Appendix B
Task Analysis Framework

Affordances	Descriptions
N/A	Task is primarily a technology task with no focus on mathematics.
N/A	Virtual manipulative does not have mathematical fidelity required to respond to the prompts.
A	Task prompts students to recall a mathematical fact, rule, formula, or definition.
B	Task prompts students to report information from the virtual manipulative or consider mathematical concepts, processes, or relationships in the current display. The student is not expected to provide an explanation.
C	Task provides opportunities for students to explain the mathematical concepts, processes, or relationships in the current display.
D	Task provides opportunities for students to make predictions and then test their predictions using the virtual manipulative.
E	Task provides opportunities for students to connect multiple representations of a mathematical concept (e.g., graphical, algebraic, and tabular representations of a relation).
F	Task provides opportunities to check students' understanding of mathematical concepts, processes, or relationships. Task may provide minimal feedback to the student based on specific errors.
G	Task provides opportunities for students to go beyond the current display by considering multiple examples to generalize mathematical concepts, processes, or relationships.
H	Task supports students' exploration through manipulation of the display that may surprise one exploring the relationships represented or cause one to refine thinking based on themes within the surprise (e.g., addressing a common student misconception).

Note. This framework is intended to help teachers better critique and develop tasks aimed at promoting students' development of conceptual understanding of mathematics through reflection and communication (Hiebert et al., 1997), as well as through using and connecting mathematical representations (NCTM, 2014). Descriptions below are not necessarily in a hierarchical ordering nor are they mutually exclusive. Portions of the table below are adapted from Trocki (2014) and Sinclair (2003).

Guiding Questions

1. What is your learning goal (for your students)?
2. How might your students struggle during this exploration?
3. How might your students benefit from engaging in this exploration?
4. Thinking about your learning goal, what is one modification you would make so that the exploration better fit the needs of your students?
    - *Why might this modification help your students engage in the learning goal?*