

## Chapter 17

# Curricular Collaborations: Using Emerging Technologies to Foster Innovative Partnerships

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### ABSTRACT

*As libraries make the transition from information repositories to centers of learning, librarians are under pressure to collaborate more effectively with other academic units and departments. At the same time, classroom faculty feel pressure to experiment with innovative teaching methods, to provide experiential learning opportunities, to be more interdisciplinary and collaborative, and to engage their students more proactively. A 3D printing curricular collaboration between a library and an academic department is presented that illustrates the importance of collaboration and innovation, the changing mission of libraries, the learning styles of millennial students, and the benefits of experiential learning. The chapter explores in-depth both the opportunities presented by curricular collaborations and the challenges to providing technologies in a curricular context.*

### INTRODUCTION

Academic libraries are experiencing transformational change - rather than just housing and disseminating information, libraries are transitioning into multi-purpose learning centers. To meet the contemporary academic library mission of active involvement in teaching and learning, librarians must explore ways in which today's students learn and how we can best support their academic development. Rapidly evolving and emerging technologies offer new opportunities for libraries to partner with academic departments to design technology-infused curricula that enhance teaching and learning. Librarians should feel challenged to ensure that their students have the information and technology literacy skills to deal with a rapidly changing information world.

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## **Curricular Collaborations**

As libraries make the transition from information repositories to centers of learning, librarians are under pressure to broaden their missions and collaborate more effectively with other academic units and departments. At the same time, classroom faculty feel pressure to experiment with innovative teaching methods, to provide experiential learning opportunities, to be more interdisciplinary and collaborative, and to engage their students more proactively. This chapter opens with a discussion of the changing mission of libraries, and the importance of collaboration and innovation. The authors will then explore research on the learning styles of millennial students and the benefits of experiential learning, and detail potential collaborations with academic departments in developing innovative uses of library-housed technology to support curriculum development and faculty and student research. The chapter will describe both the opportunities presented by curricular collaborations (support of mission; library relevancy and visibility; marketing and promotion; fundraising; student research and learning; and librarian, faculty, and student publication and presentation possibilities) and the challenges to providing technologies in a curricular context (collaboration barriers; management of technology; costs; hardware and software issues; time commitment; staffing; and level of mediation required). To ground the discussion with an illustrative example, a 3D printing curricular collaboration between a library and an academic department will be featured. The chapter will close with measures of success and a discussion of how libraries can develop their own curricular collaborations.

## **BACKGROUND AND LITERATURE REVIEW**

Discussions of 3D printing in libraries began to appear in the literature in 2012, with public libraries as early adopters - mostly as part of the “MakerSpace” movement. The University of Nevada Reno advertised itself as the first academic library in the United States to offer 3D printing and scanning to all students as a library service, but the printers were located in the specialized Science & Engineering Library (News from the field, 2012). Similarly, as an early 3D printing adopter, the University of Alabama housed its 3D printing studio in its Library for Science and Engineering (Scalfani & Sahib, 2013). Only in 2014 did articles begin to appear detailing 3D printing start-ups in several academic libraries (Gonzalez & Bennett, 2014; Norton & Gonzalez, 2014; Pryor, 2014), with Steven Pryor noting that “little has been written so far regarding the use of 3D printing technology in academic libraries” (Pryor, 2014, p. 2). Very little has been published on academic libraries collaborating with academic departments on any direct curricular applications for 3D printing. While Gonzalez & Bennett (2014) stress the importance of identifying “internal community advocates” such as instructors of design classes in engineering and the fine arts, they offered no evidence of direct collaboration. Likewise, although Scalfani & Sahib (2013) state that “two Art & Art History Professors have begun to incorporate the 3D printing workshops and services directly into their design classes,” they do not detail any curricular collaborations with the library other than using the library’s equipment. Librarians in two libraries - the University of Alabama Science and Engineering Library (Scalfani & Vaid, 2014) and the University of Florida Science Library (Gonzalez & Bennett, 2014) - assisted instructors by printing models used in science and mathematics classes, but neither library indicated any substantial collaboration with teaching faculty. The academic literature offers no examples of academic 3D printing curricula that have been developed. Two commercial companies, however, have designed 3D printing curricula for educators; NVBOTS offers lesson plans that integrate 3D printing into the classroom that are in line with the Common Core State Standards and Next Genera-

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