

# University of Texas at Arlington Libraries' Beta Maker Competencies

## The “Maker-Literate” student:

### 1. Identifies the need to invent, design, fabricate, build, repurpose or repair some “thing” in order to express an idea or emotion, or to solve a problem.

- 1.a. Recognizes unmet needs that may be filled by making
- 1.b. Expresses curiosity about how things are made and how they work
- 1.c. “Hacks” and “tinkers” to learn how things are made and how they work
- 1.d. Evaluates the costs & benefits of making as an alternative to buying or hiring

### 2. Applies design praxis

- 2.a. Defines the problem
- 2.b. Analyzes the problem and breaks it into component parts acquires reliable and relevant background information identifies stakeholders
- 2.c. Specifies project requirements
- 2.d. Identifies and works effectively within project constraints, be they financial, temporal, proximal, or material
- 2.e. Brainstorms for a variety of solutions & chooses the best one
- 2.f. Evaluates the costs & benefits of using off-the-shelf parts or kits as opposed to making from scratch
- 2.g. Creates and tests prototypes
- 2.h. Revises and modifies prototype design over multiple iterations
- 2.i. Takes intelligent risks and learns from failures

### 3. Demonstrates time management best practices

- 3.a. Outlines project milestones and identifies dependencies
- 3.b. Constructs critical paths
- 3.c. Builds in extra time to allow for multiple prototype iterations

### 4. Assembles effective teams

- 4.a. Recognizes opportunities to collaborate with others
- 4.b. Evaluates the costs & benefits of “Doing-it-Together” (DIT) vs. “Doing-it-Yourself” (DIY)
- 4.c. Seeks team members with skills appropriate for specific project requirements
- 4.d. Joins a team where his/her skills are sought and valued
- 4.e. Solicits advice, knowledge and specific skills succinctly from experts

## **5. Employs effective knowledge management practices**

- 5.a. Communicates clearly with team members and stakeholders
- 5.b. Restates technical and “maker” jargon in plain English documents work clearly
- 5.c. Uses version control to manage project outputs and documentation
- 5.d. Preserves project outputs and documentation for long-term access

## **6. Assesses the availability of tools**

- 6.a. Elects the best tools for the job
- 6.b. Acquires the necessary tools or revises project to conform to tool availability
- 6.c. Seeks alternate tools when a required tool is not available
- 6.d. Creates necessary tools that can’t be acquired or when an alternate is not an option

## **7. Assesses the availability of materials**

- 7.a. Selects the best materials for the job
- 7.b. Acquires the necessary materials or revises project to conform to materials availability
- 7.c. Seeks alternate materials when a required material is not available

## **8. Demonstrates understanding of digital fabrication process**

- 8.a. Recognizes additive and subtractive fabrication techniques
- 8.b. Applies 3D modeling principles
- 8.c. Creates 3D models using appropriate software

## **9. Understands many of the ethical, legal and socio-economic issues surrounding making**

- 9.a. Demonstrates an understanding of intellectual property rights and protections
- 9.b. Identifies project outputs that may be protectable by trade secret, patent, trademark or copyright
- 9.c. Compares the costs & benefits of seeking intellectual property protections v. making project outputs open and freely available to others
- 9.d. Evaluates the costs & benefits of open source and proprietary systems
- 9.e. Recognizes and respects the intellectual property rights of other makers

## **10. Employs safety precautions**

- 10.a. Seeks training for dangerous equipment and materials
- 10.b. Wears personal protective gear when appropriate
- 10.c. Teaches safety precautions to others

## **11. Transfers knowledge gained into workforce, community, and real world situations**

- 11.a. Teaches what he/she knows to less experienced makers