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A Current Snapshot of Institutional Repositories: Growth Rate, Disciplinary Content and Faculty Contributions

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Abstract

INTRODUCTION The purpose of this study was to examine current institutional repository (IR) content in order to assess the growth and breadth of content as it reflects faculty participation, and to identify successful strategies for increasing that participation. Previous studies have shown that faculty-initiated submissions to IRs, no matter the platform, are uncommon. Repository managers employ a variety of methods to solicit and facilitate faculty participation, including a variety of print marketing tools, presentations, and one-on-one consultations. **METHODS** This mixed method study examined faculty content in IRs through both a quantitative analysis of repository content and growth rate and a qualitative survey of repository administrators. Repositories using the Digital Commons repository platform, hosted by Berkeley Electronic Press, were examined in the fall and winter of 2013-2014 to assess the disciplinary scope of faculty content ($n=107$) and to measure the growth rate of IR content ($n=203$). Repository administrators at 205 institutions were surveyed to investigate what methods they used to facilitate faculty participation and their perceptions about the effectiveness of these methods. **RESULTS** Mean and median growth rates of IRs have increased since measured in 2007, with variance depending upon size and type of academic institution and age of the IR. Disciplinary content in IRs is unevenly distributed, with the Sciences predominantly represented. IR administrators remain actively involved in the submission process and in the promotion of their IRs. Personal contact with individuals or groups of faculty is the most used and successful interaction method. **CONCLUSION** Though IR growth rate has increased, the growth is not consistent across all IRs and does not yet pose a challenge to traditional models of scholarly publication. The rising amount of faculty content in IRs indicates faculty are increasingly willing to participate in the IR movement. However, faculty involvement may be more passive than active.

Implications for Practice:

- The growth rate of IR content has increased since measured in 2007, though current growth patterns are not consistent across all IRs.
- Faculty scholarship in IRs is still more common in the Sciences than the Humanities and Social Sciences.
- Faculty are participating in IR submissions, though almost always through a mediated submission process and after extensive personal and direct contact with IR administrators.
- IR administrators show little willingness to relinquish tight oversight of their IRs

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INTRODUCTION

The development of networked communication and digital technologies has radically changed how researchers create, distribute, and access scholarship. The speed of dissemination and ease of access to scholarly material has never been faster or easier. One development central to this advance is the establishment and growth of institutional repositories (IRs). These large aggregations of scholarship reflect the range and scope of intellectual output generated by the community of scholars affiliated with any single academic institution.

One measure of the success of an IR is the volume and scope of its contents. Achieving breadth and depth of scholarship in the IR is dependent upon the participation of the academic institution's scholarly community. Repository managers employ a variety of methods to encourage, solicit, and facilitate participation, most often targeted at faculty. Some institutions have drafted mandates requiring faculty to submit their scholarship to a repository. The purpose of this study was to examine the current rate of growth and disciplinary content of IRs as a reflection of faculty participation and to identify successful strategies for increasing that participation.

This study was based on the assumption that academic institutions play an active role not only in providing a fertile environment for the pursuit of scholarly endeavors but also in enabling the entire scholarly communication process. This process includes the creation, evaluation, dissemination, and preservation of scholarly information. These last two components ensure long term access to scholarship, which is critical to the advancement and sharing of knowledge, progress in scientific discovery, and the development of critical analysis and enquiry.

Statement of the Problem

Most IRs are coordinated or administered through the university's library, though some are managed by a Research Office, Academic Affairs Office, or Graduate School. Libraries, by nature of their experience managing informational resources and the scholarly publication process—scholarly journals, database subscriptions, and the like—have taken the lead in coordinating the establishment, structure, implementation, and maintenance of repositories. This places the library (or the librarian serving as the IR administrator) in the position of advocate (promoting open access, promoting the

institution's value as a generator of scholarship) and facilitator (addressing faculty concerns, abetting faculty participation).

From the beginning, an identified challenge to managing an IR has been that of faculty participation. Much discussion has concerned how best to garner both theoretical and practical support from faculty. Benefits to faculty must be clearly defined, explained, and disseminated. Reluctance to participate must be addressed, including easing concerns about copyright issues, peer-review, and even questions about the inherent value of a repository (Creaser et al., 2010; Palmer, Tefteau, & Newton, 2008; Salo, 2008).

A challenging subset of faculty participation is that of faculty self-archiving. The term self-archiving in this context lacks a consistent definition. Faculty self-archiving may be used to mean an individual faculty member personally submits his/her work into the IR and completes the required metadata submission form. Or it could mean the faculty submits through a proxy—usually a departmental secretary or designate—who completes the necessary submission form and process. In some cases, the definition of faculty self-archiving is broadened to encompass faculty who merely agree to have their scholarship included in the IR.

Accurately measuring faculty participation and faculty self-archiving in IRs is difficult because both terms can be narrowly or broadly interpreted. A strict interpretation would imply deliberate action on the part of individual faculty members to add their scholarship to an IR; the loosest interpretation would allow faculty content to be added to an IR through harvesting from another source without the author's prior consent or knowledge. Attributing all faculty IR content directly to some level of active faculty participation cannot be supported.

This study examined faculty content in IRs by an analysis of disciplinary content. Jantz and Wilson (2008) looked at the content in selected Association of Research Libraries (ARL) IRs to assess the volume of faculty input and the differences in the degree of input from the Sciences, Humanities, and Social Sciences. Using similar quantitative methodology, this study looked at the content of 107 Digital Commons IRs to assess the volume of faculty work contained therein. My goal was to provide a current "snapshot" of faculty content in the Sciences, Humanities, and Social Sciences. As a measurement of IR growth, I used methodology similar to that used

by McDowell (2007) wherein repository content was examined over precise time increments. McDowell argued that a better measure of repository status was the examination of metrics over a period of time rather than one-time counts. Whereas McDowell recorded item counts every six weeks over an 18-month period, I recorded total item counts in 203 Digital Commons repositories every month over a six-month period during the fall and winter of 2013-2014. A basic assumption of both earlier examinations was that although repository item counts included content not supplied or authored by faculty, these counts did serve as an adequate reflection of faculty participation. This study more cautiously assumes that repository item counts serve as a relative reflection of faculty contributions, and that faculty may or may not have been actively involved in the submission of content. The quantitative investigations of this study assume the broadest interpretation of faculty participation, allowing that the inclusion of faculty-authored content reflects “participation.” No attempt has been made to determine how faculty content was added to the IRs, whether by faculty self-archiving or mediated deposit.

Additionally, this study examined training methods and technologies employed by IR managers to encourage faculty participation and self-archiving activity. A web-based survey was used to collect data from 205 repository administrators whose institutions use the Digital Commons repository platform. The survey addressed the types of technologies used to support participation in the IR, the prevalence of training materials, whether these materials addressed faculty concerns identified in the literature (e.g. copyright, value of repository), and the perceived effectiveness of these tools.

Specifically, this study was designed to answer the following research questions:

1. What is the current growth rate of IRs as measured by the number of items they contain?
2. Compared with the IR growth rate determined by McDowell in 2007, have growth rates improved?
3. What is the current scope of faculty content in IRs in the Sciences, Humanities, and Social Sciences?
4. What instructional technologies or tools are IR administrators using to assist or instruct faculty members who participate in the IR?

LITERATURE REVIEW

There is extensive literature about IRs, their development, successes, and challenges. A thorough historical review is beyond the scope of this study. This literature review is intended to give a brief overview of the development of IRs and the discussion to date about faculty participation in IRs.

The Rationale for Institutional Repositories

IRs emerged in response to the open access movement. The cognitive scientist Stevan Harnad is often credited as a founder of the open access movement with his 1994 “Subversive Proposal.” Harnad called on researchers to make their “esoteric” writings—written for research impact rather than for income—to be archived and available online at no cost, thus allowing “for the unimpeded flow of esoteric knowledge to all” and enabling researchers to build upon each other’s work (Harnad, 1995). Ann Wolpert (2013) cited a much earlier call for open access from Vannevar Bush in his 1945 essay “As We May Think.” As director of the U.S. Office of Scientific Research and Development, Bush had coordinated the work of thousands of scientists in the application of science and research to winning the Second World War. In his essay he called for making the store of scientific knowledge more accessible, for a “record if it is to be useful to science, must be continuously extended, it must be stored, and above all, it must be consulted” (Bush, 1945).

