INTERPRETING STUDENT THINKING: WHAT CAN NOVICES DO AT THE BEGINNING OF TEACHER EDUCATION

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IMPLICATIONS OF A SHIFT TO PRACTICE-BASED TEACHER EDUCATION

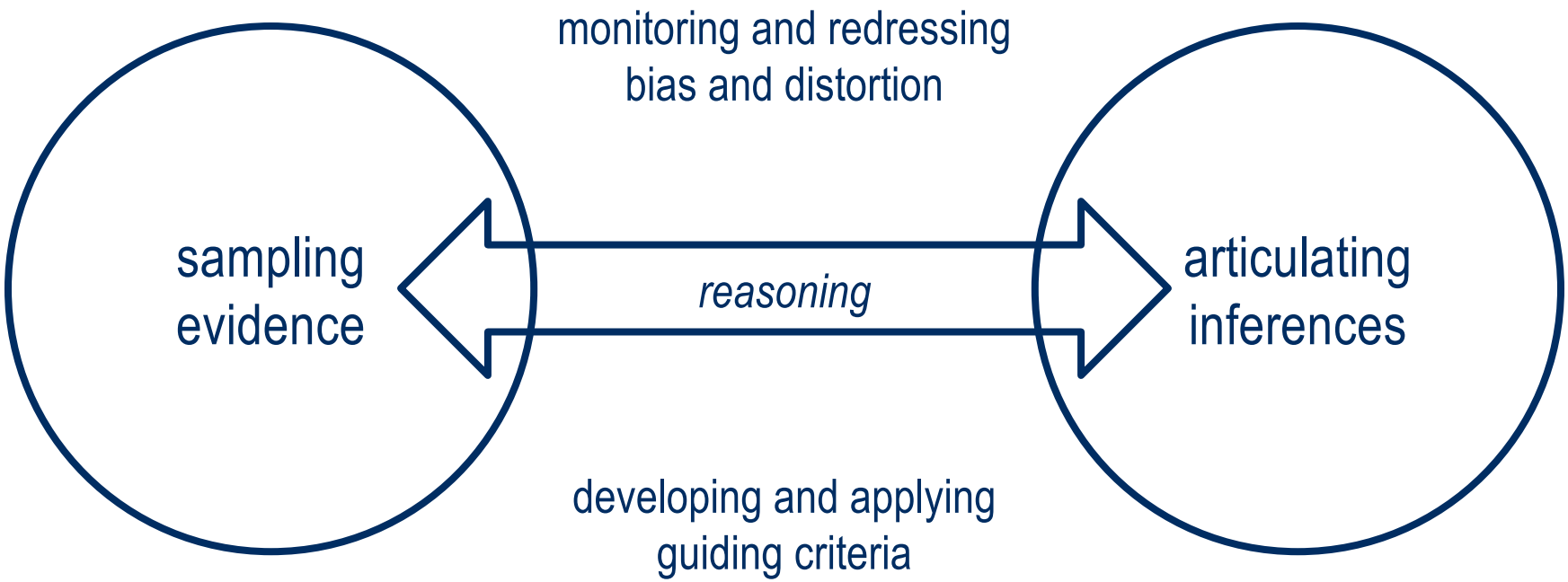
A shift to practice-based teacher education requires:

- Redesigning our coursework for preservice teachers
- Developing new settings for doing the work of teacher education and using current settings differently
- Learning about the skills with teaching practice that preservice teachers bring to teacher education
- Developing ways to assess preservice teachers' developing capabilities

RESEARCH QUESTION

What is the nature of the interpretation skills that preservice teachers bring to teacher education?

