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Hook, Line, and Sinker: How to Build DEI in STEM Focused Institutional Repositories by Putting Student Research First

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CHAPTER 22

Hook, Line, and Sinker:

How to Build DEI in STEM-Focused Institutional Repositories by Putting Student Research First

Anne Marie Casey and Debra Rodensky

Embry-Riddle Aeronautical University (ERAU) Scholarly Commons is an institutional repository on the bepress Digital Commons platform that highlights the intellectual output of the university's faculty, staff, and students.¹ Established in May 2013, Scholarly Commons has grown to include faculty, student, and staff research, instructional materials, journals, magazines, conferences, and research data. By August 2022, the collections consisted of more than 34,600 works downloaded nearly 4.9 million times. An important part of this collection is the research submitted by undergraduate students, which offers a variety of diverse voices.

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

Established in 1925 as a flight school in Cincinnati, Ohio, ERAU relocated first to Miami, Florida, and in 1965 to Daytona Beach, Florida, where it has grown in less than a century to become one of the leading accredited institutions of higher



education in the fields of aerospace engineering and aeronautical science. Degrees at ERAU range from an associate's degree in aviation maintenance science to several PhDs including aviation, aerospace engineering, and human factors. The university consists of residential campuses in Daytona Beach, Florida, and Prescott, Arizona, and a Worldwide Campus that includes regional hubs in Brazil and Singapore, 125 face-to-face distance-learning classrooms located on US military bases and corporate partners, as well as extensive online learning programs.

The larger residential campus in Daytona Beach had an enrollment of 7,177 in fall 2021, 6,900 of whom were undergraduates. Of these undergraduates, 75 percent identify as male and 57 percent identify as white. The campus in Prescott enrolled close to 3,120 students, most of whom were undergraduates.² Of these undergraduates, 73 percent identify as male and 58 percent identify as white. The third campus, Worldwide, had an undergraduate headcount of 15,339 in the 2021–22 academic year.³ Of these undergraduates, 86 percent identify as male and 58 percent identify as white. (See table 22.1 for a detailed demographic breakdown.)

TABLE 22.1

Demographic analysis of Embry-Riddle Aeronautical University undergraduate students by campus in the fall of 2022.

	Daytona Beach	Prescott	Worldwide
Male	75%	73%	86%
Female	25%	27%	14%
International students	10%	9%	3.5%
American Indian/Alaskan Native	0%	1%	.4%
Asian	5%	6%	5.4%
Black/African American	5%	2%	9%
Hispanic/Latino	15%	15%	17.9%
Native Hawaiian/Pacific Islander	0%	1%	.9%
White	57%	58%	53%
Two or more races	5%	7%	4.4%
Race/ethnicity unknown	2%	2%	5.6%
<i>Source:</i> "Enrollment," Embry-Riddle Aeronautical University Institutional Research, accessed October 31, 2022, https://ir.erau.edu/Factbook/Enrollment/ .			

Enrollment and retention initiatives target the recruitment and persistence of female students and those from underrepresented groups. The university president stresses that student success is the responsibility of every employee. The Hunt Library, which supports the Daytona Beach and Worldwide campuses, and

the Hazy Library, which serves the Prescott campus, actively engage in retention efforts for all students. An important means to support underrepresented students is through outreach to student groups such as the National Society of Black Engineers, Women in Aviation, and the National Gay Pilots Association. Librarians' outreach to undergraduate researchers in these and other groups helps pave the way to student participation in Scholarly Commons.

ERAU also prioritizes support for student research at both the undergraduate and graduate levels. However, while graduate students are able to publish the results of their research in dissertations and theses, undergraduate students do not have the same opportunity. One of the five key pillars of the university strategic plan is Research and Innovation, which includes as one of its four strategies the integration of research and innovation into the undergraduate curriculum.⁴ The libraries have prioritized collaboration with faculty and have worked with university offices supporting this strategy to highlight the results of undergraduate research.

ESTABLISHING AN INSTITUTIONAL REPOSITORY

In 2010, librarians at the Hunt and Hazy libraries recognized the need to establish an institutional repository at the university. Faculty recently hired from other institutions were requesting a repository for their published research. At the same time, the libraries had collections of materials related to the early days of aviation that they wanted to make more openly discoverable and available. Some of this material included the role of women who joined the ranks of pilot trainees during WWII.⁵

At about the same time, ERAU was developing its first Quality Enhancement Plan (QEP), which is required by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) for the university's 2012 reaffirmation by the regional accrediting agency.⁶ The university team, which developed the QEP, created Ignite, the five-year plan to increase and disseminate undergraduate research at the university, and based the metrics for the plan on the ACRL Information Literacy Standards.⁷ The initial implementation team included librarians.

