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Students' Perception of Building a Digital Repository for the Intellectual Outputs of Saudi Scholarship Students

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Abstract

The intellectual output of students may receive insufficient attention in terms of preservation and distribution. The present study focuses on the perceptions of students toward a digital repository for collecting the works of students awarded scholarships. The study found that majority of participants have the desire to archive or publish in a digital repository because they appreciate the quality of students' research and trust it when writing projects and study reports. However, only a small proportion of participants understood about digital repositories and a few of them had previous experience in publishing their works online. The findings indicated that copyright infringement is the biggest concern that prevents participants from depositing their work, followed by the unawareness about a university repository or appropriate digital repositories that accept students' work.

Keywords: Archives, Archiving Students' Work, Digital Repositories, Institutional Repositories, Open Access Publishing, Saudi Culture Missions, Scholarship Students

1. Introduction

The Internet plays a major role in scholarly communication and knowledge sharing due to its high speed and huge capacity for storing information in different forms. Scientists and researchers use the Internet to disseminate the results of scientific research. The development of this practice has led to the reconsideration of traditional publishing systems and creation of a new scholarly communication system based on an open access publishing model that aims to make scientific information freely available online without restriction or hindrance as well as free of charge for all people.

Supporters of open access started to publish their works on personal websites or the portals of the institutions to which they are affiliated; however, this was found to be ineffective for popularizing research outputs due to access restrictions and unorganized content of the Internet[1]. Digital repositories emerged as a solution by imposing a new pattern in scholarly publication and facilitating knowledge and information sharing. Such repositories collect a variety of information resources including journal articles, conference papers, books, book chapters, theses, dissertations, and video and sound files. In the academic environment, these types of resources have been increasingly extended to include students' work such as honors projects, capstone papers, conference papers, multimedia projects, and research papers[2]. One study of 283 U.S. repositories indicated that 71% include undergraduate and graduate theses and dissertations and 38% contain other research such as posters, presentations, and papers[3].

There are many incentives and reasons to collect students' work in digital repositories. Some students may not preserve their work accomplished during university studies, which might lead to the loss of significant resources after graduation. Moreover, students are enthusiastic about making their work available in a digital repository. In particular, they are motivated by the possibility of disseminating their work and receiving feedback and commentary[4]. The presence of a digital repository is good opportunity for students to share their research with the wider community and engage in a system of scholarly communication without going through the typical journal route[5].

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2. Research Problem

The support to higher education and research in the form of scholarships in Saudi Arabia has led to an increase in the number of scholarship students globally. Students enroll at prestigious universities and join reputed academic programs. Therefore, scholarship students are required to write many term papers, class assignments, technical reports, theses, and conference papers. These diverse intellectual outputs of Saudi students may receive insufficient attention in terms of preservation and distribution. As noted above, students may not keep their work after passing courses or graduating. In this case, these works will be lost and no longer accessible. It is therefore important that Saudi cultural missions monitor students' outputs and make them accessible for others without restrictions by building a repository for the digital assets of scholarship students. Setting up a repository requires that students have awareness of the importance of archiving their work and making it accessible to others. The present study focuses on the perceptions of students toward starting a digital repository.

3. Research Questions

This study examines the following questions:

1. To what extent can scholarship students engage in setting up a digital repository?
   a. Are scholarship students aware of the concept of a digital repository?
   b. Do they have the desire to publish their work in digital repositories?
   c. Which factors prevent scholarship students from publishing their work in digital repositories?
   d. Is there a need to preserve students' work in a digital repository?

4. Literature Review

Several studies have examined the institutional repositories in various organizations. Some experts have expressed concern about the inclusion of students' work in repositories. Pickton and McKnight[4] believed that while there is a place in an institutional repository for research students' work, one of the major concerns is the quality of the work. They suggested applying quality control approaches to ensure that only worthy content is added. Moreover, faculty is concerned about plagiarism because other students might download the work from the repository and submit it as their own[6]. Other concerns from faculty include how students' research appears in the repository[7]. For instance, do retrieved results list students' research alongside faculty research? Are student authors clearly identified as such? How will this affect a faculty member's research agenda, specifically their ability to publish work in a journal? And what is the impact on intellectual property and patents? The worry of ideas being pinched or plagiarized before publication is also legitimate to prevent students' work, especially faculty–student collaborations, from being disseminated and openly shared[8].