Another rationale used to support the creation of IRs was the transformation of the traditional publication system of scholarly materials. Davis and Connelly (2007) cite two philosophical camps within the IR community regarding publication. One camp positions IRs as competition to the traditional scholarly publication model; another proposes repositories as a supplement to traditional publication models. Harnad’s “Subversive Proposal” (1995) and Crow (2002) argue that open access publication reforms the system of scholarly communication by reducing the power of publishers who have built economic barriers and monopolies that limit access to scholarly literature. Crow goes further by suggesting that IRs could take over the traditional functions of publishers such as peer review, dissemination, and preservation. Clifford Lynch (2003) argued that IRs were a supplement to the traditional publication models,

designed to improve the dissemination of scholarly content and promoting dissemination of a broader range of content—the so-called “grey literature”—often overlooked by traditional publishers.

Other factors fueled the implementation of IRs and support of open access initiatives. IRs were established to address the escalating costs of electronic and print serial subscriptions and database licenses from for-profit publishers. These budgetary challenges forced academic libraries to investigate and develop alternative models for accessing scholarly content (Warren, 2003; English, 2003). IRs provided an infrastructure in which to archive research outputs. Funding sources and academic institutions issued mandates requiring the archiving of scholarly research into open access repositories. These mandates resulted in the greater transparency of publicly funded research outputs (Harnad, 2009).

Deployment of Institutional Repositories

In 2005 Lynch and Lippincott examined the state of IRs in the U.S. through a survey of the individual and consortia members of the Coalition for Networked Information (CNI). The survey indicated that the number of repositories in non-research intensive universities was limited, while the majority of doctoral-granting institutions either had established or were planning to establish IRs. At that time, the major concern of the non-research-intensive institutions was about the fixed costs of operating a repository, leading to a “great deal of interest in either purchasing repository services from some other entity or becoming part of consortial, multi-institutional repositories as a way of sharing these fixed operating costs” (Lynch & Lippincott, 2005).

One of the activities of the MIRACLE (Making Institutional Repositories a Collaborative Learning Environment) Project, funded by a multi-year (2005-2008) Institute of Museum and Library Services grant, was a nationwide census of repositories in the United States in the spring of 2006. The project staff used the Carnegie Classification of Institutions of Higher Education™ (CCHE)¹ to characterize census respondents. The census

¹ The Carnegie Classification™ framework was designed to describe institutional diversity in U.S. higher education. Originally published in 1973, the framework has been updated five times (most recently in 2010) to reflect changes among colleges and universities. The independent policy and research center Carnegie Foundation

revealed that research universities vastly outnumbered other CCHE classes with respect to involvement in repository implementation or planning. Almost 85% of the research university respondents were either planning, pilot testing, or had already implemented IRs. Only 37% of the respondents with CCHE classes of Masters, Baccalaureate, and Special were either planning, pilot testing, or had already implemented repositories (Markey et al., 2007).

This literature review found no sources that provided a numerical count of all IRs in the United States at any one point in time. There is no one listing service that references every IR; however, the growth in IR use can be inferred by the increasing number of institutions listing their repositories in projects such as the Directory of Open Access Repositories (OpenDOAR). OpenDOAR was originally developed by the University of Nottingham to create a single comprehensive and authoritative list of academic open access repositories. OpenDOAR (as cited in Jain, 2010) listed 413 repositories in North America in September 2009 and 433 only six months later. A search in OpenDOAR for repositories by continent in October 2013 showed 515 open access repositories in North America, 427 of which were in the United States.

Faculty Participation

The growing number of repositories indicates that academic institutions have accepted this system of publication and the institution’s role in disseminating scholarship. However, individual scholars and researchers have shown less enthusiasm. Repository administrators quickly discovered that faculty did not rush to participate in their IRs. Paul Royster, director of Scholarly Communications at the University of Nebraska-Lincoln, has described his experience implementing an IR (using the Digital Commons platform) at his university (Royster, 2007; Royster, 2008). His original assumption that faculty would recognize the inherent value of an IR and would self-submit their scholarship was proven wrong when it was met with a participation rate of less than 10%. Royster stated that “it had become apparent that voluntary self-archiving was a utopian illusion” (2007, p. 185). A second strategy involved promoting mediated deposits, wherein faculty would send their publication lists to the IR administrators in the library, and the

for the Advancement of Teaching maintains the framework. It is often used in the study of higher education as a way to represent and control for institutional differences.

administrators would deposit the work. This improved faculty participation to 15–20% across the campus, except in the Physics department where participation neared 70%. This was attributed to both the established system of self-archiving in the discipline-specific electronic repository arXiv, which was originally established in 1991 for physics pre-prints, and to the willingness of many physics journals to allow the use of the publisher's version of peer-reviewed articles in IRs (Royster, 2008).

The DADELUS project at the University of Glasgow began in 2002 with the goal of establishing online IRs for the university. Within the first year repository managers found that faculty members were interested and/or aware of the repositories, but that interest and awareness did not result in the submission of work into the repository (Mackie, 2004). An examination of nine Canadian Association of Research Libraries (CARL) IRs found that direct submission of material by individual faculty and researchers had been negligible (Westell, 2006). Repository administrators found that faculty participation was minimal during the implementation of an IR at the Texas Medical Center. Despite a range of presentation content, formats, target audiences and venues, administrators found that “Excitement bubbling up from the faculty ranks was not occurring” (Krevit & Crays, 2007, p. 121). Dorothea Salo, then-repository librarian at the University of Wisconsin, described a bleak situation for IRs in 2008: “Except in a few disciplines with thriving disciplinary repositories...unmediated faculty-initiated self-archiving has failed abjectly thus far” (Salo, 2008, p. 99).

Barriers to Faculty Participation

Several studies point to barriers to faculty participation in IRs. In their study of Cornell University's DSpace repository, Davis and Connolly (2007) identified several reasons faculty were not actively archiving their work in the IR. These reasons included lack of awareness of the repository, redundancy with other modes of disseminating information, confusion over copyright, fear of others plagiarizing their work, and a preference to archive scholarship in a disciplinary repository. Whereas librarians perceived a “crisis” in access to materials due to journal price inflation, Davis and Connolly found that access to scholarly literature was a non-issue to the faculty that they surveyed. The authors concluded that each discipline had a normative culture which influenced

faculty behavior and their willingness to use an IR. Further, IR administrators would need to address that cultural diversity in order to successfully capture and preserve the scholarship of the institution's faculty.

One survey of over 3,000 scholars across Europe revealed differences in their understanding of open access repositories and their motivations for depositing their work in them. Physical Science and Mathematics authors expressed a stronger preference for subject-based repositories, while authors from the Social Sciences and Humanities were more likely to utilize an IR. Concerns over copyright infringement, uncertainty over embargo periods, and unwillingness to archive research outputs where other content had not been peer-reviewed were the most frequent concerns cited by the European respondents. Another barrier identified was a lack of knowledge of how to deposit material into an IR (Creaser et al., 2010).

Other research supports the findings regarding scholars' concerns about IRs and their perceived quality of content. Creaser (2010) looked at two complementary studies conducted in Europe in 2008 and found that many researchers maintained a suspicion of open access publications, both as authors and users of scholarly material. Respondents cited a lack of high-impact open access journals in their fields, a perception of lower quality in open access journals, and lack of peer-review as deterrents. In disciplines such as the Biomedical Sciences, with more prominent open access publications and a longer history of open access funder mandates, the culture is more supportive of IRs and open access.

A case study of repositories at three doctoral-research universities in the U.S. revealed faculty's perceived barriers to IR adoption included copyright complications and reservations about trends in open access (Palmer, Tefteau, & Newton, 2008). The authors suggest that repository administrators emphasize how the IRs address specific information visibility, management, or access problems experienced by faculty. Specifically, repository developers need to focus not on the basic aims of IRs—collecting, preserving and providing access to the institution's research output—but on the more specific functions that “are aligned with the nuances of varying disciplinary practices...expanding their support for the humanities, and more generally for fields not well served by existing or emerging disciplinary efforts” (Palmer et al., p. 29).

