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Abstract

Escalating textbook costs and continually evolving technologies for delivering course content have combined to place the "textbook problem" at a boiling point ripe for systemic change. This article describes two efforts to address the "textbook problem" by offering incentive grants to faculty members who adopt, adapt, or create open educational resources (OERs) to replace costly textbooks. It describes programs at UMass Amherst and North Carolina State University and discusses the role of the library as a campus leader, educating faculty on new textbook models and investigating and providing incentives to incubate change.

Introduction: The Textbook Problem

The increase of textbook costs combined with the continual evolution of technologies that deliver course content has made the "textbook problem" ripe for systemic change. According to the 2014 College Board *Trends in College Pricing* study, college students spend an average of $1,200 a year on textbooks.[1] While course materials are a vital part of the higher education system, cost increases well above the general rate of inflation have increased dissatisfaction with standard textbook publishing and delivery models. Though traditional textbook publishers rightly note that students can spend less than the College Board reports through ebooks and rentals, the escalation of textbook prices well above the overall rate of inflation continues unabated. The Government Accountability Office estimates that from 2002 to 2013 prices increased by 82%, three times the rate of increase in overall consumer prices.[2] This unsustainable rate of increase is driven by a variety of factors, but at its core stems from a generally inelastic market where consumers (students) and providers (publisher/vendor /bookstore) are separated by an intermediary (professor) who is not directly exposed to price.

Though inelastic in structure, the significant rate of increase in costs has helped increase awareness and dissatisfaction among participants in the textbook market. From this crossroads of unsustainable costs, emerging delivery technologies, and growing dissatisfaction—the long-term evolution of systems for delivering course materials will be shaped by a complex mix of economic, political, pedagogical, and technological factors, along with a diverse set of players that includes students, faculty, publishers, open educational resource providers, central information technologists, and librarians.

The immediate problem facing academic libraries of all types is what, if anything, they can or should do about textbooks. Libraries, particularly in North America, have traditionally taken a hands-off approach to the textbook problem. No library has the funding or mandate to purchase textbooks at the scale needed to serve an entire institution of students. As neither the ones selecting nor using textbooks, libraries have not been principal agents

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[1] College Board. (2014). Trends in college pricing. Retrieved from https://secure-media.collegeboard .org/digitalServices/misc/trends/2014-trends-college -pricing-report-final.pdf

[2] General Accountability Office. (2013). College textbooks: Students have access to textbook information. Retrieved from http://www.gao.gov/assets/660/655066.pdf

in the textbook market. That traditional stance on textbooks, however, is rapidly changing.

As hubs of higher education institutions, libraries have a natural connection to students and their growing dissatisfaction with textbook costs. Libraries also work closely with faculty across the life cycle of their research and teaching. Library service provision and engagement with pedagogical tools such as electronic reserves and course management systems increased engagement with digital tools for delivering course materials. More libraries are putting together the pieces of student dissatisfaction, faculty interest in new pedagogical approaches, established relationships with both students and faculty, and the burgeoning open educational resource (OERs) market to move into the middle of the textbook conversation, and become leaders in offering solutions to the "textbook problem."

OERs and alternative market driven options such as Flat World Knowledge and OpenStax created opportunities for libraries to come off the sidelines of the "textbook problem" and start participating in developing, promoting, and disseminating alternatives to traditional textbooks. While academic libraries do not exert central authority or market power to drive solutions, they do have both physical centrality on campuses and important visibility and goodwill in the academy.

Further, there are strategies available for librarians to move the needle from problem to affordability, access, and piloting new spaces to incubate change. From utilizing existing systems of reserves, to innovating in the use of course management systems, to developing incentive programs for incubating alternatives to traditional textbooks—libraries are fostering change by providing educational resource solutions to their students and faculty. This paper highlights efforts at the libraries of the UMass Amherst and NC State University to move into leadership roles in fostering innovation and cost savings in the delivery of educational resources.