Some researchers think of students' work as an interesting collection that deserves examination. Therefore, different case studies of repositories holding students' research and outputs have been conducted. Barandiaran, Rozum, and Thoms[3] studied the content of the institutional repository at Utah State University, focusing on graduate and undergraduate students' work including posters and the research by research groups. This repository provides individual profile pages, where students can present their research and scholarly interests and promote their skills and accomplishments. The authors found that students were motivated to deposit their work because they wanted a permanent and official place to archive their research so they may refer to it on their CVs. In addition, the repository allows students to build an online CV and promote their research and academic skills. Other students benefit from the ability to market their research group and personal site. Passehl-Stoddart and Monge[9] described Western Oregon University's focus on publishing students' work in its institutional repository *Digital Commons @ WOU* by discussing individual student collections. The authors indicated that such collections have the ability to increase students' academic confidence, provide access to students' research and scholarship, introduce scholarly communication concepts and practice, offer internal and external promotion of programs, provide inclusive opportunities and documentation of student scholarship, and contribute to student retention. Hertenstein[2] discussed the inclusion of student scholarship on institutional repositories in the United States. The findings suggested that most repositories, regardless of their size, archive a variety of student-generated content including honors projects, capstone papers, conference papers, multimedia projects, and research papers. Therefore, the inclusion of student scholarship is becoming the norm. The author suggested that administrators need to be prepared to create policies and procedures for diverse materials, especially related to embargoes and the actual submission process. Administrators should also look to faculty to endorse

students' content to ensure the quality of their repository.

Other studies have attempted to build new repositories focusing on preserving and archiving students' work in particular. Nolan and Costanza[5], interested in promoting students' work, especially undergraduate theses, developed a set of institutional repositories among several liberal arts college libraries. During the development, students were found to become aware of the benefits of the online repository much faster than faculty and staff. They liked the idea of their work being online, discoverable on Google and potentially visible to future graduate school admissions officers, employers, and even relatives. With the continuous use and improvement of the repository, the authors believed students would become aware of some conception issues relating to copyright, fair use, licensing, and alternative publishing models. Anderson, Arndell, and Christensen[10] sought to retain the material produced by undergraduate students by creating a searchable digital repository for long-term preservation and dissemination. The repository was successful as a pilot study, with students showing an increased awareness of the value of properly documenting their work for future reference and encouraging best academic practice at an early stage of tertiary education. Bhardwaj and Kaushik[11] found that students use digital repositories to keep themselves up-to-date with the latest developments in their field. However, they suggested that more students needed specific training by the library team to maximize their use of these e-resources.

5. Methodology

The study aims to understand if scholarship students have the desire to archive their work in digital repositories. Due to the difficulty of conducting the study on all scholarship students and cultural missions globally, the study was applied to scholarship students and cultural missions in two countries: the United States and Australia.

A mixed method using a concurrent nested design was employed to obtain the most suitable data. Questionnaires and interviews were used to provide more information and understanding of the subject. A questionnaire survey was distributed to all scholarship students at all levels except those still studying English. Altogether, 236 students from Australia and 108 from the United States participated in the study. The questionnaire was distributed to students in Australia by sending an email to each student, while it was distributed to the students in the United States by publishing it on the Facebook account of the cultural mission. A semi-structured interview was conducted with IT staff in the two cultural missions to explore the technology environment in terms of software, hardware, staff, and financial support.

6. Data Analysis and Results

The descriptive statistics of each variable are used to investigate the extent of students' engagement in setting up a digital repository. The mean and percentage for the survey items are reported herein. The results are divided into five categories that address the research questions: demographic characteristics, awareness of digital repositories, students' desire for online publishing, barriers to online publishing, and the need for digital repositories. Data gathered by using a Likert scale were analyzed using the coding system. Strongly disagree was scored as one: 1. disagree as two, 2. neutral as three, 3. agree as four, 4. and strongly agree as five, 5. Similarly. No. 1. I don't know, 2. and yes, 3. were used. The mean of the answers from the test questionnaire was calculated for each question or statement. The mean obtained was interpreted based on the scale in Table 1.

