Figure 6. Rubric for student explanation of decomposition by microbes.

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|  | **Claim** | **Evidence** | **Reasoning** |
| 0 | Claim is incorrect, irrelevant, or missing.  Example:   * *Microbes cause changes in food materials.* | Evidence is incorrect, irrelevant, or missing.  Example:   * *This is what happened in both models.* | Reasoning is incorrect, irrelevant, or missing.  Example:   * *Even though the banana in the physical model weighed more than the banana in the computational model, it wasn’t that different.* |
| 1 | Claim is correct and answers the investigation question.  Example:   * *Microbes break down solid food materials and turn them into gas.* | Evidence supports claim but addresses either the computational model OR the physical model.  Examples:   * *In my computational model, when microbes collide with solid banana, 1 solid banana is deleted and 1 gas banana is created. The total weight of the banana stays at 500.* * *In the physical model, the solid banana appeared to vanish and started to smell. The total weight of the closed landfill bottle system stayed at 1,500 g.* | Reasoning is correct and links evidence to claim.  Example:   * *Since the computational model is consistent with what happens in the real world (i.e., weight is conserved), I know that the computational model accurately represents how microbes cause changes in food materials.* |
| 2 |  | Evidence supports claim by relating the computational model to the physical model.  Example:   * *In my computational model, when microbes collide with the solid banana, 1 solid banana is deleted and 1 gas banana is created. The total weight of the banana stays at 500. In the physical model, the solid banana appeared to vanish and started to smell. The total weight of the closed landfill bottle system stayed at 1,500 g.* |  |

TOTAL: \_\_\_\_\_ out of 4