Academic libraries have taken a lead in developing Open Educational Resources (OER). They are also working with members of academia from interdisciplinary backgrounds in large grant funded OER creation projects. These projects are the ultimate library led collaboration, involving activities such as grant application development, organizing and facilitating OER content design, creating content, and publishing. However, navigating collaborations with people from interdisciplinary backgrounds can be complex. Based on the experience of an academic library led project to develop robotics, mechatronics and advanced manufacturing OER materials that is funded by a $2,000,000 US Department of Education grant, this paper offers lessons learned and insights on managing the process of collaboration. It highlights many difficulties in keeping an interdisciplinary project team together and argues that success can be achieved with an adjustable project management plan and team management strategies that help build an inclusive and motivating environment. The paper demonstrates how the Agile project management framework and its Scrum and Strategic Doing approaches can be used to achieve these ends and hopes that its example will offer larger insights in helping libraries enhance their leadership in interdisciplinary collaboration in OER and beyond.

INTRODUCTION

Reducing the cost of textbooks for students through encouraging the use of Open Educational Resources (OER) has increasingly become an established service in academic libraries. The ACRL declared OER to be a top trend in academic libraries in 2018, and surveys by the Library Journal from 2020-2022 have shown that 88 to 90 percent of academic libraries in the US are involved in supporting OER initiatives.¹ Seeking to lower the cost of learning for students in a wider variety of subjects, and to fill in gaps in OER materials, hundreds of libraries, according to some surveys are also actively engaged in OER creation and publishing.² Supported by government grants, many are increasingly leading endeavors to develop complex OER materials through large, multi-year projects. With up to millions of dollars in funding and often

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involving individuals from many backgrounds and institutions, major OER development projects represent the ultimate form of academic library leadership and demonstrate their ability to support broader interdisciplinary collaboration in academia. However, they are also challenging undertakings, whose successful completion requires effective project management strategies and the ability to navigate collaboration among people of many backgrounds who are often not from academic libraries within limited time periods. Although there is a broad research literature on many aspects of OER work by academic libraries, OER development projects and the role played by academic libraries and librarians in them remains largely unexplored. This paper highlights challenges involved in these projects, and offers lessons learned from analyzing the experience of a $2,000,000 US Department of Education funded grant to develop 9 OER textbooks and ancillary materials on robotics, mechatronics, and advanced manufacturing, which involves three academic institutions and led by an OER librarian.

SIGNIFICANCE OF LARGE GRANT FUNDED OER CREATION

Large grant funded OER creation projects are relatively new phenomenon. They were made possible by the creation of new large federal grants supporting OER creation since 2018, such as the Department of Education’s Open Textbook Pilot Program. The Institute of Museum and Library Services, another major grant also made OER a funding priority around the same period, and OER advocates have also used other large federal and state grants for OER creation. The subject of developing large grant funded OER has not yet been studied in part due to its novelty, and existing literature on OER creation from an academic library perspective has focused largely on OER publishing services using limited funding.

Studies on large grant funded OER creation projects are significant to academic libraries due to growing governmental awareness of the importance of OER and willingness to support major projects to develop them, and the number of such projects is increasing each year. Designed to develop high quality and innovative OER materials that can have a maximum educational impact, large grant funded projects often utilize new educational technologies and produce materials that can serve the needs of a broad range of learners, including those from under-represented groups in higher education and students with disabilities. They have the potential to dramatically improve the quality of OER, leading to wider adoptions. These projects can also elevate the status of academic libraries. Securing major grants require the writing of lengthy grant applications, which often involve collaboration by individuals from a variety of disciplines and professions. Academic librarians have led the way in both applying for grants and leading OER development projects funded by them and serve as principal investigators in many of the major grants awarded in recent years. By leading these interdisciplinary collaborations, they are moving beyond their traditional roles as service providers to winners of major grants and pioneers in education, who enhance the status of their institutions in the process.

