Accelerating online support for students and researchers

The institutional repository as a *more essential service* in responding to COVID-19 and beyond
“The COVID-19 crisis has increased the need for online access to knowledge and learning resources. In this landscape of health and economic crisis, all the efforts of the [institution] must be directed towards facilitating this access.”

— Academic Librarian from Spain, survey respondent

Introduction

The global COVID-19 pandemic has proved a game-changer for many sectors, and higher education is no exception. When many institutions around the world closed earlier this year in a bid to control infections, academic leaders, library staff and faculties were among those forced to radically rethink the delivery of their services.

Some of the challenges they have since faced are far from new; for example, as noted in the 2020 Elsevier report, University leaders: opportunities and challenges,1 long before the arrival of COVID-19, there were calls for universities to increase remote learning opportunities. The virus has advanced this pace of change, with an almost overnight transition to online delivery of teaching and learning content.

At the same time, institutions are navigating other concerns posed by the new limitations on travel and campus access. These concerns include attracting and recruiting the new student numbers they need to meet income targets — the coronavirus is expected to create global tuition fee shortfalls running into the tens of billions of dollars.2 They must also find ways to provide students with the full spectrum of educational, social and personal development they signed up for. In addition, institutions want to support researchers unable to attend conferences, help them network and collaborate, and provide them with tools to work effectively remotely.

Many industry watchers see the virus as "yet another type of disruption likely to accelerate the radical transformation of higher education."3 For some, it offers an opportunity to "break out of old habits and create new, impactful, relevant modes of learning that take advantage of technology and this moment."4 And global higher education leaders themselves have been quick to acknowledge the crucial role that technology will play in meeting the challenges they will continue to face. One of the key findings of the Elsevier report is that they view technology, including platforms such as institutional repositories, as their biggest assets. They believe that technology will not only support collaboration — within the institution and beyond — it will also showcase their institutions more effectively to the employees and students they so urgently want to attract, as well as support the innovative and flexible education that students are now seeking.
While the long-term impact of COVID-19 on institutions remains difficult to predict, at least some of the changes the pandemic has prompted are likely to be permanent; for example, it is probable that educational institutions will continue to deliver large portions of their content remotely, even when contagion is no longer a threat.

As many colleges and universities navigate the seas of uncertainty, they are recognizing that the institutional repository (IR) is ideally placed to immediately help address the ongoing business of the institution: the continuance of doing research, of teaching and learning, and of openly sharing scholarship — all in an online environment. This belief is supported by data collected from more than 600 institutions that use Digital Commons as their IR platform. Usage figures show an impressive 84 percent increase in full-text uploads in quarters one and two of this year, compared to the same period in 2019 (see figure 1).

The findings in this paper are not just based on data drawn from the Digital Commons community, however, but also from conversations with key academic figures, a global survey of nearly 200 librarians and academic leaders from outside the Digital Commons community, and available online reports and analyses.

“Switching to more remote / virtual recruitment has meant the organization ... needed to change how we showcase research and publications. Our IR has allowed us to step into the moment ... ”

— Medical School Librarian from the USA, survey respondent

![Total uploads by quarter](image)

**Figure 1:** Uploads to Digital Commons IRs in the first and second quarters of 2019 and 2020, showing an 84% increase driven largely by institutional needs in the wake of the pandemic.
An institutional repository (IR), also often referred to as a digital or library repository, is a valuable channel for universities and colleges to share the innovative work taking place within their walls. Importantly, it also helps them build the institutional brand by raising the visibility of scholars, researchers and their work.

Since the arrival of the pandemic, those showcasing activities have taken on a new urgency. For example, it’s no longer easy (or in some cases, even possible) for potential students to visit a campus in person. As a result, universities “have to find new methods to market their institution to prospective students and keep these students engaged as the coronavirus crisis continues.” Posting exemplary student works on the IR provides those considering the university with easy-to-access examples of the quality projects they can expect to work on should they choose to study there.

The 84 percent increase in Digital Commons uploads makes it clear that higher education institutions understand the need to increase their reputation-building efforts for a variety of purposes, including student attraction and enrollments and research funding. The rapid growth also suggests that more papers — and not only scientific or pandemic-related publications — are being published, and it’s likely that a desire to showcase the institution is helping to drive this growth.

The brand-building benefits of sharing preliminary results on the IR

While empowering the early publication of research has long been a primary use case of the IR, another emerging trend since the pandemic is that researchers are publishing preliminary results, including versions of scholarly or scientific working papers and preprints, at unprecedented rates.

