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Collaboration Between Library, Faculty, and Instructional Design to Increase All Open Educational Resources for Curriculum Development and Delivery

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Introduction

Academic librarians have a long history of collaborating with faculty to contribute to the success of students at their institutions. Information literacy instruction, reference or research assistance, textbook recommendations, and instructional design support are some common examples of this collaboration. In the second decade of the 21st century, textbook affordability assistance has grown as another important point of collaboration. Faculty understand that the cost of textbooks can negatively impact student success, yet they may have concerns about the difficulty locating cost-free or low-cost alternatives, and if they do find them, assessing their quality in relation to standard peer-reviewed publications.

Librarians, who are familiar with the world of scholarly publishing, are coming forward to assist faculty by suggesting open educational resources (OER) from reputable sources, offering site wide licenses to ebooks that might replace a textbook, and helping faculty authors publish their own affordable alternatives to textbooks. This case study outlines the process trialed and developed by Embry-Riddle Aeronautical University (ERAU), a large private university with a substantial online and distance learning population, in which faculty and librarians collaborate to reduce textbook costs for their students. It highlights a strong working relationship between faculty teaching online courses in the distributed learning division and the library.

Literature Review

The cost of textbooks has risen dramatically. From January 2006 to July 2016, the consumer prices for college textbooks increased by 88 percent compared to an overall increase of 21 percent for all consumer items (Bureau of Labor Statistics, U.S. Department of Labor, 2016). Students in four-year colleges expected to pay \$1,240 for textbooks in the 2018-2019 academic year (College Board, 2019). In addition, 43.8 percent of students at Florida public colleges and universities spent \$301 or more on textbooks in the Spring 2018 semester (Florida Virtual Campus). These costs impact student success. In the 2018 survey of Florida students, 64 percent did not buy the required text, 36 percent believe they earned a poorer grade because they could not afford the book, and a further 23 percent dropped the course (Florida Virtual Campus, Office of Distance Learning & Student Services, p. 14).

The high cost of textbooks is changing the types of resources some faculty assign to their students. The use of OER is clearly a growing trend in higher education. As one example, OpenStax, a large nonprofit initiative based at Rice University, reported that their textbooks were in use in over 48 percent of colleges and universities in the U.S. during the 2017-2018 school year (Ruth, 2019).

While many professors may be interested in swapping out lower-cost or free materials for the traditional textbook, many find the process to research and compile relevant materials that are of sufficient quality and low cost to be time-consuming (McMurtrie, 2019). Librarians have stepped in to help with this process. “They are running workshops to explain open educational resources to faculty members, connecting to state and national open-resource networks, and searching for OER textbooks and other free materials” (McMurtrie, p.3).

While librarians might view the transition to OER or library-licensed resources as an opportunity to assist faculty in course design in much the same way they provide guidance on the incorporation of information literacy into a class, professors may not come to this conclusion automatically. In a survey of community college faculty, who had participated in a program designed to increase awareness of OER,

Braddlee and VanScoy (2019) found that the majority saw the primary librarian role in support of OER as advocacy. In addition, respondents generally viewed librarian colleagues traditionally, being aware of their work in discovery, curation, adoption, and information literacy (p.442). However, while faculty may not automatically turn to librarians for help in discovering and creating OER, librarians are reaching out to collaborate with professors.

At the University of Wisconsin-Milwaukee, the library saw support of OER adoption as aligning with an institutional initiative to support open textbooks. Collaborating with several campus partners, including the Center for Excellence in Teaching and Learning as well as student groups, the library provided workshops and one-on-one sessions with faculty to raise awareness and provide assistance. The library's goal at the end of the first year was to develop a faculty toolkit for course design (Woodward, 2017).

Several case studies elaborate on collaborations between librarians and professors to incorporate OER into their courses or create OER. Goodsett, Loomis and Miles (2016) describe a collaboration between a library liaison and faculty member at Cleveland State University to develop OER for her course. The success of this project led the library to expand support of OER initiatives on campus. At Utah State University, library liaisons partnered with a small, targeted group of faculty to assist them in locating OER to support the learning objectives of their courses. As a result of this pilot project, the library developed a streamlined process designed to expand support of faculty use of OER (Davis, Cochran, Fagerheim, & Thomas, 2016). In addition, a library liaison at the University of Central Florida seized on an opportunity to work with a faculty member who contacted the library after learning her preferred textbook was out-of-print. Their collaboration, which resulted in affordable alternatives suggested by the librarian, also informed the development of a five-step process for success (Avila & Wray, 2018).

