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

**Promote Discussion**

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| **Anticipated Student Idea, Explanation, Model** | **Rationale for Selection** | **S**  **e**  **q**  **u**  **e**  **n**  **c**  **e** | **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** |
| Matter is not destroyed when chemical changes occur; the atoms are simply rearranged. | Correct Conceptual Idea | 1 | Matter is conserved or remains the same even when atoms are rearranged to form new compounds. Energy may be taken into system or given off by the system but the number of atoms stays constant. | How do we create a closed system?  What did you observe that proves a chemical change occurred?  How can you tell that energy was taken in or given off in these two reactions? Which one did which? | Prod. Talk:  paired sharing |  |
| Volume and mass OR volume and matter are synonymous | Misconception | 2 | When new chemical compounds form, their density and volume may change while the among of matter does not. | Which had a greater volume, the products or reactants? How do you know? | Prod Talk:  paired sharing; compare with another pair |  |
| Mass was lost from the closed system which means... | Partially true conception | 3 | If a closed system lost mass, it must not be entirely closed.  This can be explained by the porosity of the balloon and the size of the gas particles. | How do our results show that this was not a completely closed system?  What do you know about the behavior of a balloon?  Why might one system have lost more mass than the other? | Prod. Talk: compare and contrast with another group |  |
| **Connecting (**Questions that will make the core science idea visible and understandable to the entire class):  Looking back at your notebook, which stars would you consider removing? Why? How would you answer your focus question now? What, if anything, could you add to your answer?? | | | | | | |

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