 Rubric —Promoting and managing students' discourse

Activity: Promoting and Managing Students' Discourse

To promote and manage student discourse		Such as a discussion on the general question of what can be said of the angle bisectors of a quadrilateral
A teacher would	**Which means**	**For example**
Prepare for student participation	○ **Launch** tasks that invite students to employ different strategies. ○ Give students **time** to think and work on the task and on what they might say to others about their approach. ○ **Anticipate** students' responses to the task and the difficulties that they may have. ○ **Observe** what students have done in their notebooks, while working individually or in groups and use that knowledge to plan who to call on. ○ Orchestrate (**select and sequence**) how different contributions will be solicited so that not only students share their work but also the overall discussion contributes to a productive mathematical agenda.	○ Pose the question "what can one say about the angle bisectors of a quadrilateral" and note that you are interested in any true statements that could be made about the intersection of angle bisectors. ○ Indicate how much time they have to think about the question (e.g., 10 min) and how you'd like them to think about it (e.g., take time to think, talk to your neighbor, and write down the statements that each of you think are true and why) ○ Anticipate that some students will draw a very **general** quadrilateral while others will choose specific quadrilaterals. Some students will measure attributes others will inspect diagrams visually, and yet others may try to prove claims. Some will focus on how to get angle bisectors to be **concurrent** while others will try to see **what figure** the angle bisectors make. ○ Make notes of what kind of question students are working on (concurrent, general, what figure) and what method they are using (perception, measurement, proof). ○ Organize less sophisticated contributions (e.g., perception, measurement) to appear earlier than more sophisticated ones.
Make discursive **moves**	○ **Invite** contributions from students that can get a productive discussion started	○ "Joe, I saw that you had drawn several diagrams, could you describe to the class what you were looking for?"
	○ **Revoice**: Repeat or reformulate a student's answer, hence providing an additional opportunity for it to be heard and reflected on when needed.	○ " Maria just said that the angle bisectors of a parallelogram are parallel to each other"
	○ Prompt **restatement**: Ask a student to restate what someone else has said in their own words.	○ "Who could say in their own words what José just said?" ○
	○ Give **wait time**: Indicate to students that they are all responsible to think.	○ "Let me wait a minute so that you have the chance to think about that question and more of you volunteer a response."
	○ Press for **explanation**: Invite students to explain and justify their claims.	○ "María, could you say why you think those angles are equal?"
	○ **Orient** students' contributions to each other, establishing relationships (similarity, opposition) between them.	○ "José's approach is similar to Maria's in that both of them were looking at angle relationships between angle bisectors." "Dan, are you agreeing or disagreeing with Maria?"
	○ Draw attention to the **mathematically**	○ "José decided to **represent** each of these consecutive angles with **variables**, x

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	significant aspects in the student's solution and further explicates its relation to other contributions.	and y. That enabled him to apply a **theorem** we know and **deduce** what the measure of the third angle of this triangle would be." "Note that Brendan just **refuted** Angela's conjecture."
	○ Prompting for further **participation**	○ "Who would like to make another conjecture?" "Who thinks they can explain why this is true?"
	○ **Negotiate** the mathematical value (truth, importance, generality, etc.) of a students' contribution	○ "How do you think we could determine if José's conjecture is **true**?" "Several of you are saying that the angle bisectors of a parallelogram make a parallelogram but others are saying they make a rectangle; which conjecture do you think is more **important** and why?
	○ **Represent** students' contributions on the board (including some incorrect ones that are useful for developing understanding) so that students can refer to them	○ "Danny, while we hear Amanda's approach, would you mind writing up here what your conjecture is? In that way we can refer to it later"
	○ **Empower** students to control the discourse	○ "What question do you all think we should ask Danny now?"
	○ **Evaluate (give feedback on)** students' individual contributions	○ Roy, thank you for your contribution, you speak of the center of a kite but I don't think we have a definition of that; do you think there is one?
Hold students **accountable**	○ Make students accountable for learning from other class members by allowing for particular contributions to be collective objects of reflection. ○ Allow enough wait time for students who do not respond to a prompt, and tries to support their participation by helping them use what they know to verbalize their answer. ○ May also encourage the students that are not vocal in class by alerting them that she will ask them to participate and making sure they have something worth sharing with the class. ○ Respond to a student's inadequate contribution by asking him questions that help him revisit his response.	○ "Annie, can you hear Danny well from there? What do you think he was talking about?" ○ "I know that José has something to say and I appreciate his volunteering. I am going to wait now because I think others should also have something to say. Then I am just going to call on anybody." ○ [approach Joe and say privately] "Joe, I think it would be good for the rest of the class to know how you approach this problem. I'm going to ask you to share that from your seat, in a minute or so" ○ "Danny, Annie over there could barely hear you. Could you repeat what you said in a louder voice?" ○ "Mateo just showed that those two angles are not always congruent which was what Danny had said. Danny, would you like to revise your conjecture?"

This rubric adapts and enhances ideas found in

Ghousseini, H. (2008). Learning with routines: Preservice teachers learning to lead classroom mathematics discussions. University of Michigan.
Chapin, S., O'Connor, M. and Anderson, N. (2003). Classroom Discussions: Using Math Talk to Help Students Learn, Grades 1-6. Math Solutions.