While pilot projects with a small number of faculty are a proven way to develop a new initiative, such as the expansion of OER as textbook replacements, there are times when an institutional mandate dictates a larger project. This was the case when the University of Maryland University College, which specializes in online adult education, decided to replace traditional textbooks with OER to reduce costs for their students. The goal was to redesign the undergraduate curriculum so that all class content would be open by fall 2015 (Miller & Homol, 2016, p. 351). To accomplish this transformation, teams of librarians, faculty, and instructional designers (ID) were formed. Librarians developed lists of OER and library-licensed resources, which faculty course content experts evaluated and selected. While the project was ultimately successful, some aspects of the process were refined to streamline for a similar project aimed at graduate courses.

Embry-Riddle Aeronautical University

Embry-Riddle Aeronautical University (ERAU) is a doctoral-degree granting university with residential campuses in Daytona Beach, Florida and Prescott, Arizona as well as a large Worldwide Campus dedicated to distributed learning. ERAU offers degrees ranging from an Associate's in Aviation Maintenance Science to a variety of PhDs. Widely known for its aviation and aeronautics programs, degrees in non-aviation disciplines such as engineering, project management, cyber security, and information security are also popular.

ERAU's reach is global, with a 23 percent international student population. Just over 10,000 students attend classes on the residential campuses, with over 65 percent coming from outside the states where the residential campuses are located. On both residential campuses ERAU partners with the U.S. military to offer Air Force, Army, and Navy ROTC programs with the Air Force ROTC detachments at the Daytona Beach and Prescott campuses forming the largest university-based Air Force commissioning source in the nation.

ERAU Worldwide

Embry-Riddle Worldwide consists of over 130 campuses located in a mixture of military and civilian facilities across the United States, Europe, Asia and the Middle East with a student body totaling 18,000 primarily part-time degree-seeking students. The military and military-related students account for 70 percent of the student body, yet the first time in college student has been increasing in the past few years approaching 20 percent. Degree programs are offered in multiple modalities including traditional and virtual classrooms, as well as asynchronous online platforms. The student body, which primarily consists of working adults, includes 14,000 undergraduate and 4,000 graduate students, with more than 1,200 studying at overseas locations.

ERAU Worldwide's academic degree programs reside within one of three colleges; Aeronautics, Arts and Sciences, and Business. ERAU Worldwide offers five associate degrees, 16 bachelor's degrees, 21 master's degrees, and two doctoral degrees, as well as five certificate programs, all focused on aviation, aerospace, engineering, and related fields.

Undergraduate and graduate courses at Worldwide are taught over a nine-week term using various delivery modalities: online, teleconferencing, or in a traditional classroom. There are twelve terms in each year that offer online courses. Teleconferencing and classroom courses are offered only during the five terms starting in August, October, January, March, and May. Courses offered in any of the three delivery modes are structured to deliver equivalency of the student learning outcomes by standard created modules of content and assessments required to be delivered by all instructors.

Online modality is completely asynchronous using Canvas as the learning management system (LMS). Students may take these courses anywhere in the world as long as they have access to the internet. All course content and assignments are accessed through Canvas. These online courses provide flexibility to the students so they may complete the work on their own schedule. However, the online

courses are not self-paced. Each one has a set structure and time frame for the lectures, discussions, assignments, and assessments.