Table 1. Scale used to interpret the data

Mean	Verbal Interpretation
4.20–5.00	Strongly Agree
3.40–4.19	Agree
2.60–3.39	Neutral
1.80–2.59	Disagree
1.00–1.79	Strongly Disagree
2.34–3.00	Yes
1.67–2.33	To some extent
1.00–1.66	No

7. Demographic Characteristics

As shown in Table 2, the gender distribution revealed a higher male participation than female participation (77.3%). Participants were asked to determine the degree in which they are enrolled. The distribution was: Bachelor's (32.2%), Master's (39.5%), and doctorate (28.2%). They were also asked to identify their discipline. The findings highlight the diversity of majors. Applied science (33.1%) is the most frequently reported discipline, with health sciences (28.5%) the next most frequent. Only one participant (0.3%) is studying religious sciences.

Table 2. Demographic characteristics

Variable	Item	Frequency	Percentage
Gender	Male	266	77.3
	Female	78	22.7
Degree level	Bachelor's	111	32.2
	Master's	136	39.5
	Doctorate	97	28.2
Program of study	Humanities and Social Sciences	45	13.1
	Administrative and Financial Sciences	86	25
	Religious Sciences	1	.3
	Applied Sciences	114	33.1
	Health Sciences	98	28.5

Table 3. Awareness of digital repositories

Statements of construct	No	To some extent	Yes	Mean	SD
Knowledge of open access	24.71	35.17	40.12	2.15	0.79
Knowledge of digital repositories	39.54	34.01	26.45	1.87	0.80
Knowledge of electronic archiving	21.22	31.40	47.38	2.26	0.79
Total				2.10	.65

8. Awareness of Digital Repositories

It is possible to determine whether participants are aware of the concept of digital repositories by asking them directly or by understanding their comprehension of a set of concepts related to digital repositories. In this context, participants were asked about their knowledge of open access, digital repositories, and electronic archiving. Table 3 shows, participants' knowledge of the concept of digital repositories and associated procedures/practices is incomplete and may still be ambiguous. The mean of participants who know about digital repositories is only 1.87, while the mean of those who have a general understanding of related concepts is 2.10.

9. Experience in Online Publishing

There are online publishing channels other than digital repositories such as websites, blogs, e-journals, and social media. Participants were asked about their previous experiences in online publishing on any channel. Table 4 shows, only a small minority (18.31%) mentioned that they had already published one or more piece of research on the Internet. Taking into account that the majority of participants who previously published on the Internet are doctoral students, we can conclude that a large proportion of students' work, especially in Master's and Bachelor's degrees, may not become visible and get disseminated to a wider community because it is not archived and online.

10. Desire for Publishing in a Digital Repository

Identifying readiness to publish students' work in digital repositories requires knowledge of their views on a range of issues related to the desire for electronic publishing and the possibility of citing such work in writing course research. The general impression of participants was that they were not reluctant to publish and make their studies

available in digital repositories. As shown in Table 5, the majority of participants at least agree with most of the statements: 83.72% have a desire to preserve and archive their work, 81.10% would like others to view their work, and 63.68% do not mind publishing their work in a digital repository. About half (50.58%) stated that they can rely on students' work to write scientific research. The decline in this percentage compared with previous findings may be because students' work is not subject to peer review, which makes it unacceptable in scientific research. By looking at the overall mean of all statements, it can be concluded that participants in general have the willingness and readiness to publish their studies in digital repositories (mean = 3.91).

Table 4. Experience in online publishing

Answer	Frequency	Percentage
Yes	63	18.31
No	281	81.69

11. Barriers to Online Publishing

The previous results show that participants have the desire and conviction to publish their work in digital repositories; however, few of them actually do so. Table 6 shows the reasons that may prevent the availability of students' work in a digital repository. The greatest barrier to publishing in digital repositories is the fear of stealing an idea (mean = 3.44), followed by the fear of plagiarizing work when it is published in full text (mean = 3.32). Other reasons include the unawareness of appropriate digital repositories (mean = 3.24) and the weakness of students' work in terms of scientific content (mean = 2.91).