Libraries Leading the Way at UMass-Amherst

The UMass Amherst Libraries have been engaged in seeking open alternative models in scholarly communication since 2006. These alternative models included the development of an institutional repository for UMass Amherst scholarly materials, the introduction of library publishing services, and partnership with the University Press. When the textbook affordability "crisis" was brought to the attention of librarians at the Scholarly Publishing and Academic Resource Coalition (SPARC) forum during the American Library Association (ALA) midwinter in 2009 and again during a SPARC phone conversation in February 2011, we realized that this was an exciting opportunity to participate actively within the teaching and learning community and aligning with our open mission, seeking open alternatives to high cost textbooks. During the SPARC phone conversation, Steven Bell, Associate University Librarian for Research & Instructional Services at Temple University, outlined the alternative textbook project they had established and willingly shared the materials they had developed.

The Director of Libraries, Jay Schafer approached the Provost to seek that level of support and engagement as we envisioned the Open Education Initiative. Building upon Temple's success and our own active partnerships with Academic Computing, the Center for Teaching and Faculty Development, and the academic IT Minor Program, we created an innovative new Open Education grant program in April 2011 that began with 10 $1,000 grants to incentivize faculty who were interested in pursuing alternatives to high cost textbooks. Within a year, we realized that we were not attracting faculty who were teaching large general education classes of over 200 students so we added 2 $2500 grants to the program. Now in its fifth round of funding, the program has attracted faculty from across the university, included courses from general education to graduate level, and saved students over $1 million in textbook costs.

The Open Education Initiative

Many libraries already purchase access to materials that are excellent substitutes for materials that educators currently use in their teaching. Some of the items are actually identical to adopted course materials. The shift from paper to digital means that, instead of one book on reserve at the library counter, an e-book could be available to a hundred students at once. For many educators, this is a shift in access that is not within their personal experience. They are familiar with course packs, reserve materials, and the campus bookstore. They are aware of library databases in their own research. Through the Open Education Initiative, grant recipients are made aware of the wealth of materials that libraries offer and how licenses have been negotiated so that the maximum number of students can have access to a research. This can at times be tricky, since we have different contracts with different vendors. But it can also be an eye-opening experience for professors, who in our workshops often say, "I didn't know the library had that." While the OEI workshop is not billed as such, it is really an opportunity to showcase the value of the library and its subscribed resources, to the benefit of the library, faculty, and students.

The OEI workshop also includes an introduction to open access resources, which have greatly matured in the last five years. The UMass Amherst Libraries keeps an extensive list of resources through its LibGuide at http://guides.library.umass.edu/oer. The list can be overwhelming, as there are many initiatives around the country and none that offer comprehensive coverage. However, this is also a sign that open education resources are part of a growing movement, and it does take effort. During training, it is important to stress the availability of the scholarly communication and subject liaison librarians and guides and consultants to finding open education resources.

The Office of the Provost has been an important partner and supporter since the beginning of the Open Education Initiative. The Provost funds half of the grants every semester, sends out the email announcing the request for proposal, and is vocal regarding the impact of the program and its benefits.

Another important campus partners for open education at UMass Amherst is the Information Technology (IT) office, which already holds workshops to help faculty with instructional and classroom technologies, from embedding videos in Moodle to creating a wiki. For example, Professor Hossein Pishro-Nik worked with IT on his statistics and probability e-book http://www.probabilitycourse.com/. It includes videos and calculators within the text for an interactive experience. A few professors have worked with the Center for Educational Software Development, which is an interactive quizzing/homework service.

As a consequence of new technologies and methods, there are some who discover that, having made their lecture slides into the course materials, they now must learn how to flip their classroom to an interactive one. We partner with the Center for Teaching & Faculty Development, who works with professors in order to teach using new models. This taps into the innovative learning trends that are happening on campus, such as the new academic classroom building on campus that is built specifically to encourage nonlecture styles of teaching and learning.

The most recent partner in the UMass open education efforts has been students. Individual students and those affiliated with MASS PIRG have written articles, spoken to their own professors, advocated on Facebook, and even spoken to the Faculty Senate as part of a panel presentation. Student advocacy around open education is a growing and important voice for any institution who is looking to establish an open education program. In 2015, student PIRG chapters across the state of Massachusetts plan to make open education their central campaign, and will work towards having departments commit to seeking affordable alternatives to expensive textbooks.