INTERPRETING STUDENT THINKING



(Developed drawing on Stiggins, 2001)

FOCUSING ON INTERPRETING STUDENT THINKING AT THE BEGINNING OF TEACHER EDUCATION

Early attention to interpreting student thinking is crucial, because:

- people are likely to develop ways of doing this in everyday life
- errors in focus, scope and/or evidence are consequential for students' learning and life opportunities
- it is a rich territory in which to notice, and work to address/counteract, the impacts of bias

CHALLENGES IN STUDYING CAPABILITIES WITH INTERPRETING STUDENT THINKING

- Interpreting is contingent on the information that a teacher has about student thinking
  - A valid assessment must establish what information is available for a PST to interpret
- Interpreting is closely intertwined with eliciting student thinking
  - A fuller/more robust assessment allows PSTs opportunities to elicit what they believe is sufficient information

Simulations address these challenges

USING STANDARDIZED SIMULATIONS TO ASSESS TEACHING PRACTICE

Simulations are approximations of practice that can be used for both assessing and supporting ongoing learning

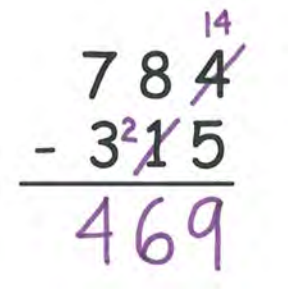
Simulations:

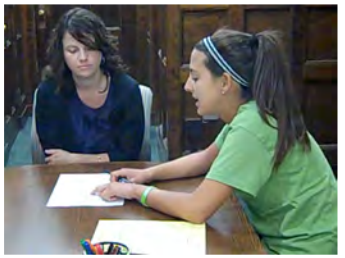
- place authentic, practice-based demands on a participant
- purposefully suspend or standardize some elements of the practice-based situation
- can provide information that are not possible or practical to determine in real-life professional context

STRUCTURE OF THE TEACHING SIMULATION

The preservice teacher

1. Prepares for an interaction with a standardized student about one piece of student work
2. Interacts with the "student" with the goal of eliciting the student's process and understanding of the process and related mathematical ideas
3. Interprets the student's thinking in a follow-up interview, using evidence from the interaction





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METHODS

Context:

- Simulation assessment (23 preservice teachers)
- Data collected during the first week of the teacher education program

Analyzing the nature and prevalence of inferences:

- Making inferences about the student's mathematical process
- Makes inferences about the student's understanding
- Marshalling available evidence to support inferences

INFERENCES ABOUT THE STUDENT'S PROCESS

- 87% of preservice teachers described accurately the student's steps for solving the problem
- Almost all of the PSTs (96%) could apply the student's process to a similar problem

