Chapter 27
Equity, Literacies, and Learning in Technology–Rich Makerspaces

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ABSTRACT

This chapter uses an equity lens to examine learning in makerspaces with a focus on the role that literacies and technologies play in these spaces. The authors examine ways that makerspaces bridge formal and informal learning and serve as important contexts for community building and mentorship. This stance on makerspaces centers equity and inclusion as driving forces that must become central to the design of these innovative learning spaces. The piece includes a review of the literature aimed at building a deeper understanding of the principles that underlie literacy practices, collaboration, and learning engagement. The authors offer principles and recommendations for designing, organizing, expanding, and sustaining learning-through-making opportunities for all learners.

INTRODUCTION

Looking into a community-based makerspace is like opening a door into a world of full of possibilities. Victoria, an adult learner, works with e-textiles to create a cultural pattern that reflects her indigenous roots. Her creation process taps into a multigenerational and cultural influences that highlight how making is, and has always been, central to her family's roots. Freedom, the makerspace's facilitator, reflects on the equity and inclusion journey the makerspace's leadership team took to get to this place. This group engages in asset-mapping, a process through which a community identifies existing strengths and

resources. The makerspace's leadership team, which includes both Victoria and Freedom, debrief about ways to deepen maker culture. Their conversations dig deeper into the values, mindsets, and knowledge that community members possess to can work to extend to other participants. Discussions build stronger and deeper community connections that bring to the surface key values -- that learning is grounded in learning from and with others, that learning occurs through problem-solving, and learning happens by creating and sharing artifacts that are made with pride and effort.

This introductory vignette illustrates how learning practices in makerspaces create a culture of collaboration and community with participatory processes and co-creation as shared values. While each makerspace is unique with characteristics that are specific to the place, purpose, and participants who inhabit it, makerspaces share some common features. They are adaptive learning environments that represent a hybrid between formal and informal learning. Many are built on community principles of collaboration and cooperation among learners of all ages and knowledge levels. Makerspaces are known by many different names including fablabs, innovation labs, tinkering hubs, and other creative monikers that signal cooperatives, studios, and community workshops. They are designed to be safe and supportive contexts for setting goals, working with others, making mistakes, and learning from those mistakes through problem-solving. In the process, learners develop agency through learning-by-doing.

Makerspaces have evolved to be interdisciplinary centers that personalize learning for diverse learners. When designed well, makerspaces create communities around participants' goals and invite multidisciplinary learning in a dynamic and integrated way. However, makerspaces struggle to create a sense of inclusivity for women (Hynes & Hynes, 2018) and other diverse groups. Noel, Murphy & Jariwala (2016) observed four barriers to full participation including: anxiety due to lack of experience, a lack of information regarding equipment and usage, a fear of alienation, and a pre-existing notion that makerspaces are only for engineering.

This chapter examines the rise of makerspaces and offers critical perspectives related to equity within these spaces to address participation, access, and inclusion of all learners. The authors distill from research literature five guiding principles for equity and inclusion in makerspaces. Five recommendations are offered to guide design and implementation. In sum, this piece offers new perspectives that address sustaining and expanding the impact of makerspaces across learning contexts including schools, libraries, museums, and community-based organizations.

BACKGROUND

Digital Technologies Shape Literacy Practices

Digital technologies have fundamentally transformed our world and expanded the ways we navigate the world. They expand the ways learners navigate information and interact with one another and are shaped by the learning environments in which they are used. Implications of these changes have profoundly affected the instructional practices educators employ in formal settings such as schools and informal settings such as museums and libraries. The ways individuals and collective groups exchange ideas in our information-rich, technology saturated world is constantly evolving. As a result, digital networks and devices are shaping communication, literacy practices, literacies acquisition, and learning. Educators need to pay attention to these shifts and respond to them in the design of learning and learning spaces.

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