The last piece of the Open Education Initiative is assessment. In terms of cost savings, the program is a quantitative success. As of spring 2014, projected savings based on initial proposals were approximately $750,000. An online survey was sent out asking participants when and where they had implemented the grant, and it was realized

that there was an ongoing impact due to materials being used in semesters after the initial launch. For example, the aforementioned Professor Pishro-Nik has now used his textbook nine times, resulting in a savings of $50,000 for just one grant recipient. We estimate that students have saved over $1 million in textbook costs.

The qualitative feedback is just as compelling. In a recent informal survey for the fall 2014 semester, 83% of students in the OEI program indicated they were happy with the course materials. Professors have told us that since they are more engaged with the material, students are more engaged with material. They are seeing more prepared students and greater participation in class discussion. It's clear that the OEI program has been a catalyst for shaking up, not just the traditional textbook adoption model, but also the structure of teaching and learning.

Libraries Leading the Way at NCSU

The NCSU Libraries has long recognized the danger posed to student outcomes and the education mission of higher education, and investigated several strategies for addressing the problem. Recognizing limitations in market and bargaining power, and respectful of faculty member's academic freedom to make decisions regarding curriculum and instruction, the Libraries began with a strategy based on developing resources, infrastructure, and support for faculty and students.

Beginning in the early 2000s, the Libraries approached the problem in three ways: by supporting learning technologies, offering education, and providing resources. Support for both instruction and technology has always been a core mission of the Libraries, so ramping up and synthesizing that support for faculty instructors looking beyond textbooks was a natural fit. Similarly, as the Libraries worked to advocate for open access, advocacy for open education followed naturally. We developed our own expertise in open education, offered

consultations, and developed web materials and a white paper describing the textbook problem. Through these efforts, we hoped to inform faculty members about the issue and support them when and in the ways that they were most comfortable engaging.

Along with our work engaging faculty instructors, the Libraries also developed strategies for reducing the high cost of textbook for students at NCSU. We offered online and physical course reserves and worked with faculty to license materials—both traditional print and digital/audiovisual materials. The Libraries also partnered with our campus bookstore to reduce the burden on students. We adopted a policy of purchasing at least one copy of every assigned textbook, to be placed on reserve for students to use. This program is incredibly popular today, with rising use every semester driving greater use of other Library resources.

Despite these efforts, however, textbook costs continue to be a major issue for our students. As such, the Libraries were increasingly persuaded that direct action was also needed to empower faculty and support student access. In 2011, we partnered with the Physics Department to pilot an open physics textbook for our large Physics 211 and 212 courses.[3] Serving more than 1,300 students, the book was a massive success, making one of the most expensive textbooks free for students to read and available for print-on-demand for $45. We also offered market alternatives through hosting faculty materials and investigating both FlatWorldKnowledge and OpenStax. In 2014, the Libraries finally decided to enter the Open Education environment directly, by launching the Alt-Textbook Project. This project follows on the success of programs at UMass Amherst and Temple, offering individual faculty members grants as an incentive to replace costly traditional textbooks with open alternatives.

Like most supporters of open education, we were keenly aware of the cost of textbooks, and this cost both drove our efforts and helped us

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[3] http://chronicle.com/blogs/wiredcampus/north
-carolina-state-u-gives-students-free-access-to-physics
-textbook-online/21238

articulate the problem to faculty members and to our own funders, the NC State Foundation. Most studies suggest that the cost issue has several facets.[4] The unsustainable rate of growth—80% in the past decade and more than 800% in the past 30 years—dwarfs the rising cost of both home prices and medical care, two areas that have been recognized as areas in crisis. The actual cost per student—more than $1,200 per year, was also a concern since textbooks are often purchased with student loans, leaving many students with final costs much greater than even that alarming number. We also saw this cost as a social justice issue, pricing many of the most vulnerable students out of an education that our public, land grant mission is especially attuned to.

This issue of cost also played into our concerns about educational outcomes. More than 70% of students have admitted to going without a required textbook based on cost, so it should come as no surprise that open educational materials are more effective. Indeed, we have been encouraged by the growing body of research on the efficacy of OERs, confirming empirically our anecdotal experience that open works are more effective.[5] After all, you can't learn from a book you can't afford to read.