For example, in March 2020, California’s Biola University posted an accepted paper, “Does COVID-19 Spread through Droplets Alone?” by researchers in the School of Science Technology and Health six weeks prior to the official journal article’s publication (see figure 2). It was one of the first openly-available papers to suggest that COVID might be transmitted via contact with contaminated objects or aerosols.
In a second example (see figure 4), which focuses on the University of Pennsylvania’s business school, Wharton, a working paper on the relationship between COVID and social security benefits was posted to the IR in March of 2020. Although the paper is not scientific in nature, it deals with a virus-related topic that will touch thousands, if not millions, of lives. It also highlights that the impact of COVID is not limited to people’s health. At the time of this writing, this working paper has been downloaded from the IR more than 6,500 times.

Given the viewership rewards that institutions are reaping, this trend of early posting is unlikely to change.

Figure 3: The PlumX Metrics for the Biola University article, “Does COVID-19 Spread through Droplets Alone?”

Figure 4: The Wharton working paper as it appears on the university’s Scholarly Commons IR.
While archiving has always been an important role of the IR, the pandemic has inspired institutions to develop and upload new content that charts this historic period in our lives.

In the case of Jacksonville State University in Alabama, two new collections have been created — one capturing faculty’s thoughts on COVID-19, and the other with students’ experiences of the virus captured in a student journal project (figure 5).

The University of Southern Maine has taken a slightly different approach, crowdsourcing a digital archive of COVID-19-related signs (see figure 6). This initiative ensures that an unprecedented moment in the region’s history is preserved for future generations. Many other institutions are collecting stories, audio and video recordings, and artwork related to COVID-19.

Figure 5: JSU added two COVID-related collections to its IR.

Figure 6: The pandemic-related “Signs of the Times” IR collection, initiated by University of Southern Maine.
Another factor driving the rise in IR uploads is the posting of materials that fall into the category of “research collaboration.” As previously mentioned, many of the changes that higher education is now experiencing have their origins in pre-pandemic times; COVID-19 has only accelerated the pace of change. Research collaborations were on the rise long before COVID, but the urgency to find effective therapeutics and a vaccine created a “global collaboration unlike anything in history.”

An inability to travel to conferences or to view physical items in person has seen institutions also turn to their IRs for non-virus-related support. For example, Dr. John H. Walker of the Anthropology department at University of Central Florida discovered a database-generated website of ceramics pictures that he made for Bolivian researchers back in 2004. He asked the library to add the collection of images and associated metadata records to the IR (see figure 7) as reference materials for international colleagues.

“I think that ... post-COVID [changes will drive] greater interconnections worldwide between [sic] ... scientists from different disciplines that [will] contribute to ... faster [developments] of science to give solutions to the problems that exist, and those that lie ahead ... ”

— Library Leader from Cuba, survey respondent

Figure 7: This 2004 collection of ceramics images was posted to the University of Central Florida’s IR earlier this year.
As Sweden-based biologist Juleen R. Zierath remarked in a 2016 paper, conferences are a “big part of scientists’ lives. They provide an important forum to bring a research community together and serve as a platform to disseminate knowledge and forge collaborations.” While the value of these events remains unchanged, many events have been cancelled, postponed or moved online with the arrival of the pandemic and the resulting restrictions on travel.

Resourceful institutions are using their IRs to ensure the content created for these events is not lost. For example, the library at the University of Nebraska Medical School sent the following invitation to researchers, accompanied by a graphical list of instructions (see figure 8):

“It’s no secret that COVID-19 has affected nearly every aspect of our daily life. Don’t let your hard work get left behind. If you were scheduled to present at a conference that has been canceled, follow these steps to ensure your work is properly cited and shared.”

Disseminate your peer-reviewed, accepted abstract and related information, including your completed poster/presentation, to the UNMC Digital Commons at: digitalcommons.unmc.edu

Include your conference acceptance email/letter in the scholarship section of your promotion portfolio.

Update Your CV and add the link to where your scholarly work has been disseminated (i.e. Digital Commons).

STEPS

1. More information: apastyle.apa.org/blog/canceled-conferences

Essentially, the message urged all researchers tied to cancelled conferences to use the IR to publish papers that were accepted but unable to be delivered. For the papers’ authors, it offered an opportunity to get recognition for their work and to share it formally with their peers. For the institution, it is a great way to build IR content and showcase the university’s expertise.

Some institutions have taken the idea a step further and are hosting all proceedings related to a conference on their IR, including those written by authors affiliated with other universities.