INFERENCES ABOUT THE STUDENT'S UNDERSTANDING

Peripheral Understandings

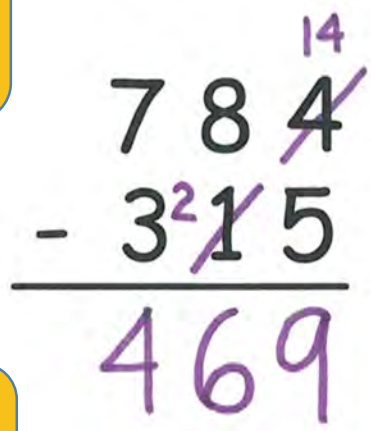
784 as 7 hundreds, 8 tens, and 4 ones

Why you can't take 5 from 4

Core Understandings

What the little "2" means

Why both the minuend and subtrahend are adjusted



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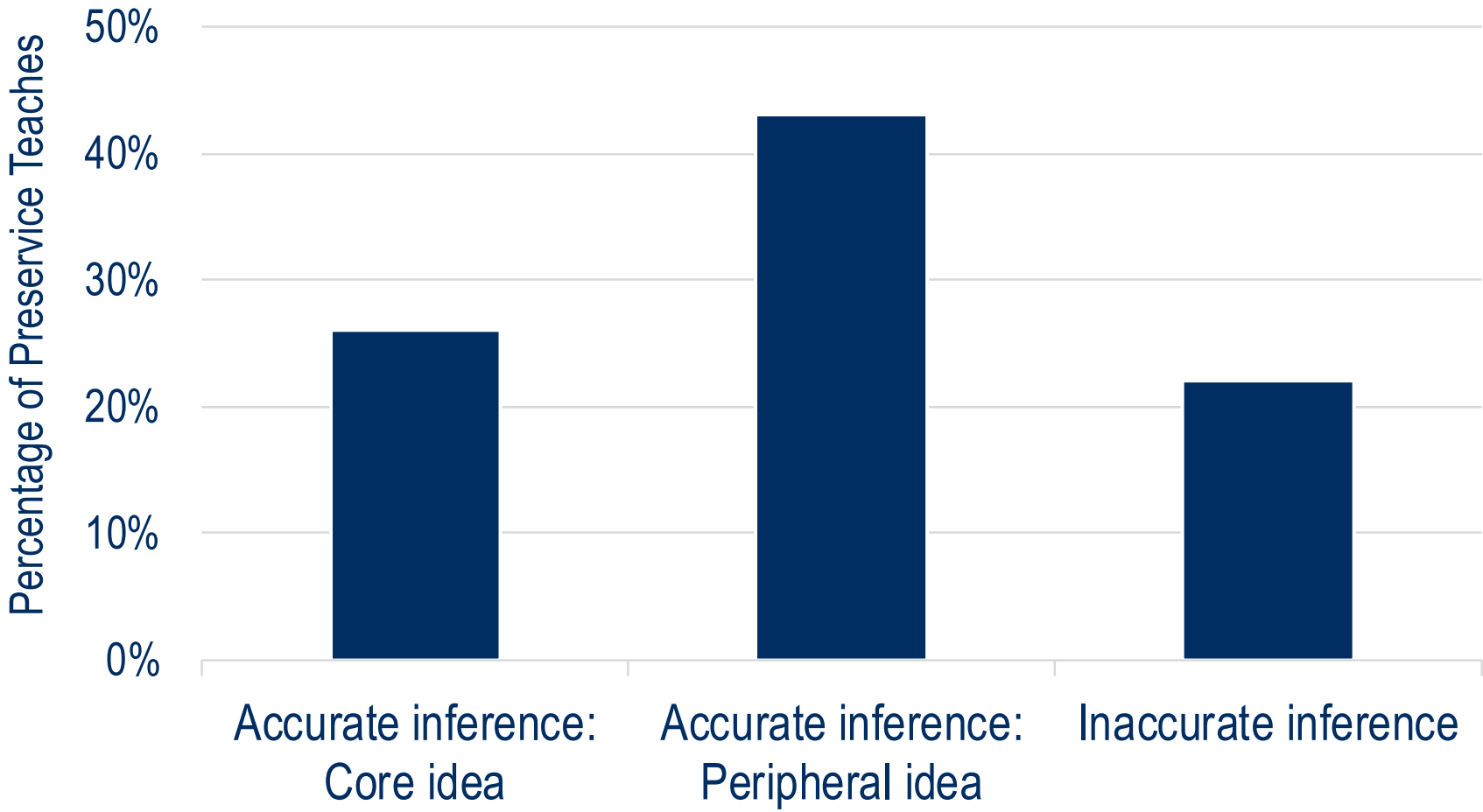
INFERENCES ABOUT THE STUDENT'S UNDERSTANDING (OPEN ENDED)



