CHAPTER 18

North Carolina State University Spotlight

Part 3, The Power of Open: Tools and Practices for Opening Up Student Work

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North Carolina State University's (NCSU) mission to "Think and Do" has empowered the NCSU Libraries to be a leader in connecting theory to practice, coursework to careers, and personal passions to global engagement. Additional information about how this mission informs the work of the NCSU Libraries is provided in the chapter "Preparing Students to 'Think and Do': Promoting the Value of Student Work," which appears in the Articulating the Value of Student Work section of the book.

This chapter presents a set of case studies focusing on our public engagement in the context of the movement to create a more open, transparent, and sharing culture through open access to research products. The NCSU Libraries' work is grounded in open culture and programs that introduce students to open tools and practice have been a powerful way to help students learn to work collaboratively and transparently, as well as prepare a portfolio of their accomplishments. The ways we have designed, organized, and promoted library tools, spaces, and expertise connect our students with the communities

where they live today and the lives they will build going forward, whether they choose a career in academia, industry, or the arts. These projects are just a few components of a broader series of programming designed to demonstrate the commitment the NCSU Libraries bring to supporting students as producers, the challenges inherent to this work, and the ways in which the Libraries can support and articulate the value of student creations. While actively exploring and engaging in this space, we do not purport to have the answers and are still investigating how best to provide emerging scholars and creative students with the tools, spaces, and resources to share, save, and disseminate their work.

Though the libraries strive to provide venues for students to disseminate and showcase their works, we also recognize the value of empowering students to develop and share their work independently. The libraries do not have the capacity to be, nor should they be, the sole keeper of student works, but we can help students embrace their own roles as prospective producers, publishers, and distributors of their work. In the NCSU Libraries, we have created multiple programming opportunities to help students understand and take advantage of their roles with content creation and distribution, whether the work they are sharing is a scholarly paper, artwork, code, or specific forms of made products such as designs.

In particular, we have focused on introducing students to open tools such as open-source software and Creative Commons–licensed resources. David Wiley defines open content as any work that is “licensed in a manner that provides users with free and perpetual permission to engage in the 5R activities.” The Rs are

1. Retain—the right to make, own, and control copies of the content
2. Reuse—the right to use the content in a wide range of ways
3. Revise—the right to adapt, adjust, modify, or alter the content itself
4. Remix—the right to combine the original or revised content with other material to create something new
5. Redistribute—the right to share copies of the original content, your revisions, or your remixes with others¹

In an attempt to connect with motivated students across multiple disciplines and departments, we hosted a full-day student-oriented conference on open culture and open creation. With the support of the Scholarly Publishing and Academic Resources Coalition (SPARC) and the Right to Research Coalition (R2RC) we applied to host an OpenCon Satellite Event—a local meet-

ing that leverages the momentum of the international OpenCon meeting, designed with the mission of “Empowering the Next Generation to Advance Open Access, Open Education and Open Data.” Through our satellite event, we aimed to tailor content from the international OpenCon meeting to our local context, with a goal of reaching undergraduate and graduate students at our university and other local universities or colleges.²

This event, called OpenCon 2017: North Carolina Student Leaders, was marketed as an opportunity for students to learn more about how to share their work, cultivate their professional identity, and learn advocacy skills. Students submitted a brief application to attend, which assessed their knowledge of and interest in open scholarship, and asked students to tell us a little about what they were hoping to get out of the day. With the permission of the global OpenCon organizers, we incentivized participation by providing acceptance emails so participants could include a line on their résumé or CV indicating they were an OpenCon North Carolina Student Leader.

This event engaged with undergraduate and graduate students from the sciences, social sciences, and humanities to explain the power of openness and open licensing in retaining control of their early work while simultaneously engaging with a broader community of scholars and practitioners. Throughout the day, students learned about facets of openness through hands-on tool-based sessions, workshops, and talks with advocates of open sharing and access. Students received a brief introduction to the concept of openness in scholarship and practice and learned about licensing their own work and using openly licensed works through hands-on sessions. Students then had the opportunity to make their own online portfolio using GitHub pages where they could share a résumé as well as examples of work they had created at NC State.