Measuring Faculty Content

Jantz and Wilson (2008) examined the actual content of selected IRs to assess the extent of faculty work represented in repositories in selected disciplines in order to determine the disciplinary differences in individual faculty participation. They proposed that measuring the volume of work represented in IRs under individual faculty names served as a sufficient indicator of the scope of faculty participation. Forty-nine Association of Research Libraries (ARL) IRs were examined. The IR contents of the following disciplines were sampled: English, History, Linguistics and Philosophy in the Humanities; Anthropology, Economics, Sociology and Political Science in the Social Sciences; Biological Sciences, Computer Science, Engineering (all areas of Engineering) and Mathematics in the Sciences. Jantz and Wilson (2008) found that individual faculty participation was either low or nonexistent in one third of the ARL-university IRs that were studied. In addition, repository deposits differed greatly by disciplinary area, with Humanities faculty depositing the least number of works. Of the 5,000 items listed under faculty/researcher names in the disciplines analyzed, 67% were in Sciences, 27% in Social Sciences, and 5% in Humanities.

McDowell's (2007) study of IRs proposed a new metric for evaluating the success of repositories. McDowell argued that a better measure of repository status was the examination of metrics over a period of time rather than one-time counts. Her study looked at 50 institutions—varying in size, Carnegie classification, and repository platform—over a period of 18 months to determine growth and participation rate. The findings revealed that the mean growth rate for U.S. IRs from November 2005 to November 2006 was an increase of 1,100 items. The median annual increase was 366, or one new submission per day. The repositories in academic institutions with Carnegie classifications of Baccalaureate, Master, DRU (doctoral/research university) or Special (special focus university) grew by the fewest number of items. The repositories in institutions classified as RU/VH (research institutions/very high research activity) saw the greatest annual total increase in items.

Statement of Purpose

Several years have passed since Jantz and Wilson (2008) and McDowell (2007) measured repository content

and faculty participation. Since 2008 the number of institutions hosting a repository has grown significantly. Whereas the first adopters of IRs were doctoral research universities (Lynch & Lippincott, 2005), more non-research-intensive colleges and universities have invested resources into deploying repositories in the last five years. It is appropriate to look again at repository content, scope and item counts and consider their value as a reflection or measurement of faculty participation in IRs. It is also useful to investigate how repository administrators are attempting to promote and facilitate faculty participation and how or if these methods successfully address faculty reluctance to participate. This study presents a current assessment of the content, growth, and scope of IRs, identifying successful strategies for increasing faculty participation, and allowing for reflection on the progression of this publishing platform.

METHODS

This mixed method study included two quantitative examinations: the first of repository growth, as evidenced by item counts in the repositories, over precise time increments; the second of IR content authored by faculty in the Sciences, Humanities and Social Sciences. These two steps provided a current snapshot of the growth and extent of IRs, both of which are relative reflections of faculty participation. As a final step, a qualitative survey of repository administrators examined training methods, technologies, and strategies they use to encourage and facilitate faculty participation in IRs.

Survey Population and Participants

This study investigated 214 academic institutions using the Digital Commons platform, published by the Berkeley Electronic Press. The Digital Commons platform supports the publication of a range of scholarly materials and open access electronic journals. Typically these IRs are structured hierarchically with content organized into series (e.g. faculty publications, student publications) within communities (usually organized by discipline). As of October 2013, the Digital Commons platform was used by 306 institutions worldwide as a hosted, subscription-based service to organize and disseminate their scholarly output. Reflecting the evolution of IRs from their beginnings in primarily research-intensive academic institutions, Digital Commons repositories now reflect a wide range of small, medium, and large

universities with varying levels of post-graduate and research mandates. The Digital Commons customer base also includes public libraries, research centers, academic consortia, and organizations that use the product as an electronic journal publication platform. Repositories using the Digital Commons platform were chosen for this study because of the relative ease of harvesting data (both total item counts and disciplinary item counts) and the range in size and type of institutions using the platform.

Of the total population of Digital Commons repositories, those not associated with a single higher education academic institution were excluded from this study. Of the 248 repositories associated with single academic institutions, 34 were deselected based on the following characteristics:

<i>Institutions based outside North America.....</i>	13
<i>Community colleges.....</i>	4
<i>Faith-based institution.....</i>	1
<i>Institutions that use Digital Commons solely as an electronic journal publishing platform.....</i>	2
<i>Institutions that publish only student-generated content.....</i>	12
<i>Institutions that publish primarily content related to the institutional archives.....</i>	2

The resulting potential survey population size was 214. The 214 institutions represented a wide spectrum of public and private colleges and universities. The survey population of institutions in the United States fell into the following Carnegie Classification of Institutions of Higher Education™ Basic categories:

- Baccalaureate Colleges—Arts & Sciences
- Baccalaureate Colleges—Diverse Fields
- Doctoral/Research Universities
- Master’s Colleges and Universities (medium programs)
- Master’s Colleges and Universities (larger programs)
- Master’s Colleges and Universities (smaller programs)
- Research Universities (high research activity)
- Research Universities (very high research activity)
- Special Focus Institutions/Schools of Law

- Special Focus Institutions/Schools of Medicine
- Special Focus Institutions/Schools of Engineering
- Special Focus Institutions/Schools of Business and Management
- Special Focus Institutions/Other special-focus

There is no direct Canadian equivalent to the Carnegie Classification of Institutions of Higher Education. The four Canadian institutions in the survey population are all considered either research-intensive universities (members of U15) or comprehensive universities with a significant degree of research activity (according to *Macleans* magazine rankings).²

IR administrators at the 214 institutions above composed the potential survey population for the qualitative portion of this study. These individuals were presumed to be the most likely to be knowledgeable about the instructional tools and methods used by their institutions to facilitate faculty participation. In addition, they were presumed most likely to be able to judge the effectiveness of these methods.

Data Collection

To answer the first and second research questions (*What is the current growth rate of IRs? Have growth rates increased since 2007?*), Digital Commons repository websites were visited to harvest the item count totals on the first of each month from October 2013 to April 2014. The standard Digital Commons homepage template includes the display of repository item counts to date, total downloads to date, and downloads in the past year. Of the 214 IRs in the survey population, all but 11 displayed the item count on the homepage (or the “About” page) during the study period. The 11 repositories that did not display item count anywhere on their websites were deselected from the sample population, resulting in a sample size of 203.

To answer the third research question (*What is the current scope of faculty content in IRs in the Sciences, Humanities and Social Sciences?*), IRs using the Digital Commons platform were examined in January 2014 to determine

² U15 is the consortium of Canada’s 15 research-intensive universities. *Macleans* is a weekly Canadian current affairs magazine that has compiled and published university rankings since 1991.

the disciplinary differences in faculty content. Several institutions using Digital Commons contain scholarship reflecting the special disciplinary focus of the academic institution, rather than a range of disciplines. Therefore, the 62 IRs published by these discipline-specific institutions (e.g. medical schools, law schools, and engineering schools) were deselected for this part of the study.

Examining IR content by discipline in over 150 repositories was not feasible within the timeframe of this research study. Efforts to analyze content proved difficult because IR content organization varies greatly from repository to repository. Most IRs are organized into faculty series by academic department. However, some IRs combine all faculty content together within a single “Faculty Publications” series. Others employ separate composite series for all Humanities faculty publications or all Sciences faculty publications, while some repositories organize faculty content by type of publication. New repositories, which I define as those less than one-year old, may not yet reflect the breadth and depth of their institution’s faculty scholarship. For the purposes of this study, IRs where faculty content was not organized by academic department (n=16) were deselected, as were IRs less than one-year old at the start of the study (n=29).³ The resulting sample population was 107 institutions.

Using the same methodology as Jantz and Wilson (2008), this study sampled the contents of the IRs as follows: English, History, Linguistics and Philosophy in the Humanities; Anthropology, Economics, Sociology and Political Science in the Social Sciences; Biological Sciences, Computer Science, Engineering, and Mathematics in the Sciences. These disciplines were deemed representative of their areas by Jantz and Wilson (2008). Only items listed under individual faculty member names under their academic unit were counted. Counts included both items providing full-text access and items providing only descriptive metadata. Items counted included pre-prints, post-prints, working papers, presentations, peer-reviewed articles, book reviews, and reports.

To answer the fourth research question (*What instructional technologies or tools are IR administrators using to assist*

³ The default Digital Commons home page template displays not only total item count in the repository but also downloads to date and downloads for the last twelve months. IRs in which the downloads to date and downloads in last twelve months were equal were identified as less than one year old.

or instruct faculty members who participate in the IR?), repository administrators from the available survey population were asked to complete an online survey. Contact email addresses for the IR administrators were harvested from the IR websites. If a contact email address was not supplied on the IR website itself, I searched for the contact information on the website of the department within the institution responsible for administering the IR. Several institutions were contacted by phone, email or chat reference service to gather contact information. Contact email addresses were discovered for all but nine of the IRs, resulting in a sample population of 205.

