

RETHINKING THE WORKSHEET

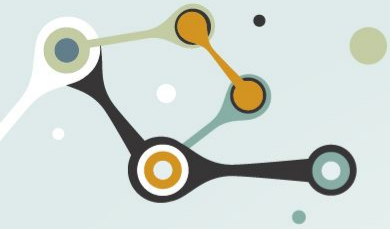


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PLAN FOR THIS SESSION

01

MCwordle

Iterative multiple choice practice with limited feedback

02

Walk Aroun

Instant feedback with google form data validation

03

Scrambles

Unscrambling secret words by solving practice problems





MCwordle

Iterative multiple choice
practice with limited feedback

Why is Wordle Awesome?

- Iterative (it's ok to be wrong)
- Feedback is useful but limited
- Low floor
- Personalized journey
- and more...

G	R	A	I	L
T	R	A	C	K
C	R	A	M	P
C	R	A	B	S
C	R	A	Z	Y
C	R	A	Z	E

Introducing... MCwordle!

Attempt 1

1	A	2	B	3	D	4	C
5	D	6	B	7	C	8	C



Attempt 2

1	A	2	B	3	D	4	C
5	D	6	C	7	C	8	A



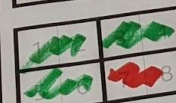
Attempt 3

1	C	2	B	3	D	4	B
5	D	6	C	7	B	8	A



Attempt 4

1	C	2	B	3	D	4	C
5	D	6	C	7	C	8	A



Attempt 5

1	C	2	B	3	D	4	C
5	D	6	C	7	A	8	A



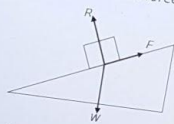
Attempt 6

1	2	3	4
5	6	7	8

1	2	3	4
5	6	7	8

3:58 PM Tue Oct 18

5. Three forces act on a block which is sliding down a slope at constant speed. W is the weight, R is the reaction force at the surface of the block and F is the friction force acting on the block. [1 mark]



In this situation

- A. there must be an unbalanced force down the plane.
 - B. $W = R$.
 - C. $F = W$.
 - D. the resultant force on the block is zero.
6. A climber of mass m slides down a vertical rope with an average acceleration a . What is the average frictional force exerted by the rope on the climber? [1 mark]
- A. mg
 - B. $m(g + a)$
 - C. $m(g - a)$
 - D. ma

How to Play MCwordle

Attempt 1

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

Attempt 2

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

Attempt 3

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

Attempt 4

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

Attempt 5

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

Attempt 6

1		2		3		4	
5		6		7		8	

1	2	3	4
5	6	7	8

- Groups complete a timed 8-question multiple choice quiz
- Only 6 attempts to get a score of 100% correct
- Teacher provides feedback in a specific way after each attempt

Limited Feedback

Attempt 1

1	A	2	A	3	B	4	B	1	2	3	4
5	A	6	D	7	D	8	C	5	6	7	8

Attempt 2

1	A	2	A	3	D	4	B	1	2	3	4
5	C	6	D	7	A	8	C	5	6	7	8

Attempt 3

1	A	2	A	3	B	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 4

1	A	2	A	3	A	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 5

1	A	2	A	3	C	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 6

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 1

1	A	2	A	3	B	4	B	1	2	3	4
5	A	6	D	7	D	8	C	5	6	7	8

- If all questions in the larger box are correct (i.e. 1, 2, 5, and 6), then it is colored green
- If at least one question in the box is incorrect, it is colored red

Limited Feedback

Attempt 1

1	A	2	A	3	B	4	B	1	2	3	4
5	A	6	D	7	D	8	C	5	6	7	8

Attempt 2

1	A	2	A	3	D	4	B	1	2	3	4
5	C	6	D	7	A	8	C	5	6	7	8

Attempt 3

1	A	2	A	3	B	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 4

1	A	2	A	3	A	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 5

1	A	2	A	3	C	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 6

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 2

1	A	2	A	3	D	4	B	1	2	3	4
5	C	6	D	7	A	8	C	5	6	7	8

- Groups must re-evaluate responses to determine what (if any) answers they want to change
- Each round of feedback has different groupings of questions

