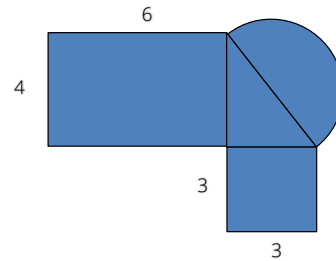


Write a single equation to find the area of this shape.

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Finding Area

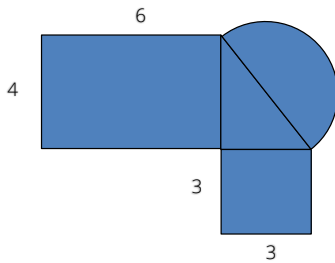


$$4 \times 6 + 3 \times 3 + .5 \times 3 \times 4 + ((\sqrt{3^2 + 4^2}) / 2)^2 \times 3.14 =$$

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Finding Area



$$4 \times 6 + 3 \times 3 + .5 \times 3 \times 4 + ((\sqrt{3^2 + 4^2}) / 2)^2 \times 3.14 =$$

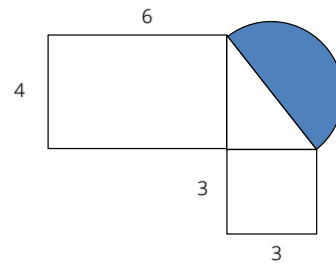
$$4 \times 6 = 24 \quad 3 \times 3 = 9 \quad .5 \times 3 \times 4 = 6 \quad ((\sqrt{3^2 + 4^2}) / 2)^2 \times 3.14 = 19.625$$

$$24 + 9 + 6 + 19.625 = 58.625 \text{ units}^2$$

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Finding Area



$$\text{radius}^2 \times 3.14 = \text{area}$$

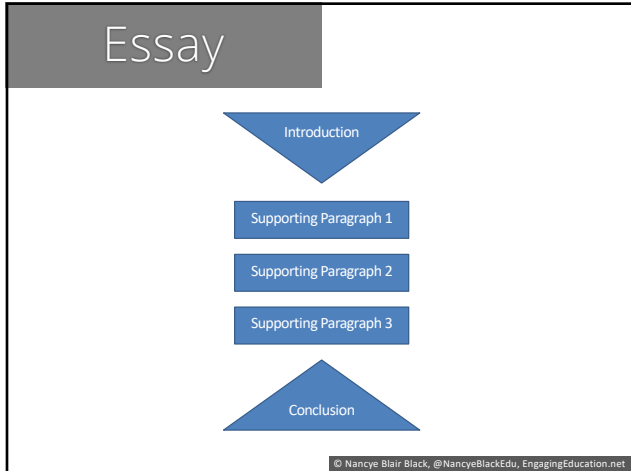
$$\text{diameter} / 2 = \text{radius}$$

$$((\sqrt{3^2 + 4^2}) / 2) = \text{diameter}$$

$$((\sqrt{3^2 + 4^2}) / 2)^2 \times 3.14 = 19.625$$

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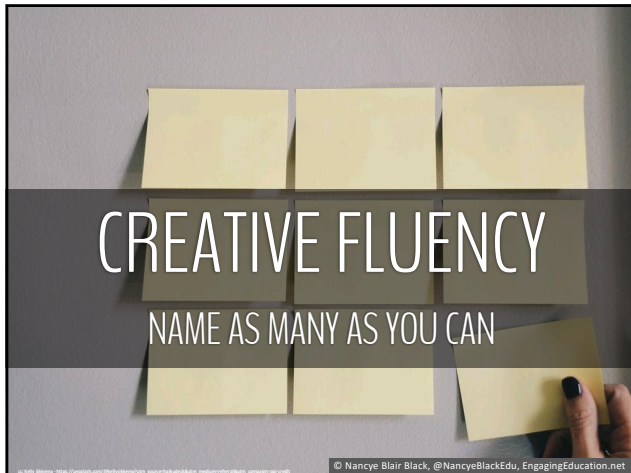
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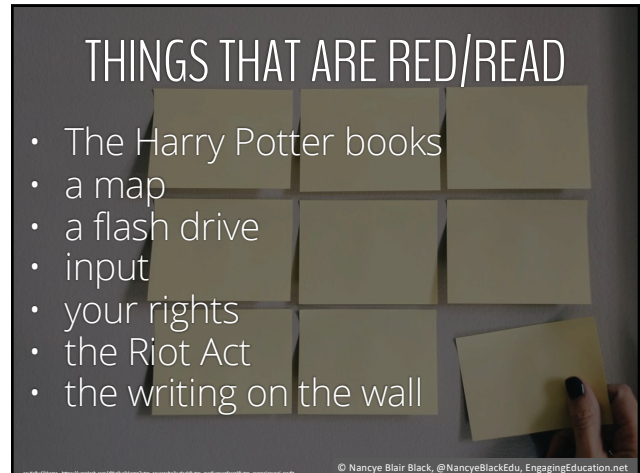
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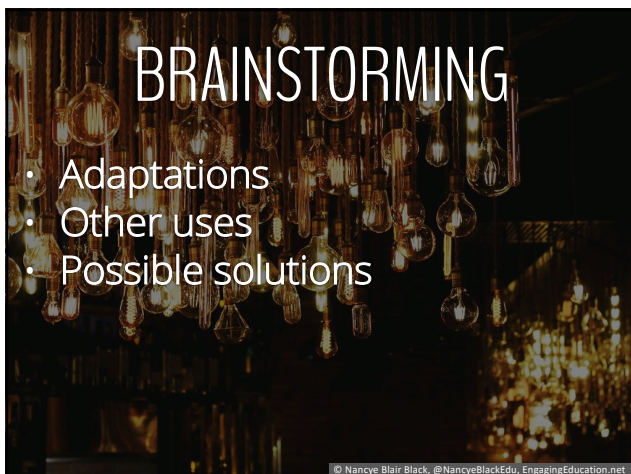
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Fix It