12. Need for a Digital Repository

The need for a digital repository to archive coursework was examined by identifying participants' assessment of the scientific value of students' work, learning how to handle research and papers after the completion of the course for which they were written, and the existence of a digital repository at the university where they study. Table 7 illustrates the participants' perceptions of the value of students' work. The vast majority agree that students' work has high scientific value and that its information and analysis can be relied on. On the contrary, a few (4.65%) are not satisfied with the quality of students' work.

Participants were asked about what they have done with the work they conducted after the course was completed. As shown in Table 8, the majority of participants (63.37%) indicated that they kept or would keep it when the course is completed. This supports the

Table 5. Desire to publish in a digital repository

Statements of construct	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Publishing in a digital repository	2.01	4.37	29.94	38.09	25.59	3.81	.94
Citing students' work	6.10	11.05	32.27	32.85	17.73	3.45	1.09
Informing others of coursework	1.45	3.94	13.95	42.73	38.37	4.13	.88
Archiving students' work	.29	2.91	13.08	39.83	43.89	4.24	.81
Total						3.91	.68

Table 6. Barriers to publishing in a digital repository

Statements of construct	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Fear of plagiarism	9.30	18.60	25.58	23.84	22.68	3.32	1.26
Unawareness of digital repositories	7.85	18.02	29.65	30.81	13.67	3.24	1.13
Weakness of students' work	7.27	19.76	52.03	16.57	4.37	2.91	.90
Stealing a topic idea	5.23	13.66	33.14	28.20	19.77	3.44	1.10
Total						3.23	.73

previous finding that participants value students' work and see it as having scientific value, so they can use it in the future. Only 15.99% stated that they would publish their work online either in the current form or after being reviewed and revised, 12.21% said that they have discarded it or would discard it, and 6.11% declared that they would take no action. Some participants mentioned other actions such as giving their work to friends to take advantage of, consulting specialists about what to do, and trying to apply the results in their work after graduation.

Table 7. Value of students' work

Opinion	Frequency	Percentage
Strongly agree	3	28.20
Agree	13	47.09
Sometimes agree	69	20.06
Disagree	162	3.78
Strongly disagree	97	.87

Table 8. State of students' work after passing the course

Act	Frequency	Percentage
Kept it or will keep for the long term	218	63.37
Discarded it or will discard it	42	12.21
Ignore it and no action will be done	21	6.11
Publish it online	55	15.99
Other action	8	2.32
Total	**344**	**100.0**

One of the obstacles students face in archiving and depositing their work online is the lack of a digital repository at the university to which they belong. Table 9 shows that the highest proportion of participants (39.24%) reported that their university did not have a repository. However, 31.69% asserted the existence of a repository. The rest said they did not know if there was a digital repository at the university. The lack of an institutional repository at a university or even unawareness of its existence by students is thus a factor discouraging them from depositing their papers and research.

13. Discussion

Building a digital repository requires the understanding of stakeholders, especially content providers, of the concept and related concepts. It is discouraging that such a small proportion of participants (26.45%) understood about digital repositories, which is consistent with a previous study reporting that doctoral students in New Zealand have little awareness of the existence of institutional repositories[12]. Compared with the awareness of digital repositories, the awareness of open access is a little higher (40.12%), but still low. These findings are similar to those reported by Hahn and Wyatt[13], who found that majority of faculty are unaware of an institutional repository in their local institutions and that many are also ignorant regarding open access journals. There is a direct correlation between open access and digital repositories. One of the main objectives of setting up institutional repositories is to provide open access to information as a means of disseminating and promoting the intellectual output[14]. The awareness of open access movement and resources influences the establishment of and contribution to digital repositories. Kocken and Wical[15] found that a lack of clarity about the concept of open access leads to the ignorance of digital repositories.

Table 9. Awareness of an institutional repository at the university

Answer	Frequency	Percentage
Yes	109	31.69
No	135	39.24
I don't know	100	29.07
Total	**344**	**100.00**

Based on the above results, it is important to formulate a comprehensive program for scholarship students to raise their awareness of digital repositories and open access of information. Different means and channels can be used to disseminate these concepts including emails, introductory lectures, Saudi cultural clubs, the websites of cultural missions, and other online resources[16]. Mercer[17] identified several strategies that can raise awareness of open access including educating students of the importance of archiving their work, providing services, advocating for changes within the scholarly publishing landscape, and enhancing the value of open access with the community.