Recognizing the role of an institutional repository (IR) in the dissemination of undergraduate research, the library directors collaborated with the founding coordinators of the Undergraduate Research Offices on each of the campuses. Because of the advantages an IR promised to bring to the undergraduate research initiative, as well as the ability to highlight faculty research and preserve archival materials, the university administration agreed to allocate funding for an IR.

Introduced to the university community in May 2013, interest in Scholarly Commons grew quickly. Initially, university administrators were most interested

in faculty submissions. The provost asked the library to focus the first year on assisting faculty to submit their research and offered the names of forty highly published faculty members to start. The library formed a team to assist faculty with copyright research and uploading their works. Many faculty with long lists of research publications were eager to provide open access to their work and expressed appreciation for the help they received from library staff. It is likely that Scholarly Commons would have developed primarily as a resource for faculty research if oversight had remained solely with the libraries.

However, since Scholarly Commons is a university resource rather than a library service, the implementation and development required input from a variety of stakeholders. The university formed the Scholarly Commons Oversight Team (SCOT) to set policy and manage growth. SCOT membership initially consisted of both library directors, the Scholarly Commons administrator, a cataloguer, a systems librarian, the undergraduate research coordinators, the university archivist, and a representative from IT. While SCOT did not set out to prioritize the collection of creative works from underrepresented undergraduate students, early opportunities presented themselves, which the team embraced.

RECRUITING STUDENT SUBMISSIONS

The first opportunity emerged almost immediately when the university president decided that two of the five journal spots that were part of the original license would be dedicated to undergraduate student research. One of those is the *McNair Scholars Research Journal*.⁸ The McNair Scholars Program is a federally funded program awarded to a small number of colleges and universities in the United States. McNair participants are either first-generation college students with financial need or members of traditionally underrepresented groups who aspire to doctoral studies.⁹

ERAU's McNair Scholars Program grant ended in 2018. Prior to the establishment of the journal on Scholarly Commons, the director of the program produced a print version of the peer-reviewed papers and projects created by the students each year. Beginning in 2014, all of the McNair Scholars' research projects were published in the *McNair Scholars Research Journal* on Scholarly Commons. The five volumes, published from 2014 to 2018, provide open access to research in the fields of aerospace studies by students from predominantly underrepresented groups in the STEM fields. As one of the earliest publications on Scholarly Commons, this journal set a standard for the inclusion of student voices from diverse communities.

In 2015, a new university administration prioritized recruitment and retention of a more diverse student body. They launched new degree programs to broaden ERAU's appeal beyond the traditional population. The campus Retention Committee focused on initiatives aimed at deepening a sense of belonging

on the part of all students and, in particular, those from underrepresented groups. Librarians serve on the Retention Committee and have a strong history of collaboration with the Office of Diversity & Inclusion. They saw Scholarly Commons as a resource they could promote to capture the creative works of all undergraduates, especially those who might not consider their creative works as eligible for inclusion in an open access repository.

FORMAL OUTREACH TO UNDERGRADUATES

As awareness of Scholarly Commons grew, the Hunt Library created the Department of Scholarly Communication to provide more resources for the ongoing development of Scholarly Commons. A reference librarian moved into the new position of scholarly communication (SC) librarian, which is dedicated to faculty, staff, and student outreach and submission support. The librarian selected for this role already had experience as a library liaison to the Office of Diversity and Inclusion, whose staff were enthusiastic about the opportunity to have her present workshops to their active student groups.

It became increasingly evident that if the Hunt Library wanted to continue to increase awareness of Scholarly Commons to more diverse groups of undergraduate students, the librarian had to go where the students were. Taking advantage of already established programs, she prepared presentations tailored to meet the needs of the students participating in each program. One of the more successful efforts includes an annual presentation at the pre-boarding event hosted by the Office of Global Engagement for their Study Abroad and Study America programs. The results of this multi-year effort have paid off based on the number of student submissions to the Global Education collection.¹⁰

The SC librarian also solicits undergraduate students from diverse communities to Scholarly Commons by engaging with faculty outside of ERAU's US campuses. She has assisted in the creation of the Central and South American student works collection, originally intended to host only the Graduate Capstone Projects from the Brazil campus.¹¹ However, discussions about adding non-capstone projects to the collection are forthcoming. Outreach also includes contacting faculty on the Singapore campus to populate the Asia campus collection. Since the creation of these collections, more faculty have encouraged their students to submit creative works not only to the general Student Works collections on Scholarly Commons but also to consider a submission to *Beyond: Undergraduate Research Journal*, ERAU's peer-reviewed undergraduate research journal, which is published through Scholarly Commons.¹²