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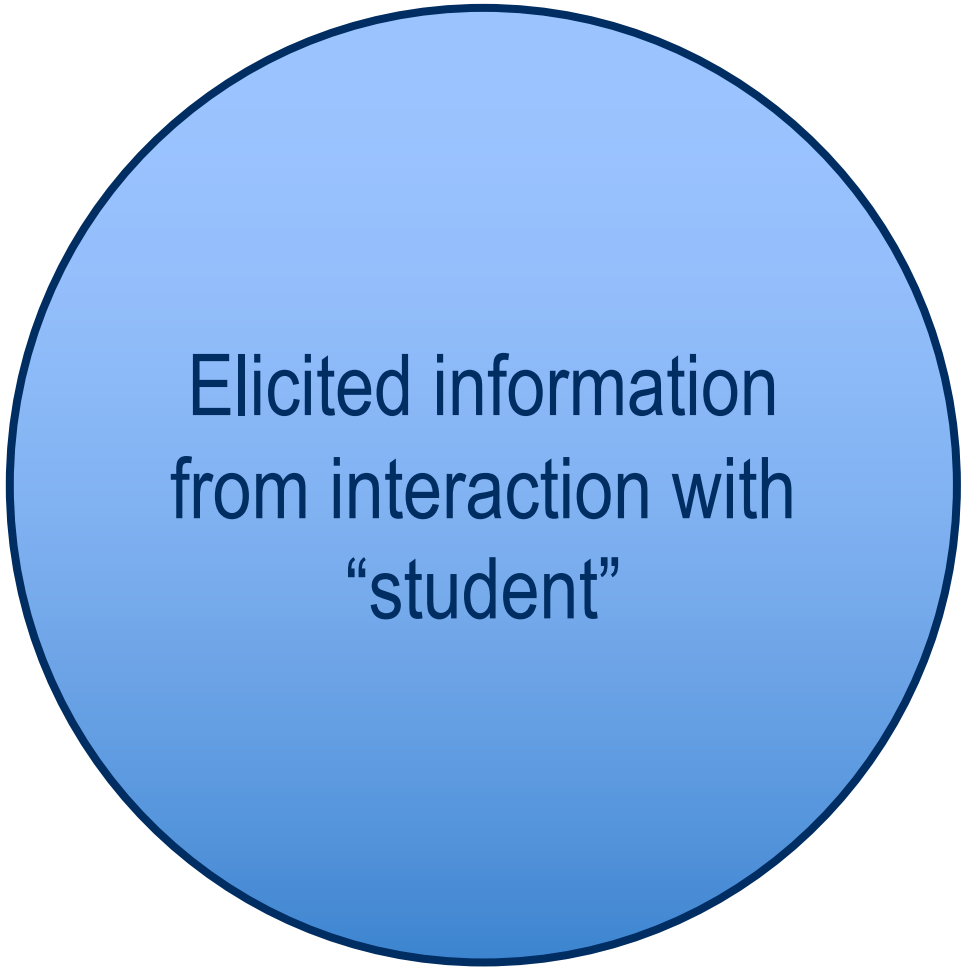
EVIDENCE AVAILABLE FOR INTERPRETATIONS



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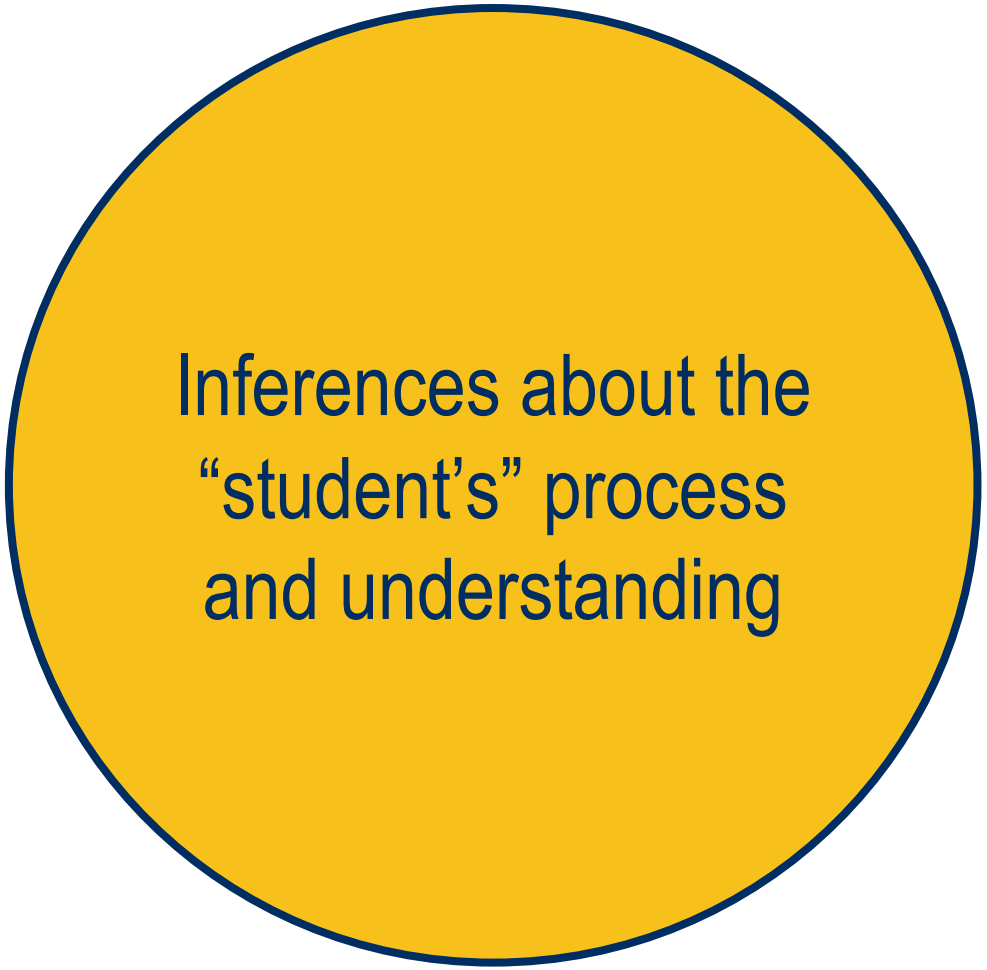
INFERENCES THAT ARE MADE



