

Supporting and Enhancing Social Scholarship in the Digital Age: The Case of PocketKnowledge

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Abstract

This article reports on a study of the adoption and use of an institutional digital repository and social networking website by the academic community of a graduate school of education in the Northeastern United States. Specifically, the researchers investigate: (1) the rate of adoption and use of the repository by faculty, staff, students and alumni of the university, (2) the contents and levels of participation of these respective groups, and (3) the emergence of collaborative, online and open access scholarship within the institution. Employing a Transaction Log Analysis (TLA) methodology, three successive years of database usage records were gathered and analyzed, and based on the findings, the researchers discuss the potential of digital repositories for advancing social scholarship.

Introduction and Purpose

An institutional digital repository (often called an institutional repository - IR) is a web-based database of scholarly material which is institutionally defined, cumulative and perpetual, and openly accessible to members of the institution's community (Ware, 2004). Described as an essential infrastructure for scholarship in the digital age (Lynch, 2003), institutional repositories provide a set of digital collections and services that the institution offers to members of its community for the management and dissemination of digital materials created by the institution and its community members (Crow, 2002; Lynch, 2003). As Crow (2002) points out, interest in institutional repositories within the academic community has grown steadily in recent times, largely due to the logical convergence of faculty and student-driven self-archiving initiatives, library dissatisfaction with the monopolistic effects of the traditional and still-pervasive journal publishing system, and the availability of digital networks and publishing technologies.

Institutional repositories thus offer many benefits to an academic establishment as they manage and showcase the institution's intellectual assets, making them searchable and available in one central location whilst providing authors with an integrated and stable method for storage and dissemination of content. Many US academic institutions are thus implementing institutional repositories, indeed Lynch & Lippincott (2005), report on a survey of half of US doctoral-granting institutions in which 40% of respondents indicated they had some institutional repository operating.

Currently however, there is no consensus on what constitutes acceptable use of an institutional repository (Markey, Rieh, Jean, Kim, & Yakel, 2007), and since implementing these repositories requires considerable financial, personnel and technical investment, while some studies report that operating institutional repositories have had limited success in recruiting voluntary deposit of content (Markey et al, 2007), it would be helpful if academic institutions that currently operate these repositories could share their experiences so as to help build models, and formulate best practices. The purpose of this study is therefore to contribute in this direction by comprehensively examining one such repository that was purposively developed to facilitate the storage and sharing of scholarly material by members of the institution's community.

Theoretical Perspective

PocketKnowledge, developed and maintained by library staff at a graduate school of education in the northeastern United States, is a repository that merges static digital archiving with Web 2.0 technologies, and thus in addition to serving as a conventional repository, offers users a platform

for knowledge sharing and social interaction. This resource has been in operation for close to 3 years, and this study sought to determine the acceptance, usage levels and patterns of usage by respective groups (students, staff, faculty and alumni) within the institution. Two main theoretical frameworks thus guided the study - the Diffusion of Innovations (DoI) theory (Rogers, 2003), and Grounded Theory (Glaser & Strauss, 1967).

DoI theory discusses how a new technological idea, artifact or technique, or a new use of an old one, migrates from creation to use. According to DoI theory, technological innovation is communicated (diffused) through particular channels, over time, among the members of a social system. Given that the decision to adopt a particular innovation is optional and not collective (where a decision is reached by consensus among the members of a system), or authoritative (where a decision is imposed by another person or organization which possesses requisite power, status or technical expertise), each member of the social system encounters a 5 step innovation decision process:

1. knowledge - person becomes aware of an innovation and has some idea of how it functions
2. persuasion - person forms a favorable or unfavorable attitude toward the innovation
3. decision - person engages in activities that lead to a choice to adopt or reject the innovation
4. implementation - person puts the innovation into use
5. confirmation - person evaluates the results; positive outcomes reinforce decision

A characteristic feature of DoI theory is that, for most members of a social system, the innovation-decision depends greatly on the decisions made by other members of the system.

Rogers (2003) identified different adopter categories as:

- Innovators - the mostly very few venturesome types that enjoy being on the cutting edge
- Early adopters - the respectable group (mostly opinion leaders) that use data from innovators' activities to make their own adoption decisions.
- Early majority - a large subsection of the social group that follows the trusted early adopters
- Late majority - the skeptical that join as adoption becomes a necessity
- Laggards - the "traditionalists" who take much longer to adopt any innovation

DoI theory is thus more of a descriptive tool, rather than one for explanation or prediction, and in this study it provides the framework with which we describe the adoption and use of *PocketKnowledge* over a three year period.

