

# Questioning Patterns

## Tips and Tricks

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### Overview & Purpose

The purpose of this worksheet is to help future and/or current LAs when they're unsure of how to engage with their students. This LA cheat sheet is to be treated as a reference to refer to when LA's do not know what type of questions to ask their students to understand the depth of their learning and help further expand their learning. This worksheet includes examples of important questioning patterns articulated by Herbel - Eisenmann and Breyfogle and guidance on the proper settings to use those questions.

### Initiation -Response-Feedback (IRF):

1. Research on teacherstudent interactions (Mehan 1979) has shown that this is the most well-known questioning pattern.
2. Teacher asks a question → a student answers → teacher gives feedback
  - a. Initiation → response → feedback
3. Keep in mind: limits the student's ability to display his/her own, individualized thinking pattern

#### When to use this pattern:

- When you're short on time!
- When you're working with a large group
  - Sometimes as an LA you'll have limited time with your students during the lecture period to work on an activity. If this is the case and you need to

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help multiple students during this short period of time, the IRF questioning pattern is the way to go!

- Other times as an LA you will be hosting a review session before an exam. These sessions are often busy and it can be difficult or inefficient to answer every student's individual questions. Again, in these cases, in order to best clarify questions and ensure every student is being helped it is best to resort to the IRF questioning pattern.

### Examples:

*LA [ initiation ]:* What do humans breathe out with the chemical formula CO<sub>2</sub>?

*Student [ response ]:* Carbon Dioxide

*LA [ feedback ]:* Great! It's Carbon Dioxide

## Funnelling:

1. Teacher asks a series of questions; meant to guide the student to the "correct" or desired answer
  - a. Predetermined path
  - b. More than one way to solve a problem
2. Important to note: Student is answering mechanically, what about the student's thinking pattern? What about the student's ability to connect and analyze the answers?
3. Does restrict students' responses, but less than IRF

### When to use this pattern:

- When you're working on an activity that requires specific responses
- When you're working with more than one student
  - When you're working with a small group (around three students) and are trying to help them with an activity or concept, this is the ideal questioning pattern approach as you want them to be actively thinking and learning, which can be stunted with IRF questions, but you don't want to focus wholly on one student's thinking process, which is a danger with Focusing questions.

### Examples:

*LA:* What is responsible for relieving stress in the DNA supercoiled structure during DNA replication?

*Student:* It's an enzyme

*LA:* Okay..yes, but what enzyme makes cuts in the sugarphosphate backbone?

*Student:* Topoisomerase!

*LA:* Yes! That's correct!

### **Focusing:**

1. Teacher listens to students' responses before asking the consequent question
  - This question is based on the path the students' thinking is on, NOT a predetermined path
2. Not only clarifies the students' thinking pattern to the teacher, but also to fellow students to encourage deeper learning
3. The most open-ended; allows students to think deeply and express their thinking
  - Allows students to make connections between previously learned concepts and new concepts → the bigger picture

### When to use this pattern:

- When you're trying to figure out the student's reasoning or understanding of a concept
- When you're working one-on-one with a student
  - When you are in a review session or in class and are able to focus on the learning of one student for a period of time, this is ideal. In order to deepen a student's understanding of a concept you need to figure out how they think and how they learn. This is when you should use the Focusing questioning pattern in order to ascertain these details of the student's thought process in order to be able to better guide them in their learning.

### Examples:

*LA:* What enzyme is responsible for relieving stress in the DNA supercoiled structure during DNA replication?

*Student:* It's like the front car of a train!

*LA:* What do you mean by that?

*Student:* It's the enzyme that goes in front of the replication bubble.

*LA:* So the DNA is like the train tracks?

*Student:* Yes!

*LA:* So what does this front car do?

*Student:* If it's snowing and there's snow on the track, the front car pushes the snow off.

*LA:* Okay, so it clears the path for the rest of the train?

*Student:* Kind of, it relieves tension from the track so that the rest of the train can run smoothly!

### Miscellaneous Tips:

- While there are more appropriate questioning patterns for certain situations, there is no right or wrong!
- Sometimes situations aren't ideal
  - You may be running out of time
  - Students may not be responding effectively
  - You also may just be stuck on how to form an effective question
- Practice!
  - Don't only have to use these with your students, try using them with friends and family
    - Analyze how the other person responded- Think:
      - Was this the best question to ask for the specific situation?
      - Was this effective? (why or why not?)



### Source Materials:

Herbel-Eisenmann, B., & Breyfogle, L.M. (2005). Questioning our patterns of questions. *Mathematics Teaching in the Middle School*, 10(9), 484-489.