The advantage of leveraging the IR for conference content is that many platforms can happily accommodate a variety of file formats. For example, John Hopkins University had been expecting up to 400 presenters at its 2020 Richard Macksey National Undergraduate Humanities Research Symposium. When it was cancelled due to COVID-19, they quickly launched an IR (see figure 9) to provide a home for a whole range of files associated with the event, from posters to multi-page PDFs and videos, as well as audio files and PowerPoint presentations.

There is greater demand for hosting posters [on our IR] due to regular campus student research symposia taking place online.”

— Academic Librarian from the USA, survey respondent

As figure 8 shows, the library at the University of Nebraska Medical School in Omaha, NV, provided researchers with a list of no-nonsense instructions to ensure their work was properly recognized and shared. They pointed out that the IR was a great new home for conference-related content.

The IR: providing a new home for conference-related content

Figure 9: IR home page for an annual undergraduate humanities research symposium that moved online within three weeks following COVID-19 campus closure.
It is not only higher education institutions that see the potential of IRs to deliver event support in pandemic times. In a 2020 *Journal of the Medical Library Association* article, US-based health care organization Providence St. Joseph Health explained how its System Library Services department used its repository to host a virtual showcase (see figure 10) in place of an annual in-person event.8

The role of the IR in research collaboration is likely to remain important as we transition into a post COVID-19 world. As Tim Stearns, Associate Dean for Research at Stanford University, noted in a recent *University World News* post, the way scientists communicate has changed, with online meetings, conferences and seminars becoming the norm, facilitating international communication and debate.9

A 2020 *Inside Higher Ed* article on how libraries will change as a result of the pandemic takes this proposition one step further. It sees the IR as playing a role in the wider research process, stating that “researchers will also need places to deposit data and distribute their research. Libraries can use tools like ORCID to connect preferred gateways like ArXiv with institutional repositories to develop a comprehensive research platform for researchers.”10

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*Figure 10: IR home page for an annual undergraduate humanities research symposium that moved online within three weeks following COVID-19 campus closure.*
Helping institutions satisfy the online educational needs of their students is an area in which the IR has truly come into its own since the pandemic.

For example, as the Digital Commons data and wider survey results make clear, the IR is increasingly fulfilling the role of a student scholarship management system — with so many key staff working remotely, institutions need workflow tools to manage the process of submitting, stamping, reviewing, accepting and, in many cases, publishing student projects. The publishing functionality and ease of remote access offered by many IRs mean they are a viable solution for managing undergraduate work such as capstone theses and honors projects, as well as graduate theses and dissertations.

For Maine’s Bowdoin College, the arrival of COVID-19 sparked an urgent need to change the workflow for student honors projects. These are now deposited, reviewed and accepted entirely online in the IR (see figure 11), and the plan is to continue using the IR to manage the process even when the current crisis has passed.

What is interesting about these kinds of collections is that prior to COVID students were rarely expected to upload content to IRs. Since the arrival of the virus, however, IR content uploading has extended beyond the library to include many more institutional constituents.

The IR is also becoming a popular channel for distributing teacher-created instructional materials for students.

“A new era of digital education is “generated” and all distance and digital contents/materials [have become] part of everyday work for all institutions.”

— Academic Library Leader from Greece, survey respondent

At Concordia Seminary in Missouri, for example, staff have created an Online eClass Tutorials collection on the IR (see figure 12), designed to support their students and instructors through the sudden transition to virtual learning.

As Christopher Cox, Dean of Libraries at South Carolina’s Clemson University, notes in an Inside Higher Ed article, involving librarians — who are often the custodians of the IR — in teaching and research efforts is not a new trend. But if courses remain online, he anticipates “deeper integration of both library resources and personnel into course management systems.” Cox adds: “Librarians can help faculty members develop course content, co-teach, provide research consultations, hold virtual office hours online and assist in the identification and linking of course content.”

“Supporting teaching and learning”

Figure 11: Bowdoin College’s honors projects collection is now hosted on its IR.

Figure 12: Tutorials for instructors and students on CSL Scholar at Concordia Seminary.
Many institutional administrators, faculties and librarians have long been active promoters of open educational resources (OERs). No cost (free) or very low-cost textbooks and other educational materials are usually made publicly available on the IR. For Cox, “OERs will be in demand as faculty seek alternatives to bulky print textbooks.”

It’s a view shared by Karen Bjork, Head of Digital Initiatives and Scholarly Publishing at Portland State University. Her IR, PDX Scholar, now hosts 25 OER textbooks (see figure 13), and she believes that support for this type of material, which has increased since COVID, will continue to grow post-pandemic largely because of OERs’ many benefits, including affordability.

