Mathematics Teacher Noticing: Seeing Through Teachers’ Eyes

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Other perspectives on noticing were presented during this session by Miriam Gamoran Sherin, Lynn Goldsmith, Rossella Santagata, Nanette Seago, Jon Star, and Elizabeth van Es.
Why Noticing?

Teachers faced with a “blooming, buzzing, confusion of sensory data” during instruction (B. Sherin & Star, p. 69)

- Teaching involves deciding where to pay attention and where not to pay attention.
- Mathematics teaching in particular calls for adaptive and responsive style of instruction.
- Assessing on-going instruction requires expert noticing.
Studying Teacher Noticing

Noticing is not an unqualified virtue … key is what to attend to and how to interpret it (D. Ball, p. xxiii)

- What is teacher noticing?
  - Attending to particular events in instructional setting
  - Making sense of events in an instructional setting

- Recent studies of teacher noticing
  - Preservice and In-service teachers
  - Interviews, Observations, Video tasks, Student work
  - Nature of teacher noticing/Development of noticing
Our Session Today

... what teachers attend to as they teach is highly consequential. Given that, the next logical questions become: How and why does it matter, and what can be done about it? (A. Schoenfeld, p. 224)

- Situating our work
- Thinking about our noticing – A video task
- Perspective on studying noticing
- Discussion and Raffle
A Video Task …

- 3-minute interview with kindergarten-student Rex
  - From NSF-funded STEP project (Philipp, Jacobs, et al.)
- Interviewer poses series of three story problems.
- Your task is to watch video and think about what you noticed.
Kindergarten Rex
Kindergartner Rex

- Rex had 13 cookies. He ate 6 of them. How many cookies does Rex have left?
- Today is June 5 and your birthday is June 19. How many days away is your birthday?
- Rex had 15 tadpoles. He put 3 tadpoles in each jar. How many jars did Rex put tadpoles in?

Think about what is noteworthy to you …

Compare what you noticed to what others noticed. What might teachers notice?
NSF-funded project to study how sustained professional development focused on children’s mathematical thinking affected teachers’

- Beliefs
- Mathematical content knowledge
- Responsiveness to children’s thinking in 1-on-1 interviews
- Professional noticing of children’s mathematical thinking
Professional Noticing of Children’s Mathematical Thinking

1. **Attending** to children’s strategies
   
   Please describe in detail what you think the child did in response to this problem.

2. **Interpreting** children’s understandings
   
   Please explain what you learned about this child’s understandings.

3. **Deciding how to respond** on the basis of children’s understandings
   
   Pretend that you are the teacher. Describe some ways you might respond to the child, and explain why you chose those responses.
Deciding How to Respond on the Basis of Rex’s Understandings

Extent to which teachers consider Rex’s past and future understandings.

- Build on the Rex’s strategies and understandings?
- Leave room for Rex’s thinking in the proposed interaction?
- Suggestions consistent with research?

1. **Evidence** of deciding how to respond on the basis of Rex’s understandings

2. **Lack of Evidence** of deciding how to respond on the basis of Rex’s understandings

   - Focus on teachers’ thinking
   - Focus on general comments
Evidence of Deciding How to Respond on the Basis of Rex’s Understanding

Rex really prefers to use his fingers as a tool to solve problems. In the first problem he used them to count down from 13 …. In the second problem he counted on from June 5th to June 19th, but was thrown—ever so slightly—when his counting on continued beyond his 10 fingers. Considering this, I think the third problem caused some difficulty because he couldn’t represent 15 tadpoles with his fingers. ...

I’d start by asking him why that problem was hard. Is it because of the language and context of tadpoles? Is it because he can’t use a counting on or back strategy? ... Where I’d go from there would really depend on his response....

I might adjust the numbers to (16, 2) to see if he’d skip-count by 2s up to 16 and keep track on his fingers. If Rex explained that it was hard to use his fingers for this one, I might ask if there’s another tool that would help him.
I would help him draw a picture and guide him through the problem. I would ask him to draw 15 dots or lines to represent the 15 tadpoles. Then I would tell him that there will be 3 in each jar, so to represent each jar he could circle tadpoles in groups of 3. I would then ask him how many circles he has ....
Lack of Evidence of Deciding How to Respond on the Basis of Rex’s Understandings:

Focus on General Comments

I might say something like, “Yes, that does seem a little bit harder than our last problems, but you’re a smart boy. I’m sure if we work together, we could solve it.” … I’d use positive reinforcement by telling him I think he’s smart to boost his confidence. … I believe after solving the problem together, Rex would feel very proud of himself.
Conclusions

- Deciding how to respond on the basis of children’s understandings is challenging.

- Expertise can be gained through sustained professional development (over years not months).

- Characterization of teachers’ responses helps us understand and build on teachers’ existing perspectives.
The Book

Forward (Deborah Ball)

Part I: Introduction
1. Situating the Study of Teacher Noticing (Miriam Sherin, Vicki Jacobs, Randy Philipp)

Part II Foundations of Teacher Noticing
2. On Noticing Teacher Noticing (Frederick Erickson)
3. Noticing: Roots and Branches (John Mason)
4. Situation Awareness in Teaching: What Educators Can Learn From Video-Based Research in Other Fields (Kevin Miller)
5. Reflections on the Study of Teacher Noticing (Bruce Sherin and Jon Star)
6. Accessing Mathematics Teachers’ In-the-Moment Noticing (Miriam Sherin, Rosemary Russ, and Adam Colestock)
Part III: Studies of Mathematics Teacher Noticing

7. Deciding How to Respond on the Basis of Children’s Understandings (Vicki Jacobs, Lisa Lamb, Randy Philipp, Bonnie Schappelle)

8. Using Video to Improve Preservice Mathematics Teachers’ Abilities to Attend to Classroom Features: A Replication Study (Jon Star, Kathleen Lynch, and Natasha Perova)

9. A Framework for Learning to Notice Student Thinking (Elizabeth van Es)

10. From Teacher Noticing to a Framework for Analyzing and Improving Classroom Lessons (Rossella Santagata)

11. Using Classroom Artifacts to Focus Teachers’ Noticing: Affordances and Opportunities (Lynn Goldsmith and Nanette Seago)

12. Noticing Teachers’ Thinking About Videocases of Teachers Engaged in Mathematics Tasks in Professional Development (Elham Kazemi, Rebekah Elliot, Judith Mumme, Cathy Carroll, Kristin Lesseig, and Megan Kelley-Peterson)

13. Examining the Behavior of Operations: Noticing Early Algebraic Ideas (Deborah Schifter)

Part IV Conclusion

Thank you!!

Discussion