For virtually-enabled class offerings, ERAU Worldwide uses EagleVision, which is the local name of the synchronous video lecture system powered by Adobe Connect. EagleVision combines the power of web video conferencing and LMS software to maximize the benefits of synchronous and asynchronous virtual learning environments. EagleVision courses come in four varieties: EagleVision Home, EagleVision Classroom, EagleVision Hybrid, and EagleVision Blended. In EagleVision Home, the instructor and students participate in class synchronously using their own home computers. In EagleVision Classroom, the students all participate in classrooms synchronously located at different Worldwide campuses. The instructor is located at one of the campuses and uses EagleVision to view the other classrooms. In EagleVision Hybrid, some students participate synchronously in classrooms while other students participate from home. Instructors in Hybrid courses can teach from their own home computers, or from a classroom. In EagleVision Blended courses, two-thirds of the lecture and discussion are synchronous using EagleVision, while the remaining one-third is asynchronous using the university's online system.

Classroom courses are the traditional lecture/seminar courses where the instructor and students are all located in a single classroom, typically during the evening hours of a workday. These classroom courses take place at one of the Worldwide's 130 campus locations in the US, Europe, and Asia. However, all course content and assignments are presented and submitted within Canvas, the same as online and EagleVision.

Worldwide's faculty can also use various online modalities on an as-needed basis as resources in part to support the unique needs of each student and to contribute to a technologically enriched, student-centered environment. Faculty use these modalities to interact with students who may be

suddenly redeployed miles from where they started a class. Relocated students are thus able to continue and complete a course while maintaining virtual, interactive communication with instructors and other students.

Hunt Library

The Hunt Library supports the residential campus in Daytona Beach as well as the Worldwide distributed learning program. The Hunt Library also collaborates with ERAU's Hazy Library on the Prescott Arizona campus to acquire and provide access to electronic library resources as well as in the management and development of the university digital institutional repository, Scholarly Commons. Physically located on the Daytona Beach Campus, the Hunt Library is committed to providing the Worldwide community access to all library resources and services equivalent to the residential community. The Hunt Library provides students and faculty access to library collections and services and to other learning/information resources consistent with the Worldwide degrees, research initiatives, and public service programs.

The Hunt Library has 34 full-time staff: 19 professional librarians, 14 technicians, and 15-20 student assistants. Library staff work in one of four departments, Access Services, Electronic & Technical Services, Research & Worldwide Library Services (RWLS), and Scholarly Communication. RWLS is the largest department, comprised of 11 professional librarians and one technician.

Research Librarians provide reference assistance to both campuses seven days a week through chat, text, email, telephone, and in-person. Reference questions range from very simple directions to in-depth consultations. Librarians also offer library instruction in select courses on the Daytona Beach Campus and through virtual instructional techniques, such as videos and tutorials, available to both campuses. Research Librarians serve as liaisons to all departments on the Daytona Beach campus and currently one librarian is the liaison to the Worldwide Campus.

The Scholarly Communication department consists of two librarians, a professional staff member, a technician and a student employee. One of the librarians is responsible for recruiting faculty and student research artifacts for the university's digital institutional repository (IR), Scholarly Commons, while the other focuses on affordable textbook options, including OER. The professional staff member handles journals, conferences, and most of the backend work, while the technician and the student support all areas of the IR.

Open Educational Resources at ERAU

In 2017 independent initiatives to support textbook affordability were launched in both the Hunt and Hazy Libraries. At the Hazy Library on the Prescott Campus, librarians created a research guide and sponsored a workshop designed to educate faculty on the benefits of OER. As part of the workshop they purchased two books from OpenStax and requested the electronic versions be linked to a new OER section of Scholarly Commons. They were able to demonstrate to interested faculty that many OER resources were peer-reviewed and applicable to some of the introductory courses at ERAU.

Simultaneously, the Scholarly Communication department in the Hunt Library was exploring ways to increase awareness of OER among the faculty on the Daytona Beach Campus. They learned that faculty teaching in some new areas of Aeronautical Science, such as Commercial Space Operations, were unable to find textbooks, so created coursepacks consisting of open electronic materials and licensed library resources. The lists of textbook alternatives were built into each course shell in Canvas. As a pilot in spring 2017, one of these faculty members worked with the Scholarly Commons Administrator to develop an electronic coursepack she would use as her textbook alternative. The items were placed in a list that displayed in the Scholarly Commons under a unique URL that reflected the course number, the faculty name, the campus and the semester. The professor placed the single URL into her Canvas course, which relieved her of the necessity of adding each link separately. In addition, when the

semester ends, the Canvas course ends as well. However, the URL with the links in Scholarly Commons remains permanently so faculty can revisit it and revise as often as they wish for new courses. The new coursepack option was well-received, but somewhat difficult to market, so the library turned to campus partners for help.