Large grant funded projects also highlight many new capabilities that academic libraries are acquiring. OER work is inherently interdisciplinary, with OER librarians working to introduce these resources to many departments and networking with administrators and faculty to implement them. With ties across campus, these librarians can serve as a locus for interdisciplinary collaboration around OER. As the people who have spearheaded the OER movement over the past decades on many campuses, librarians with OER responsibilities have also developed expertise on different aspects of OER, and funding agencies see them as a good choice to lead OER projects. Often from humanities backgrounds, OER librarians have strong writing skills well suited to preparing grant applications. Academic librarians, in recent years, are also acquiring project management skills that make them able to take on leadership responsibilities for major projects. Lastly, academic libraries have moved increasingly into publishing, and some have even merged with university presses. With these skills and connections, academic libraries and librarians can serve as leaders and providers of critical components for OER projects. Studies on the experiences of major grant funded OER projects can help academic librarians to rethink their roles and provide insights to librarians seeking to engage in these projects.

BACKGROUND OF PROJECT

The focus of this study is to share some experience from an academic librarian's role in leading interdisciplinary
collaborations in a large grant funded OER development effort. It involves a librarian at a Research-1 institution in the American southeast who led a multi-campus team to apply for a US Department of Education grant in 2020 and his initial experience in leading the project as principal investigator after successfully receiving funding. The librarian comes from an academic library system with a strong interest in OER and was given a specialized OER position in 2018. His library system also merged with the university press in 2019 and began to develop an OER publishing program in 2020. Encouraged by library administration, the librarian started to apply for grants to further expand the OER program.

Applying for and winning the Department of Education OER creation grant is challenging due to the many requirements of the funder. Among these is that proposals must be written by a consortium of at least three higher educational institutions of different types, with one being minority serving. The proposed OER materials must also serve the needs of students of different backgrounds from all three types of institutions. The grant required a project team with experts from a variety of backgrounds, such as educational technology, instructional design, and assessment. In addition, proposals submitted must receive endorsement from several local stakeholders from the business, educational and governmental sectors. Lastly, the Department of Education gave only two-month period to complete a 60-page grant narrative, creating urgency in building ties and writing.

The librarian gained support from interdisciplinary networks developed through his work. His created ties in multiple colleges and departments at his institution through promoting and supporting OER. One of these ties, the dean of engineering, a strong advocate for OER, played an important role in the inception of the project. He suggested gathering a coalition of faculty to develop 9 textbooks on industrial robotics, mechatronics, and advanced manufacturing, three in-demand subjects in the southeast which are crucial to support the growing industrialization in the region. The dean also used his influence to assist the librarian in building the coalition. With his help, along with that of two vice presidents of the university, the librarian connected with two other engineering deans, one from a major technical college in his state and another from a minority serving institution who were also interested in having their institutions take part in a major grant funded OER development project. The administrators found faculty and staff from their institutions with skills required by the grant to take part in the writing of the grant application. Assisted by the vice presidents, the librarian also gained endorsements from major stakeholders, including BMW, his state Department of Commerce, and the state technical college system, which included 16 institutions and 200,000 students.

Adding credibility to the application, the librarian integrated the idea it proposed with the OER publishing services of his libraries and the resources of OER allies in his state. The textbooks produced under the grant would receive line and copy editing, design, and other aspects of professional publication from the university press, which runs a service selling hard copies of textbooks. They would also be available in e-format on the discovery system of the academic library consortium in his state, which advocates for OER statewide and has an e-collection that serves virtually every higher educational institution in it.

With a background in history, the OER librarian possesses strong skills in writing, literature review and crafting well supported arguments in writing the application. To overcome the challenge of lacking knowledge in robotics, mechatronics, and advance manufacturing, he worked with the various experts involved in writing the application, putting the works they wrote into a coherently structured proposal and editing it to improve readability by a non-expert audience. The librarian also researched the costs of existing textbooks in the three subjects, data on enrollment in them in the three institutions involved, and literature on workforce development needs in industry to craft an argument on the need for OER on the subjects. These efforts resulted in an initial $760,000 grant from the Department of Education in 2021 to start the project, with the promise of an additional $1.24 million in late 2022 based on the project’s performance in 2021-2022. The OER librarian became the project’s principal investigator.

PROJECT CHALLENGES

Winning the grant, however, was only the beginning. The complex nature of the project poses many challenges from a project management perspective. The project has ambitious design to serve the needs of a wide range of

* Since the project is ongoing the institutions and names of project members will be kept anonymous.
learners. To assist the workforce development needs of the advanced manufacturing industry in the southeast, it will develop textbooks for the 2-year technical college, 4-year undergraduate and masters levels. The textbooks are to have interactive animations and simulations visualizing course concepts, interactive questions and answers to support student personal learning, inclusive language and examples, and are in compliance with the American Disability Act. To support students in rural areas, who often lack access to reliable high-speed internet, the textbooks are available in two forms, an online interactive version, and a downloadable and print quality PDF, with animations, simulations, and other activities able to be downloaded and used offline. To fully support the needs of instructors and students, the project must also engage in educational research aimed at learning their preferences for learning resources, and to assess the educational impact of the works after they have been completed.

