

Learning Dimensions Framework

Learning Dimension	Indicators	Descriptions of learners' interactions
Engagement	Spending time in Tinkering activities	<ul style="list-style-type: none"> playing, envisioning, making, exploring materials, trying something over and over, etc.
	Displaying motivation or investment through affect or behavior	<ul style="list-style-type: none"> showing emotions such as joy, pride, disappointment, frustration remaining after appearing "finished," and starting something new
Initiative and Intentionality	Setting one's own goals	<ul style="list-style-type: none"> setting goals / posing problems planning steps for future action developing unique strategies, tools, objects or outcomes stating intention to continue working outside Studio
	Seeking and responding to feedback	<ul style="list-style-type: none"> actively seeking out feedback or inspiration from materials/ environment anticipating further outcomes innovating approaches in response to feedback
	Persisting to achieve goals in the problem space	<ul style="list-style-type: none"> persisting toward their goal in the face of setbacks or frustration within the problem space persisting to optimize strategies or solutions
	Taking intellectual risks or showing intellectual courage	<ul style="list-style-type: none"> disagreeing with each others' strategies, solutions or rationales trying something while indicating lack of confidence in outcome
Social Scaffolding	Requesting or offering help in solving problems	<ul style="list-style-type: none"> requesting or offering ideas and approaches offering tool(s) or materials in service of an idea
	Inspiring new ideas or approaches	<ul style="list-style-type: none"> noticing, pointing out, or talking about others' work innovating and remixing by using or modifying others' ideas or strategies leaving something behind to share with others
	Physically connecting to others' works	<ul style="list-style-type: none"> producing work that physically interacts with others' work
Development of Understanding	Expressing a realization through affect or utterances	<ul style="list-style-type: none"> showing excitement when expressing a realization claiming to realize or newly make sense of something
	Offering explanation(s) for a strategy, tool or outcome	<ul style="list-style-type: none"> offering or refining explanation(s) for a strategy, tool or outcome, possibly by testing and retesting
	Applying knowledge	<ul style="list-style-type: none"> connecting to prior knowledge, including STEM concepts employing what has been learned during tinkering complexifying by engaging in increasingly complicated and sophisticated work
	Striving to understand	<ul style="list-style-type: none"> indicating <i>not</i> knowing (e.g., through surprise, bewilderment, confusion) and remaining in the problem space to explore confusion and build an understanding