In Spring 2017 the library collaborated with the Center for Teaching & Learning Excellence (CTLE) to form an Daytona Beach campus OER team. In addition to staff from CTLE and the Hunt Library, the team also includes representatives from the faculty, student organizations, Student Affairs and the bookstore. The first-year goal of the team was to raise awareness on the Daytona Beach Campus. However, team members soon learned that there was already awareness among many of the faculty who were teaching courses in new areas. They were using a variety of openly accessible web resources and struggling to organize them for use in their Canvas courses. In addition, other faculty were requiring students to purchase commercial versions of government publications, which are in the public domain, and were eager to accept help from the library to locate the free versions of the texts to share with students.

As the team began sharing information at the faculty senate, department meetings, and on the campus retention committee, requests for assistance began pouring into the library. Having no dedicated staff, the library director began working through the faculty requests, helping them to locate what they needed and working with the Scholarly Commons to create electronic coursepacks. As demand grew, liaisons from RWLS were tapped to work with faculty from their assigned departments. They conducted reference interviews to determine the need, researched and shared lists of potential OER or library resources with the faculty; organized the chosen resources into coursepacks and submitted them to Scholarly Commons for upload into the IR. In addition, the liaisons also uncovered faculty-authored textbooks and encouraged the authors to submit these texts to Scholarly Commons. As a result of the increase in library support for affordable textbook options, the Provost agreed to let

the library retain a position they were scheduled to lose after a retirement. That position was repurposed into the Scholarly Communication Librarian responsible for affordable textbook initiatives.

Worldwide Course Development and Design Process

All courses at ERAU Worldwide are developed by a fulltime faculty member who is a subject matter expert in partnership with an Instructional Designer (ID) and follows a tightly scripted process. The faculty produces all academic content and aligns objectives, activities, and assessments with the course learning outcomes (LOs) that are represented in the course outline. Every course at ERAU is governed by a course outline that includes course description, goals and course LOs. The ID designs the course format and coordinates all aspects of the course, including documentation and notification of textbooks and resources to be utilized in the course. The result is a Canvas Production shell that serves as a master course template that includes nine modules of work.

Every time the course is offered, regardless of offering modality, the teaching faculty must use the content and assignments present in the course master template. Individual faculty can add content and assignments, but they may not subtract or materially change anything. Once a course is developed, the master template is used for approximately three to five years depending on revision needs. Student course evaluations and faculty feedback initiate revisions, which keep the ID and course developer in a cycle of updates on the course. Other maintenance triggers include textbook updates, Canvas upgrades, and so forth.

Course development typically spans 12 weeks from the beginning of the kick-off meeting to conclusion with academic and design reviews. The course development kick-off meeting is an administrative town-hall style meeting including all the relevant faculty, ID, and any supervisors to set course expectations and the development and review schedule. In preparation for the meeting, the ID will confirm the course outline is up to date. After the kick-off meeting, there is a design or a production

meeting between only the faculty member and the ID to serve as a venue for creative ideas and discussing learning strategies and course design. Depending upon the faculty member's preferences, a research librarian may be asked to participate in the production meeting. The production meeting will result in textbook (if any), course packs, software and any external tools or third-party integration selections. Although this option has rarely been exercised in the past, it has provided an opportunity for the Hunt Library liaison to work with the instructional design department (IDD) and Worldwide Faculty.

During course development there are a number of predetermined scheduled times for design, academic, and quality reviews. Design reviews scrutinize design elements to ensure the course meets the pedagogical design and style principles established by ERAU as well as usability and accessibility issues. Academic reviews ensure course content and level of rigor are appropriate for the course being developed. A final quality review checks spelling, grammar, punctuation, and broken links. Once completed, this developed course becomes the template of designed content, assessments, rubrics, and grading breakdown for every faculty member to use in the conduct of their course, regardless of delivery modality. Faculty members are allowed and encourage to add content but they are barred from changing or removing content. Once a course is delivered, an instructor post-course feedback process facilitates the continuous assessment of our online courses by ensuring that feedback is collected and submitted to all development parties (faculty developer, ID and the library) as a means to address any and all issues identified in the course. Teaching faculty have the opportunity to comment on any aspect of the course design and implementation (assignments, discussions, grading criteria, rubrics, sequence, structure, assessments, resources, etc.). This provides information to ensure that the courses remain instructionally and academically sound.

