We used the Wilcoxon Signed Ranks Test to compare the means of PSTs responding and interpreting scores for each task. PSTs reported on their preference for both interpreting and responding between the three tasks and the results were organized. We coded PSTs’ preferences with dummy variables (1, 2, 3). A one-way ANOVA was conducted to determine if there were differences between PSTs perception of the easiest type of task to interpret and respond to elementary students’ mathematical thinking.

Independent samples t-test comparing the means of PSTs who preferred responding to the interaction-focused mathematics clip but were scored higher on responding to written mathematics student work.

### Methods (Cont.)

#### Data Collection and Analysis (Cont.)

- **Participants**: 22 male and female elementary education PSTs enrolled in Monmouth University as undergraduate and graduate students.
- **Instruments**
  1. Task, analyzing written student mathematics work of two students completing a prompt based on a word problem utilizing models for multiplication and division.
  2. Task, analyzing an instruction-focused mathematics clip of a student explaining their response on a fraction-based word problem to their teacher and responding to the teacher’s questions.
  3. Task, analyzing an instruction-focused mathematics video on a lesson on ratios and rates with a teacher instructing a whole class.
- **Two-question survey**, asking PSTs for their perspective about the three types of tasks and the tasks’ affordance to help PSTs interpret and respond to elementary students’ mathematical thinking.

#### Findings

- **Data Collection and Analysis**
  - PSTs completed the three tasks described above during one semester as part of their coursework.
  - PSTs responses were coded for each task using a rubric scoring both interpreting and responding from 1-2.
  - Coding was completed by two researchers to check for inter-rater reliability, which was achieved with an average of 85.2% between the three tasks.

### Conclusion

- **Overall**, results demonstrated that there is a significantly greater chance that PSTs will correctly interpret and respond to written student mathematics work as compared to an interaction-focused mathematics clip and an instruction-focused mathematics video.

- **In conclusion**, PSTs are strongest with their ability to interpret written student mathematics work, despite preferring the interaction-focused mathematics clip.

- While it is necessary to be able to respond to and interpret written mathematics work, it is also important that PSTs develop the skills needed to interpret and respond to students while having one on one interactions and during whole class instruction.

- The results demonstrate that while elementary math PSTs are gaining the ability to notice students’ mathematical thinking, there are still changes needed in education of PSTs to enhance the development of their noticing skills.

- Noticing might be impacted by PSTs’ Content Knowledge (CK). The level of difficulty of the mathematics content increased from the written student mathematics work, to the interaction-focused mathematics clip, to the instruction-focused mathematics video.

- In relation to the increased progression was an overall decrease in the scoring for PSTs. This could be due to a lack of CK for the advanced math skills.

### Recommendation for Future Studies

- A future study could repeat the same methodology but assess the same mathematical skill through the different types of tasks.
- This will help determine if CK is responsible for the varying abilities of PSTs noticing skills between tasks, or if PSTs abilities vary based on the type of task.

### References