Students also had the opportunity to meet a local open-source advocate—Tom Callaway, University Outreach Team Lead at Red Hat—who has made a career working with open tools and openly licensing his own work. In his keynote address, he told his own story of working in the open in his early career and the doors that it opened for him. He also discussed how he values visibility and openness of a candidate’s work when hiring new professionals. Our students perked up at the opportunity to hear from a real potential employer; it demonstrated that not only do students feel pride in their work, but others, including prospective employers, value this work as well. Finally, students participated in advocacy training, where they learned how to demonstrate the value of open to key stakeholders, including employers, professors, or administrators.

OpenCon provided our students who had a pre-existing interest in sharing their work with an opportunity to engage deeply with open practices, but we recognize that not all students are willing to devote a full day to learn about sharing their work. We wanted to offer meaningful and actionable

instruction about sharing work with a community. As a university with an active makerspace community that regularly engages with open-source software, open hardware, and openly licensed materials, we chose to integrate this content into pre-existing makerspace instruction.

We integrated instruction about intellectual property, copyright, open licensing, and the life cycle of information into two pre-existing tool-training workshops: Developing Arduino Projects and Developing 3-D Printed Projects. The first workshops were offered during Open Access Week 2016 for a mini-workshop series titled Power of Open. The content was designed in a partnership between librarians with tool expertise from the NCSU Libraries' makerspace and librarians from the NCSU Libraries' Copyright and Digital Scholarship Center with knowledge of copyright, licensing, and the scholarly life cycle. These workshops began with a primer on ownership and licensing, and then delved deeply into hands-on tool training. We taught students how their individual making activity is shaped by a larger community of makers who are actively engaged in sharing their work openly.

After the success of the Power of Open miniseries, it was clear that this content could be more than just a special addition for Open Access Week; it had the potential to be core to our students' experience of making. We redesigned the workshops to include content about copyright, licensing, and sharing throughout, and offered them as basic introductory Arduino and 3-D Printing and Design workshops. The new content wove hands-on work with the tools together with conversations about how to participate in a broader making community through sharing. For example, in the 3-D Printing and Design workshops, after a basic primer on Creative Commons licensing, students were asked to download a CC-licensed remixable file from Thingiverse, an online repository where users can share digital design files. They then worked to remix and print this openly licensed file, and finally, we discussed what their rights to the remixed file were and how they might upload or share their altered file or their original design to Thingiverse or a similar repository of openly licensed files.

Workshop evaluations (see figures 18.1 and 18.2) indicated that embedding this discussion into this making environment was valued by our students. Multiple students reported that the most useful thing about these workshops was the information about licensing or copyright.

FIGURE 18.1

Course evaluation 1

What was the most useful thing you learned in today's session?

Copyright - refreshing topic

FIGURE 18.2

Course evaluation 2

Conclusion

We have adopted this approach to integrating information about sharing and ownership into all aspects of the NCSU Libraries instruction and outreach work. For example, we address these concepts in high-traffic workshops such as our music-making workshops. We have also incorporated them into the programmatic instruction provided for undergraduate science communication courses. This approach aligns with the findings of the ACRL white paper *Intersections of Scholarly Communication and Information Literacy*, which acknowledges the needs for students at all levels to understand the social life of information along with the rights and responsibilities they enjoy as creators of information resources.³ By teaching students that sharing and promoting their work are core to engaging with their communities from the beginning of their research or making process, we are able to encourage students to take an active role in preserving and promoting their work.

Notes

1. David Wiley, "Defining the 'Open' in Open Content and Open Educational Resources," Opencontent.org, accessed March 15, 2018, <http://opencontent.org/definition/>. This material is based on original writing by David Wiley, which was published freely under a Creative Commons Attribution 4.0 license at <http://opencontent.org/definition/>.
2. Scholarly Publishing and Academic Resource Coalition (SPARC) and the Right to Research Coalition, *OpenCon2016: Empowering the Next Generation to Advance Open Access, Open Education and Open Data: Community Report* (SPARC and Right to Research Coalition, 2016), <http://www.opencon2017.org/community-report>.
3. Association of College and Research Libraries Working Group on Intersections of Scholarly Communication and Information Literacy, *Intersections of Scholarly Communication and Information Literacy* (Chicago: Association of College and Research Libraries, 2013), <http://www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/Intersections.pdf>.

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