ScholarSpace and Scholarly Communication: A Needs Assessment

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Abstract: This paper discusses a needs assessment conducted at the University of Hawaii at Manoa (UHM) to understand how an institutional repository can best meet the scholarly needs of faculty and researchers at that campus. ScholarSpace, the UHM institutional repository, is still in early stages of development; however, two prominent questions need to be addressed. How can faculty members be encouraged to readily deposit their work to ScholarSpace? What can the repository developers do to assist and encourage this process? Since the repository is being developed in order to capture and preserve the intellectual output of the University, as ScholarSpace begins to grow, the developers want to avoid a phenomenon observed at other institutional repositories: a struggle in populating the repositories with content. The needs assessment was created and delivered in an online format addressing faculty, researchers, and graduate students at the UHM campus. Results indicated that, though a majority of respondents would find it helpful to distribute their work in an institutional repository, a substantial number would need further information about the repository. Results also indicated that there are a number of critical issues that will need to be addressed with the UH Manoa academic community in order to make the repository a success. The results are presented and the issues more thoroughly discussed in this paper.

Introduction

In the last few years there has been a marked increase in the number of educational and cultural institutions worldwide which are in the process of developing institutional repositories. An institutional repository (IR) can be defined as a “digital collection capturing and preserving the intellectual output of a single or multi-university community” (Crow, 2002). Very typically, an IR will contain pre- and post-prints of scholarly articles, dissertations, theses, technical reports, and conference proceedings.

This movement is motivated by the desire to manage the content of digital curation activities. Content management allows control over the submission, archiving, publishing, access and preservation of scholarly publications and research output. The increased move towards institutional repository development is the result not only of advances in technology and the availability of good open source software but is also motivated by a more recent movement called the “Open Access movement,” which represents a shift away from traditional approaches to scholarly communication. Both the rising costs of serials and the desire and opportunity to provide access to publications and research quickly to a large audience via the Internet have dramatically influenced the
development of institutional repositories worldwide. “More importantly, well-established IRs allow authors and users to meet in the early phases of conception of academic ideas, encouraging both parties to share information freely and openly” (Kim & Kim, 2008).

In addition, momentum is building for institutions to provide repositories from increased government pressure. In December, 2007, former President Bush signed a spending bill, the National Institutes of Health’s Public Access Law, requiring the National Institutes of Health (NIH) to mandate open access to all of the research that it funds. “The Director of the National Institutes of Health shall require that all investigators funded by the NIH submit or have submitted for them to the National Library of Medicine’s PubMed Central an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication” (NIH, 2008). Some universities are mandating that such research be deposited in their own repositories as well. With an increase in the awareness of the Open Access movement and a shift in the landscape for scholarly communication, repository development will experience a growth as more and more institutions support such mandates (University of Iowa, 2008).

Worldwide repository development is increasing steadily, particularly in Australia, New Zealand, India, and Europe. Around the globe, national, intergovernmental, and non-profit funding agencies are realizing the increased need for governmental policies requiring public access to research funded by government agencies. Institutional repositories very often act as a place to deposit such research in order to make it freely available on the Internet. As of September 2007, “six of the seven Research Councils in the UK have adopted open access mandates” (MIT Libraries, 2008). This Open Access movement is taking place across Europe. The European Commission allocated 50 million pounds for the 2007-2008 period in support of the open access infrastructure. In addition, numerous research funding organizations across Europe have established Open Access mandates. Finally, in Canada, too, has announced new Open Access policies that took effect in January, 2008. The Canadian Institutes of Health Research (CIHR) now require that “those receiving grant funds from CIHR ‘make every effort to ensure’ their research articles are made freely available within six months of publication” (MIT Libraries, 2008).

Though there is a dramatic increase in the development of institutional repositories, it is therefore a curious phenomenon that developers of these institutional repositories often struggle with populating the repositories with content.