To achieve these objectives the project has 5 components that must interact with each other, authoring, development of interactive materials, instructional design, publishing, and educational research. It also developed a growing team of 9 faculty, 3 staff members and several graduate students from the 3 participating institutions. The librarian, as principal investigator, must work with experts from different disciplines, and to navigate interactions between the different components of the project to ensure its success. He must also interact with people from three institutions, most of whom had never worked with each other.

Added to the challenges of developing the textbooks is the short timeframe to complete them. The textbooks in 3 subject areas total 9 books of about 100 chapters and 3,000 pages. Each chapter also contains around two dozen diagrams and charts, at least a dozen animations and simulations, and a similar number of interactive questions. Giving each of the textbooks professional publishing, such as line and copy editing, peer review also required between 9 months to a year. While a project of this scale could take many years, the Department of Education gave a 5-year maximum period to complete all textbooks. Progress on the project was closely monitored by the Department of Education, which required the principal investigator to submit quarterly reports detailing work done every three months, and a major report at the end of every year. The project also has external evaluators, who report to the Department of Education after observing project meetings and progress. The first year is a particularly challenging period because the supplemental grant in the second year depends on the progress in the first year.

The urgency to accomplish tasks went against the reality of the project. Deans from the three institutions envisioned the textbooks, and most of the project team was recruited through their introduction. However, administrators and team members did not always see eye to eye. While administrators felt strongly about the need to develop OER resources and encouraged the most qualified people in their institutions to take part in the project, the project team members they recruited were often less-willing participants, feeling they were asked to do something that was not very beneficial to their careers. Although the grant was large, the actual amount received by each participating member, due to a large project team, was not great. The time needed for participating members to develop the textbooks was not considered by their institutions, which did not reduce their regular workload. Neither did the institutions offer incentives for participation in OER activities, such as linking work on the project to tenure or promotion. The three institutions, from 2021 on, were also feeling the effects of the “great resignation”, with frequent resignations and retirements often leaving them short staffed. This resulted in many project team members being assigned additional work on top of their work for the project and regular work, making many feel even less motivated to work on the project.

Recruitment of project team members by institution administrators also created another problem. Most members saw themselves as employees of their institutions and under the authority of deans rather than a committed project team led by its principal investigator. These issues began to surface at the very start of the project. Two weeks after project commencement in September 2021 the dean of one of the three institutions left for another university. The faculty member he chose immediately pulled out of the project, causing the institution to withdraw completely. Although the librarian was able to find another institution for the project 3 months afterwards with help from his institution’s administrators, the incident highlighted the challenges behind the project team.

LESSONS AND INITIAL ACTIONS

The librarian principal investigator initially took a less direct approach in managing the development of the textbooks. He met with the project team and asked members of each of the five components to present plans on
how they would create their sections of the textbooks and specify their tasks. Based on discussions the librarian developed a timeline for completing tasks, which was agreed upon by members of all project components. The administrators had also recommended key faculty to oversee collaboration. However, the project ran into many difficulties in the first few months, with different project components working at different speeds, and some project members lacked motivation to work. Collaboration between different project components were not carried out well either. This made the components unable to support each other. Some faculty involved viewed their work as their own turf and did not like feedback from others. There were also disputes over salary and allocation of resources involving some members. These issues, fortunately, did not seriously affect the project. The major components of the project, textbook authors and developers of interactive resources remained focused, creating a good deal of content. They overall met the targets set at the onset.

These developments led the librarian to take a more direct approach in leading the different components, guiding both the design of the textbooks and workflow in which the textbooks are created and improved. Although he had no previous experience in leading a project of this magnitude, he had worked on a library project that adopted the Agile project management framework in the past. During that time, he studied Agile, observed how it was implemented, and published an article on the subject. The librarian used some of Agile's principles and insights and applied them to guide project management for the textbooks.