Timeline

This study was conducted from October 2013 to April 2014. Part one data collection (total IR item counts) was conducted for the six-month period from October 1, 2013 through April 1, 2014. The part two data collection (IR item count by disciplinary area) was conducted during January 2014. Institutional Review Board (IRB) approval was sought in December 2013 and granted in January 2014, after which the part three administrators’ survey was distributed. Data analyses of parts two and three data were completed in February and March 2014. Data analyses of part one data was completed in April 2014.

Survey Instrument

The questionnaire (Appendix A) included closed- and open-ended questions about faculty participation in IRs, and instructional technologies, tools, and methods used by IR administrators to encourage and facilitate faculty participation in a repository. The survey was distributed as a Google Form. The survey did not ask for the name of the respondent, his/her email address, or the name of the academic institution that they represented. Survey answers submitted through Google Forms directly populated a Google spreadsheet and did not capture any personal identifying information (email or IP address) about the submitter.

Analysis of Data

Basic descriptive statistics were used to describe the scope and extent of IR content. I looked at quantitative data for the survey population as a whole, by Carnegie Classification, and by age of the IR. The analysis by

Carnegie Classification and IR age provided insight into differences in faculty content in IRs and differences in IR growth over time by institution type/size.

The qualitative survey responses were analyzed to discover common methods and technologies noted by respondents. The analysis revealed which methods and technologies were rated as most effective in facilitating faculty participation in IRs. In addition, I hoped to discover whether and how IRs are addressing faculty questions and/or concerns about IR participation through instructional technology tools.

Limitations of Study

The six-month data collection period for this study prevented a more exact replication of the methodology used by McDowell in 2007. McDowell (2007) was able to record item counts every six weeks over an 18-month period. The six-month time-frame of this study should be sufficient to reflect some of the ebb and flow of activity during an academic year. Though the survey population represented a wide range of institutions by size and research focus, surveying only IRs using the Digital Commons platform prevents generalizing the results to institutions using other repository platforms.

Item counts in the first part of this survey reflect IR content of all kinds: faculty scholarship, student scholarship, institutional materials, archival material, campus publications, etc. The basic assumption of this study was that total item count serves only as a relative reflection of faculty content. The study did not attempt to break down total item counts by authorship (faculty or non-faculty). Due to the range of possible levels of faculty engagement in the IR submission process, the presence of faculty content may not correlate to active faculty participation. A more exact item count of only faculty-generated scholarship would provide more accurate data on growth rate of faculty content. Harvesting such data would involve the evaluation of multiple webpages within each IR on a monthly basis and thus was beyond the scope and resources of this study. An examination of faculty participation in IRs would require an exploration of how faculty content was added to the IRs (e.g. self-archiving, mediated deposit), which was also beyond the scope of this study.

The qualitative survey data did not include any institutional identification so the results could not be analyzed by institutional type and size.

RESULTS

Part 1 of this study examined IR content and growth in 203 academic institutions using the Digital Commons repository software platform. The sample population broke down into the following types of institutions based upon basic Carnegie Classifications and descriptions of Canadian institutions:

<i>Baccalaureate Colleges—Arts & Sciences</i>	23
<i>Baccalaureate Colleges—Diverse Fields</i>	5
<i>Master's Colleges and Universities (smaller programs)</i>	1
<i>Master's Colleges and Universities (medium programs)</i>	12
<i>Master's Colleges and Universities (larger programs)</i>	41
<i>Research Universities (high research activity)</i>	27
<i>Research Universities (very high research activity)</i>	19
<i>Doctoral/Research Universities</i>	13
<i>Special/Business</i>	1
<i>Special/Engineering</i>	2
<i>Graduate School—Law</i>	46
<i>Graduate School—Medicine</i>	7
<i>Graduate School—Other</i>	2
<i>Macleans Comprehensive (Canada)</i>	2
<i>U15 member institution (Canada)</i>	2
<i>Total</i>	203

The mean growth rate for all IRs during the study period was 165 items per month. The median number of items added by all institutions during the entire study period (181 days) was 299. The mean number of items added per month by newer IRs—those IRs publishing open access content for 12 months or less as of the beginning of this study— was 346. That was over three times greater than the mean number of items added per month to IRs older than 12-months old (107). The median number of items added to newer IRs was higher than that to established IRs. Over the course of the 181-day study period, newer IRs had a median growth rate of 346 items and established IRs had a median growth rate of 295 items.

IRs are designed as a stable home for submitted content, providing long-term access through permanent URLs. However, in some circumstances an item may be removed if the posted material violates copyright law, has been corrected, or by special request of the author. Occasionally a large number of items are removed from an IR, which may be a result of a problem with batch uploading, duplicated content, or the need to transfer content to another repository. This may have been the case during the research period because eight IRs (six established, two new) removed over 100 items during a single monthly reporting period of this study. While this lowered the mean monthly growth in item counts, the amount was small. Eliminating those IRs from the item count analysis did not significantly change the value of the mean growth rate of the IRs. Therefore, the results shown in this analysis include the data from all the IRs, even those with negative item counts per month.

Figure 1 shows the mean number of items added month by month by IRs by age (younger than and older than 12 months as of the beginning of the study). Comparing mean monthly growth for all IRs, the rate of growth remained relatively consistent from month to month during the six month study period. For all IRs, the mean monthly growth rate ranged from 98 to 232 items added.

Mean monthly growth of IRs less than or equal to 12 months old fluctuated more during the study period in comparison to the mean monthly growth of IRs older than 12 months. For younger IRs, the mean monthly growth ranged from 156 to 590 items added. For older IRs, the mean monthly growth ranged from 59 to 156 items added.

The IR item counts were analyzed to determine mean monthly growth rate by type/size of institution. Law schools and research intensive institutions showed the highest mean growth rates. Table 1 (following page) shows the results as well as the number of institutions included in each grouping.

Figure 2 (following page) shows the mean number of items added each month comparing IRs by size and type. This visualization reveals more of the outliers, such as single months with significantly larger numbers of submissions or withdrawals.

Neither Figure 1 nor 2 reveal a clear pattern of IR growth related to a specific month during the study period. In no single month did all IRs exhibit similar increases or decreases of activity. However, in March 2014 most IRs added fewer items than in the previous month.

Figure 1. Fluctuation of mean monthly growth of IRs from October 2013 through March 2014