Limited Feedback

Attempt 1

1	A	2	A	3	B	4	B	1	2	3	4
5	A	6	D	7	D	8	C	5	6	7	8

Attempt 2

1	A	2	A	3	D	4	B	1	2	3	4
5	C	6	D	7	A	8	C	5	6	7	8

Attempt 3

1	A	2	A	3	B	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 4

1	A	2	A	3	A	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 5

1	A	2	A	3	C	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

Attempt 6

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 3

1	A	2	A	3	B	4	B	1	2	3	4
5	C	6	D	7	D	8	B	5	6	7	8

- Feedback groupings become more precise with each attempt but question by question feedback isn't provided until Attempt 5

MCWORDLE

Attempt 1

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 2

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 3

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 4

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 5

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

Attempt 6

1		2		3		4		1	2	3	4
5		6		7		8		5	6	7	8

MCwordle Questions

- How long is the border between the US and Canada?
 - 3,525 miles
 - 4,525 miles
 - 5,525 miles
 - 6,525 miles
- When did Salt Lake City host the Winter Olympics?
 - 1992
 - 1998
 - 2002
 - 2008
- What is the star sign for someone born on Jan 1st?
 - Scorpio
 - Capricorn
 - Libra
 - Aries
- How many wives had Henry VIII?
 - 4
 - 5
 - 6
 - 7
- When was the first Harry Potter book published?
 - 1995
 - 1997
 - 1999
 - 2001
- What does NASA stand for?
 - National Aeronautics and Space Administration
 - Nautical And Space Association
 - National Aeronautics and Space Association
 - New Aeronautics and Spacial Administration
- How many bones are there in an adult human body?
 - 186
 - 206
 - 286
 - 306
- How many years was Nelson Mandela in prison?
 - 7
 - 17
 - 27
 - 37

Why MCwordle?



Makes multiple
choice review
collaborative and fun

Practices test taking
skills of assigning
confidence



Easy to create and
adapt (just 8 MC
questions per round)

Goal of 100% leads to
deeper thinking and
continual review



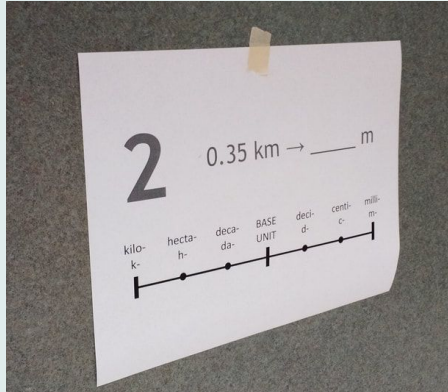
Walk Arouds

Instant feedback with google
form data validation



What is a Walk Around?

- Posters with questions around the room
- Google form “answer sheet” set up with data validation



Station #1 *

Station #2 *
Try Again Please :)
Station #3 *

Motion Graph Scavenger Hunt

* Required

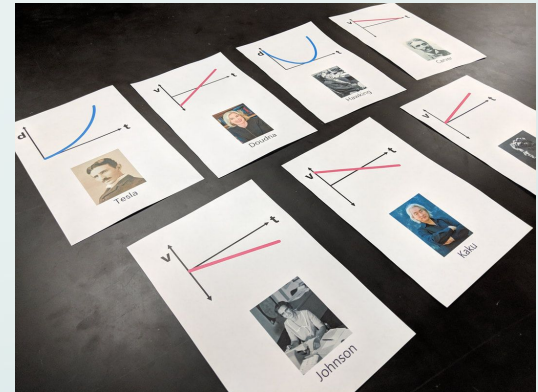
Scavenger Hunt Questions

Find a velocity graph that is moving at a constant negative velocity *

Your answer

Find a velocity graph that is moving in the negative direction and speeding up the entire time *