Developed in the software industry during the 1990s, Agile was gradually applied to managing a variety of projects. It consists of strategies for conducting projects and regulating interactions in a project team. Agile calls for developing a product through an incremental and iterative process between different team members, where each member can learn how to improve the product through discussion, making changes to the product if needed. Scrum, a strategy behind Agile, emphasizes making the product development process transparent through Sprints, check-in meetings after a short period of work. Each project member reports on their progress, and the team discusses issues relating to the development and direction of the product. This process allows for inspection, reflection and adaption on work being done, improving the product. Agile and Scrum also emphasizes developing collaboration through the establishment of norms. It views projects as a problem-solving exercise, and something that should be taken by collaborative, motivated project members as opposed to hierarchical supervision and the dictation of tasks to each member by project leaders. Strategic Doing, the team management component of Agile that can be used in Scrum, also contains practices for motivating a project team, empowering each member in an inclusive dialogue, and engaging them in action to improve a project by posing issues it faces as continuous problem-solving exercises.

In the context of the project, Agile and Scrum are useful in several ways. Scrum allowed one team member, designated the Product Owner, to flexibly direct the project based on progress reported in meetings and feedback from the rest of the team. Product owners can adjust the timeline for completing tasks and focuses of the project based on meetings and feedback. The librarian chose this approach because the previous attempt to develop OER textbooks based on a fixed timelines only partially worked, and a more flexible approach is needed. Scrum's emphasis on frequent meetings also allows the librarian, who has not led people from so many different backgrounds before, a chance to better understand how they work and discover issues related to collaboration. Agile's strategy of using a problem-solving framework to continually improve the project offers a possible way to actively engage the project team in creating OER. In addition, Strategic Doing and its focus on motivation and fostering an inclusive dialogue over enforcing supervisory authority also fitted the situation of the librarian, where he is the project leader but not the boss of the project team members and had little direct authority over them.

**APPLICATION OF AGILE**

The librarian took up the role of product owner under Scrum and began to test the Agile approach in the late spring and summer of 2022 through holding sprint meetings. Meetings were held each month for several months, with the purpose of getting project members to explain their progress and issues they faced. Initial meetings did not always go smoothly. Some members felt defensive about constantly reporting their work, and others noted that they did not have time for a lot of meetings. However, through the meetings the librarian discovered several things. While members had some issues that are hard to resolve, such as lack of time and low
pay, there were issues that can be corrected with the application of team management strategies. Overall, project members from different project components often had difficulty communicating their ideas with others. This was in part caused by the various disciplinary backgrounds of team members. Project members often couldn't understand each other due to the use of different disciplinary terminology without enough attempts to explain what these terms mean. Different members at times also had disagreements due to their disciplinary viewpoints in issues such as pedagogy. For example, some textbook authors emphasized on teaching hard mathematical concepts in the textbooks and the instructional designer preferred providing more real-world examples to allow students to better understand the concepts being learned. It is necessary to find better ways of getting people work together to understand what would be useful for real students.

Based on these observations, the librarian adjusted the direction and focus of the project in several ways by fall 2022, the start of the second year of the project. Luckily, the most important parts of the project, textbook writing and interactive content development, were the most productive of the project's components. Realizing that they were the basis for creating the OER textbooks, the librarian gave them a greater focus and allocation of funding. Members of these components were given leeway at first to develop materials the way they wanted, so that they could complete work and show progress to the Department of Education. These components were also allowed to set the pace for the project's progress in the sprint meetings. To work with project members from other components, the librarian realized that he needs to better educate himself on what they do. Although it was impossible to become an expert in all the components, he tried to develop a more global understanding of the scope of knowledge involved. He also gained insights for conducting more meaningful and productive conversations with team members to jumpstart parts of the project that had fallen behind, such as understanding how the textbooks and their content can better support student learning. In addition, he developed a good understanding of professional publishing, how it operates and certain details of the process, so that a clear publishing plan with a timeline and costs could be settled.

Applying Strategic Doing, the librarian at first started meetings with interdisciplinary project members by asking them a simple, positive problem question, such as “Picture yourself as a student, what would a textbook you enjoy using look like?” Participants were all asked to speak out, offering different perspectives, and the librarian helped to turn these questions into more complex discussions on understanding students, leading to research that all members involved could provide suggestions on. The use of simple questions encouraged team members to speak in commonly understood terms at first and explain themselves, avoiding the use of disciplinary jargon. Creating an inclusive discussion, the librarian also moderated conversations to ensure that everyone, regardless of institution or rank got an opportunity to speak.