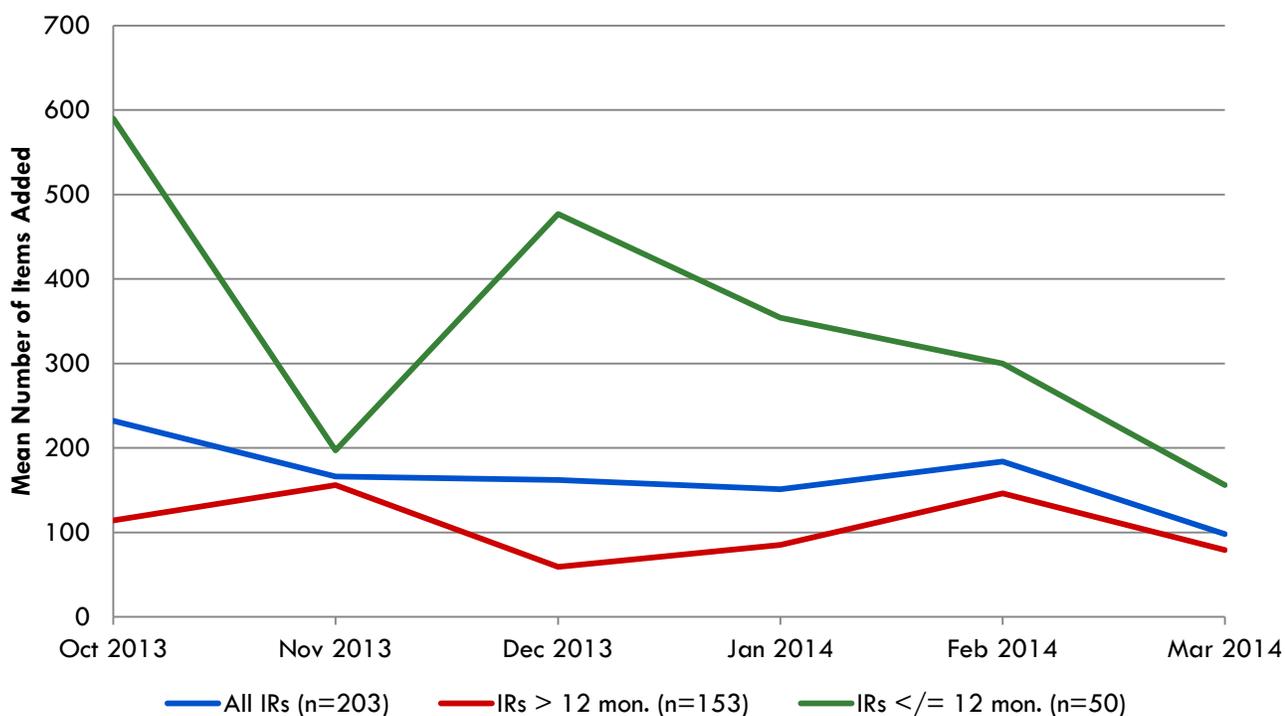
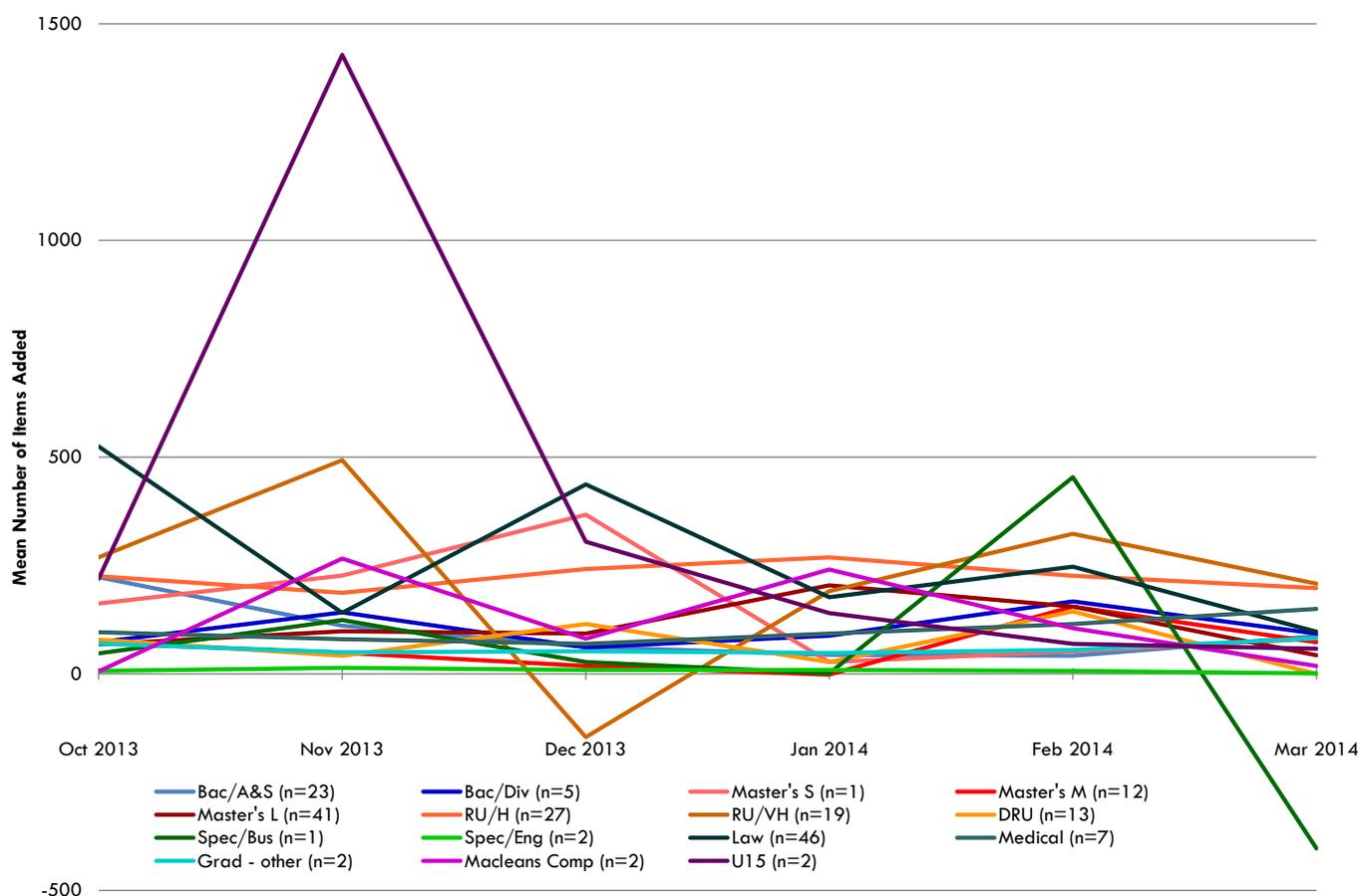


Table 1. Mean monthly growth in IR item counts by institution type/size

Type/Size Institution (sample size)	Mean Monthly Growth
U15 member institution (Canada) (n=2)	370
Graduate School–Law (n=46)	271
Research Universities–high research activity (n=27)	225
Research Universities–very high research activity (n=19)	223
Master’s Colleges and Universities–smaller programs (n=1)	153
Macleans Comprehensive–Canada (n=2)	119
Master’s Colleges and Universities–larger programs (n=41)	110
Baccalaureate Colleges–Diverse Fields (n=5)	104
Graduate School–Medicine (n=7)	101
Baccalaureate Colleges–Arts & Sciences (n=23)	95
Doctoral/Research Universities (n=13)	68
Master’s Colleges and Universities–medium programs (n=12)	61
Graduate School–Other (n=2)	59
Special/Business (n=1)	42
Special/Engineering (n=2)	8

Figure 2. Mean monthly growth rates of IRs by type/size of institution



Part 2 of this study looked at the disciplinary breakdown of faculty participation in IRs. In order to examine the broadest range of scholarship across disciplines and to avoid skewing the results towards a single discipline, the discipline-specific institutions (e.g. medical schools, law schools, and engineering schools) were deselected from the survey population. The study sample ($n=107$) broke down into the following types of institutions based upon Carnegie Classifications and descriptions of Canadian institutions:

<i>Baccalaureate Colleges—Arts & Sciences</i>	18
<i>Baccalaureate Colleges—Diverse Fields</i>	1
<i>Master’s Colleges and Universities (medium programs)</i>	4
<i>Master’s Colleges and Universities (larger programs)</i>	29
<i>Research Universities (high research activity)</i>	22
<i>Research Universities (very high research activity)</i>	17
<i>Doctoral/Research Universities</i>	10
<i>Special/Business</i>	1
<i>Macleans Comprehensive (Canada)</i>	3
<i>U15 member institution (Canada)</i>	2
<i>Total</i>	107

There were 63,706 items counted in January 2014 in the specific sub-disciplines for the 107 IRs in the sample population. As shown in Figure 3, over 60% of the items counted were in the Sciences, with about 20% each in the Humanities and Social Sciences.

Figure 3. Faculty content in IRs by discipline

Of the 63,706 items counted in January 2014, 13,558 were in the Humanities, 11,232 were in the Social Sciences, and 38,916 were in the Sciences.

■ Humanities ■ Social Sciences ■ Sciences

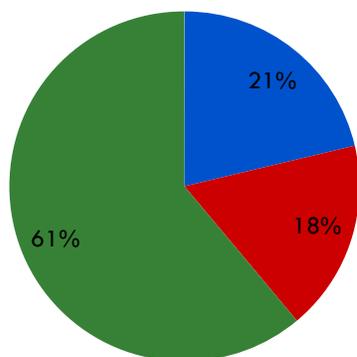


Figure 4 (following page) shows the disciplines broken down into sub-disciplines. Faculty contributions in each of the four Science sub-disciplines (Biology, Computer Science, Engineering, and Mathematics) surpassed all of the other sub-disciplines counted except those in English. The number of items in the sub-discipline of Engineering alone (16,778) surpassed the total number of items for all Humanities (13,558) or all Social Sciences (11,232).

