

# LEARNING DIMENSIONS

## of Making & Tinkering

Students gain valuable learning experiences while making and tinkering. Use this framework to notice, support, document, and design assessments for student learning – and to reflect on how your tinkering environment, activities, and facilitation may have supported or impeded such outcomes.

### Initiative & Intentionality

- Setting one's own goal
- Taking intellectual and creative risks; working without a blueprint
- Complexifying over time
- Persisting through and learning from failures
- Adjusting goals based on physical feedback and evidence

### Problem Solving & Critical Thinking

- Troubleshooting through iterations
- Moving from trial-and-error to fine tuning through increasingly focused inquiries
- Developing work-arounds
- Seeking ideas, assistance, and expertise from others

### Conceptual Understanding

- Controlling for variables as projects complexify
- Constructing explanations
- Using analogues and metaphors to explain
- Leveraging properties of materials and phenomena to achieve design goals

### Creativity & Self-Expression

- Responding aesthetically to materials and phenomena
- Connecting projects to personal interests and experiences
- Playfully exploring
- Expressing joy and delight
- Using materials in novel ways

### Social & Emotional Engagement

- Building on or remixing the ideas and projects of others
- Teaching and helping one another
- Collaborating and working in teams
- Recognizing and being recognized for accomplishments and contributions
- Developing confidence
- Expressing pride and ownership