Grounded Theory on its part posits that a theory must emerge from (or be grounded in) the data. This inductive approach thus emphasizes the use of "real world" data and a systematic set of procedures to develop a grounded theory about a phenomenon, rather than deductively generating theories in abstraction. The intent of this approach is to develop an account of a phenomenon that identifies the major constructs, or categories, their relationships, and the context and process, thus providing a theory of the phenomenon that is much more than a descriptive account (Becker, 1993). In this study, grounded theory served as a perspective with which Transaction Log Analysis (TLA) was used to isolate and identify typical interactions among users of *PocketKnowledge*, and consequently sought to establish the existence or emergence of social scholarship within the system, and the institution as a whole.

Methods and Techniques

Transaction Log Analysis (TLA), defined as the study of interactions registered electronically between online systems and persons who use these systems, was the main methodology of this study. As a non-intrusive and non-interactive method of gathering data, TLA has long been used to assist in measurements of user interactions on websites, as well as address issues relating to system performance and information structure (e.g. Moukdad & Large, 2001; Park, Lee, & Bae, 2005).

Applying TLA in this study, the researchers retrieved and analyzed all transaction logs pertaining to user access and registration, content archiving, community creation, user tagging of files, searches, file views and file downloads. This study was conducted longitudinally over the course of seven semesters (Fall 2006 - Spring 2009), and for each semester data analysis yielded information on:

- the numbers and identities of persons registering to use the resource
- total number and types of files archived in the system, and by whom
- permissions (private or public) granted to files by uploaders
- number of searches made in the system, and the popular keywords and phrases used in searches.
- total number of files viewed and downloaded from the archive
- the levels and extent of use of Web 2.0 technologies - tagging, commenting, emailing, collaborative practices.

This data was then analyzed against the backdrop of DoI and Grounded Theory to establish rate of adoption and usage patterns, user demographics and interactivity as well as the possible emergence of the phenomenon of social scholarship through community creation, content sharing, tagging of files, cross-referencing, commenting etc.

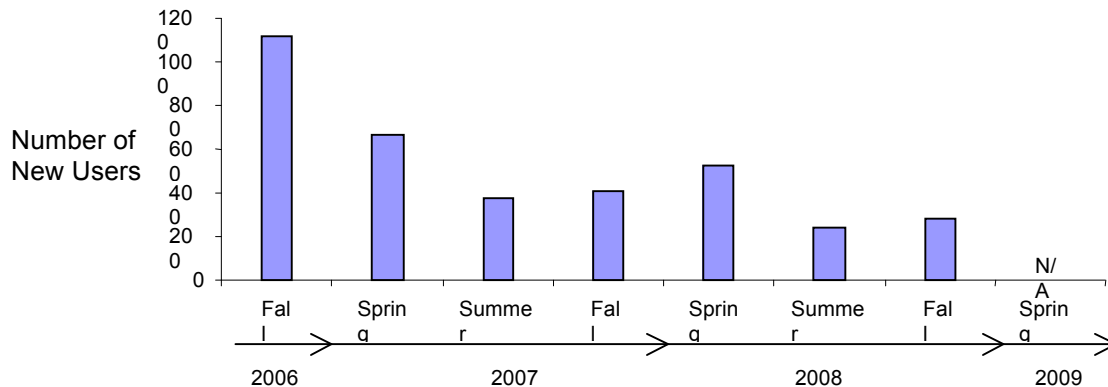
Data sources

As stated already, the main source of data for the study was logs of user activities drawn from the *PocketKnowledge* database system from the Fall semester of 2006 to the Spring semester of 2009.

