Guided Inquiry

Guided Inquiry is a technique in which the teacher asks questions guide student understanding of a topic, but never directly gives them the answer to what they are looking for.

Example of use in a Chemistry Class

Background:

Students are learning about nuclear chemistry, nuclear fission and nuclear fusion.

Objective:

Students will be able to define, in their own terms, nuclear fission vs nuclear fusion.

Students will be able to identify nuclear fission vs nuclear fusion reactions.

Part 1 - Teacher Instructions:

Do not introduce terms nuclear fission and fusion prior to starting.

Project the image on the next slide.

Ask students to individually identify the similarities and differences between the to images and write a brief description of what is happening in each.

This can be done mentally, paper, JamBoard, but Pear Deck works really well, especially if virtual.

Students: on your own, take 3 minutes to record any observations you have about this image. This can include similarities, differences and a description of what you think is happening.

Image 1

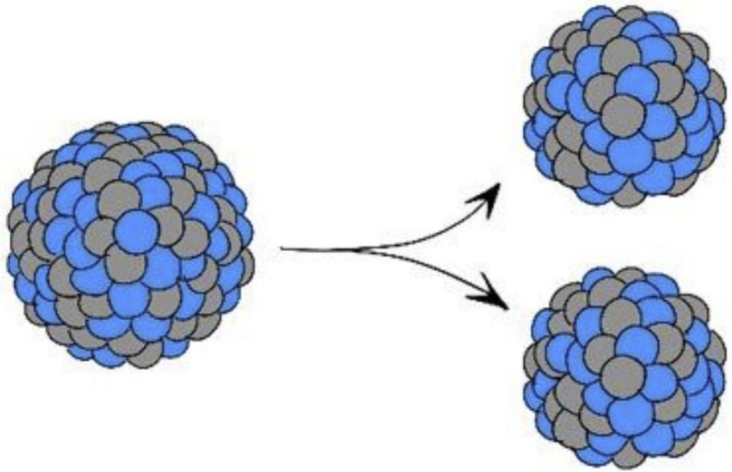
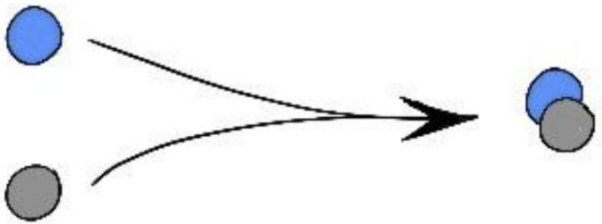


Image 2



Part 2 - Teacher instructions

After students have had time to record their individual observations, put them in groups of 2-4 and guide a discussion.

Instruct groups to:

1. Have each individual share their observations
2. Create a list of common observations for each image
3. Come to a consensus on what is happening in each image.
4. Write a 1-2 sentence describing each image.

Tips and tricks:

- Roam the room and listen to group discussions.
- If you hear something good, ask that group member to explain it further to the group.
- If you hear groups struggling, pose directing questions to guide them
    - Ex: How many particles does Image 1 start with vs Image 2?
- Groups can put their work on paper, JamBoard, Post-it notes oe a PearDeck

Part 3 - Teacher Instructions

Begin a whole class discussion, have each group nominate a spokesperson to share out for them (this role can also be assigned).

Begin with collecting group responds for similarities and differences between the image.

- There should be a lot of overlap
- If something is really good, you can circle it and say something like “oh, I really like this”
- If something is really wrong, just say something like “I’m not too sure about that”

The teacher can record these on a whiteboard, JamBoard, Screen or have the spokesperson come up and present and write them down.

Next collect the descriptions. It might be helpful to have the images projected still and put the descriptions on the image.

You might only need 1-2 groups to share, them ask other groups if they think anything needs to be added or changed.

Coming to a class consensus is key and this is where the teacher can continue to ask questions, if something is lacking from the descriptions.

Part 4 - Teacher Instructions

Dependant on time or skill level, the class can come up with a name for these processes happening in the images.

If the class has a developed vocabulary, you can start asking for synonyms for making/breaking. Hoping that fusion might be mentioned (fusion comes up time to time in most classes, fission rarely gets suggested).

Most of the time or in class that mave have ELL, the teacher can give them the two names

- “One of these processes is called Nuclear Fission and the other is Nuclear Fusion”

Now have the groups discussion which they think is which and come to a consensus.

Share out or take a vote to see how each group decided to name the images.

If there is not a whole class consensus, have groups present their reasoning and try to sway the other groups. Eventually, you will get a class consensus or have to step in and confirm the correct names.

These are students generated descriptions/definition of a complex idea, because the student come up with the explanation, they have created their own original content knowledge.