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Using "Teacher Reflections"

Some thoughts on using this video to help teachers plan effectively:

Different Audiences, Different Goals

There are several ways to use the "Teacher Reflections" video. I have sometimes just used specific chapters of it to help answer workshop participant questions about why Teri chose a particular course of action. I have used it with coaches to help them think about what it would take to support a teacher as he/she becomes more reflective. Principals are not the intended audience for the workshop described below but they can benefit from watching "Teacher Reflections" and pondering the level of professionalism and dedication that Teri displays. Their challenge is to figure out how to support their teachers to achieve a similar competence.

Learning to Plan

One important use of the "Teacher Reflections" video is to help teachers **learn to plan**. In this scenario "Teacher Reflections" is used in conjunction with "Developing a Multiplication Algorithm for Fractions."

On this video Teri reflects each day on what happened in class, and where students are in their development of an understanding of a piece of mathematics; this naturally evolves into planning the next day. Teri also indicates in her reflections that sometimes a class does not go as planned, and she has to make adjustments immediately, based on what she hears students saying and sees them doing. Planning in this forethoughtful and flexible way is not easy to do. Ω

Beginning teachers are frequently daunted by the challenge of planning and executing lesson. I can encourage them by pointing out that Teri has many years of experience, but that at one time she felt as unsure as they do. She encourages new teachers to concentrate on really knowing the mathematical goals for each lesson as a first step.

Design of the Workshop

Note: I must create an environment has to be supportive so teachers feel comfortable teaching and critiquing peers.

The design for the workshop involves assigning small groups to plan a Lesson from *Bits and Pieces II*, 3.1, 3.2 or 3.3 outside of class time, using both the Student and Teacher editions; workshop time is then given to executing the plan with peers as "students", comparing the result with what we see on the video "Developing a Multiplication Algorithm," and then viewing "Teacher Reflections." The goal while watching *both* videos is to focus on learning to plan.

Ω It might help the discussion if participants first read "Orchestrating Discussions of Challenging Tasks: Keeping Your Eye on the Mathematics to be Learned" (Smith et al) which describes 5 useful practices. (See Appendix)

"Teacher Reflections"

LAUNCH:
Before viewing the videos "Teacher Reflections" and "Developing an Algorithm for Multiplying Fractions: *Bits and Pieces II*, Inv.3"

First Steps: Do the Problems (outside of class time)

Each group is assigned a Problem (3.1, 3.2 or 3.3) to plan to teach; the small group collaborates to explore and plan outside of class time. The first step in planning is to do the actual Problem in the student text, *Bits and Pieces II*. Doing the problem yourself is essential, but doing it with others will help to anticipate likely responses.

and Plan Collaboratively (outside of class time)

The questions below help to guide the planning process. The Teacher Edition should be available throughout.

- What mathematics will students bring to the Problem?
- What is the overall mathematical goal?
- What will you use for the Launch? What do you expect students to do/say in this phase?
- What will you look for and ask about during the Explore phase? What do you expect students to do/say in this phase?
- How will you organize the Summary? What do you expect students to do/say in this phase?
- Where do you expect the students to be in relation to the mathematical goal at the end of the Problem?

Next Step: Teach the Lesson

Each small group takes the role of "teacher" (perhaps one person taking the responsibility for Launch, all members of the group circulating to ask questions during the Explore, and one person taking the responsibility for the Summary). If there are more than 3 small groups then a "breakout" room is helpful, so every group has an opportunity to plan and execute a lesson.

After the lesson the planning group responds to peer questions about their plan.

All of this is preparatory to viewing students working with the same problem and critiquing the plan of the teacher on the video.

VIDEO: "Developing an Algorithm for Multiplying Fractions, *Bits and Pieces II*, 3.1/3.2 and 3.3"

This is actually two videos, a total of 45 minutes in all. We should view only the part that shows students working on the same problem as participants in the workshop have just planned and executed.

