



# SHOWCASE LESSON

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8th Grade Earth Science, Kealing MS





# TOPIC: Naming and Categorizing Ionic Compounds

SWBAT:

- Name chemical formulas containing any combination of:
  - metals
  - nonmetals
  - transition metals
  - polyatomic ions
- Write chemical formulas if given the name
- Identify a chemical formula as ionic or covalent



# WHY I CHOSE THIS LESSON

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While this lesson did not involve a big project or exciting lab, I did feel as though this day was a turning point with my students, where after this lesson they seemed much more confident in their abilities and the content as a whole.



# OUTLINE

01

ENGAGEMENT

CONNECTEDNESS

02

03

ASSESSMENT

DIFFERENTIATION

04





**ENGAGEMENT**

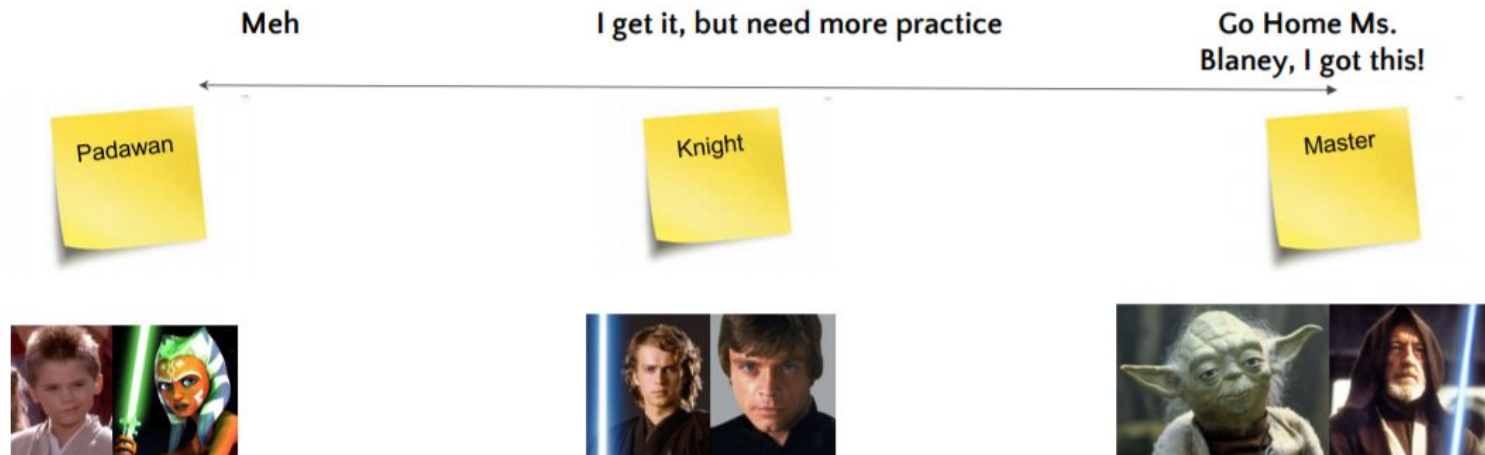
# ENGAGEMENT

- To check for current student understanding of the objectives, I asked students to rank themselves on a scale.
- They could choose 1 of 3 categories to rank themselves in:
  - Jedi Padawan (Beginner)
  - Jedi Knight (Intermediate)
  - Jedi Master (Expert)
- They each received a sticky note, and were asked to write their name on it and place the sticky note on the board next to where they felt they belonged (see next slides).
- I challenged them to see if they could improve and feel confident changing their ranking by the end of the class period.
- Students got excited because they enjoyed the Star Wars analogy and the ability to get out of their seats, as well as the idea of having a challenge for the day.

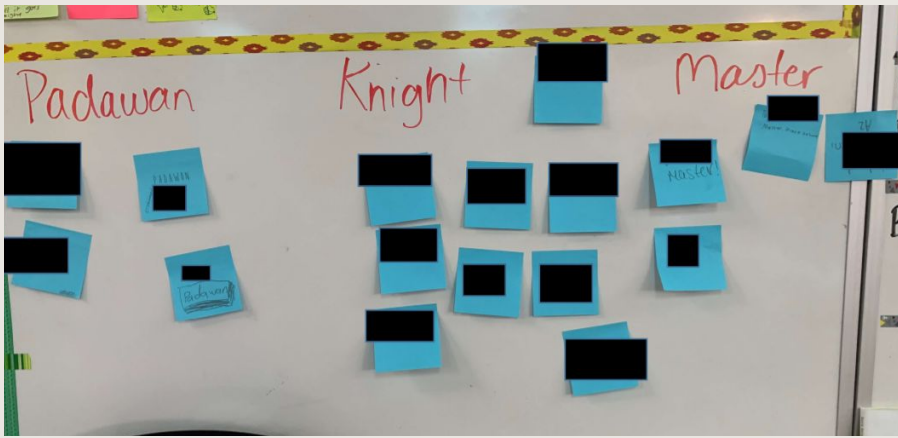


I can identify chemical formulas containing:

- metals
- nonmetals
- transition metals
- polyatomic ions



The powerpoint slide I showed my students explaining the scale to them.