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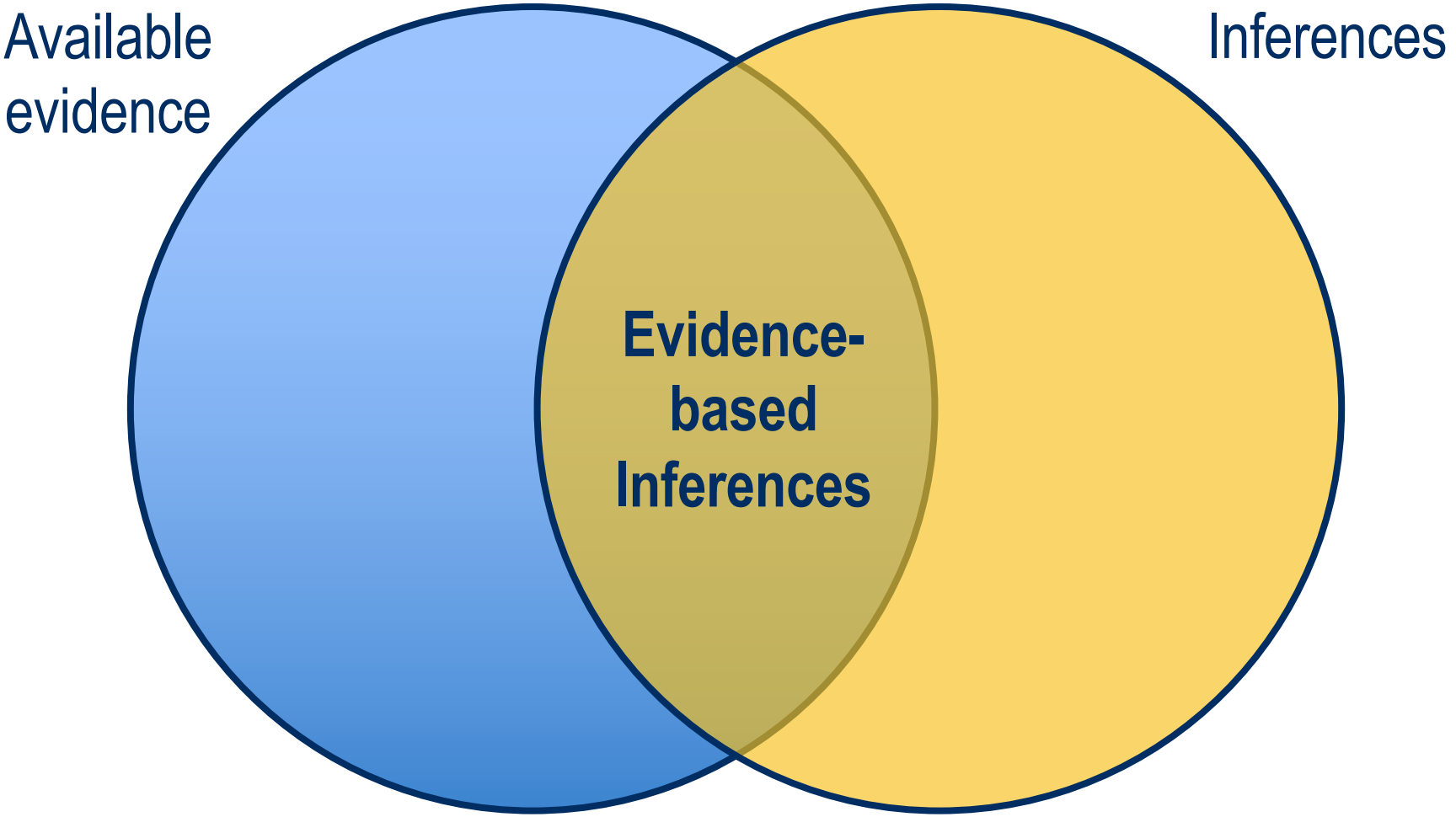
EVIDENCE-BASED INFERENCES