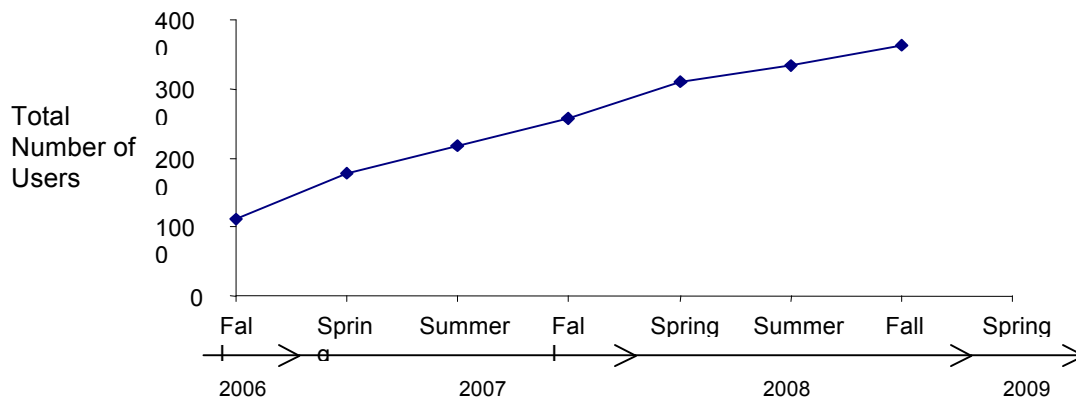
Results

Rate of adoption

1. Number of persons registering as users by semester



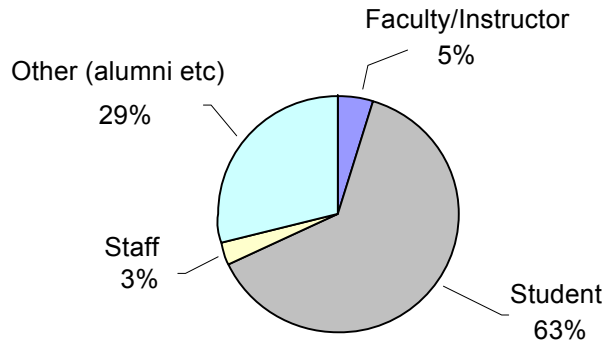
2. Trend of total user numbers over the seven semester period



The above diagrams point to a steady, albeit erratic, growth in user acceptance of the system following a significant number of early adopters. Contrary to the DoI theory prediction that early adopters generally tend to be "opinion leaders," most of the early adopters in this case were students (not really considered leaders in academia), partly because they are the majority group within the institution, and also due to the fact they were targeted (though not purposefully) during advertising campaigns following the launch of the system. It is however clear that, these early adopters having made the decision to put the technology into use, had gone through 4 of the 5 step decision process. Follow-up studies will then reveal their level of satisfaction with the system, and their decision to continue usage or otherwise.

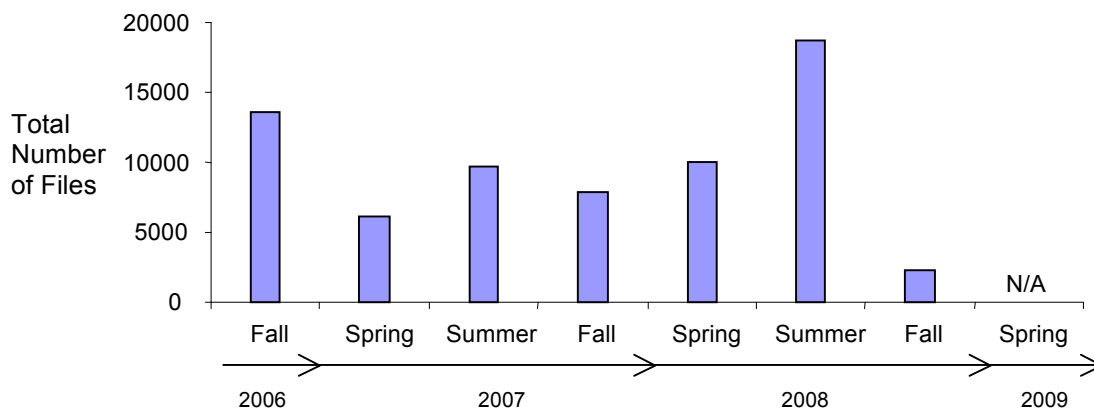
The findings also indicate that adoption of *PocketKnowledge* is still in a state of growth, and the phenomenon of late adopters or laggards will probably not come into play, particularly as new members join the community each semester and are introduced to the system. There is equally a tendency for some users to discontinue use once they are no longer actively involved in the institution, but all these issues can only be better understood if further studies are carried out.

User Demographics (through December 2008)