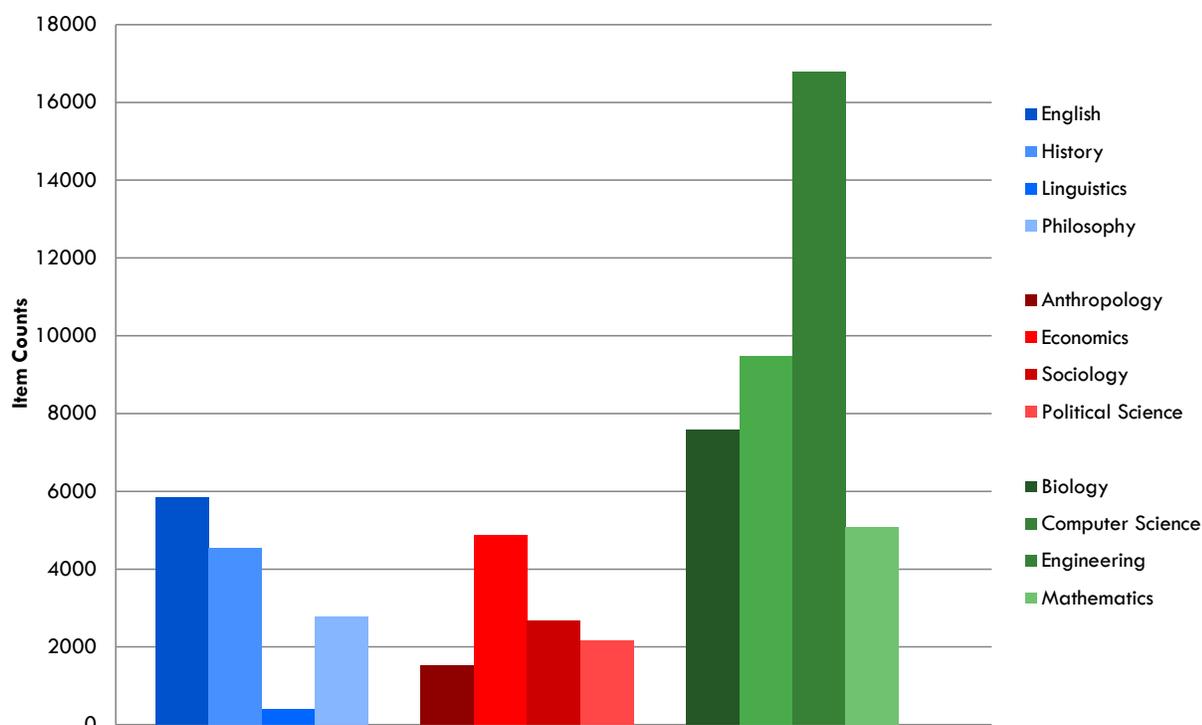
An analysis of item counts by discipline for institutions in each Carnegie Classification segment confirmed the preponderance of Science content across almost every institution, regardless of size or type. Only the institutions designated as Baccalaureate/Arts & Sciences hosted both more content in a discipline other than Science and a relatively even distribution of IR content (Humanities—29%; Social Sciences—39%; Sciences—32%).

In part 3 of this study, IR administrators were asked to complete an online survey. Of the 205 requests to participate, 85 completed responses were received, for a response rate of 41.5%.

When asked how they define the term “self-archiving” as it relates to faculty submission of content to an IR, administrators’ responses did not reveal a single agreed-upon definition. Of the 78 responses to this question, about one-third (27) indicated that self-archiving was defined as the faculty member him or herself submitting the content to the IR or using a proxy such as a departmental assistant. About one-third (22) indicated that faculty self-archiving was defined as the faculty member submitting the content to the IR staff for uploading (mediated deposit). About one-third (29) defined faculty self-archiving as a combination of faculty directly doing the submission and IR staff doing the submission. Respondents’ further descriptions of the “combination” definition revealed less concern for a strict definition of “self-archiving” and more concern about getting faculty work into the repository. Typical of the responses were the following:

When I say “self-archiving” what I mean is some version of the scholarly work ending up in an open access repository. I don’t care how it gets there.

As long as faculty have the attitude or intention that they would like to self-archive their scholarly content, we are fine with any approach.

Figure 4. Faculty content in IRs by sub-discipline

Administrators were asked how faculty content was added to their IRs. Fifty-four percent of the respondents indicated that all IR content is mediated by IR staff; the other repositories are populated by a combination of mediated deposits and faculty self-archiving. No respondents indicated that their IR required faculty to self-archive material.

Fifty-three of the IR administrators answered the question asking why they did not allow faculty self-archiving. Over half of the responses revealed concerns about control over the IR content. There was a general concern about quality control, appropriateness of content submitted, and copyright permissions. One respondent noted,

It is important for the integrity/accuracy/completeness of the repository that the IR team uploads material and sends it through the quality control process we have developed. It is also important from a permissions standpoint, as we require documentation that uploading the material to an open access repository is permitted by the publisher of the material.

More specifically, administrators addressed concerns about the extent and accuracy of metadata related to IR submissions. Comments such as “*We want to ensure*

consistency in metadata” and “*We limit faculty self-archiving so that we can be sure that accurate and high quality metadata is created*” suggest that administrators lack confidence in their faculty’s ability to fully describe their scholarship. One administrator explained that his/her IR did not allow faculty self-archiving because “*Faculty are prone to submitting to the wrong series, misplacing metadata, etc. because they are not as familiar with the system.*”

There was one other common explanation suggested by IR administrators to justify why faculty self-archiving was not allowed. Almost one-third of the administrators cited faculty lack of interest, willingness, or time as the reasons why they did not allow faculty self-archiving. One administrator stated that “*... few faculty have the time or inclination, and those that do usually can’t spare the time to be properly trained.*” Another respondent reported that “*Faculty have not expressed any interest in a more hands-on process.*” Several administrators were more direct in their comments, with statements such as “*... they are just not going to do it,*” “*...our faculty members do not want to be bothered*” and “*...they just are too busy to submit.*”

IR administrators were asked about the instructional methods and materials they provide to facilitate faculty participation. Respondents were allowed to choose one

or more type of method/material. Table 2 shows the breakdown of the 81 responses.

While 12 of the respondents indicated that they do not provide any instructional materials, 59 respondents checked multiple materials/methods that are used. Four responses indicated usage of only FAQs; six responses indicated only usage of face-to-face (in-person) interaction with faculty. The “other” responses included various methods of email communication with faculty and promotional marketing materials.

Three questions addressed specifics about online tutorials. Three respondents provided answers about the topics these tutorials addressed, the length of the tutorials, and the technology used to create the tutorials. The topics addressed were: how to upload; student self-submission, journal management; and simple instructions for uploading content to the repository. All of the respondents indicated that these tutorials were short in length (3-4 minutes, 5 minutes, and 2 minutes). All were created using screen-capture technology.

Two questions addressed specifics about online videos—the topics covered and the lengths. One respondent indicated that the video content was promotional in nature: “... *designed to generate interest in our IR.*” A second respondent indicated that the video content addressed “*How to upload.*” Both respondents indicated that the video’s length was 3 minutes. A third respondent indicated that his/her IR was “*currently developing content to promote the IR and encourage uploads.*”

IR administrators were asked to describe what they felt were the most effective tools or methods that they have used to facilitate faculty participation in the IR. Of the

66 responses, 39 administrators (60%) described direct communication with faculty as the most effective tool or method. One administrator mentioned a personalized approach: “*A cup of coffee and a conversation with the faculty member about what would be good to archive and how the faculty member is most comfortable having the material added.*” Other respondents reported that “*Attending faculty meetings and one-to-one conversations and meetings*” and “*Face-to-face presentations and individual e-mails*” were effectively used to increase faculty participation in their IR.

Ten respondents (15%) described promoting the availability of statistics and usage (download counts) as an effective method of facilitating faculty participation. One administrator explained that “*...the monthly download reports are most persuasive.*” Another stated that “*The system emails them dashboard with download stats. They love it. They want to see their work used.*” Additionally, four respondents listed faculty word of mouth as an effective method to facilitate faculty participation.