Your answer



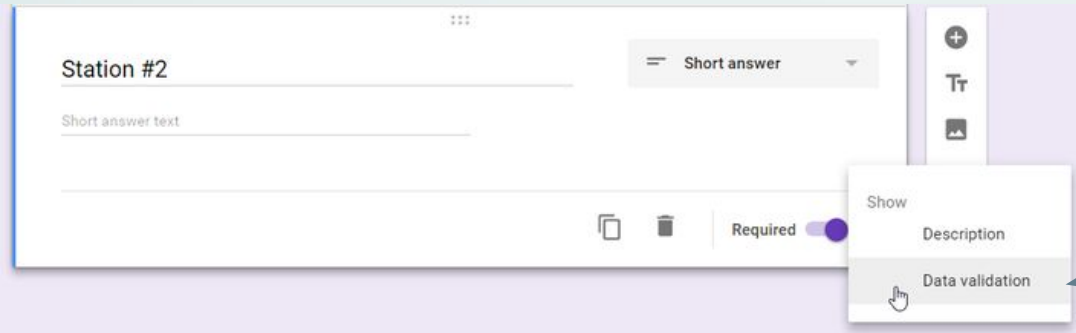
WALK AROUND

bit.ly/mncose22googleform

A smartphone screen displays a Google Form titled "MncOSE 2022 Walk Around". The form header features a giraffe illustration. The form is from the user "cossettej@gmail.com (not shared) Switch account". It includes a "Required" indicator. The form has three text input fields: "First Name *", "Last Name *", and "#1 *". Below the "#1 *" field, there is a question section titled "Question Posters" with the instruction "For the following questions, find the appropriate poster and type your answer". The form is currently empty of answers.

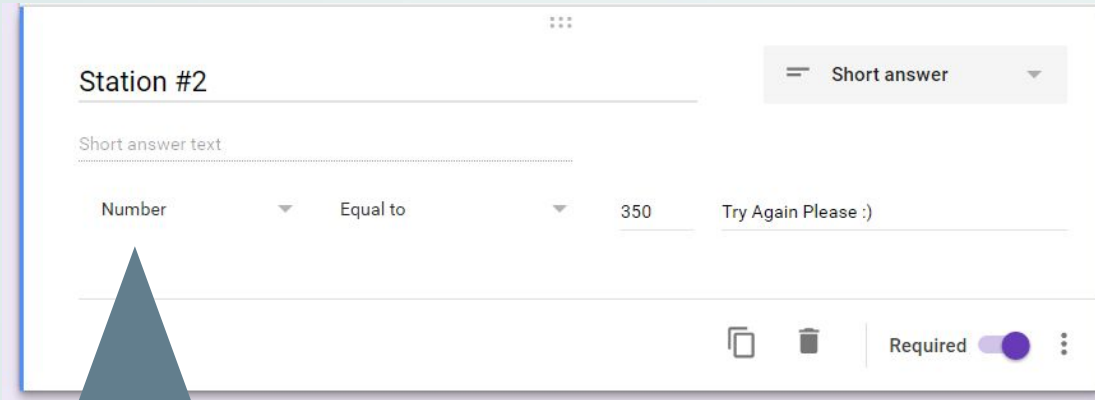
Setting up the Form

- Add “Short Answer” question
- Click the 3 dots in the bottom right-hand corner
- Turn on “Data validation”



The screenshot shows a form editor interface. The main form area contains a question titled "Station #2" with a "Short answer" type. Below the question is a text input field labeled "Short answer text". To the right of the question is a dropdown menu showing "Short answer". Below the question is a "Required" toggle switch, which is currently turned on. In the bottom right corner, a context menu is open, showing options: "Show", "Description", and "Data validation". The "Data validation" option is highlighted, and a blue arrow points to it from the right.