We also believe that efficacy is improved when faculty are fully engaged and empowered to make and use resources that reflect their own instruction. For this reason, we were equally excited by the opportunity to engage our faculty members with library services and empower them to create better models for instruction. Along with questions of cost, we expected to see great return on our investment in faculty teaching. Libraries spend millions of dollars every year on research, from acquiring materials and hosting repositories to managing data and tracking impact. We strongly believe that similar support should be provided for faculty instruction, which impacts the next generation of researchers, as well as the millions of students who will go on to work outside of the academy. As discussed below, faculty shared these sentiments and we're often

tremendously inspired to create materials that leveraged library resources to do something a print textbook just couldn't do.

Our decision to enter this space was made easier by the rich and growing OER community. The ability to point faculty members to existing resources such as Merlot-, OpenStax-, and Creative Commons-licensed works gave them a foundation on which to build and reinforced our belief that work done in our program would resonate far beyond our campus. Our project itself was supported by the generosity of colleagues at peer institutions, who shared materials, strategies, and tips for launching the program. Armed with advice, resources, and a passionate faculty base, we launched the Alt-Textbook Project in the spring of 2014.

The NCSU Alt-Textbook Project

From the start, we took a team-based approach to this project. We wanted the Alt-Textbook Project to really be a tool, not just to save students money, but also to promote the full range of library materials and services to our faculty. The Alt-Textbook Project, then, is not just a grant award but an outreach opportunity for us to introduce faculty to materials and services they might not be aware that we offer. We've pitched grant awards to our faculty as the beginning of a semester-long process in which many of our librarians will work closely with them to help them locate and evaluate the quality of existing OER resources, using our course management system Moodle with library resources, e-reserves, licensing content for course use, exploring digital publishing tools, and incorporating streaming video into courses.

Will Cross, Brendan O'Connell, and Kim Duckett (Associate Head, Research & Information Services) founded the project in late 2013, and applied for and received a $15,000 campus grant to build the Alt-Textbook Project. After receiving the grant, we added the Associate Head of Digital Library Initiatives Jason Casden and Associate Head of

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[4] General Accountability Office. (2013). College textbooks: Students have access to textbook information. Retrieved from http://www.gao.gov/assets/660/655066.pdf

[5] Robinson et al. (2014). The impact of open textbooks on secondary science learning outcomes, *Educational Researcher, 43*(7), 341-351.

Access and Delivery Services Sydney Thompson to our team to bring expertise in web content delivery, and e-reserves, respectively. This team-based approach allows us to leverage a large range of library services to aid faculty award recipients, from Kim's expertise in e-learning and course management systems, Will's expertise in copyright, fair use, and licensing content, and Sydney's skills in e-reserves, to name a few examples.

We knew from early on that for this project to succeed, we had to get buy-in from staff. We were interested in asking staff to partner with faculty awardees throughout the semester, which would which mean more work, so we had to make sure to get them on board first. We decided to conduct outreach visits to department meetings for the most likely departments that faculty grant recipients would be working with—Collection Management and Research and Information Services, where the majority of our subject specialists are located. We also wanted this to be a recruitment effort, and asked our colleagues to help us seed great project proposals by promoting the grants to faculty they already have relationships with.

We promoted the project through emails to a number of faculty listservs, a press release, social media, and a gallery image in the artbox on our homepage. An important component of our outreach to faculty members was a series of information sessions on the project. We held two faculty info sessions, one in collaboration with our campus Office of Faculty Development, which holds a well-attended workshop series. We held an additional info session at D. H. Hill Library.

We've also ended up meeting for individual consultations with almost every faculty member who attended our workshops, again demonstrating the effectiveness of open information sessions as a way to attract interest in the project, and invite faculty members to seek further consults with us.

We've built a diverse peer review team, including students, faculty members, campus partners, and librarians to evaluate faculty applications. We believe it's extremely important to bring all stakeholders to the table on a project like this that affects the entire campus, and especially to include student voices in our review process.

We're also currently working on developing partnerships on and off campus. Representatives of DELTA (Distance Education and Learning Technology Applications) and OFD are on our peer review team, and our campus bookstore has offered print-on-demand services at cost for our project. We're fortunate that our campus bookstore is not an external for-profit entity, as many are, so in our case they're extremely concerned about the cost of textbooks for students and are an enthusiastic supporter of efforts to promote textbook affordability.