Research strongly suggests that IR development should include a complete needs assessment of the target users of the repository. “… accommodating faculty needs and perceptions – and demonstrating the relevance of an institutional repository in achieving them – must be central to content policies, implementation plans, and internal marketing” (Crow, 2002). Therefore the purpose of this needs assessment was to understand how best an institutional repository can meet the research needs of faculty and researchers at the University of Hawaii at Manoa (UHM).
Benefits of an Institutional Repository

There are potentially numerous benefits that would draw faculty and researchers to deposit work into their institution’s repository. Capturing the intellectual capital of their institution, better service to contributors and to the learning community, exposing the institution’s intellectual output to researchers around the world, increasing the research library’s role as a partner in the research enterprise, and contributing to the longtime preservation of digital output were some of the benefits outlined by a 2007 census of institutional repositories (Mareky, et.al). Chan and Crow (2002, 2004) found that one appeal to researchers was the knowledge that there would be a paradigm shift in scholarly publishing. They suggested that publishing within an institution’s own repository would wrest the control from publishers and put it back in the hands of the academy. They also listed the idea that there would be increased visibility, prestige, and public value. Furthermore, the use of persistent identifiers is a very positive development, which can help facilitating the re-use of resources for new research. In addition, it is becoming evident that as research is disseminated in this open-access online environment citation counts are increased. Eysenbach concludes a 2005 study with the observation that “the open access advantage” has at least three components: (1) a citation count advantage (as a metric for knowledge uptake within the scientific community), (2) an end user uptake advantage, and (3) a cross-discipline fertilization advantage.”

The very success of a repository is often measured by the amount of content held within the repository. In a 2003 article, Shearer suggests that the success of IRs will be determined eventually by “their uptake and use by researchers.” Probets and Jenkins concur, “Content size is one of the most important factors for assessing the achievement of self-archiving” (2006). Blythe and Chachra also state “IRs will be successful only if a large percentage of the institutional community voluntarily subscribes to the concept of the repository and routinely participates in it” (2005). Foster, in a 2005 article addressing IR development at the University of Rochester, reports that the total average number of documents held within individual repositories to be only 1,250 items per repository, a small number when considering the numbers of dollars and staff hours that go into establishing and maintaining a repository (2005). Bailey et. al., researching for an Association of Research Libraries publication, sums up the response of about two-thirds (63%) of ARL libraries regarding the recruitment of digital content for the IR as “difficult” (2006).

Other studies have suggested a variety of reasons for under recruitment of content. “The prime reasons for this could be - confusion, uncertainty and fear on copyright issues; doubts regarding how the material would be used; doubts on getting proper attribution, impact and scholarly credit; myth of low quality material in institutional repositories; unfriendly submission procedures; lack of mandatory provisions to deposit and lack of Internet connectivity” (Singh, et. al., 2008). As in the Foster article and a 2005 vanWestrienen and Lynch study, advice for successful deployment of IRs is usually given in the concluding remarks of many studies. Pelizzari voices concern, “The biggest obstacle may be inertia … amongst academics … [the problems of] intellectual property rights, quality control, workload (their own), undermining the ‘tried and tested’
publishing status quo on which academic reputations and promotions lie” (Pelizzari, 2005). Gierveld summarizes, “the marketing challenge of the IR [is] somewhat controversially: Scientists need to act in order to make the IR ‘product’ successful, yet it is a product which they did not ask for in the first place” (Gierveld, H., 2006). Faculty participation is critical. “Change in scholarly communication has been under way long enough that it is clear it will not achieve its full potential without active involvement of scholars and researchers, and research institutions are the obvious places to begin a much deeper level of exploration of and dialogue about the evolving spectrum of issues” (Hahn, 2008).

“Institutional repositories will succeed precisely because they are responsive to the needs of campus communities, and advance the interests of campus communities and of scholarship broadly” (Lynch, 2003). In the Gierveld article, the author discusses using a marketing and communications approach for an institutional repository. IR developers are encouraged to thoroughly think about the target audience for the IR and advises that “their benefits should be the starting point for developing the product in order to make them deposit their work” (Gierveld, 2006).

Methodology

A needs assessment conducted for the UHM community will help to give definition to the needs of researchers and faculty members. It will thereby guide the development of the institutional repository, in terms of both services and products. Data was gathered through a formal questionnaire in an online format, including demographic questions to determine status at the University and comfort level with adopting new technologies. Most questions gathered information about needs for storing and sharing research, attitudes on open access publishing, and on how the UHM Library might assist in scholarly work.