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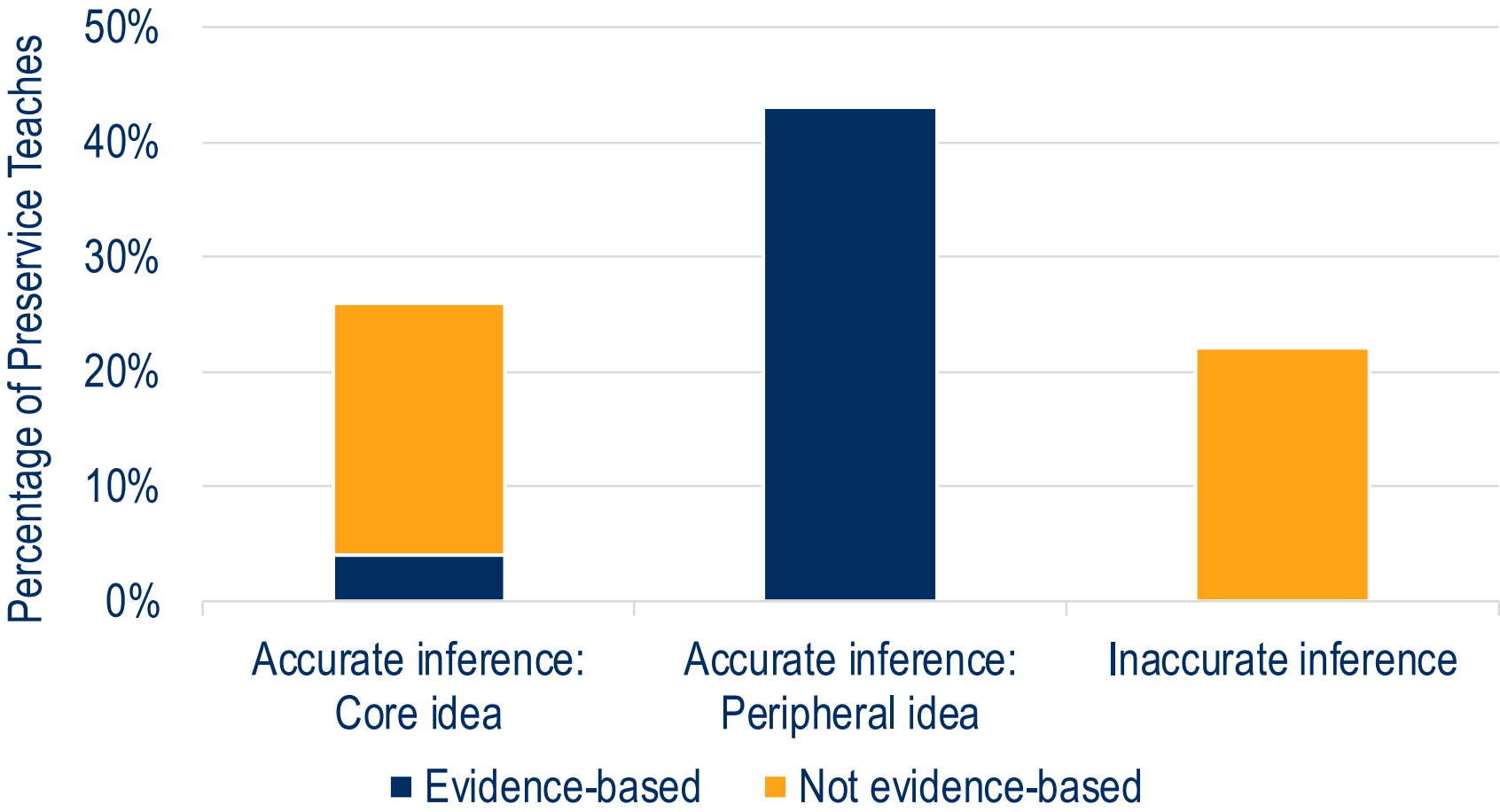