Validation Options



Station #2

Short answer

Short answer text

Number Equal to 350 Try Again Please :)

Required

Make sure to include
“Custom Error Text” or it will
tell students the answer
that it is looking for 😊

- Number → “Equal to” | “Between”
- Text → “Contains”
- Regular Expression → “Matches”

Can accept multiple answers:
i.e. (Bohr|bohr|BOHR)

Why Walk Arounds?



Gets students up and moving around the classroom

Students turn to peers with questions before teacher



Feedback allows student to correct work in the moment

Visible indication of areas of need





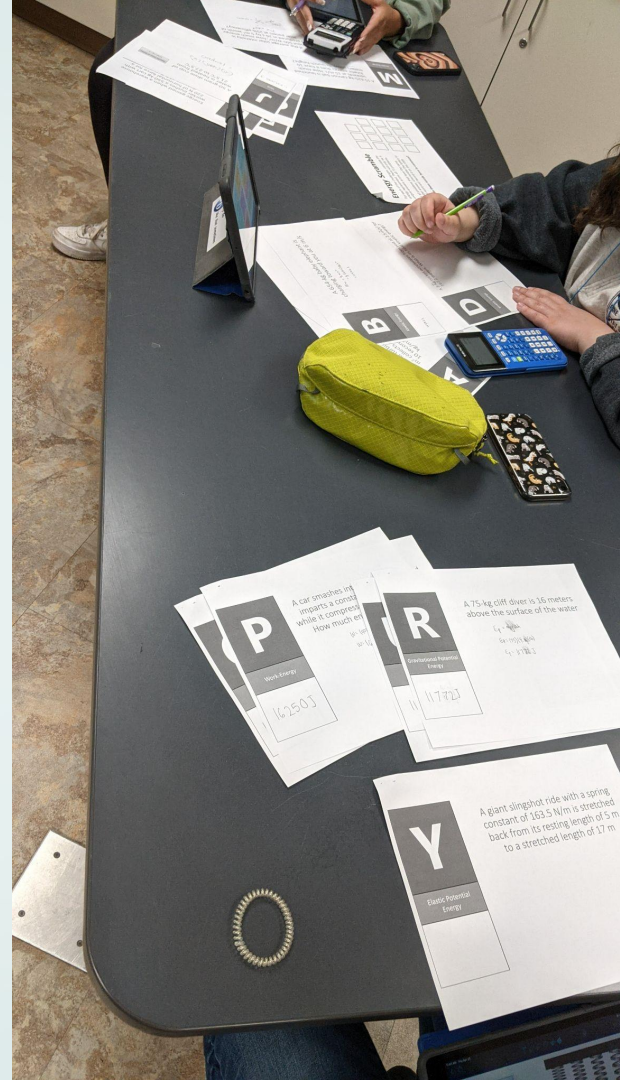
03

Scrambles

Unscrambling secret words by
solving practice problems

What is a “Scramble”?

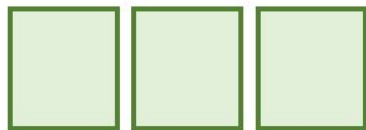
- Many single question posters with different tasks that require more detailed problem solving
- All questions have a numerical answer that matches the answer of at least one other question
- Students group by answer and unscramble the letters into a word



Energy Scramble

For each of the challenges, calculate the energy represented.
There will only be 4 unique answers across all 15 problems.

For all problems that have the same number answer, unscramble the letters to form a word and record it below



What do these words have in common?



SCRAMBLE!

Why Scrambles?



Lots of practice for
long form problem
solving

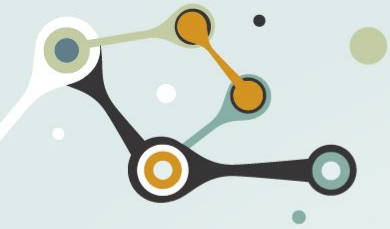
Feedback leaves
room for revision



Collaborative with
multiple access
points

Students naturally
differentiate the task





Recap of Strategies...