2nd (top) and 4th (bottom) Period Scale at the Beginning of Class  
(identifiers removed for privacy)





# ENGAGEMENT

- After the rankings, I passed out different cards to each student that each had both the name and the formula of an ionic compound on them.
- They were tasked with sorting their given ionic compound into the correct category by moving to different areas of the room.
- The categories included:
  - Metal/Nonmetal (eg. NaCl)
  - Metal/Polyatomic Ion (eg. NaOH)
  - Transition Metal/Nonmetal (eg. FeO)
  - Transition Metal/Polyatomic Ion (eg. Fe(OH)<sub>2</sub>)
  - Polyatomic Ion/Nonmetal (eg. NH<sub>4</sub>Cl)
  - Polyatomic Ion/Polyatomic Ion (eg. NH<sub>4</sub>OH)
- Students stayed engaged because they had to think about their card in order to know where to go, as well as discuss with the other people in that category to make sure they got the correct answer.





**CONNECTEDNESS**

# CONNECTEDNESS

- To categorize their compound, students needed to remember what metals, nonmetals, transition metals, and polyatomic ions were.
- Even though students did not need to memorize the transition metals or the polyatomic ions, they needed to be able to recognize what about the name or formula indicated that the ion was a transition metal or a polyatomic ion, such as:
  - Transition metal names contain a roman numeral
  - Polyatomic ions contain more than 1 element
- This related to future topics because the next step was to be able to name chemical formulas as well as write the formula when given the name.
- If students knew how to categorize the ionic formula then it would be easier for them to determine the proper way to write the name/formula on their own.



# ASSESSMENT



# ASSESSMENT

- After the sorting activity, students were given an ionic naming worksheet that they worked on for the remainder of the class period.
- I had the opportunity to walk around to the table groups, ask if they needed help, and see what they were working on and where they needed help.
- This gave me a pretty good idea of how the students were doing on the material before the class period ended.
- I also checked for student understanding again by asking students to move their sticky note on the board if they felt they improved during the class period, which many students did.
- While not every student moved their sticky note, it was helpful for me to see who did feel they had improved, so that when I was looking at their worksheets later I could tell who was getting better and more confident, even if their work still had some mistakes.



## Naming Ionic Compounds Worksheet One

Give the name of the following ionic compounds:

- 1)  $\text{Na}_2\text{CO}_3$  \_\_\_\_\_
- 2)  $\text{NaOH}$  \_\_\_\_\_
- 3)  $\text{MgBr}_2$  \_\_\_\_\_
- 4)  $\text{KCl}$  \_\_\_\_\_
- 5)  $\text{FeCl}_2$  \_\_\_\_\_
- 6)  $\text{FeCl}_3$  \_\_\_\_\_
- 7)  $\text{Zn}(\text{OH})_2$  \_\_\_\_\_
- 8)  $\text{BeSO}_4$  \_\_\_\_\_
- 9)  $\text{CrF}_2$  \_\_\_\_\_
- 10)  $\text{Al}_2\text{S}_3$  \_\_\_\_\_
- 11)  $\text{PbO}$  \_\_\_\_\_
- 12)  $\text{Li}_3\text{PO}_4$  \_\_\_\_\_
- 13)  $\text{TiI}_4$  \_\_\_\_\_
- 14)  $\text{Co}_3\text{N}_2$  \_\_\_\_\_
- 15)  $\text{Mg}_3\text{P}_2$  \_\_\_\_\_
- 16)  $\text{Ga}(\text{NO}_2)_3$  \_\_\_\_\_
- 17)  $\text{Ag}_2\text{SO}_3$  \_\_\_\_\_
- 18)  $\text{NH}_4\text{OH}$  \_\_\_\_\_
- 19)  $\text{Al}(\text{CN})_3$  \_\_\_\_\_
- 20)  $\text{Be}(\text{CH}_3\text{COO})_2$  \_\_\_\_\_

### Writing Ionic Chemical Formulas

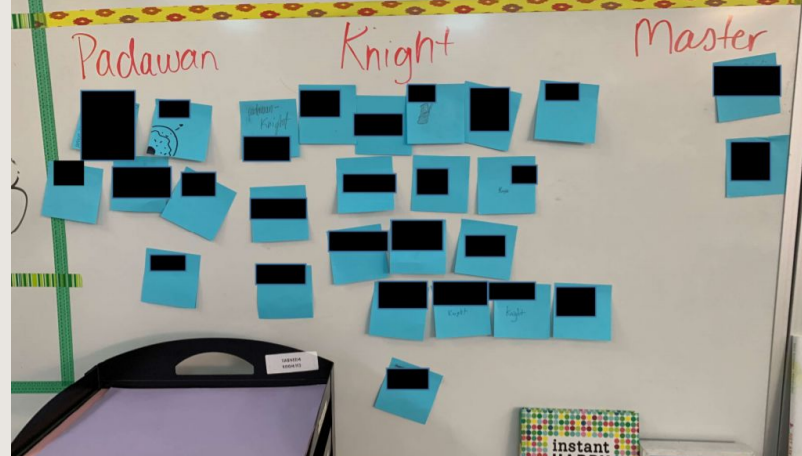
Using the oxidation number criss-cross method, determine the final chemical formula of each of the following:

Question #	Compound Name	Criss Cross Method	Chemical Formula
22.	Sodium phosphide		
23	Magnesium nitrate		
24	Lead (II) sulfite		
25	Calcium phosphate		
26	Ammonium sulfate		
27	Silver cyanide		
28	Aluminum sulfide		
29	Beryllium chloride		
30	Copper (I) arsenide		

Question #	Compound Name	Criss Cross Method	Chemical Formula
31	Iron (III) oxide		
32	Gallium nitride		
33	Iron (II) bromide		
34	Vanadium (V) phosphate		
35	Calcium oxide		
36	Magnesium acetate		
37	Aluminum sulfate		
38	Copper (I) carbonate		
39	Barium oxide		
40	Ammonium sulfite		

The worksheet students were given.





2nd (left) and 4th (right) period's improvement at the end of class (bottom).

# DIFFERENTIATION





# DIFFERENTIATION

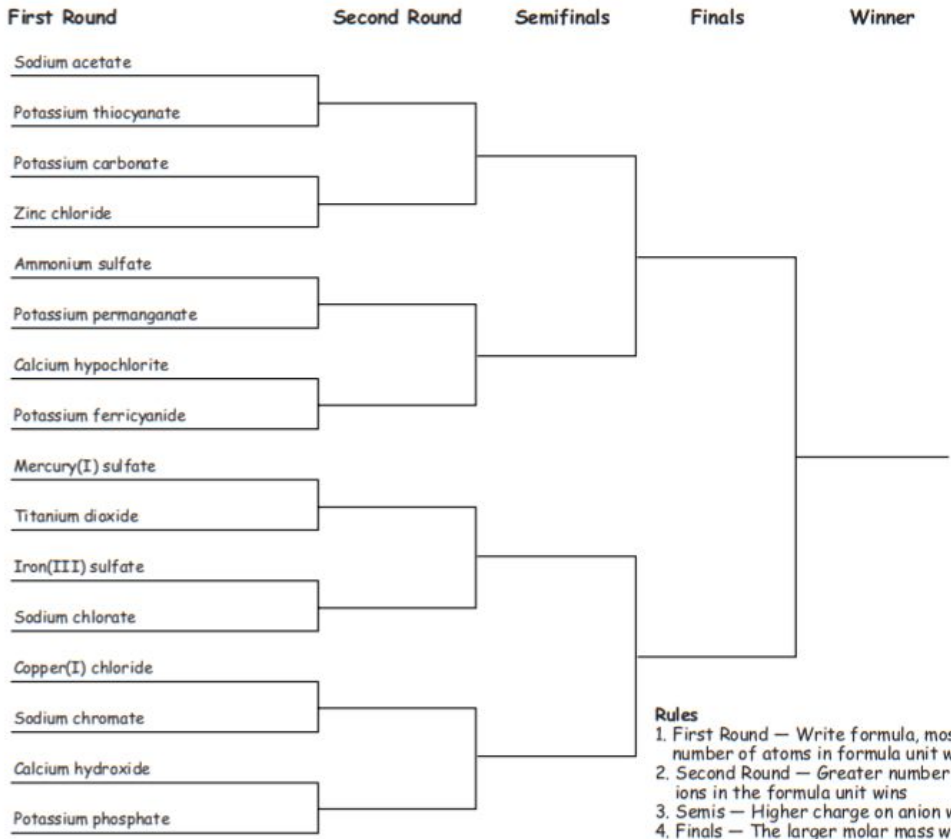
- Students had the ability to work at their own pace during the practice time, which allowed for instruction to be differentiated based on the student's skill level.
- Students we allowed to move around the room and choose who they wanted to work with, and often paired themselves with other students who worked at the same pace as them.
- I was able to walk around and help students who needed a little more support.
- I also asked students who deemed themselves a "Master" at the beginning of the class to help their classmates with the work when they were finished.
- Students who finished quickly also received an additional challenge worksheet.



Name \_\_\_\_\_

Class/Period \_\_\_\_\_

## Sweet 16 Chemistry Compound Tournament



The challenge worksheet given to students who completed the other activity.

# SUMMARY



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- I summarized the learning goals for the students both at the beginning and the end of class, before each time I asked them to move their names on the scale.
- This allowed them not only to know what we were talking about for the day, but exactly what material I was asking them how confident they were in.
- Even if the students did not feel good about the learning goals at the beginning of class, I emphasized that it was more important for them to feel like they were improving and feel more confident about the learning goals by the end of the class.

