

Facilitating Formative Feedback: Using Simulations to Impact the Capability of Novice Mathematics Teachers

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What is being assessed in the simulations?

Teacher Candidate (TC) Eliciting student thinking:

- formulating questions to elicit and probe student thinking;
- posing questions;
- listening to and interpreting what students are saying;
- posing additional questions that are responsive

TC Interpreting student thinking

- gathering evidence of student thinking;
- articulating inferences that are grounded in the evidence.



$$\begin{array}{r} 503 \\ - 207 \\ \hline 296 \end{array}$$

How do the simulations support feedback conversations?

Simulation Documentation

Elicits		
Yes	No	Confirms that the student expanded 503 and/or 207
Yes	No	Elicits that the student compared the ones place digits
Yes	No	Elicits step of making a trade
Yes	No	Elicits that the student subtracted numbers by place in expanded form
Yes	No	Elicits the sequence of subtraction
Yes	No	Confirms the answer of 206 or that the student added 200 + 6
Probes		
Yes	No	Probes the student's understanding of the value of particular digits in the original problem and/or the equivalence of the expanded number and the original number
Yes	No	Probes around why the student trades
Yes	No	Probes the equivalence of 503 and the 400+13 (the value after the trade)
Yes	No	Probes the recording of the trade
Yes	No	Probes around the reasonableness of the student's answer

Interview Documentation

Based on your interaction with the student, how do you think the student would solve this problem (show the teacher the problem) if the student used the same process as in the first problem? If you feel that you did not gather enough information from the interaction with the student, you can say that you don't know. (Ask the teacher to narrate the process as they write it.)

732 - 216 =

Explains that the student would expand 732 to 700 + 30 + 2 and 216 to 200 + 10 + 6

Yes No Missing

Explains that the student would compare numbers in the ones place to determine if trading is needed.

Yes No Missing

I am now going to ask you to anticipate how the student would understand two mathematical ideas in this problem. As you are answering, you should say what you heard from the student that supports your interpretation. If you feel that you did not gather enough information to know what the student would understand, just let me know.

Yes What would the student understand about expanded numbers like these point to the expanded form of one of the addends?

Anticipates the student's understanding about expanded numbers, e.g., "The student understands they can represent the value of each digit by writing out the values in place value notation using addition and/or that adding up the expanded values results in the original number."

Correctly characterized
Incompletely characterized
Not clear
Missing information

Generated Feedback

Eliciting process

Elicits all core steps in the process with some additional components. Discussed

Interpreting process

Accurately describes the process, but does not accurately apply in a new situation. Discussed

Probing understanding

Probes some core understanding. Discussed

Performance summary

You asked about a core understanding that is related to the student's process. You asked about other aspects of understanding that are less central.

What to do next time

Anticipate ahead of time thinking about what is most important to ask about and/or what aspects of the student understanding are not available through the written work. For instance, when working with subtraction strategies it is often helpful to find out how the student understands the values of the numbers they record.

Attending to student thinking

Attempts to probe the student's work. Discussed

Applying Mathematical Knowledge for Teaching

Discusses MAT through generating a future lesson. Discussed

Using mathematical knowledge and skills

Generates and uses mathematical knowledge and skills accurately. Discussed

Respecting the student and their thinking

Consistently demonstrates respect for the student's approaches and for the student as a knowledgeable of mathematics. Discussed

How are the simulations designed to capture teaching practices?

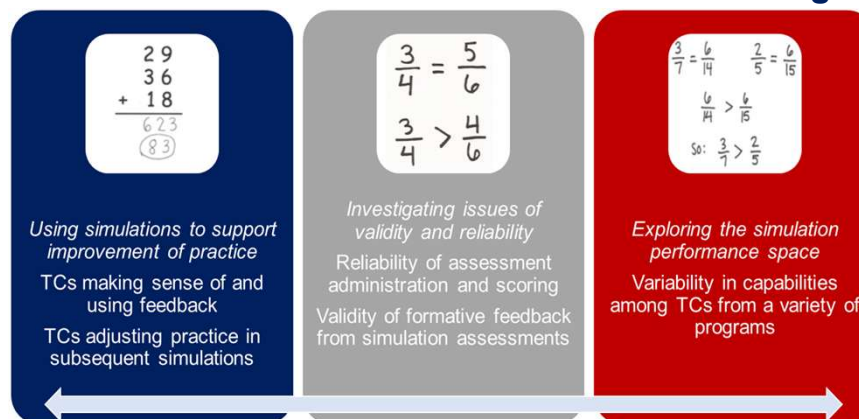
Preparation: The TC examines student's work

Simulation: The TC elicits a Simulated Student's process and understanding of the mathematical ideas

Interview: The TC shares their interpretations of the student's process and understanding.

Feedback: The Teacher Educator provides formative feedback on the TC's eliciting and interpreting of student thinking

What research ideas are studied using the simulations?



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