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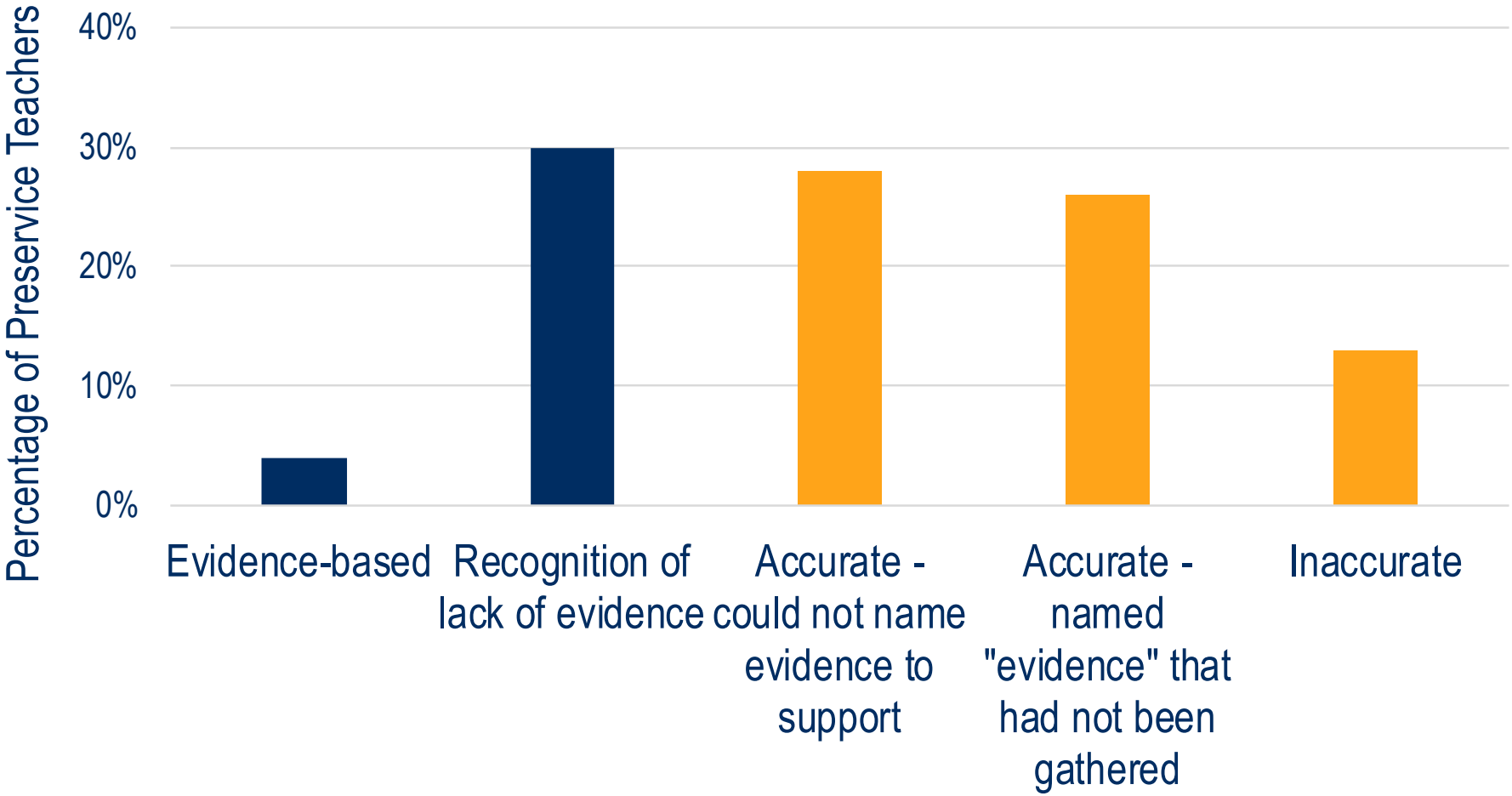
INFERENCES ABOUT THE STUDENT'S UNDERSTANDING (PREDETERMINED)



