Chapter 7
Exploring the Core Features of UTeach Maker:
A Collaborative Micro-Credentialing Model

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ABSTRACT

UTeach Maker is a collaborative micro-credentialing program that supports preservice and practicing STEM teachers in developing the knowledge, skills, and professional networks needed to bring maker-centered learning opportunities to secondary STEM learning environments. This chapter describes the UTeach Maker program and unpacks four core features including (1) collaboration with field leaders to develop an open portfolio, (2) collaboration with peers and mentors to develop a supportive community, (3) collaboration with technical experts to promote skill building, and (4) collaboration with participants to develop a personalized experience. The chapter also highlights unique aspects of the program and explains how the UTeach Maker model can be adapted to support micro-credentialing initiatives in other contexts.

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INTRODUCTION

UTeach Maker has changed my perspective on teaching, art, and life for the better. I always thought all the technology, coding, woodworking, and building was only for a select group of people, and not for me. However, making has shown me it's relatively easy to do, and all that is needed is a supportive group and access to materials.

—Paul, UTeach Maker Showcase, Fall 2019

Popularized by the publication of *Make:* magazine and the success of Maker Faires, the terms "maker" and "making" have become part of the modern-day lexicon and expanded to the phenomenon known as the maker movement. Existing at the intersection of the arts, crafts, engineering, mathematics, science, and technology, the act of making is made visible through the artifacts that makers create (Marshall & Harron, 2018). Making may include no-, low-, and high-tech applications of science, technology, engineering, and mathematics (STEM) tools and skills such as metal and woodworking, knitting, computer programming, 3D printing, and other creative endeavors (Martin, 2015; Peppler et al., 2016). Most importantly, the making of personally meaningful artifacts allows makers to form community connections, develop personal agency, and build the foundations to imagine, make, and iterate (Rodriguez, Smith, & Harron, 2021).

In an educational context, making can be seen as a bridge between disciplines and serve as a vehicle to enact student-centered instructional philosophies and tools for learning (Cohen et al., 2017). Making and maker-center instruction also shows promise for promoting creativity, student choice, and inquiry (Martin, 2015). However, there is a need to do more to prepare future educators to maximize making as an instructional method. In response, the UTeach secondary STEM teaching licensure pathway at The University of Texas at Austin has developed UTeach Maker, an embedded micro-credentialing program for preservice teachers (Rodriguez, Harron, & DeGraff, 2018). The program supports future STEM educators who express an interest in integrating making into their classrooms or within K–12 makerspace environments.

As micro-credentials for teachers are competency-based forms of certification, UTeach Maker supports developing educators' knowledge and skills around elements of making (Rodriguez, Harron, Fletcher, et al., 2018). Through intentionally embedding maker-centered philosophies, practices, and experiences into preservice STEM teacher preparation, teachers can learn to confidently use "making" to foster authentic learning. Maker-centered learning, as defined by UTeach Maker, focuses on making and learning as "an iterative process of tinkering and problem solving that draws on a do-it-yourself (DIY) mindset" that "allows students to collaborate and express themselves through the creation of something that is personally meaningful" (UTeach Maker, n.d.). By incorporating maker-centered learning into STEM teacher preparation, there is potential to reshape what preservice education programs look like and how they engage and influence the communities around them.

This chapter depicts UTeach Maker as a case of sustained, maker-focused professional learning and micro-credentialing. It unpacks how UTeach Maker is designed around four collaborative features used to ensure a credentialing program that is rigorous and responsive. The chapter also describes how the UTeach Maker model can be adapted to support micro-credentialing initiatives in other contexts.