#### **Table: Benefits of Using a Problem-based Science Model**

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| **Benefits** | **Mindsets**“I am willing and able to...” | **Habits**“I practice…” |
| Agency | See complexity in materials, structures and systems | ● Slow looking/observation of objects or systems, inductive reasoning |
| See problems and needs that can be fixed | ● Slow looking/observation of environment, empathy, listening, diagnosis |
| Ask questions and Explore | ● Testing ideas and prototypes● Measuring, calculating formulas● Gaining literacy from various available sources |
| Take risks | ● Learning new skills, tools, sharing ideas, showing leadership (earning new badges) |
| Creativity and Cognition | Think creativelyabout multiple solutions | ● Brainstorming● Improving on ideas, designs and solutions based on feedback, research and testing |
| Make my thinking visible | ● Drawing blueprints, making data visualizations and models to explain an idea |
| Connect the dots | ● Recognize the relatedness between disparate ideas● Analyzing data for patterns and anomalies● Form claims and conclusions based on evidence |
| Think with my hands | ● Making prototypes, build, tinker, assemble, disassemble |
| Constructive Autonomy | Self-direct my learning and work | ● Setting learning goals, making agendas, making process maps, exercising resilience and determination |
| Use assessment and feedback as part of learning | ● Data collection● Documentation of work, self-reflection● Giving and receiving feedback |
| Community | Be better together  | ● Mentoring● Partnering with peers and mentors to give and receive feedback● Giving credit where credit is due● Sharing work● Sharing diverse perspectives, ideas and criticism |