

Prompts for thinking about the *mathematics and cognitive demand* of tasks

Child Lens

- Do the students engage with the activity in ways that support the development of conceptual understanding and/or problem solving strategies?
- Do they participate meaningfully in the **mathematical** work of the class?
- Do the students have opportunities for mathematical reasoning (explaining rather than just stating answers)?
- Do students engage with challenging ideas? Do they show a willingness to work on demanding tasks even without direct teacher input/encouragement?
- Are students comfortable sharing partial or incorrect work as part of a whole class discussion?

Teacher Lens

- Does the teacher use tasks and activities that provide multiple entry points and support multiple approaches to the mathematics content (i.e., not just one right answer or way of doing things)?
- Does the teacher highlight important ideas and provide opportunities for students to engage with them?
- Does the teacher support the purposeful use of mathematical language and of representations (e.g. use of manipulatives, tables, diagrams, symbols)?
- Does the teacher position students as sense makers who can make sense of key conceptual ideas?
- Does the teacher monitor students' engagement and adjust materials and activities to offer an appropriate level of challenge (i.e., support students without removing the challenge-productive struggle)?
- Does the teacher support students in seeing mathematics as being coherent, connected and comprehensible?

General questions:

Each activity will have a specific mathematical goal but more generally, the mathematical goal can be understood as orchestrating opportunities for all students to work on core mathematical issues in ways that enable them to develop conceptual understandings, develop reasoning and problem solving skills, and use mathematical concepts, tools, methods and representations in relevant contexts.

Was this goal met? If so, how?

In relation to cognitive demand, the goal can be understood as orchestrating opportunities for all students to make their own sense of important mathematical ideas, developing deeper understandings by building on what they know. Was this goal met? If so, how?

Adapted from:

Schoenfeld, A. H., and the *Teaching for Robust Understanding Project*. (2016). *The Teaching for Robust Understanding (TRU) observation guide for mathematics: A tool for teachers, coaches, administrators, and professional learning communities*. Berkeley, CA: Graduate School of Education, University of California, Berkeley. Retrieved from: <http://map.mathshell.org/>

Prompts for thinking about the talk used by teachers and children

Child Lens

- Do children (have opportunities to) explain their reasoning processes as well as their answers?
- Are children comfortable sharing partial or incorrect work as part of a whole class discussion?
- Do children actively listen to others and build on their ideas/support other children developing understandings?
- Do children hold classmates and themselves accountable for justifying their positions, through the use of evidence and/or elaborating on their reasoning?
- Do children see errors as opportunities for new learning?
- Do children see their classmates as resources for their own learning?

Teacher Lens

- Does the teacher create safe climates in which children feel free to express their ideas and understandings?
- Does the teacher provide time for children to develop and express mathematical ideas and reasoning?
- Does the teacher support the purposeful use of academic language and of representations e.g. tables, symbols as central to mathematics?
- Does the teacher position children as sense-makers who can make sense of key conceptual ideas?
- Does the teacher build and maintain classroom norms that support every child's engagement?
- Does the teacher expect and support meaningful mathematical engagement from all children, helping them to contribute and build on contributions from others?
- Does the teacher employ a range of techniques that attribute ideas to children, to build children's ownership and identity?

General questions:

Each activity will have a specific mathematical goal but more generally, the *mathematical goal* can be understood as orchestrating opportunities for all children to work on core mathematical issues in ways that enable them to develop conceptual understandings, develop reasoning and problem solving skills, and use mathematical concepts, tools, methods and representations in relevant contexts.

Was this goal met? If so, how?

In relation to *Cognitive Demand*, the goal can be understood as orchestrating opportunities for all children to make their own sense of important mathematical ideas, developing deeper understandings by building on what they know. Was this goal met? If so, how?

In relation to *Equitable Access to Content*, the goal can be understood as supporting the diverse range of learners in engaging meaningfully in mathematical activity. Was this goal met? If so, how?

In relation to *Agency, Ownership and Identity*, the goal can be understood to be ensuring that every child has opportunities to explore, conjecture, reason and explain in ways that contribute to the development of agency, ownership of the mathematics and positive mathematical identities. Was this goal met? If so, how?

In relation to *Formative Assessment*, the goal can be understood as eliciting children's thinking and orchestrating subsequent interactions (between teacher and child or amongst children) in responsive ways. Was this goal met? If so, how?

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