Implementing Agile was never perfect. Some project members did not always follow along during meetings. Others were unhappy with the allocation of funding to textbook writing and interactive content development. Project members were also often slow in carrying out assigned tasks, citing lack of time. The librarian followed several approaches in dealing with these issues. Firstly, meetings to discuss certain issues included only project members that are directly involved in them. Meetings were only held frequently for aspects of the project that were struggling. Recognizing the busy schedules of project members, the frequency of meetings was reduced for successful components of the project that can constantly meet goals. The librarian explained to meeting participants the purpose of his strategies, noting that they were for betterment of the project. When facing frustrations, the librarian stayed professional, acknowledged the difficulties of the project, framed decisions as out of necessity, and avoided personalizing the dispute.

In implementing his new plan, the librarian also relied on two groups to build cooperation in the project. One was the administrators involved. Due to their influence the librarian attempted to get the administrators to serve as an advisory group and arbitrate disputes but found that they were often too busy to meet frequently. However, the administrators remained interested in the progress of the project and the librarian approached them for help when needed, particularly in issues involving project members. Supporting his case, the librarian expressed concerns and requests for help in the context of project needs and his larger framework for accomplishing tasks. Another group was project members that were reliable and focused on their work. The librarian relied on them for advice, suggestions on how to accomplish tasks, and made them leaders of the project components they are part of.
EARLY OUTCOMES AND DISCUSSION

Some problems remained despite the new approach. Certain project members who were either too busy or unwilling to work withdrew. However, the application of Agile overall received cooperation from project members, and administrators remained supportive. With help from reliable members and administrators the project was also able to find new members to strengthen its components. With this the key objectives of the project for the first stage met, including the completion of one textbook. A research study on the learning preferences of students, involving two project components was also completed. The project received good ratings from the Department of Education and external evaluators due to these successes and received the promised $1.24 million in late 2022.

This project is still ongoing, and its experiences and solutions are limited to the specific context it faced. However, several initial conclusions can be drawn. One is to understand the limits of project partners early on in larger interdisciplinary OER projects. The project was started by a remarkable degree of administrative collaboration and leadership in grant writing by the librarian but had many limits in terms of commitment and time by people directly involved. Another is the need for a flexible project and team management strategy. Large grant funded OER development projects can exceed anything that academic libraries have conducted before, involving librarians working with large, interdisciplinary teams of faculty, staff, and administrators, from many institutions, and in changing situations. Project and team management strategies that can accommodate difficulties in achieving objectives, working with partners, and be adjusted to build commitment to the project is critical. Lastly, large OER development projects, due to the complexities involved, can be very time consuming and involve skills beyond an individual librarian. The librarian in the study often found that the learning curve for the project, particularly leadership skills in managing the team was overwhelming. The appointment of a small group of librarians to lead a project, or the hiring of a professional project manager could be used in similar situations.

CONCLUSION

Despite the difficulties experienced, the project mentioned by the study was an overall success so far. With more planning, flexible strategies and administrative support, a librarian can take on a vast grant funded project, playing a role that might have traditionally been given to an academic faculty or administrator. As large grant funded OER development projects become more common, library leadership of them could dramatically change perceived roles for academic librarians and elevate their potential. Through its example the study seeks to highlights pitfalls and offer suggestions of possible coping strategies for all academic librarians on managing these projects. It hopes that its lessons can also be applicable to other large library led interdisciplinary projects.

NOTES


6. The Open Textbook Pilot program, a specialized federal grant supporting OER projects is an example. Created through bipartisan consensus in 2018, the grant initially appropriated $5 million per year to support large OER projects. Available funding per year rose to $12 million in 2023, and it is expected to increase significantly each year over the next few years. Scholarly Publishing and Academic Resources Coalition, “Open Textbook Pilot Grant Program.”

7. Although large OER grants are not specifically designated for libraries, academic libraries and librarians have played a lead in applying for and winning them. For example, according to data from Nicole Allen, Director of Open Education for the Scholarly Publishing and Academic Resources Coalition, an organization that advocates for and monitors OER grant funding, academic librarians serve as principal investigators for roughly half of the Department of Education Open Textbook Pilot grants awarded.


15. Schwab and Sutherland, 5-6.

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