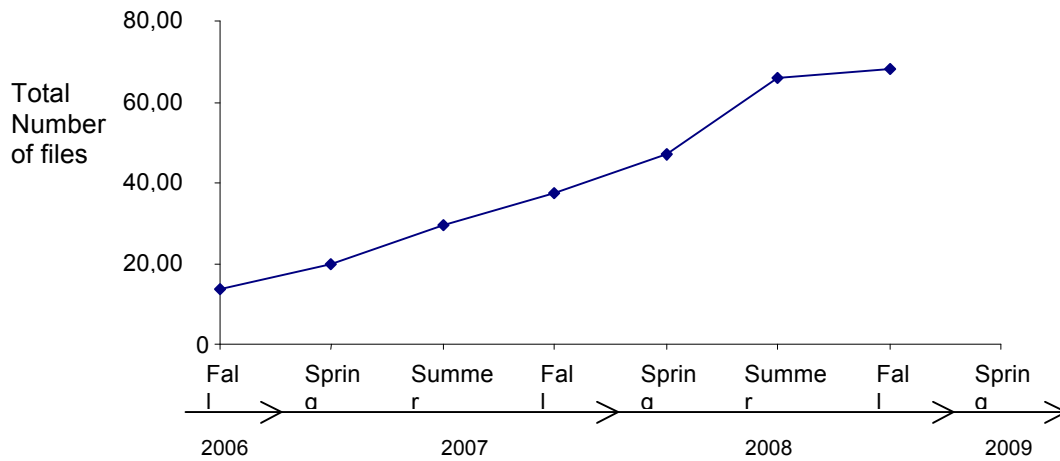


Content

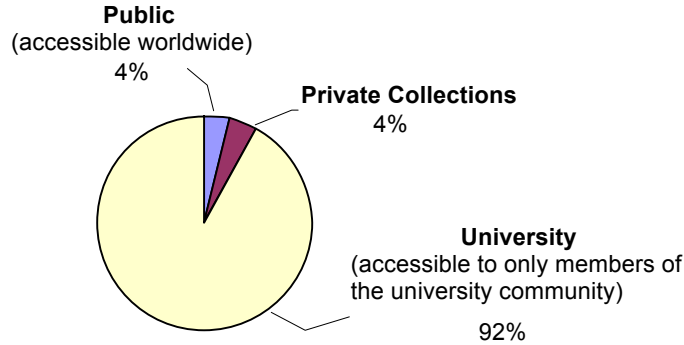
1. Number of files archived (uploaded) by semester



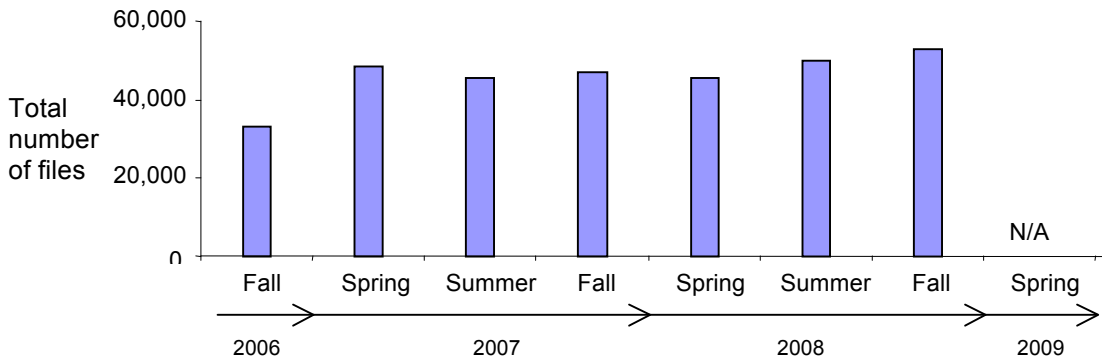
2. Trend of content growth in the system



3. Content accessibility (by end of 2008)



3. Number of files downloaded by semester



Content creation in *PocketKnowledge*, mainly by user archiving of digital resources is also growing rapidly, though most of the content (about 50%) is digitized institutional (mostly historic) resources that are being archived for posterity. Accessing and downloading content however continues to be a high priority among users, with significant downloading of content being done by other members of the university community who are not even registered users of the system. This is an indication that the system is an acceptable source of scholarly material among many members of the university.

User Interactivity and Folksonomies

As a user-controlled system, *PocketKnowledge* allows the creation of open or restricted communities within the system. Individuals uploading files into the system also have the opportunity of tagging (labeling with keywords) the files, adding descriptors and also assigning the files to communities of interest. Other users access these files by searching the system using search parameters such as author names, file titles, tags, communities etc. and also have the opportunity of writing comments in relation to the content of each individual file that is accessed. *PocketKnowledge* thus provides a platform not only for academic discourse and social scholarship, but for the possible emergence of a bottom-up self-organized system of classifying the institution's self-generated knowledge and other academic resources.

Data analysis and interpretation with regard to user interactivity and social scholarship within *PocketKnowledge* is currently ongoing, but preliminary findings point to a not very vibrant scholarly discourse taking place as originally anticipated, though the use of the system as an archiving and information access and retrieval source continues to grow. These issues will be discussed extensively in the final presentation.

Educational Significance of Study

In recent times, institutional repositories are commanding great interest particularly in higher education, mostly because, as generators and disseminators of knowledge, it is only natural that with the proliferation of knowledge made possible by emergent technologies, these institutions will be concerned about the stewardship of the knowledge assets they produce. Also, repositories hold promise of expanding access to resources for research while serving as a critical component in reforming the current system of scholarly communication within institutions and the academy in general. With the current lack of acceptable models or best practices for building and maintaining credible repositories, however, there is a great need for information about what is going on in the world of institutional repositories (Markey et al., 2007), and studies such as this that carefully gather and interpret data will help meet that need.

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