The survey instrument was adapted from previously-tested questionnaires used in similar IR studies at other academic institutions in the United States. The software that was used to generate and implement the online questionnaire is Surveyor, a web-based survey application and contains a report module. This feature supports data collection, organization, and preparation in various report formats. However, in order to generate more granular reports and charts and to more finely manipulate the data, it must be further exported into an external spreadsheet program. The format of the survey allowed for both the selection of pre-determined answers, as well as, an area to explain the selection of an answer and gather further comments. In this manner both quantitative and qualitative data was gathered through the same instrument.

The most recent statistics available indicate that there are 1,180 full-time faculty at the University of Hawaii (UH) at Manoa campus, with an additional 92 part-time faculty members. Of the 20,357 total student population, graduate and professional students number 6,320. The population is diverse in its multiethnic heritage. Two of the major University schools rank either first or top in the nation for the best environment for minority students and the most diverse faculty.
The institution, with very high research activity, excels in a number of academic areas. It is a leader in Hawaiian, Pacific, and Asian studies, as well as in astronomy, oceanography, international business, and travel industry management. UH Manoa is ranked in the top 30 public universities in federal research funding for engineering and science by the National Science Foundation, and it is one of only 13 institutions in the nation to hold the unique distinction of being a Land, Sea, and Space Grant research institution. The Cooperative Extension Service, provided by the College of Tropical Agriculture and Human Resources, dedicates approximately 65 county agents and specialists performing extension work in agriculture, natural resources, and human resources across the state of Hawaii. The Hawaii Institute of Marine Biology runs the world's only coral reef research center and marine biology lab built on a coral reef. The Institute for Astronomy is involved in major next-generation telescope projects and within four years, the Hawaii Space Flight Program will make UH Manoa the first university in the world to be able to design, build, launch, and control its own satellites. The William S. Richardson School of Law, the John A. Burns School of Medicine, and the Shidler College of Business graduate program in international business all rank high for a number of distinctions. The School of Pacific and Asian Studies hosts seven area centers, and UHM is home to the nation’s only School of Hawaiian Knowledge. (University of Hawaii at Manoa, 2008).

In order to support the high level of research activity at the UHM, the focus of this needs assessment was on its faculty, researchers and graduate students. By using faculty and graduate student listservs, organizations, and points of contact, the subject sample more accurately represents the target group for this assessment. The actual sample population for this survey is further described in the results section of this paper.

The questions in the initial draft for use in the survey were adapted from other IR needs assessments conducted at several universities. Institutional repository directors at the University of Southern California and at the University of Arizona Libraries provided examples of the needs assessment instruments and reports from their studies. The second draft of the survey questions resulted from tailoring the survey to more reflect the culture at the UHM. The draft was revised numerous times as it was reviewed by the Chair of the Educational Technology Program at UHM, several Library colleagues interested in scholarly communication, an IR content expert, and the University Librarian.

Field testing was conducted as a next step, using several faculty members from across campus and three graduate students. Feedback from this input was used to further refine and clarify aspects of the survey. After the survey questions were finalized, application was submitted to the Committee on Human Studies, seeking exemption from the Department of Health and Human Services regulation requiring permission to conduct research on human subjects. Exemption was granted on October 16, 2008. The final set of questions was formatted into an online version using the software program, Surveyor. This format was used to distribute the survey electronically.
Recruitment of survey participants took place through a number of avenues. A request for graduate student and faculty participation was placed on the UHM Library’s website and through the UHM’s website. Several UHM community listervs were used to send out participation requests, such as those representing the Graduate Student Organization and the Manoa Faculty Senate. In addition, librarians acting as library liaisons were asked to contact their department representatives. The main participant recruitment effort focused on web-based distribution, so data was gathered electronically directly into the survey application. Simple statistical and qualitative methods were applied to analyze the data. This data will provide meaningful feedback to enhance the functionality and services of the institutional repository for the University of Hawaii at Manoa.

Findings and Results

There were 414 participants who responded to the online survey. Of that number, 89 responses were removed from the overall tally due to incomplete responses. The remaining 325 participants were almost equally divided between graduate students and faculty.

