Frameworks and tools for thinking about learning connected with Makers, Making, and Makerspaces

1. uTEC Maker Model[1] – identifies developmental stages of learners

What developmental stages do makers go through? using, Tinkering, Experimenting, Creating

What dispositions do learners develop as they 'make'? Dispositions connected with strategies, actions and roles

2. Gutwill et al.[2] – Learning Dimension and Facilitation Frameworks

What does learning-through-tinkering look like? four dimensions: engagement, initiative and intentionality, social scaffolding, and development of understanding

How can adults facilitate learning-through-tinkering? three 'facilitation moves' or ways of intervening: spark initial interest and participation, sustain participation, and deepen understanding and commitment

3. Wardrip and Brahms[3] – tool for conversations about designing maker experiences
   - to support discussions about
        1) design of programs or spaces,
        2) reflection and professional development,
        3) evaluation of maker programs and spaces
   - Framework focuses on 3 elements: purpose, people, pieces & parts

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[1] Loertscher D, Preddy L, and Derry B (2013) Makerspaces in the School Library Learning Commons and the uTEC Maker Model. *Teacher Librarian*. 41, 2: 48-51.

[2] Gutwill J, Hido N, and Sindorf L (2015) Research to Practice: Observing Learning in Tinkering Activities. *Curator: The Museum Journal.* 58(2): 151-168.

[3] Wardrip P and Brahms L (2015) Making+Learning.
https://makingandlearning.squarespace.com/about/