We've also been in discussions with Lumen Learning and OpenStax about using their platforms to publish some of our alt-texts, as well as the University of North Carolina system press. This represents a very potent partnership for us, as our library doesn't offer digital publishing infrastructure, so for some of our more ambitious applicants we plan to partner with UNC Press to publish open alt-textbooks.

In the fall of 2014 we completed our applications and peer review process, and a common thread, not surprisingly, was that our faculty applicants are dissatisfied with commercial textbooks. Obviously our applicants are a self-selecting group of faculty members, but we believe OER faculty incentive programs like this one on other campuses will find a receptive audience among faculty members. Many of our faculty members propose to create resources that incorporate existing practices in their courses—making instructional videos, crowdsourcing knowledge, and developing lab notes into a durable alt-textbook, but are requesting library help to publish them.

We were actually surprised to see how many of our faculty members were interested in creating totally new alt-textbooks, instead of adopting existing OERs. We're confident that we'll be contributing a great deal to the broader OER landscape by working with faculty members to

publish all these new alt-textbooks on emerging, interdisciplinary, or specialized subjects.

Finally, we've built assessment into our project, with plans to assess learning outcomes for students using OERs, continued use of OERs by faculty after the grant award period, and making improvements to our website based on comments and feedback.

Lessons Learned and Joining the Party

Both Amherst and NCSU have learned important lessons from our experience with these programs. Libraries can, and must, take an active role leading their institutions to make changes to a broken textbook market. We have the necessary expertise, a historical mission to marshal resources for the benefit of our stakeholders, and we offer a trusted space on campus for innovative, interdisciplinary work to be done.

Having run a grant-based program on campus, both institutions also believe that this sort of program, offering financial support for faculty who adopt, adapt, or create open educational resources is a powerful and effective way to spark change. In many cases, even a relatively modest investment can give faculty the ability to hire a graduate student, license resources, or acquire software needed for transformative practice. Even in cases where faculty members do not need to meet specific line-item costs, a small financial incentive can be the push faculty need to focus their attention on this sort of project. In either case, returns on an investment can be expected to be exponential in terms of dollars, and immeasurable in terms of faculty and student outcomes.

We have also learned the value of meeting faculty on their terms using library strengths. Some faculty members may be tech-savvy or knowledgeable about OERs. Others may be neophytes. Wherever faculty are, if they have a sincere desire to be better instructors and improve outcomes for students, libraries can best-

help them succeed be making space for contributions from instructors of all levels. This can be done by leveraging library expertise and building on the strengths of your own institution. Both Amherst and NCSU have strong copyright and instructional support, so leveraged those to empower faculty. Other institutions may have a mature repository, deep relationships with subject specialists, or an affiliated university press. Any program interested in addressing the textbook problem should identify the strengths within the library and across campus and use those as a foundation to build on.

At the same time that library strengths bolster an OER program, an OER program can also support traditional library practices. Raising the issue of instruction with faculty, particularly in the context of grant funding, reinforces the value of all library services around instruction, from course design and CMS use to the licensed resources that libraries offer, often at great cost. For example, both institutions have seen numerous faculty members come forward with a proposal for "open" materials that fit comfortably within our standard electronic reserves system. An OER program also creates a welcoming context for faculty-library interaction, forging new relationships and partnerships that will resonate with other projects and remind faculty that the library is a place with a wide variety of services and support, as well as a space that values their instructional work, too often work that is trivialized by other campus stakeholders.

Because the open education community is increasingly rich, a host of tools, templates, and examples are being developed to support best practice. SPARC offers an overview of open education that includes fact sheets, videos, and other resources.[6] The November 2014 issue of *Against the Grain* offers a series of articles on the changing role of textbook content.[7] SPARC is also offering an institute on open educational resources at the ALA Midwinter Meeting 2015 in Chicago that will build and further expand

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[6] http://www.sparc.arl.org/issues/oer

[7] http://www.against-the-grain.com/2014/11/changing -roles-in-providing-textbook-content/

librarian expertise and seed even better resources.[8] As a critical mass of faculty members begins to engage with open education and OERs,[9] there has never been a better time for your library to start leading the way on your own campus.

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[8] http://www.ala.org/acrl/oerinstitute

[9] Babson survey on open educational resources available at http://www.onlinelearningsurvey.com/oer.html