

## Codebook for Student Interview/Observation

Code #	Description of the Codes
Engagement (attitude)	<ul style="list-style-type: none"> <li>- Active: Active, takes initiative, eager to participate. (e.g. hand raising, asking and answering questions)               <ul style="list-style-type: none"> <li>- On-task</li> <li>- On alternative learning task</li> </ul> </li> <li>- Passive+: Ready to learn and participates.</li> <li>- Passive-: Doesn't take initiative, gives up, unprepared, or distracted</li> <li>- Disruptive: Actions interfere with self and other's learning, engaged in something unrelated to school</li> <li>- Attitude               <ul style="list-style-type: none"> <li>- Confidence / self-assured - evidenced by risk taking or teaching</li> <li>- Uncertainty, anxious</li> <li>- Fun, excited, engaged</li> <li>- Bored, apathetic, indifferent</li> <li>- Seeking reassurance</li> <li>- Frustrated or disillusioned/negative</li> <li>- Helplessness (too much work to do, "I don't know")</li> <li>- Proud</li> <li>- Unwilling to approach or accomplish tasks</li> <li>- Disrespectful / respectful</li> </ul> </li> </ul>
Intentionality (Design selection & cognitive demand)	<ul style="list-style-type: none"> <li>- Unintentional</li> <li>- Ideation - independent / collaborative</li> <li>- Selection of appropriate materials/tools</li> <li>- Awareness (or lack) of one's own learning needs/process</li> <li>- Model matching - align the design based on models provided / wants to match model but can't figure out how to</li> <li>- Design decisions               <ul style="list-style-type: none"> <li>- Aesthetics (i.e., Color selection, interesting / Cool design)</li> <li>- Specific purpose in mind</li> </ul> </li> <li>- Refer to model, guide, or worksheets</li> <li>- Planning or organization - sketching, diagraming, listing</li> <li>- Iteration               <ul style="list-style-type: none"> <li>- 4- Planned experimental trial and error</li> <li>- 3- Optimization (Change materials for better functioning)</li> <li>- 2- Basic trial and error</li> <li>- 1- Change based on observation</li> </ul> </li> </ul>

Cognitive Performance	<ul style="list-style-type: none"> <li>- Inquiry</li> <li>- Retention, comprehension</li> <li>- Reasoning ability, articulates steps and outcomes to others</li> <li>- Ability to discriminate between different tasks</li> <li>- Able to combine one or more steps in the design</li> </ul>
Challenging problems / Barriers	<ul style="list-style-type: none"> <li>- Lacks knowledge of vocabulary, knowledge (retention) or skills</li> <li>- Lacks basic computer literacy</li> <li>- Student forced to be there</li> <li>- Student distracted by another student or other interruption</li> <li>- Limited time to work more on the project/design</li> <li>- Technology limitations - capacities, interface</li> <li>- Lack of relevance in curriculum</li> <li>- Lack of instruction generally</li> <li>- Lack of accommodations</li> <li>- Appropriate level of difficulty (not challenging enough)</li> </ul>
Persistence Spectrum 1 - push past barrier 2 - multiple attempts	<ul style="list-style-type: none"> <li>- Persistence (some combination of interest + effort)</li> <li>- Persist by peer support <ul style="list-style-type: none"> <li>- Receive peer support/constructive feedback</li> <li>- Observe other student's work</li> </ul> </li> <li>- Persist with teacher/helper support (guidance, positive encouragement)</li> <li>- Persistent use of support materials / tools / models / aides</li> <li>- Tinkering - try tool or material again with new settings or methods but without any apparent plan - the "click buttons randomly" or "click lots of times" behavior</li> <li>- No persistence (Give up)</li> </ul>
Teacher instruction	<ul style="list-style-type: none"> <li>- Teacher redirection / feedback <ul style="list-style-type: none"> <li>- Task prompting (agenda-setting, what to do)</li> <li>- Thinking prompting (explaining WHY, helping process, relevance)</li> <li>- Positive encouragement / affirmation</li> </ul> </li> <li>- Modeling methods, behaviors and attitudes for students</li> <li>- Teacher doing task for student / taking over</li> <li>- Curricular design to support metacognition <ul style="list-style-type: none"> <li>- Planning, iteration, intentionality, persistence</li> <li>- Cultural or emotional relevance</li> </ul> </li> </ul>