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SUPPORTING THE DEVELOPMENT OF PROFESSIONAL INTERPRETING PRACTICES

Experiences are needed that:

- **foster new learning**: learning to name and apply interpretive foci
- **build on the skills that PSTs bring**: interpreting process
- **spur PSTs' reconsideration and change of the approaches they used**: making interpretations for which they either could not articulate a basis in evidence or spoke as if there were a basis in evidence that actually did not exist.

QUESTIONS? WANT MORE INFORMATION?

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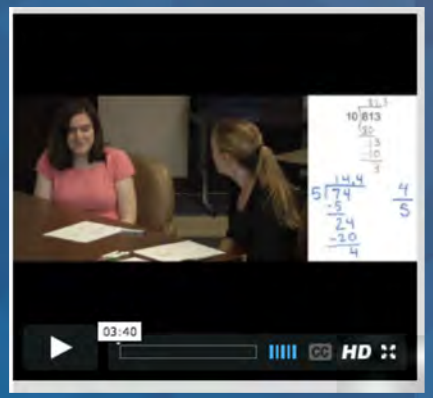

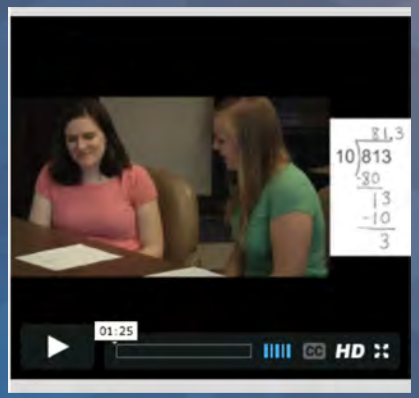

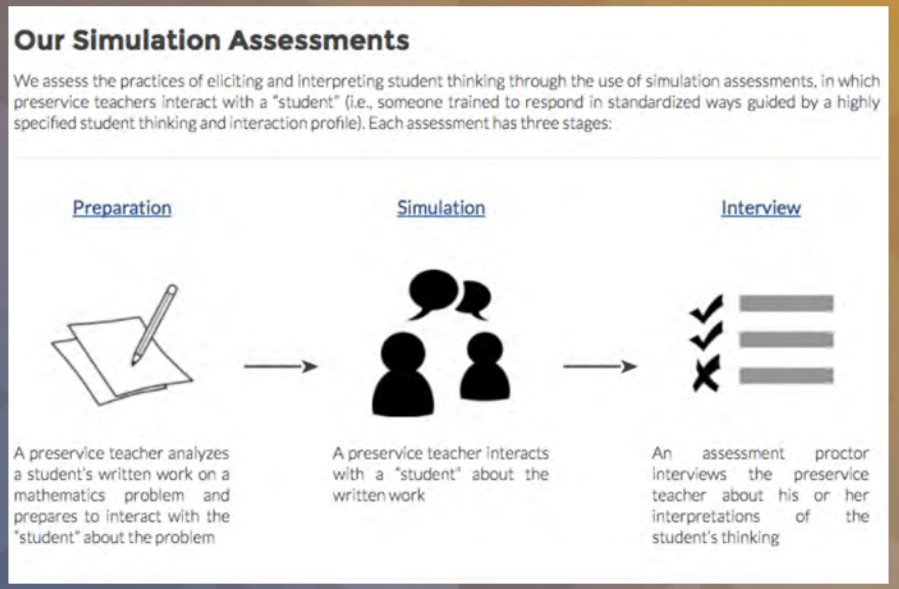

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