Since the pandemic, institutions and their libraries have been quick to embrace OERs. For example, East Tennessee State University’s IR now hosts a complete 24-lesson course on art appreciation (see figure 14). The file for each lesson contains everything students need: the presentation, the reading list, and the assignment. The university describes these materials as an OER “designed to replace a traditional textbook.” For the university, there are many reputation-building benefits, including showcasing the education on offer to potential students. For existing students, advantages include the fact that the materials are easy to access and download, with no password or IP-range barriers.

"OERs [are] now imperative in an online-first learning environment."
— Academic Librarian from the United Kingdom, survey respondent

The rising tide of IRs and OERs: why COVID-19 has increased their prominence
At Berklee College of Music in Boston, a significant focus of its IR program is to provide educational materials. This focus is quite unique: sharing OERs is rarely the primary goal of an IR. Berklee has created a comprehensive clearing house of resources for artists, arts educators, musicians, music educators, teaching artists, community arts organizations, scholars, undergraduate and graduate students, and others who work in the field of art education and special needs (see figure 15).

The ABLE Arts Resource Center is a comprehensive clearing house of resources for artists, arts educators, musicians, music educators, teaching artists, community arts organizations, scholars, undergraduate and graduate students, and others who work in the field of arts education and special needs. This project is co-sponsored by the Berklee Institute for Arts Education and Special Needs and United Sound.

The ABLE Arts Resource Center has several primary aims:

To assist artists, arts educators, and teaching artists by providing a searchable portal for arts education resources;

To assemble a comprehensive library and network of arts education resources for individuals with special needs that is regularly updated with the most current materials;
Sharing administrative updates

The final category of materials driving the rise in IR uploads and downloads can be loosely grouped together under the umbrella term “administrative communication.” The IR was rarely the go-to platform for this kind of messaging prior to the pandemic. But since COVID-19, institutions have found it a useful location to post openly accessible virus-related news.

For example, the New Jersey Institute of Technology uses the IR to host its master pandemic recovery plan (see figure 16), which explains how they are delivering the academic curriculum in light of COVID-19 restrictions. The collection also contains complementary plans prepared by the institute’s various departments. Posting them on the IR ensures the plans are widely discoverable and easily accessible for students, researchers and administrators alike. At the time of this writing, items in the collection have been downloaded more than 23,000 times. Files are not only downloaded by people living in the US, but by site visitors from countries as diverse as Latvia, Vietnam, India, Turkey and Japan.

Similarly, the University of Northern Iowa has relied on its IR to capture and share daily briefings on topics ranging from the wearing of face masks to classroom changes and notes from the President. As messaging around the pandemic becomes less urgent, it is expected that uploads of this type of content will decrease. However, having discovered the role the IR can play in delivering news and information, it is likely some institutions will continue to use the IR as an important communication channel.
The rise in IR usage and the innovative ways that institutions are now leveraging their repositories makes it clear that COVID-19 has prompted a reappraisal of the repository’s traditional role.

To explore this phenomenon further, we surveyed nearly 200 library leaders, library staff and senior academic leaders about their views on the support of the IR. Survey participants represented a range of geographic locations and university types, and most of the institutions invited to participate use an IR other than Digital Commons. Survey participants were asked about the role of the IR before, during and following the current pandemic crisis. The answers have been captured in figure 18.

The role of the IR has shifted from “essential” to “very essential” for a large number of survey respondents (before COVID – 22 percent, during COVID – 44 percent) and nearly half (42 percent) expect it to retain this importance even after the pandemic has passed. And while “not very essential” remained flat, “not essential” fell eight points to a mere 3% of survey respondents in the during and after categories.

This shift in attitude is likely to be driven, in large part, by the new possibilities for using the IR in the earlier sections of this paper. Enterprising institutions have found that the repository can help address a range of challenges that have arisen in the wake of the virus. In some cases, the IR is supporting and helping to accelerate existing trends, such as the provision of OERs; in other cases, the IR is providing solutions to new problems, such as finding an effective channel for disseminating pandemic updates.

But it is in the areas of teaching, learning and communicating with students that the IR has stepped into the spotlight by providing a ready solution to a variety of pressing needs. And now that users have discovered its potential, the role of the IR is expected to continue to grow in importance well into the future.

“COVID-19 has increased the importance of digital content and remote access to such content.”

— Academic Librarian in Sri Lanka, survey respondent

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Figure 18: The results of a survey conducted with nearly 200 librarians and academic leaders about the importance of their IR.
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