

# Developing LIS Curricula for Information Professionals in Library Makerspaces

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## ABSTRACT

Despite the increasing popularity of academic and public library makerspaces, there remains little formal preparation and/or classroom training for burgeoning information professionals and librarians to develop and run makerspace environments. Moreover, as makerspaces continue to be adopted in libraries, librarians and paraprofessionals will continue to see their job duties and responsibilities shift as user needs and services evolve. This paper centers on a graduate/undergraduate course for informational professionals interested in working within makerspaces. While makerspaces around the world tend to emulate makerspaces emerging from Silicon Valley, this paper will highlight a tension emerging from the development of the course: How do we prepare burgeoning information professionals to manage makerspaces while also remain critically and ethically aware of the biases and issues inherent to the maker movement?

## TOPICS

Curriculum; Pedagogy; Critical Librarianship; Education; Information ethics; Students

## MAKER MOVEMENT & THE GAP OF EDUCATIONAL PREPAREDNESS

Since the mid-2000s, the maker movement continues to impact how communities and libraries engage with tech-centric making on a global scale. Makerspaces are collaborative learning environments that highlight DIY creation through digital and fabrication technologies. These STEM-rich learning environments have been increasingly integrated into library ecosystems across the world since the impetus of the maker movement (Cun, Abramovich & Smith 2019). At the beginning of 2019, data was collected on U.S. state colleges and universities (784 institutions) to determine whether which institutions had makerspaces. It was reported that 41% of state universities and colleges have (or plan to have) one or multiple makerspaces (Melo & Rabkin 2019). Of the 41%, 31 institutions planned to open their first makerspace in the near future. However, despite the continued enthusiasm around makerspaces, there remains a gap in the educational preparation for upcoming and current professionals working in these environments.

In 2016, Koh Kyungwon and June Abbas investigated the educational preparation that information professionals received prior to working in their learning lab or makerspace. Specifically, the researchers queried 43 participants about whether their higher education curriculum readied them for their current roles. The results were remarkable: 64% of participants noted that their education was “somewhat relevant,” 14% said it “wasn’t relevant at all,” and 12% viewed it as “relevant.” Moreover, it was also reported that 74% of participants were asked to complete a task or do something in their makerspace that they did not feel adequately prepared to do (2016). The impetus of this makerspace course described below, along with similar LIS courses focusing on makerspaces, was developed with the intention to narrow the preparation gap that informational professionals experience.

### **COURSE OVERVIEW: INFORMATION PROFESSIONALS IN THE MAKERSPACE**

This course is currently listed as a special topics class, and has an enrollment cap of 15 students (both undergraduate and graduate students can enroll). One course objective is for students to develop a generalist understanding of approaches to manage a makerspace and how to use the conventional tools therein. Students will engage with the conceptualization of makerspaces in a “T-shaped” manner. Vertically, students will develop a deep, practical and theoretical understanding of the makerspace and its remarkable adoption rate in libraries across the US; horizontally, students will develop a wide-range of technical skills in areas including fabrication (laser cutting, 3D printing, and sewing), circuitry (paper circuits, electronic textiles, and soldering), extended reality (AR/VR/MR), and microcomputing. Students will have developed a critical understanding of the affordances and limitations of the makerspace, while also working collaboratively and individually to engage with a wide-range of topics spanning from makerspace donor relations to ethical issues emerging from makerspaces (*e.g.* 3D-printed guns and VR harassment). The following learning objectives were listed for this course:

- Develop a theoretical, reflective, and practical understanding of makerspaces and their evolving role in libraries.
- Define key terms such as maker, makerspace, maker movement, and how these terms vary widely across cultures, communities, and regions.
- Develop skills and familiarity with a host of technologies conventionally found in makerspaces through a series of technical flash projects.
- Collaborate with colleagues and a UNC researcher to oversee the development of an end-to-end digital or physical deliverable.
- Create documentation for a makerspace that centers equitable, diverse, and inclusive practices. Compose a makerspace philosophy that captures their values and beliefs as a maker, human, and information professional.
- Articulate and identify ethical challenges that emerge within makerspaces and from the conventional makerspace technologies therein.
- Articulate the affordances and limitations of the maker movement phenomenon through critical inquiry and analysis.
- Engage in a pro-help, pro-question ethos throughout the course.

The course assignments reflect common projects that emerge from makerspaces. Course assignments are project based, and are integrated into the curriculum as “flash projects” where students learn a skill and produce a small deliverable (e.g. the 3D printing flash project could include a remix of an existing model on *Thingiverse* and the successful print of that modified object). The skills and experience developed during the flash projects then culminate in a team project where students are paired with a University of North Carolina at Chapel Hill community member with a “real” maker-based research need. Student teams will help their researcher by offering their technical expertise and their guidance on the end-to-end development of a physical or digital object. For example, a project idea could include helping a Public Humanities researcher to 3D scan artifacts found at the U.S.-Mexico border. The project deliverable would be 3D scans of 10 airtight, printable 3D models for the researcher to use during community talks and workshops. Additionally, at the end of the course, students will have crafted the following deliverables: a professional portfolio including a makerspace philosophy, staff training curricula, makerspace code of conduct, and a mission and vision statement for a hypothetical makerspace of their design.

## CONCLUSION

The difficulty in developing a course on making is striking a balance between training burgeoning information professionals to perform their duties within this narrow, branded form of making, while also ensuring that we apply critical frameworks on the important issues that situate the maker movement: environmental concerns, the persistent underrepresentation of diverse communities, intellectual property, etc. (Radiecki 2018). Critical librarianship is an essential feature of this course in that the intent is to be mindful of these issues and of the ways to avoid repeating or exacerbating them further. Critical librarianship asks our field to consider not only inclusion and diversity (which are outcome based), but to question, challenge, and intervene through systems of structural inequities that undergird our libraries and pedagogy (Critlib). This course will undergo a re-making as scholarship and practices around makerspaces and libraries continues to evolve.

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