EXPLORE: View a part or all of "Developing a Multiplication Algorithm for Fractions." (*Bits and Pieces II*, Investigation 3)

Focus Questions

After the Lesson has been taught the large group should view the relevant piece(s) of "Developing a Multiplication Algorithm."
When viewing the video each "leading" group needs to keep their plans in mind and compare them to what Teri did.
From what you can see on the video:

- How did Teri's Launch differ from the Launch you planned? Did her Launch seem appropriate? Did it give too much away? Should she have added anything to the Launch?
- What did you see the teacher doing to support learning in any of the L-E-S stages? Did she seem to have *anticipated likely responses* and/or used the Explore phase effectively to *uncover different approaches?*
- How did Teri's Summary differ from what you planned? Did you see evidence that she had *purposefully selected and sequenced* the student work for display? Did Teri encourage students to compare, reflect, revise? Explain. (The student work is available so participants can examine this.)
- Do you think Teri used the Teacher Edition to plan? What is your evidence of this?
- Did students say anything unexpected in any of the Launch/Explore/Summary phases? (The Explore phase has been heavily cut, so not much appears on this video.) Did Teri take full advantage of what you heard students saying and doing in any of these phases?
- In the Summary for 3.3 Teri highlights a misconception. How, if at all, does this relate to other helpful teacher practices? (*Predicting likely responses, monitoring approaches, selecting and sequencing and connecting student work*?) Is there some other incident that you would like to view through the prism of these 5 teacher behaviors?
- Where do the students seem to be in relation to the overall mathematical goal?
- What questions would you like to ask Teri?

SUMMARIZE: Small group Debrief

Each small planning group will want to discuss how well their plans worked, and how they might change the plan, now that they have seen actual students working with the same Problems.

- What did you learn about planning from your "peer" experience or the video?
- What would you like to ask Teri?

VIDEO: "Teacher Reflections" 31 minutes, 5 chapters.

This video shows the teacher reflecting after each lesson. We might view only the reflection relevant to the particular lesson planned and executed by participants in the workshop.

EXPLORE: While Viewing "Teacher Reflections"

Some focus questions for each of these Reflections are below. It helps the culminating discussion if each small group is asked to focus on a particular reflection. A small group planning for 3.1 should concentrate on Reflections 1 and/or 2, a group planning to teach 3.2 should concentrate on Reflection 3, and a group planning to teach 3.3 should concentrate on Reflections 4 and/or 5. Alternatively, each of Teri's reflections can be viewed through the lens of the 5 practices described in the article "Orchestrating Discussions of Challenging Tasks" (Smith et al, to be published in MTMS)

Focus Questions for "Reflection for Day 1"

Day1 Topics: Planning the Launch for 3.1, goals for the week.

- Teri's Launch for Day 1 (3.1A and B) was 15 minutes *plus* what we see on the video "Developing a Multiplication Algorithm for Fractions." What might be some advantages of including a discussion of whole number multiplication in the Launch?
- When you viewed Teri's Launch on "Developing a Multiplication Algorithm" you were asked to decide if the Launch gave too much away/ should have had something added. After listening to Teri do you want to comment?
- Teri's Launch includes a student doing a Brownie Pan example on the board. What are your thoughts about this?
- When you viewed "Multiplication Algorithm" you were asked to think about where students were in relation to the overall goal. Do you agree with Teri's thoughts about where students are with respect to making models and generalizing a pattern?
- What comment do you have about Teri's use of evidence in her reflection about students' learning?

Focus Questions for "Reflection for Day 2"

Day 2 Topics: Where students are in relation to understanding the algorithm, expectations of students.

- Teri chose to split 3.1 into 2 days. After listening to her reflection what do you think of this decision?
- Teri talks about her students' expectation that they should understand "why." How will you plan to foster this kind of atmosphere? How can you plan to include more "proof?"
- Do you agree with Teri's about where students are in relation to the goals for Investigation 3?
- What other comments do you have about planning for 3.1 after watching "Developing a Multiplication Algorithm" and listening to Teri reflect? Or about planning in general?

Focus Questions for "Reflection for Day 3"

Day 3 Topics: Homework issues, management issues.

- Did you consider assigning homework as part of your planning process? What is the value of ACE in the overall plan? How else might you deal with ACE?
- What other management issues did you include in your plan for 3.2? What management questions would you like to ask Teri?
- What value do you think 3.2 adds to the overall trajectory of student learning in this Investigation?
- What comments do you have on the way Teri uses evidence from homework or from classroom observations to assess where they are in understanding a part of a part?

Focus Questions for "Reflection for Day 4"

Day 4 Topics: Student readiness to give up the drawing, planning for and executing the Launch, Explore phases of 3.3.