01

MCwordle

Iterative multiple choice practice with limited feedback

02

Walk Arouds

Instant feedback with google form data validation

03

Scrambles

Unscrambling secret words by solving practice problems



THANKS!

Any questions? You can reach me at
[@cossettej](https://twitter.com/cossettej) & cossettej@gmail.com

Session materials posted at
bit.ly/cossettemncose

For more resources like these:
passionatelycurioussci.weebly.com

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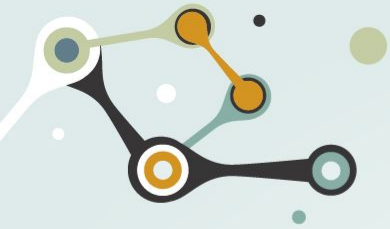


BONUS STRATEGY!!

04

Pixel Art

Digital Worksheet where students reveal a secret image

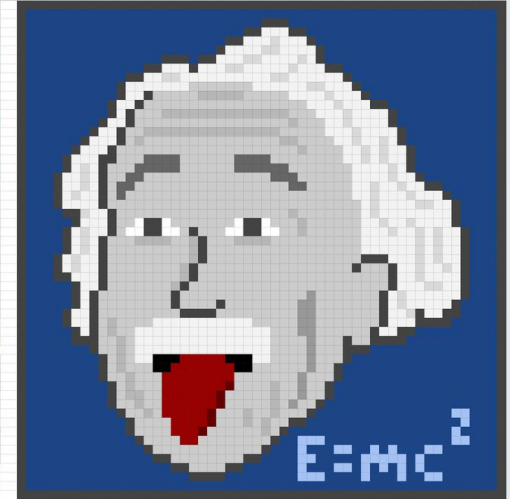


Examples of Pixel Art

	A	B	C
1		Name	Formula
2			
3		Beryllium Chloride	BeCl2
4		Sodium Oxide	Na2O
5		Potassium Sulfide	K2S
6		Magnesium Oxide	MgO
7		Barium Iodide	BaI2
8		Aluminum Oxide	Al2O3
9		Sodium Chloride	NaCl
10		Zinc Bromide	ZnBr2
11		Boron Nitride	BN
12		Barium Fluoride	BaF2
13		Silver Chloride	AgCl
14		Magnesium Chloride	MgCl2
15		Potassium Iodide	KI
16		Lithium Nitride	Li3N
17		Zinc Oxide	ZnO
18		Barium Bromide	BaBr2
19		Magnesium Nitride	Mg3N2
20		Lithium Phosphide	Li3P
21		Boron Bromide	BBr3
22		Sodium Nitride	Na3N
23		Aluminum Iodide	AlI3
24		Sodium Oxide	Na2O
25		Lithium Fluoride	LiF
26		Zinc Chloride	ZnCl2
27		Beryllium Oxide	BeO
28		Boron Oxide	B2O3
29		Beryllium Sulfide	BeS



	Name	Symbol	Quarks	Particle	Charge
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					





Examples of Pixel Art

Fill in these tables to complete the picture

Element	# of Energy Levels	# of Valence Electrons
Na		
Br		
F		
Cl		
	2	2
	2	2

$^{35}_{17}\text{Cl}^-$

Mass Number	# of Protons	# of Neutrons	# of Electrons	Ion Charge	Total # of Electrons on Ion

Ion Charge for Chloride Ion:
This is the most reactive Alkaline Earth Metal (Full name):
This is the most reactive Halogen Gas (Full name):
This is the subatomic particle that is easily gained or lost.
Magnesium and Barium (gan/ins) electrons to become an ion.
Ion with a positive charge is a(n) cation/anion.
Ion with a negative charge is a(n) cation/anion.

Element	Charge

Total number of electrons in an ion of Sodium:
Total number of electrons in an ion of Sulfur:
Total number of electrons in a neutral atom of Iron:

bit.ly/mysterypixelart

