**Selecting and Sequencing Student Ideas in Science to**

**Promote Discussion for/in \_\_\_Crash Barrier Inquiry\_\_\_**

**Core Science Idea:** Mass and Height have an equal effect on the transformation from gravitational potential energy to kinetic energy when work is performed

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| --- | --- | --- | --- | --- | --- | --- |
| **Anticipated Student Idea, Explanation, Model** | **Rationale for Selection** | **S**  **e**  **q**  **u**  **e**  **n**  **c** | **Science Concepts to highlight when students share** | **Teacher Questions to ask to make student ideas transparent to all or to connect learning (whole group)** | **Teaching routines to use during discussion** | **About students or group who used this** |
| Height will push the barrier further (the height will give the marble more force) | Incorrect emphasis on height |  | Increased height increases gravitational potential energy | H=? in equation, does the equation give it more, less, or the credence as height?  What does you data show about the relationship between height and mass? | Add-on,  Different idea |  |
| two marbles will push the barrier further (the mass will make more force | Incorrect emphasis on mass |  | Increased mass increases gravitational potential energy | M=? in equation, does the equation give it more, less, or the credence as height? What does you data show about the relationship between height and mass? | Add-on, Different idea |  |
| two marbles and one book will move the barrier the same distance as two books and one marble | Correct Conceptually |  | (the only way this doesn’t work is if the marbles rub together extensively | How does your idea compare to H and M ideas? How is it alike, how is it different? | Add-on, Different Idea |  |
| **Connecting (**Questions that will make the core science idea visible and understandable to the entire class):  Does the equation give height or mass more or less or the same credence as height? What does you data show about the relationship between height and mass? | | | | | | |

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