Reacting to Errors

An effective reaction occurs when the tutor avoids directly pointing out how the student is wrong and instead guides and motivates the student to recognize and correct the error themselves. This approach supports productive struggle, encourages reflection, and helps the student build confidence in their own problem-solving abilities. Effective tutor responses include statements such as, "Please walk me through that problem again?" or "Can you explain to me what you did here?" These kinds of prompts invite the student to revisit their reasoning and spot mistakes on their own, while still feeling supported. By contrast, ineffective or unhelpful tutors actions are those where the tutor directly states or highlights the error without fostering reflection. Examples include, "You are wrong" or "I see a mistake." While these acknowledge the error, they do not promote deeper learning and can discourage the student.

Research says...

Studies have shown that the way tutors intervene or respond when students make mistakes or show misconceptions in their learning can affect the student's motivation to learn. Asking students to try and correct their own mistakes before you help them is a great practice. For this reason, on Question 2, the most desired response or correct answer is:

"I appreciate your effort. Let's try solving the problem together. Can you tell me what you did first?"
In addition, it is best to respond indirectly and not to explicitly point out the student's mistake by asking leading questions such as, "Can you tell me what you did first?" Having students find their own mistakes is a powerful approach for three reasons:

- It helps students recognize "easy mistakes" on their own, such as making a typo or doing basic math operations incorrectly. Oftentimes, once a student looks at their work again, they will find the obvious error themselves. A student's ability to recognize their own errors increases their motivation to learn.
- It helps students to develop critical thinking skills. The ability to recognize their own errors fosters independent learning skills.
- It involves students in the learning process and gives students ownership of their learning.

(TeachThought Staff, 2021)

It is important to note that you do not want students to get too frustrated. Sometimes students may not have the prior knowledge or ability to find their own mistakes. When a student tries and fails to find their own mistake, coaches should be more explicit by giving the correct answer and support behind it.

When responding to students making mistakes or errors it is important to praise the student for putting forth the effort, also called praising for effort. Praising for effort gives students positive emotions even after making a mistake or getting a problem wrong. Praising students for effort and encouraging them to continue trying builds resilience and increases their motivation to learn.
(Master, 2015)

PREDICT Responses:

Criteria
Effective tutoring responses on reacting to student errors should:
- Avoid using direct words about the student's error (e.g., "it is incorrect", "I saw an issue in your attempt")
- Implicitly clearing up the misconception (e.g., "we have another way of doing the math problem")
- Using effective praise to motivate student's learning. (praise on student effort)

*If a tutor praises a student for effort, despite making an error, that is a correct way to respond. However, the absence of a tutor praising for effort, despite being incorrect, does not necessarily mean the tutor response is incorrect.

Effective tutor responses (Reacting to Errors)
Hi Kevin, you are doing great effort on this problem. However, let's think about it when you are doing calculation on the calculation of 2*(6+3). Which operation do you think takes precedence?

Ineffective tutor responses (Reacting to Errors, Explicitly point out student's errors)
No, this is incorrect. Try it again.

Why did you make the same mistake again?

Hi Kevin, which operation do you think takes

Correct (1): Effective tutor responses should praise the student's effort, implicitly guiding the student to correct errors. These responses avoid directly pointing out errors and instead use prompts to encourage students to reflect and explore alternative methods.

Incorrect (0): Responses that explicitly point out the student's errors are considered incorrect. Using direct negative language or failing to motivate the student can hinder the learning experience.

Tutor response	Reasoning	Correct (1) or Incorrect (0)?
Good effort! You got most of the addition right but there is a small problem at the start. What was your first step when you solved this problem?	Though it is praising the student's effort and asking them to walk through the steps, it still uses the word "mistake" which may be frustrating.	0
Great effort so far, can you explain to me how you approached this problem?	Praising a student's effort and asking them to explain how they attempted to solve the problem will aid the students in finding their mistake.	1
Everyone finds it easy to make mistakes with arithmetic, let's look at some ways that you can work methodically and check your work as you go along.	Stating that everyone is struggling with the same thing may not be encouraging to the student.	0

Lucy, very well, but I have to point that we have another way of doing the math problem, we can repeat the math together, what do you think?	A good way to rephrase the mistake.	1
This is very close! I see one issue, can you walk me through the how you worked through the problem?	Include both parts, i.e. praising the effort and asking the student to walk through their solution, but still used the word "issue"	0
Thank you for writing the problem and your answer so I can see your work. Let me show you some examples that show how to add numbers that add up to a number greater then 10.	Giving the student more examples without clearing up the misconception may not be helpful.	0

EXPLAIN:

Explained responses for reacting to errors

Key: tutor response should demonstrate an understanding of the importance of helping students to understand their errors on their own (Keywords: reviewing, revisiting, rethinking, going through the problem again and etc.)

Correct (1): The tutor response focuses on the benefits of the student independently discovering their mistake.

Incorrect (0): The tutor response suggests directly telling the student what is wrong or fails to emphasize student self-discovery of errors.

Tutor response	Correct (1) or Incorrect (0)?

She has the numbers aligned properly. This gives me a baseline to see where she is making mistakes. She will be motivated because she has the first step in the process-focused coaching correct. At this point, I think Lucy never learned how to carry over numbers from one place value to another e.g. units, tens, hundreds……..	0
Start with a positive statement and then offer to do it together, fostering a team feeling. Go through the steps to see if she can find the error herself.	1
Stays positive. They need to feel like they solved it.	0
Starting with praising the student's effort and work put in begins the session on a positive note, and uses ability-focused praise (from the previous survey) to encourage the student to keep working on the problem. Suggesting solving the problem "together" would help Lucy feel like she and the tutor are on the same side and encourage trust to try the problem again.	0
Recognizing her effort is important. Plus, encouraging her to work together in identify where the error is will boost her self confidence.	1
It points where he may have gone wrong.	0

This way, I can see where he went wrong with the problem, and address the mistake without telling him what to do.	0