IR administrators were asked about what tools or methods they planned to develop to increase or facilitate faculty participation. The answers addressed both the promotional and instructional components of that goal. About 30% (18 of 59 respondents) described tools and methods that involved face-to-face interactions with faculty. Direct and personalized contact was favored. Typical of the comments were statements such as “*Continued personal conversations and presentations at meetings,*” “*...more consultations with departments and individual faculty members,*” and “*More one-on-one contact.*”

Ten of the respondents (17%) described creating on-line videos/tutorials that were promotional and/or

Table 2. Instructional methods/materials provided to facilitate faculty participation in IR

Instructional Method/Material	Responses
Online Tutorials	2
Online Videos	3
How-to Guides	20
FAQs on the Digital Commons repository	57
FAQs on another institutional website (e.g. library’s website or resource guide)	15
Face-to-face presentations to faculty groups	55
Face-to-face presentations/consultations with individual faculty members	59
No instructional materials provided	12
Other	6

instructional in nature. One respondent very specifically described developing “*online video material to promote the IR, explaining the benefits of participation*” and developing “*online tutorials to take the place of live, hands-on workshops*.” Another stated, “*Online videos for both publicity and tutorials would be ideal*.”

Six respondents indicated their intentions of developing or improving their online resources that were instructional in nature. These included developing LibGuides, online tutorials and videos, self-help guides, and FAQs. Other common responses included:

- Developing better methods of harvesting faculty scholarship (5)
- Developing additional print promotional resources such as pamphlets and brochures (4)
- Developing or encouraging campus open access policies or mandated repository deposits (3)
- Increasing the number of IR staff (3)

Lastly the survey asked IR administrators about the reasons/concerns cited by faculty about why they do not participate or are reluctant to participate in their IR. Almost 80% of respondents (62 out of 80) indicated that the tools or methods they used to encourage or facilitate faculty participation addressed faculty concerns such as:

- Lack of awareness of the repository,
- Copyright questions,
- Preference for a disciplinary repository,
- Perceived difficulty of the submission process, and
- Fear of plagiarism.

DISCUSSION

Part 1: What is the current growth rate of IR content? Have growth rates increased since 2007?

The results of this study reveal a higher mean and median growth rate in IR content than reported in 2007. At that time, McDowell (2007) found that the mean growth rate of the IRs in her study was 1,100 items per year (about 84 items per month). This study revealed a mean growth rate of nearly twice that amount—165 items per month. The median growth rate did not increase as much as

the mean growth rate, however. McDowell reported an annual median growth rate of one new submission a day. This study’s findings found a more moderate increase—median monthly growth for all IRs ranged from 27 to 44 items. For the entire 181-day study period, the median growth was 299 items, or less than 2 items per day.

More striking is the contrast in growth rates of newer IRs (less than or equal to 12 months old) to that of established IRs (older than 12 months). The mean monthly growth rate of newer IRs (346) was over three times that of the established IRs (107). The median growth rates were closer to the same. The median growth for the newer IRs was 346 items over the 181-day study period; the median growth for established IRs was 295 items over the 181-day study period.

The disparity of mean growth rate and median growth rate reveals that a small number of IRs may be growing rapidly (raising the mean) while a much larger number of IRs are growing much more slowly (reducing the median value). This may indicate that newer IRs are growing in a pattern of starts and stops rather than slow, steady growth. Some new IRs are adding large quantities of materials rapidly, while many other IRs are adding content at a much slower rate. In contrast, more established IRs grow at a steadier pace. As shown in Figure 1, the range of mean monthly growth rates for established IRs was 59 to 156, while the range for newer IRs was 156 to 590.

McDowell (2007) reported that academic institutions with a Carnegie Classification of Research University/Very High Research showed the greatest total increase in content, while those with classifications of Baccalaureate, Master, Doctoral/Research University, or Special focus grew by the fewest number of items. Table 1 shows similar results in this study. Research universities again had higher mean monthly growth rates. Law schools also experienced very high monthly growth rates. The small sample sizes within some of the groupings may skew the results, however. The Canadian U15 member institutions had the highest rate of growth, though there were only 2 institutions in that grouping.

Part 2: What is the current scope of faculty content in IRs in the Sciences, Humanities and Social Sciences?

The analysis of current faculty content in IRs by disciplinary area showed that the majority of faculty content is

still rooted in the Sciences. Of the disciplines examined, the amount of content in the Sciences was triple that of the Humanities or Social Sciences. While both Jantz and Wilson's (2008) study and this study showed over 60% of IR content examined was in the Sciences, the earlier study reported 27% of content in the Social Sciences and 5% in the Humanities. This study showed a more even distribution of content in the Social Sciences and Humanities (18% and 21% respectively).

The dominance of Science contributions was evident across almost all types/sizes of institutions studied. The only institutions examined in which faculty content in the Sciences was less than either or both the Humanities and Social Sciences were those with Carnegie Classifications of Baccalaureate/Arts and Sciences. As with the analysis of item counts by institution type/size above, the small number of institutions in some groupings may have skewed the results.

Even though the institutions with Carnegie Classifications of Special/Engineering were not analyzed for faculty content in this portion of the study, the amount of faculty IR content in Engineering exceeded that of any other sub-discipline. Engineering content was over 75% greater than the second-most common faculty content area, Computer Science. In the Humanities, faculty content in English was the most common. Repository content in Economics was the most common in the Social Sciences.

The steady participation in IRs by Science faculty may reflect the more established system of self-archiving in discipline-specific repositories in the Sciences. Repositories such as arXiv (originally for Physics pre-prints, now Physics, Mathematics, and Computer Science) have been active since the 1990s. arXiv currently hosts over 900,000 items. In addition, since the earlier study, funding agencies such as the National Institutes of Health (NIH) and the Wellcome Trust have set mandates requiring research generated as the result of their funding be made available in open access repositories. That argument is challenged by the existence and vibrancy of the Social Science Research Network (SSRN), however. Established in 1994 as an open access repository for scholarship in the Social Sciences, SSRN currently provides access to over 400,000 full-text documents in the Social Sciences and Humanities.

The sub-disciplines examined in this research were the same as those used by the earlier Jantz and Wilson (2008) study. A different selection of sub-disciplines within each disciplinary area may have yielded a slightly different distribution of content. For example, there was relatively little content in Linguistics (406 out of 63,706 items), and there may be higher item counts for another sub-discipline in the Humanities. It is unlikely that another combination of sub-disciplines in either the Humanities or Social Sciences would challenge the dominance of content in the Sciences.

The high percentage of IR content in the Sciences may also be a reflection of the relative amount of published scholarship in the different disciplinary areas. There simply may be more articles, reports, presentations, books, data sets, etc. generated in the Sciences than in the Humanities or Social Sciences. This study did not undertake to analyze scholarship accessible in IRs relative to all scholarship generated by academic institution faculty.

Part 3: What instructional technologies or tools are IR administrators using to assist or instruct faculty members who participate in the IR?

If nothing else, the survey of IR administrators revealed a committed group eager to engage their campus communities in the continuing development of their repositories. Administrators were less concerned about a strict definition of terms (such as "faculty self-archiving") and responsibilities than they were about getting content into the IRs. Respondents reported using and/or planning to develop and use a variety of promotional and instructional tools to facilitate growing their IRs. The most dominant theme in the findings was the preference and use of direct and personal communication with faculty rather than impersonal, indirect contact.

IR administrators reported that personal interactions, whether one-on-one or in groups, were the most common promotional and instructional method used. A majority of respondents reported that personal interaction with faculty (one-to-one, email, or in groups) was also the most effective method for facilitating faculty participation. A number of respondents also indicated that the methods/tools they planned to develop to increase faculty

participation involved additional or continuing personal interaction with faculty.

Current use of instructional technologies, such as online or interactive videos or tutorials, is rare. No respondents listed any instructional technologies (e.g. online tutorial or video) as one of the most effective tools or methods that their IR had used to facilitate faculty participation. It was unclear whether those IR administrators planning to develop such material will use it more for promotional rather than instructional purposes. IR administrators may feel that faculty are not the ideal audience for instructional videos/tutorials, or that depositing scholarship into an IR may not be an appropriate topic for such materials. One respondent even commented:

We feel that if we have to use online instructional videos that our forms are probably too complex to the point of being broken. It should be somewhat intuitive to use a self-submission form. Some limitations may exist for those who are self-submitting, but these can be explained in a FAQ page on the submission page itself.

The study did not address specific reasons why IR administrators did not use or plan to use instructional technology tools to either promote or instruct faculty about IRs. Reasons could include a lack of knowledge about how to develop such materials or a lack of access to the technology to develop (e.g. software) or deploy (e.g. publication options such as websites) those tools. IR administrators also may need or want the assistance of an instructional technologist or specialist to assist in the development of the appropriate materials.