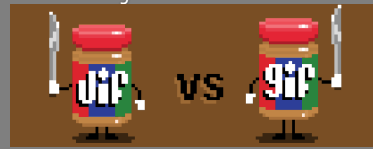
- Fix the spelling:
- gaurdianz
- Mississippi
- animated jif

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Fix It

- Fix the spelling:
- gaurdianz
- Mississippi
- animated jif



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Fix It

- Fix the sentence:
- "i went two FETC 2020 and it was eduawesome"!

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What's Wrong With This Picture?

Our artist has made 21 mistakes in this picture. See how many you can find. Then turn to page 147 for the answers.



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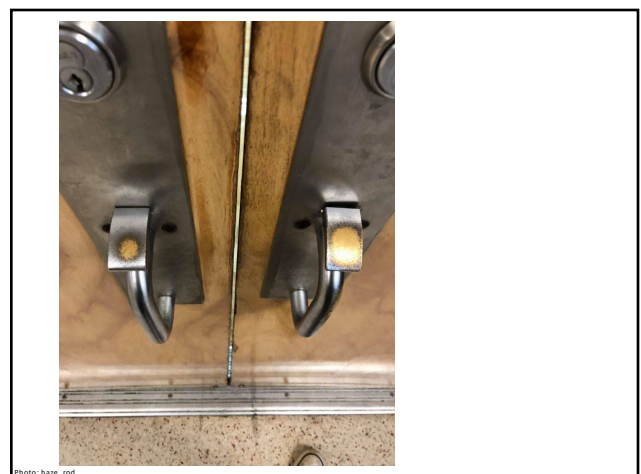
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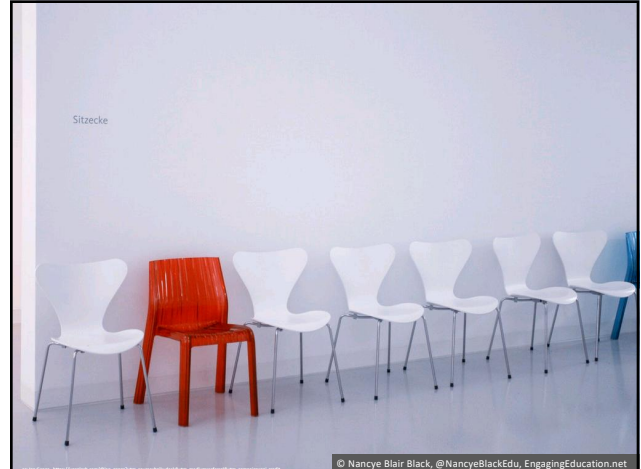
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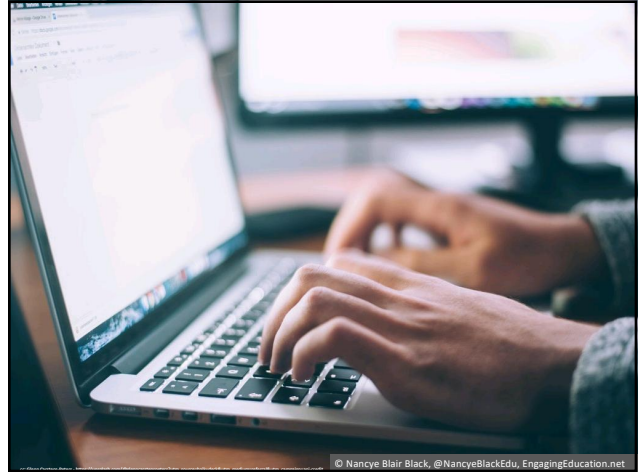
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ABSTRACTION