Participants were asked to indicate who they envisioned using the research materials that they create. Thirty-six percent of the focus was on students, both graduate and undergraduate. In addition, approximately 44% envisioned other faculty, researchers, and practitioners, and the general community utilizing their research. One participant responded with this comment, “If materials are to be put online, it is hard to imagine who would NOT use the resources. If anything, online access has tremendously broadened the use of materials by people young and old, from K-12 level children to senior citizens.”

Though the majority of participants responded favorably to the idea of distributing their work through an institutional repository, 35% were unsure. Some comments indicated confusion over the idea of an institutional repository and the need for further clarification.

When asked about providing access to their work, some researchers commented that though they had not made their research publicly available in an Open Access format, they would always send copies of their work in response to queries. A few comments indicated that some participants had not thought about making their work publicly available in an institutional repository.

One question also inquired about future intent or purpose in maintaining digital files. Table 1 reflects the responses to this question. The responses to this question were interesting in that there was a fairly even spread describing purpose for keeping the files. By analyzing the responses, it will help the ScholarSpace team to not only focus on future development aspects of the repository but on the communication points of interest to faculty and researchers. Written comments indicated that another use was personal, for example when applying for promotion or tenure.
Table 1. Purpose in keeping digital files.

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<tr>
<th>Purpose</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Provide long-term preservation of my digital material</td>
<td>14.92%</td>
</tr>
<tr>
<td>Support my teaching and research</td>
<td>13.74%</td>
</tr>
<tr>
<td>Store my digital materials in a centralized site</td>
<td>12.63%</td>
</tr>
<tr>
<td>Support the teaching and research of others</td>
<td>9.51%</td>
</tr>
<tr>
<td>Make it easy for other researchers or students to my digital materials</td>
<td>9.09%</td>
</tr>
<tr>
<td>Increase the visibility of my research</td>
<td>8.33%</td>
</tr>
<tr>
<td>Enable re-use and re-purpose of my digital content</td>
<td>7.98%</td>
</tr>
<tr>
<td>Maintain and update my materials on a department website</td>
<td>7.36%</td>
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</tbody>
</table>

Participants were asked if they would use a centralized university repository that was managed by the UHM Library to deposit the digital materials that they created. The majority responded in a positive or neutral manner. Those indicating that they would not or probably not use a repository service were less than 14%. Comments indicated that some participants would need to “sold” on the idea of a repository and how it would benefit them. Comments referenced the need for security, a desire not to duplicate the posting of their work, and the need for assistance in setting up collections and in depositing work. This would result in greater interest in the repository.

A question was then addressed to those responding in the negative for the previous question. They were asked what it would take for them to change their mind about depositing their research or scholarly materials in a university repository. Table 2 shows the response to this question. Some participants responded once again that security was a concern. Several others commented that a repository was not the best type of service for their particular research. The need for assistance in working with the repository was mentioned again.

Table 2. Factors encouraging the use of a repository.

<table>
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<tr>
<th>Factor</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>I would be interested in depositing my research if I was ...</td>
<td></td>
</tr>
<tr>
<td>Given more information about the benefits of a repository</td>
<td>24.03%</td>
</tr>
<tr>
<td>Given more information about how a repository could assist me with scholarly communication</td>
<td>17.98%</td>
</tr>
<tr>
<td>Given more information about copyright &amp; plagiarism</td>
<td>16.97%</td>
</tr>
<tr>
<td>Provided training in the submission process</td>
<td>14.79%</td>
</tr>
<tr>
<td>Given assistance in copyright issues with my work</td>
<td>12.44%</td>
</tr>
<tr>
<td>Provided with assistance in submitting my materials</td>
<td>11.43%</td>
</tr>
</tbody>
</table>

In another question, information was presented about the National Institute of Health (NIH) Public Access Law and about institutional mandates. This United States law mandates that researchers who receive NIH funding for their work must deposit the resulting research in Pub Med Central, a free digital archive of biomedical and life sciences journal literature, within a certain time period. Participants were asked to give feedback on the idea of mandating the deposit of research. Over 51% supported the idea of mandating work, but over 30% said they would need more information in order to make a decision. Many participants commented that though they would support the mandate for federally-funded research, they would not support a mandate if it applied to non-publicly funded research.
Finally participants were asked to voice their concerns about depositing their digital materials in a centralized, open access institutional repository. The top three concerns focused on plagiarism, that the work was often “in progress” and not ready for publication, and confusion over current copyright laws. Additional concerns listed in the general comment section of the survey addressed an array of issues. Others mentioned a worry about forwarding migrating work that is in a repository. As new technologies evolve, will the repository be able to migrate the current formats so they will be accessible in the future with new formats and program requirements?