Course Development with OER Trial

In late Fall 2018, at a meeting of the Scholarly Commons Oversight Team (SCOT) the Hunt Library Director shared the growing interest in OER among the residential campus faculty and asked if the Worldwide Campus representatives to SCOT had ideas about expanding to their campus. One of them, an Economics professor, suggested using an online course she was scheduled to develop as the focus of a trial to develop a process for formally incorporating OER into Worldwide online courses as they are developed.

In early Spring 2019, a team consisting of the liaison librarian to Worldwide, the Economics faculty member, and an ID embarked on the pilot to determine if the existing Worldwide process could result in a course that met the development schedule, standards, and scalability of the ERAU Worldwide, using OER in place of a textbook. Economics of Air Transportation was chosen because the faculty member had previous experience in leveraging OER in delivering courses outside of the current ERAU course development schedule. Further, at ERAU, the faculty member developing the course is the sole authority for selection of textbook and third-party software or other packages that will become required for the students in the syllabus. In this case, the faculty member did not consider the textbooks available for this course to be adequate or acceptable, so would be an unnecessary expense for the student, therefore OER was a natural selection for the materials. This pilot development was an opportunity to formally include the research librarian to assist in finding, curating and selecting OER that would effectively substitute for the textbook.

At the initial production development meeting the faculty member provided a course outline to the reference librarian. At this meeting the faculty member described how she wanted to break down the course into nine modules by topic and what types of activities she wanted to develop for the students. Additionally, the faculty member provided the resources already collected. The reference librarian interviewed the faculty member to determine her precise needs and followed up with a list of OER and library resources she might consider for the course.

The resulting course conformed to all ERAU requirements. It was built in Canvas and consisted of nine modules that cover the course learning outcomes, content material, learning activities and formative and/or summative assessments. Figure 1 shows the landing page that students encounter upon entering the course. Figure 2 is a screenshot of a module within the course showing the OER content for that module organized into one section. Figure 3 is a screenshot of the Canvas page showing the actual OER content for a module in the course.

[Insert Figures 1-3 here.]

Ideally, the coursepack is also linked from the OER section of Scholarly Commons. However, the Scholarly Communication team was not able to organize the content in the order the professor required. Subsequently, they have created a workable process. The Library uses the Bepress Digital Commons platform that tracks downloads and provides information on where the users originate. The Course Developer can take a unique, durable URL and drop it into Canvas. The system maintains the information permanently although coursepacks from previous semesters are archived in case of future need. (See Figure 4 for an example.)

[Insert Figure 4 here.]

Results of the Trial

It is important for the faculty developing the course to be aware of the student feedback and the impact the experience has on student expectations and attitudes towards the course. Positive expectations and attitudes ultimately deliver a more engaged student and a more positive course experience. The feedback from all constituents of the pilot, faculty, students, and IDs, are positive. In communications from students with teaching faculty, students express the gratitude for not having an expensive textbook(s) as required material for the course, an estimated savings of \$150-300 per student. Additionally, with all materials integrated into their Canvas course, students were appreciative

that they could easily locate course content at any time they had internet access. By directing students to the library site directly, they were readily present and familiar with different database research required to complete their various assignments throughout the course. On the formal quantitative end of course student evaluations, with a 64% response rate, all course experience questions received strongly agree to agree responses and the average score for each question was well above the comparative average score for all College of Arts and Sciences courses and all Worldwide Campus courses.

Faculty feedback was collected via email and the formal end of course faculty feedback to IDD questionnaire. Faculty reported that the content and flow for the course is good with appropriate timely topics that were generally well-received and discussed by the class interactively. Faculty thought the way in which the OER content were clearly packaged and integrated into the course modules essentially removed any obstacles to student access to required material. In the past, such obstacles would be cost of materials and inability to navigate the library's databases.