Sitzzecke

- Recognizing patterns
- Reducing complexity
- Transferring templates



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Poems

Limerick

There once was a man from Nantucket
Who kept all his cash in a bucket.
But his daughter, named Nan,
Ran away with a man
And as for the bucket, Nantucket.

Prof. Dayton Voorhees, 1902

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Poems

Limerick

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Prof. Dayton Voorhees, 1902

Haiku

Haikus are easy.
But sometimes they don't make sense.
Refrigerator.

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Poems

Limerick

There once was a man from Nantucket
Who kept all his cash in a bucket.
But his daughter, named Nan,
Ran away with a man
And as for the bucket, Nantucket.

AABBA

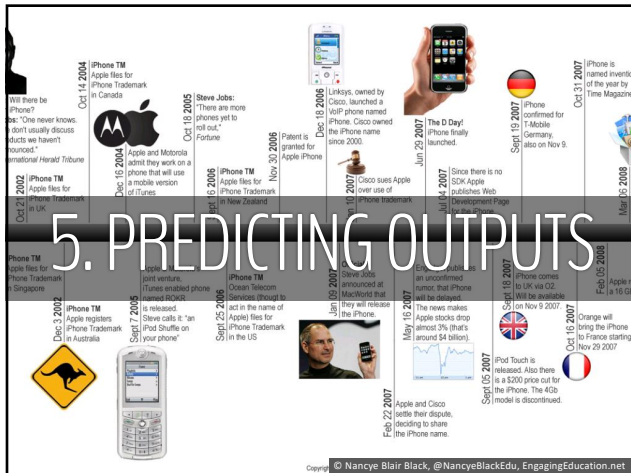
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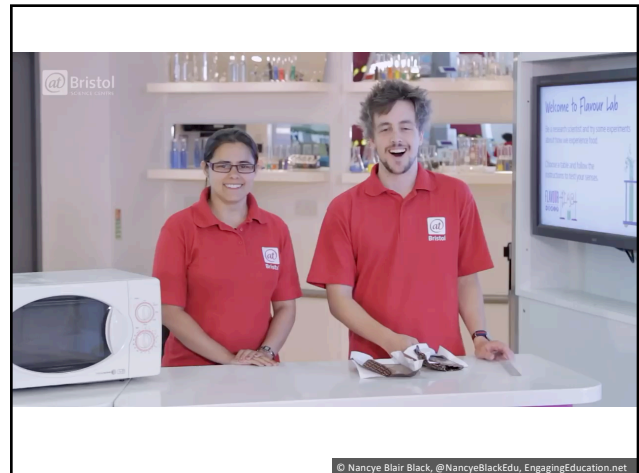
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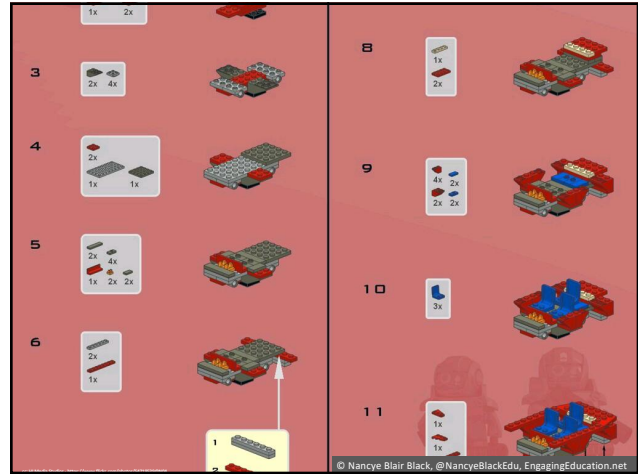
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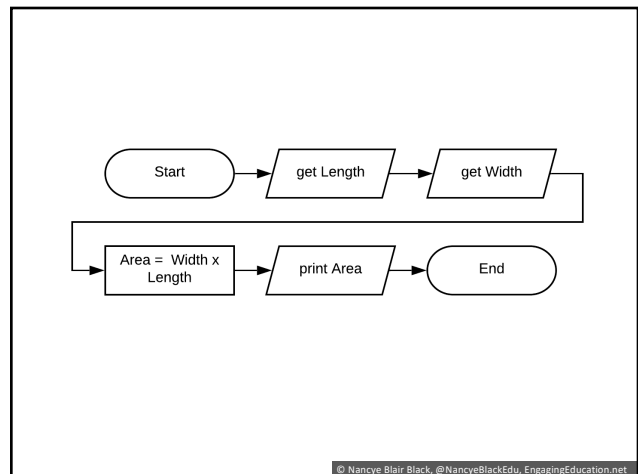
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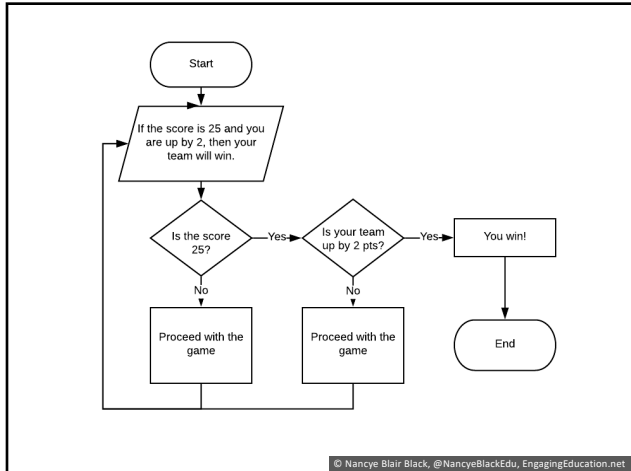
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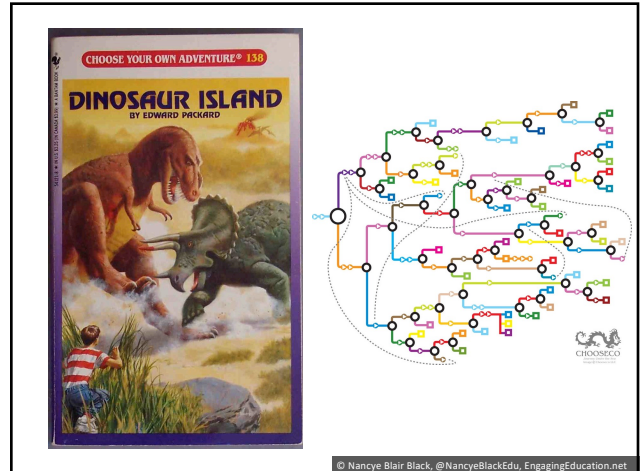
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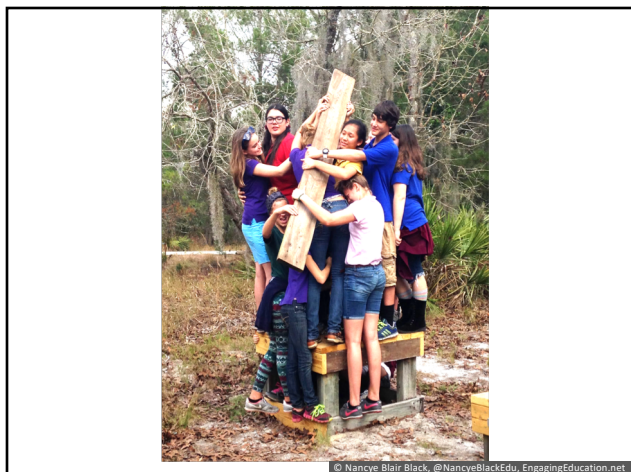
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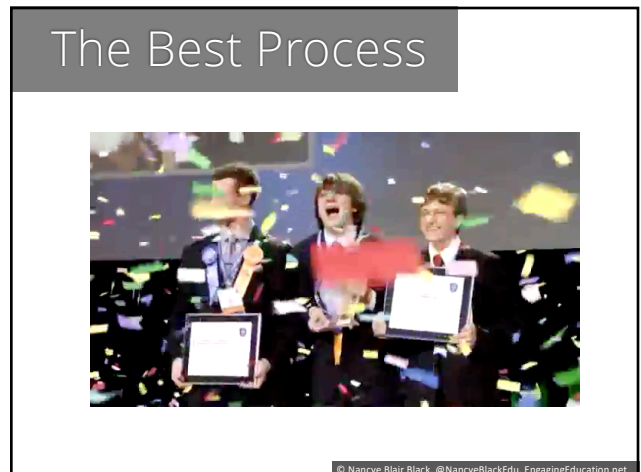
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