One participant responded that rather than looking at the “concerns” about depositing digital material, that researchers should be looking at the reasons for depositing: foster collaboration, lead to more grants, develop synergistic relationships, better recognition for all the good work going unnoticed at the UH, encourage collegiality, sharing of undisclosed research and grey literature with students and other researchers.

Conclusions and Discussion

Knowledge gained from the UHM ScholarSpace needs assessment will help to align the faculty needs with the services provided by the repository, thus encouraging the process of voluntary submission of items and the success of the repository. Data can help shape the focus of the marketing strategy by addressing faculty concerns.

Results indicated the concern for providing long-term preservation of digital materials, followed by the need for storing files to support teaching and learning, and a desire for storing digital materials in a centralized location. Written comments also addressed the intent to store files in order to use for tenure and promotion. These comments addressed features that the institutional repository currently offers, so these should be emphasized when promoting repository services.

One concern addressed the location of the researchers’ stored files. More than 63% store their research on personal computers. After experiencing the 2004 flood on the Manoa campus, an emphasis on a central location that includes back-up and off-site storage should be a very motivating reason for researchers to make use of an institutional repository.

The results of another question indicated a concern that working with the repository technology would not be easy. Therefore a marketing approach would need to take this data into consideration, and an emphasis on the ease-of-use will need to be incorporated when promoting the repository. In addition easily-accessible and flexible training sessions will need to be offered to both the graduate and faculty populations to fit into busy schedules. In addition online tutorials for utilizing the repository program should be provided.

One of the questions giving a great deal of insight into the issues on the minds of faculty and graduate students was the question asking them to address their concerns about
depositing their digital materials in a centralized location. The greatest concern for both groups was about plagiarism and the theft of their work if it resides in an open access environment, followed by the idea that their work was often “in progress” and wasn’t yet suitable for public access, with a final concern about confusion over current copyright laws.

Responses to one question indicated that 66% of participants would not allow access to their digital research. Though it is understood that many people were most likely responding in terms of their own personal files, one might wonder how much this response covers personal research as well. However, since one of the motivating factors in the initial development of institutional repositories is the idea of Open Access, this response indicates that some time should be spent addressing this concept with the UHM academic community and how it applies to research and scholarly publication today. This is an area that is rapidly changing at the moment, with a potentially great impact on the way researchers function. It should, therefore, be an integral part in marketing repositories. A few participants indicated that they hadn’t thought about making their work available in an open access format. A number of others indicated that they send files to individuals who write and request information. One comment summed up the benefits of using a repository, “I used to send my articles when anyone wrote asking for them, but now with ScholarSpace, I simply refer them there.”

When asked if they would use a centralized university repository managed by the UHM Library to deposit their research, almost a quarter of the respondents indicated in the affirmative. Approximately 45% were favorable to the idea, with 17% undecided and less than 14% responded negatively. Those respondents who had given a negative response were then queried to find out what would be needed to possibly change their mind. Almost 42% of these responded that they would need more information about the benefits of a repository and about how it would benefit them and assist them in scholarly communication needs for conducting research and teaching.

In summary, the following recommendations need to be considered while further developing the repository and its services: 1) Develop a plan to generally market and promote the repository service; 2) Address how the repository provides long-term preservation of digital materials, how it supports teaching and learning, and how it can support the tenure and promotion process; 3) Emphasize that a repository provides a central location that includes back-up and off-site storage and make sure this is a clearly-defined step in the repository development; 4) Provide easily-accessible training sessions in both repository use and submission process, as well as links to clear, online tutorials for utilizing the repository program; and 5) Develop an educational program that addresses Open Access, copyright issues, plagiarism, and the changes in scholarly communication.

By addressing these issues and by re-evaluating both the needs of the faculty and the quality of repository services as the repository continues to develop, ScholarSpace will more likely meet the needs of our academic community and therefore achieve a higher measure of success.
References