Additionally, we showed that few participants had previous experience in publishing their works online. Being unaware of digital repositories and open access might have a negative effect on engagement in online publishing. Therefore, before content recruitment can become the focal point of any marketing strategy, digital repository managers must build awareness[15]. Taking into account that some of those published online are doctoral

students, who are often required to write peer-reviewed papers, we can conclude that a large number of students have never published online. Hence, some students' work has not been collected or archived for many years. Further, the cycle of students' research is incomplete because the findings are not disseminated or subject to feedback from a broad audience[18]. Peer and expert feedback helps raise research quality and meet the criteria of a research methodology as well as making the result more noticeable. Indeed, improving the quality of research has become more important since the advent of academic journals devoted to publishing undergraduate students' research.

The study also found that the majority of participants have the desire to archive or publish in a digital repository. This result is line with Dawson and Yang[19], who declared that open access repositories are preferred to disseminate research findings widely and generate more usage statistics. Some students make a great effort in research and writing reports and want to share these works with others to prove their abilities and clarify the effort done in the study to be appreciated by others. The presentation of learning activities in institutional repositories reflects the individual student's view of the breadth of his or her education, including what was learned inside and outside the classroom[20].

The vast majority of participants (75.29%) appreciates the quality of students' research and trusts it when writing projects and study reports. The quality of students' work is negatively affected by academic factors including students' lack of analytic skills, careless supervision of students' research, poor language skills, poor teaching, and students' lack of learning goals[21]. However, students' confidence in their work can help them overcome problems preventing online publishing. This can be supported by holding seminars and specialized courses to develop writing and research skills to raise the quality of students' work.

The desire of participants to publish their work may face obstacles that prevent them from depositing the work in digital repositories. Waycott, Sheard, Thompson, and Clerehan[22] stated that students are concerned about copying issues, poor online conduct, and the risk that they may feel exposed when publishing their work online. In contrast to previous studies[23-26], the findings of this study indicated that copyright infringement is the biggest concern that prevents participants from depositing their work. The copyright issue includes the plagiarism of information and stealing topic ideas. Another reason for the reluctance to contribute is the unawareness of a university repository or appropriate digital repositories that accept students' work. This result is in line with other research that has found that the majority of university faculty and students are unaware of the institutional repository in their local institutions[27,13]. Even if participants are aware of digital repositories and have the desire to archive their work, the lack of a repository at the university to which they belong may stand in the way of this desire. It is therefore important that Saudi cultural missions provide a place for students' work to be preserved and showcased. Indeed, 39.24% of participants indicated that there is no institutional repository at their university and 29.07% did not know.

The vast majority of participants do not get rid of their student papers and projects, even after passing the course. Some students retain their work for future use, to pursue graduate study, or as supporting documents for job applications[28]. This practice among students is an incentive to develop a digital repository. Indeed, students appreciate the value of their work and have a passion to maintain it, which makes it easier to convince them of the importance of supporting a digital repository by depositing their past and future intellectual outcomes.

14. Conclusion

This study presents a vision for building a digital repository for the intellectual outputs of Saudi scholarship students at Bachelor's, Master's, and doctoral levels. There are tens of thousands of Saudi scholarship students around the world in addition to thousands of students sent every year to study abroad. The main problem is that what students write and prepare as requirements for their courses are rarely archived, organized, and made accessible, meaning that they might be lost after graduation. It is therefore important that the Ministry of Education, represented by the cultural mission, take care of the preservation and organization of this scientific output and make it available through a digital repository. The content of the repository can also be used to obtain a variety of statistics that allow the mission to evaluate students and document their achievements.

This study found that students wish to preserve their work including research, reports, projects, and term papers. However, the lack of awareness of how to do so and support to implement it either by the university or by the cultural mission might be an obstacle. It is recommended that Saudi cultural missions globally take the initiative in monitoring the intellectual output of students. Opponents of digital repositories may claim that students' work prepared at the undergraduate level is weak and fails to reach scientific research standards. If such a concern exists, the content of the repository may be based on selection according to preset criteria. Yet, if such

a belief is true, a student understanding that his or her work will be archived and made available to others may encourage him or her to improve its quality and ensure that he or she meets the methodological standards.

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