Collaboration with the faculty has opened other areas, including course projects such as a social justice course site, requested by a professor who encouraged

students to submit their group projects to Scholarly Commons in a separate series dedicated to the class.¹³ Enthusiastic about a new method of recruiting student work, the SC librarian encouraged faculty to create course projects on Scholarly Commons. Several embraced the idea and developed a variety of course projects including Digital Storytelling and Introduction to Research Methods on the Singapore campus.¹⁴ In addition, a faculty member requested an event site for her students in 2020 to commemorate The Day of the Dead holiday, which is very important in Mexican culture. Students created virtual *ofrendas* on the *Día de Muertos* event site at a time when physical gatherings were limited during the pandemic.¹⁵

The result of this outreach has not only increased awareness of the publishing landscape for undergraduates but has also made them eager to have a say in their own success. Undergraduates are publishing creative works related to both their specific course of study as well as personal issues, such as *Gender Differences and Cockpit Design* and *Racial Diversity in Aviation*.¹⁶

As these outreach efforts to highlight the creative works of undergraduates from underrepresented communities in Scholarly Commons increase, so does the priority that the repository is inclusive of all student voices. In collaboration with the Office of Diversity and Inclusion, the SC librarian has begun to meet with student organizations supported by that office to encourage members to submit their work to Scholarly Commons.

SUPPORTING STUDENT ACADEMIC SUCCESS

While the primary role of Scholarly Commons has always been to support the research pillar of the ERAU strategic plan, in 2018 it became apparent that the IR could also play a role in student success, which is another of the five pillars of the ERAU strategic plan.¹⁷ A growing body of literature calls for the examination of textbook costs through a social justice lens and argues that members of underrepresented groups may be forced to forgo purchasing required textbooks due to their ever-increasing costs.¹⁸ Anecdotal evidence from students and faculty pointed to a growing belief that many students did not purchase textbooks because of the cost. In 2018, ERAU Institutional Research conducted a survey among students enrolled in the summer term to investigate issues of textbook cost. The majority of participants responded to the survey stating that the high cost of textbooks negatively impacted their academic success. As a result, a campuswide committee formed to explore open educational resources (OER) and other methods of reducing textbook costs. The Hunt Library took the lead and in 2019 added a librarian to the Department of Scholarly Communication to manage the Textbook Affordability Initiative.

Among several strategies the new librarian developed to help reduce the overall financial burden of textbooks is the creation of course-specific reading lists that the library hosts in Scholarly Commons.¹⁹ The librarian collaborates with faculty members to select readings in the public domain or in electronic collections licensed by ERAU to put together an alternative textbook. Faculty can place the coursepack URL into their Canvas course so that students have access to the readings from the syllabus. Additionally, the librarian has identified faculty who have been using self-published texts or who have adopted textbooks from open access publishing platforms and has added these resources to Scholarly Commons, making it easier for faculty to locate a URL for the book and to determine the number of students accessing the book through download reports.²⁰ Among the groups that have expressed appreciation are veteran students, most of whom are nontraditional and struggle to purchase textbooks.

CONCLUSION

By collaborating with the Office of Undergraduate Research, the McNair Scholars Program, the Office of Global Engagement, and the Office of Diversity and Inclusion, Scholarly Commons has added over 1,500 student works to the collection as of 2022. These works include titles such as *Racism in Singapore*, *Women's Healthcare in Cuba*, and *Gender Diversity in the Aviation Workspace*. It is impossible to determine racial, ethnic, sexual orientation, or many other forms of diversity among the published undergraduate researchers. However, a cursory examination of the authors' names of the eighty-eight submissions from 2020 to 2021 in the Daytona Beach Undergraduate Student Works collection on Scholarly Commons leads the library to consider that fifty-three authors may be female. If this is in any way an accurate perception, female students created approximately 66 percent of the research for these two years wholly or in part, which is very different from the 25 percent of undergraduates who identified as female on this campus in the fall of 2021. The library plans to add a pronoun metadata field in 2023 to capture this demographic.

Library staff achieved this through multiple one-on-one meetings and group presentations to student groups and specific departments to ensure that Scholarly Commons is inclusive of all voices at ERAU. Librarians discussed in stages how open access publishing through Scholarly Commons could bolster a student's résumé prior to graduation. This in turn not only gives the student an edge in a very competitive job market but also establishes an authoritative academic presence in the research community. In addition, librarians prioritize textbook affordability and leverage Scholarly Commons to help faculty provide access to no-cost texts so that all students, regardless of financial status, have access to necessary course resources. Future outreach from the library will continue to

concentrate on capturing all of the many diverse voices and points of view at ERAU.

NOTES

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