IR administrators' responses in the survey revealed a basic lack of trust in their faculty. Most IRs rely solely or predominantly on a mediated deposit model (i.e. the IR staff facilitates or completes the entire submission process). Administrators reasoned that a mediated submission process was necessary because the faculty were unwilling, uninterested or incapable of correctly submitting material to the IR. In order to maintain the integrity and consistent quality of the IR, administrators felt the need to complete or mediate submissions.

However, IR administrators have focused and seem interested in continuing to focus their energy more on

the promotion of their IRs in general rather than on instructing faculty on how to submit. Answering the question of “why to submit” clearly still dominates over the question of “how to submit.”

IMPLICATIONS AND FURTHER RESEARCH

It would be useful to conduct similar research with a more diverse population of IRs—those based upon publication platforms other than Digital Commons, repositories from institutions outside North America, and IRs hosting consortium collections. IRs are not exclusive to North American institutions nor is Digital Commons the most commonly-used software platform. A more representative sample of IRs would provide a better sense of the current growth rate of IR content.

While this study suggests that content in IRs is growing, there is disparity in the rate of growth. With a median growth rate of less than two items per day, the Digital Commons repositories studied may be providing open access to only a small portion of the total scholarship produced by their academic communities. McDowell (2007) reported a median growth rate of one item per day, concluding that such a slow rate of growth would not “significantly impact open access or change modes of scholarly communication for some time to come.” While this study showed an increase in growth rate, there is progress still to be made.

The study results suggest that the growth rate of IRs varies greatly by both the institutional size/type and the age of the IR itself. IRs show more erratic growth patterns in their first year and then tend to stabilize and exhibit steadier growth rates as they become more established. Harvesting item counts of the IRs over a longer study period (of at least one year) would be helpful in providing a better reflection of IR activity over an academic year, possibly revealing any relationship to the academic calendar. A multi-year study period would provide a more meaningful reflection of IR growth rates as IRs become more established in their second, third, or subsequent years.

There are many possible explanations as to why newly established IRs are growing so erratically in their first year. Some may be targeting the easily accessible content—the proverbial “low-hanging fruit” such as ETDs—

to quickly prove the viability of the IR to the campus community. A possible rationale is that once the IR is pre-populated with content, the concept of an IR may be easier to “sell” to faculty. Other IRs may be slower to grow as the IR staff establishes workflows and procedures before ingesting content. Initial staff efforts may focus more on the long-term goals of acquiring faculty buy-in and generating faculty enthusiasm rather than short-term higher item counts.

The growth of faculty content in the Humanities may indicate a slow shift in faculty perception of the value of IR or a growing awareness of an IR as an avenue for the dissemination of scholarship. There may never be parity in the amount of faculty scholarship in IRs by disciplinary area or sub-discipline. In fact, parity in the representation of the disciplines may not be the appropriate goal. Sheer volume of faculty scholarship may be a better indicator of IR success, growth, or impact. If so, this study suggests the need for IR administrators to continue their efforts in promoting the existence, purpose, and benefits of their IRs.

Very few IR administrators have used or plan to use instructional technology tools to either promote the IR or to assist or instruct faculty members who participate in the IR. The lack of interest in pursuing these methods could reflect the existing perception of faculty as unwilling, uninterested, or incapable of correctly self-archiving their work or an assumption that such instructional tools would not be effective. A further study of IR administrators’ perceptions about and experience using instructional technologies as well as their access to instructional technology tools and experts may be more revealing.

Evidence of faculty content in IRs does not necessarily indicate active faculty participation. A clearer understanding of faculty participation in IRs would require analyzing faculty content by how it was added to an IR. One possible avenue of study would involve the establishment of a submission process scale that reflects the range of required action or consent of faculty. The spectrum might move from faculty self-archiving (faculty member actively submits scholarship directly to IR) to mediated deposit (faculty work submitted to IR administrator for deposit) to harvested content (faculty not aware that scholarship has been added to the IR).

Clearly the number of IRs continues to grow as does the amount of scholarship and research contained within. The rate of growth of IRs has climbed in the last five to seven years, though maybe not yet to a pace that will successfully transform the traditional scholarly publication system by challenging the dominant model of for-profit scholarly journal publishers. The rising amount of faculty content in IRs to some measure indicates that faculty are increasingly willing to participate in the IR movement. However, faculty are clearly not willing or ready to take the lead away from IR administrators, nor are IR administrators willing to relinquish their control over IR content.

A more pressing consideration for IR administrators is the breakdown of IR content by type and a reassessment of the purpose of the IR. In addition to faculty scholarship, IRs include graduate and undergraduate student scholarship, e-journals and e-books, working papers, conference reports, technical reports, presentations, images, datasets, images, archival documents, university records, non-scholarly institutional publications, syllabi, and much more. It may be appropriate to examine the amount of faculty scholarship available in IRs relative to all other types of IR content. McDowell (2007) reported that student scholarship accounted for the largest amount (about 41.5%) of IR content in U.S. academic IRs. A repository platform may provide a convenient online home for a variety of institution-related content, but the more pertinent question may be whether the IR is the appropriate online home for that content. A better measure of the success of an IR may be a deeper analysis of its content—e.g., scholarly versus non-scholarly items, breadth and depth of collections—evaluated in relation to the stated goals and purpose of the IR.

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APPENDIX A

Institutional Repository Administrator Survey

This research project is designed to study current rates of faculty participation in institutional repositories (IRs) and methods used to increase faculty participation.

How is faculty content added to your IR?

- All content must be self-archived (submitted) by the faculty member
- Combination of deposits mediated by IR staff and direct faculty self-archiving (submissions)
- All content mediated by IR staff (no faculty self-archiving)
- Other (please describe)

How do you define “self-archiving” as it relates to faculty submission of content to your IR?

- Faculty member submits him or herself, filling out the online submission form, adding appropriate metadata, uploading content
- Faculty member uses a proxy (such as a department assistant or administrator) to submit, filling out the online submission form, adding appropriate metadata, uploading content
- Faculty member submits content to IR staff for ingest and upload
- A combination of the above (please describe)
- Other (please describe)

If you allow or require faculty self-archiving (submission), approximately what percentage of the content in your IR comes from faculty self-archiving (submission)?

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

Approximately what percentage of your IR content is added by the IR staff (mediated by IR staff)?

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

If you require faculty self-archiving, why?

If you do not allow faculty self-archiving at all, why not?

*Which of the following instructional materials and/or methods do you provide to facilitate faculty participation?
[check all that apply]*

- Online tutorials
- Online videos
- How-to guides
- FAQs on your Digital Commons repository
- FAQs on another institutional website (e.g. on your library's website or on a LibGuide)
- Face-to-face presentations to groups of faculty members
- Face-to-face presentations/consultations with individual faculty members
- We do not provide any instructional materials
- Other (please describe)

If you provide online tutorials or videos, how do you measure their effectiveness? [check all that apply]

- Download or usage (viewership) statistics
- Feedback from faculty
- Number or rate of faculty submissions to the IR
- We do not provide online tutorials or videos
- Other (please describe)

If you use online tutorials, please describe the exact topic(s) that they address.

If you use online tutorials, what is the approximate length (i.e. what is the approximate time it would take a user to complete the tutorial)?

What technology did you use to create the online tutorial? (e.g. screen-capture, HTML pages, podcast, slide show)

If you use online videos, please describe the exact topic(s) that they address.

If you use online videos, what are the approximate lengths of the videos?

What do you feel are the most effective tools or methods that your IR has used to facilitate faculty participation in your IR?

What tools or methods do you plan to develop to increase or facilitate faculty participation?

Several studies about IRs identify reasons and concerns cited by faculty members about why they do not participate or are reluctant to participate in their IR. These reasons and concerns include lack of awareness of the repository, copyright questions, preference for a disciplinary repository, perceived difficulty of the submission process, and fear of plagiarism.

Do any of the tools or methods you use to encourage or facilitate faculty participation in your IR specifically address these faculty reasons and concerns?

- Yes
- No

If yes, which reasons/concerns do you specifically address?

- Lack of awareness of the repository
- Copyright questions
- Preference for a disciplinary repository
- Perceived difficulty of the submission process
- Fear of plagiarism
- Other (please describe):

Optional: Please provide the URL(s) of your online tutorials and/or videos.

Thank you for your participation. Your response has been recorded.

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