Since the OER replacement for textbook pilot was undertaken at the initial course design point in the lifecycle of the course, it required low to minimal additional workload, especially given that IDD was prepared to address integration, workability of links, databases, and any other LMS issues. The early involvement of IDD allowed the creation and thus the delivery of a course without Faculty or students getting caught up navigating technology. IDD has recommended that all new courses should at least consider OER for all course content or a portion to benefit students.

From the Hunt Library viewpoint, the trial was successful and informative. The reference librarian, who participated in the trial, consulted with the faculty member at the beginning of the process to ascertain her needs for the course. He helped her locate electronic access to the material she

had identified. He also worked with the ID to identify additional library resources to use for case study assignments.

Once the list of OER had been finalized, the research librarian consulted with the Scholarly Commons administrator to help organize them into the proper order in a coursepack. The original intent was to make the coursepack available under one course URL which could then be added to Canvas. This part of the project was halted due to display issues with the coursepacks in Canvas. The resources were displaying in chronological order in Scholarly Commons rather than according to the appropriate sequencing place in the syllabus. The materials were added to the Canvas course and subsequently the library discovered a way to organize a coursepack in the order the professor requires.

Plans for the Future

The production schedule of the ERAU Worldwide hovers around 150-180 new courses over the period of two to three years. Given such a tightly scripted production schedule, a formalized relationship and procedures with IDD will need to be established if future Course Developers wish to incorporate OER in the course development. The library also needs to identify the additional resources and organizational workflow with reference librarians to successfully allow a large-scale increase of using OER in the development of new courses.

As the scope of the yearly course developments, either in whole or in part with OER, is realized, additional employees that have specific skills sets will be needed. After this pilot was completed, the Hunt Library added a Scholarly Communication Librarian whose focus includes textbook affordability and OER support. In her first six months, her priorities consisted of familiarizing herself with the textbook affordability support needs of the residential Daytona Beach Campus and acquiring the knowledge of the unique collections necessary to participate in the reference service.

In late fall 2019, the Scholarly Communication Librarian and the Worldwide campus library liaison met with a Worldwide ID manager to set out a process for library support in 2020. They agreed to work on five courses, two initially and three later in the year. The librarians will participate in the kickoff planning meeting with the faculty and ID and attend development meetings. As they work with the faculty developers, the librarians will track the amount of time and resources needed to assist in developing a course that includes affordable textbook alternatives.

Anticipating that the demand from the Worldwide Campus will grow beyond the ability of one librarian to meet, the library is in the process of reorganizing the workload. Reference librarians will work with Worldwide faculty on the initial request for textbook alternatives. Scholarly Communication will continue to manage the upload and maintenance of electronic coursepacks and faculty-authored OER, but reference librarians will take on a stronger liaison role with the Worldwide Campus.

Conclusion

The approach to this one course design centered on saving students the burden of purchasing outdated, costly materials, an estimated per student savings of \$150-300. In direct response to the escalating costs associated with traditional textbooks, the approach to this redevelopment was to create a course utilizing OER as a cost saving measure. Designing this course with OER allowed us the opportunity to provide current, relevant, ERAU-specific content for students to engage with. The use of OER provides students with high quality, current, relevant resources that are updated regularly. Some universities are developing entire programs based on OER to make higher education programs more attractive. It's not a bad marketing strategy! In some cases, students could save thousands alone with the use of OERs in their programs. That is a great benefit for higher learning, working adults.

Beyond the benefit to students, this process has opened new doors to collaboration between the Hunt Library and the Worldwide Campus. Enthused about the library's proactive stance on

affordable textbook assistance, Worldwide's administration has begun to look for other ways to incorporate the Hunt Library more substantially in the academic life of the online and distance learning students it serves. Among the new ideas posed are an active role for the Hunt Library in the new Worldwide social media platform as well as the development of a library component in a synchronous virtual orientation for new students. The most important lesson learned from this process is that the Hunt Library should be constantly aware of the most important information needs of the programs it serves and offer solutions.

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