

**Table 1: Modes of engagement and possible teacher moves.**

| <b>Mode of Engagement</b>                                                | <b>Teacher Moves for Mode of Engagement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Altruism</b><br><i>Helping People</i>                                 | <ul style="list-style-type: none"> <li>• Have students make connections between the phenomenon or environmental problem and their friends, family, and communities.</li> <li>• Prompt students to see and explore a phenomenon from multiple perspectives, helping them understand that different people can have different kinds of connections to the same thing, and that these different connections influence what people see and think.</li> <li>• Ask students to advocate for people affected by this problem</li> <li>• Provide opportunities for students to assess the impact of an environmental problem on people and communities, asking “Who is affected, why should we care, and how can I help?”</li> </ul>                                                                       |
| <b>Conservationism</b><br><i>Caring About the Natural World</i>          | <ul style="list-style-type: none"> <li>• Have students explore an environmental problem or phenomenon solely from the perspective of the animals in the natural world</li> <li>• Ask students to explore the cause and effect of an environmental problem solely from the perspective of the land and that which grows on the land.</li> <li>• Create opportunities for students to explore and investigate the land</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Designing</b><br><i>Making Things Visually Appealing</i>              | <ul style="list-style-type: none"> <li>• Provide students with a variety of formats to engage in designing (art supplies, junk building in the makerspace, programs to code and create – i.e. Scratch, technology to create – i.e. CoSpaces, platforms to design prototypes, i.e. – Tinkercad)</li> <li>• Encourage students to draw or sketch ideas and record ideas and processes through photographs and/or videos</li> <li>• Provide opportunities for students to design and build out ideas and prototypes</li> <li>• Support students in thinking about the design and function of a potential solution, asking them “What considerations are important here? What is the function of this part? What would make this functional and meaningful for the people in my community?”</li> </ul> |
| <b>Inventing</b><br><i>Coming up with Creative and Logical Solutions</i> | <ul style="list-style-type: none"> <li>• Give students space to brainstorm and pursue as many solutions for a problem as possible, allowing for out-of-the box thinking</li> <li>• Encourage students to approach problem solving as a series of puzzles to be solved</li> <li>• Reassure students that there is never just one way to solve a problem or improve a design</li> <li>• Foster positivity in the face of failure and remind students that inventing is a process of learning and redesign</li> <li>• Encourage reflection and work through problems with confidence and curiosity, pushing students to ask How and Why questions</li> </ul>                                                                                                                                          |
| <b>Investigating</b><br><i>Studying and Explaining Problems</i>          | <ul style="list-style-type: none"> <li>• Create a learning environment where students feel they are able to dig deeper into topics that interest them and further their understanding of the problem.</li> <li>• Provide multiple modes of investigation for students (e.g., field guides, internet searchers, field work, meeting with “experts”, etc.)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                |

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|                                                     | <ul style="list-style-type: none"> <li>• Allow students to revisit an activity or investigation so that they can address lingering questions or misconceptions</li> <li>• Elicit students' ideas and allow students' questions to drive the activity</li> <li>• Press students to think about the themes or patterns they are observing and to explore cause and effect relationships</li> </ul>                                                                                                                                                                                                                                                                              |
| <b>Tinkering</b><br><i>Making and Fixing Things</i> | <ul style="list-style-type: none"> <li>• Support students in creating, building, and testing multiple solutions to a problem</li> <li>• Design learning experiences with more than one possible outcome that use trial and error to create or fix something</li> <li>• Provide time and space for students to experiment with materials and ideas to fully understand their capacities</li> <li>• Revisit learning activities to give students the ability to iterate on their learning to find better solutions to current problems</li> <li>• Create opportunities for students to deconstruct something to consider the design elements and construct new ideas</li> </ul> |