- Was your plan for 3.3 based on students being ready to use the algorithm consistently? Teri observes that some students are still drawing Brownie Pan models. Would this be a problem for your plan for 3.3?
- Teri's students came up with several strategies for computing a product of mixed numbers in the Launch (Getting Ready for 3.3). How did estimation play a role in Teri's Launch? Did estimation play a role in your Launch? Do you think, based on what you see on "Multiplication Algorithm" and on Reflection 4, that Teri had anticipated these strategies?
- Teri's Launch was very long. After listening to her talk about it have you changed your mind about whether it was too long/ not long enough?
- Teri tell us what she was looking for in the Explore phase of 3.3. She says she knows she will be able to draw on student work to bring out the Distributive Property. How does Teri know what to look for? What were you looking for in your plan for the Explore phase?

Day 5 Topics: Thoughts about the Summary of 3.3, where students are in relation to the goal for the week.

Focus Questions for "Reflection for Day 5"

- After listening to Teri talk about the Summary, and comparing the Summary on the video with the Summary as it played out in your plan, what thoughts do you have about the planning process? How can you plan to make the Summary effective? Ω
- Can you tell from listening to Teri talk how she handled student frustration? Can you plan for this?
- Do you agree with Teri about where students are in relation to the overall goal of understanding multiplication of fractions?

Ω One of the things that Teri does in the Summary on Day 5 is to bring a frequent misconception to the attention of the class. Thinking of this moment through the lens of the 5 practices for orchestrating student discussion, I am completely in awe of how naturally Teri brought this into the conversation. She had obviously *noted the misconception* during the Explore phase, and probably *predicted* this would occur. But rather than trying to eliminate the error by redirecting students she masterfully *selects and sequences* two pieces of student work for 3.3 part D, Kristen's and Brooklyn's to highlight the error. The first of these uses repeated addition to add $2\ \frac{1}{3}$, ten and a half times. Teri *connects* these by pointing out that Brooklyn's is a picture of what Kristen did in symbols. The power of including Brooklyn's strategy is that it shows pictorially all the pieces of the product of $2\ \frac{1}{3} \times 10\ \frac{1}{2}$. Teri writes the common error on the board, $2\ \frac{1}{3} \times 10\ \frac{1}{2} = 2 \times 10\ + \frac{1}{3} \times \frac{1}{2}$, and asks, "Why is that not correct? Why is that not enough?" Students are eager to point out the missing parts, and, although they do not utter the words "Distributive Property" they are able to explain how to accomplish the product correctly, and can connect this to using the "Distributive Property" in the multiplication algorithm for whole numbers. I also think that placing the misconception at that point worked well. If Teri had chosen student work with this misconception, and placed it on the board first, then I don't think that students would have been confident enough to challenge it. But by placing the error after students had agreed on the reasonableness of the two solutions for part D, students could compare the erroneous procedure with a procedure that works. Deciding when and where to look at errors is complicated. I think it worked well this time.

The one question I should have asked Teri to reflect on was why she sequenced the strategies for 3.3 part D so that Violet's came first. Violet's strategy had been proposed by Kaylie and rejected the previous day, and students were noticeably short of comments when they saw the strategy again during the Summary. Was this because they could not connect the strategy to a picture or explanation that they understood? Was this because they had not yet seen an acceptable (to their minds) strategy, so they did not know if Violet's answer was correct?

SUMMARIZE: Small group discussion

It helps the culminating discussion if participants have had an opportunity to discuss in their small groups the particular reflection(s) that are relevant to their planning.

Each small group should choose one question from their focal questions re "Teacher Reflections" that they want to report on to the larger group.

Culminating Discussion

I want to end on a positive note so, even though planning is hard and things don't always go according to plan, I want teachers to see themselves as learners. So my final questions to them should be, "What was one thing that you learned from Teri's reflections? What was the most challenging thing about planning? What suggestions do you have for me with respect to using these two videos to help teachers learn how to plan?"

Note: *Two issues are referred to in Teri's reflection for Day 2 that are not obvious from the edited video. One is that, on the video, you only see Teri push on a couple of occasions at connecting to the model why the numerators have to be multiplied in the algorithm; in fact she did this on every possible occasion, "ad nauseam" as she characterizes it. The other referred to students thinking of* $\frac{1}{4}$ of $\frac{2}{3}$ *and getting* $\frac{1}{6}$ *or* $\frac{2}{12}$ *depending on how the subdivision was made. One student pointed out that other examples had also generated 2 answers and began to try to figure out why that was, what these examples had in common. Teri mentions that she did not follow up on this.*