Can Web 2.0 Enhance Community Participation in an Institutional Repository? The Case of PocketKnowledge at Teachers College, Columbia University

by Anthony Cocciolo

This project investigates if a Web 2.0 approach to designing an institutional repository can positively impact community participation. To study this, two institutional repositories (one Web 2.0, the other not) are used within the same institution. Results indicate that the use of a Web 2.0 approach significantly enhances community participation.

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BACKGROUND

By the year 2005, the term “Web 2.0” had starting gaining widespread attention after it was coined by O’Reilly Media to describe a new way of approaching the development of Web applications that focused on participation of users in connection with one another rather than on the consumption of content compiled by experts or professional cultural producers. The rise of this movement, manifested in such web properties as Flickr, YouTube, and Wikipedia, peaked in 2006 when Time Magazine named person of the year as “You”, indicating the significance of massive individual contributions to the World Wide Web. During this time and in concert with this movement, I became interested in the educational potential of Web 2.0 technologies. I was particularly compelled by some of what I was seeing on sites such as Wikipedia, where the barriers to contribution had been dropped. This was reflected in both concrete website design affordances (e.g., the edit button was prominently displayed for all users) and the attitude the site had toward user contributions (e.g., users were trusted and respected to an unusually high degree). The types of participation encouraged by such ICTs appeared to complement constructivist and democratic educational philosophies, particularly Dewey’s notion that liberty is not the freedom from having to participate, but rather “the power to be an individualized self making a distinctive contribution and enjoying in its own way the fruits of association.” I wondered how Web 2.0 technologies could be harnessed to create more participatory learning communities?

These interests in the educational potentials of Web 2.0 coincided with my professional role where I undertook the role of leading the new institutional repository initiative at Teachers College (TC), Columbia University. In investigating the efforts of other institutions, it appeared institutional repositories had trouble attracting a high level of participation. This was evidenced in later studies. For example, a study of the institutional repository at Cornell University has described participation, especially for faculty, as varying between low and “non-use.” Further, a survey of 40 institutions using the DSpace platform as their institutional repository found that the faculty participation rate was 4.6% per archive with a median of 1.9%. Given what appeared to be a problem of participation, my colleagues and I were committed to widespread community-use as a success factor. To advance this objective, an approach was adopted that placed emphasis on the institutional repository’s ability to connect individuals with the creative and intellectual output of one another. This can also be described as a Web 2.0 approach. This objective is not...
incompatible with other institutional repository initiatives, such as DSpace, which is concerned with collecting, preserving, indexing, and distributing scholarly publications within an institutional context. However, the focus here is less concerned with faculty work and scholarly publications and more concerned with sharing creative and intellectually authored material, no matter what form it may come in from and from whom. This paper will discuss how a Web 2.0 approach was enacted in the design and implementation of the institutional repository and ask the question, does Web 2.0 enhance community participation in an institutional repository? To address this question, a 22-month usage analysis of the institutional repository developed at TC (eventually named PocketKnowledge) will be presented and compared alongside a 22-month usage analysis of its predecessor, designed in a non-Web 2.0 fashion. This analysis will follow with a discussion of the ways in which system design affects community participation and what it might mean for the further development of institutional repositories.

**Web 2.0: Definition and Discussion**

Establishing a definition of Web 2.0 is central to addressing the question of whether it can enhance community participation in an institution repository. Although there is debate as to whether there is such a thing as Web 2.0, the position taken here is that the term Web 2.0 is indeed a worthwhile concept. Web 2.0 captures a series of design patterns and approaches to structuring web-based systems that capitalize on the networked information environment, making the web better able to support the use, production, and circulation of knowledge in a peer-to-peer networked arrangement. The reason questions persist as to whether Web 2.0 is a “real thing” is a result of the complicated notion about the concept, a great deal of marketing hype, and questions related to the development and trajectory of the Web. Several researchers have noted the difficulty of defining Web 2.0. For example, Cormode and Balachander note that a “precise definition is elusive and many sites are hard to categorize with the binary label ‘Web 1.0’ or ‘Web 2.0’ and Anderson notes that ‘Web 2.0 is a slippery character to pin down.’” Anderson asks:

Is it a revolution in the way we use the Web? Is it another technology bubble? It rather depends on who you ask. A Web technologist will give quite a different answer to a marketing student or an economics professor.

In addition to the hype, there are questions as to whether the term “Web 2.0” is really anything different from a more fully-developed “Web.” Anderson notes that the creator of the Web, Sir Tim Berners-Lee, disagrees that “Web 2.0” is anything different from the “Web” because connecting people was “what the Web was supposed to be all along” and Web 2.0 is “a piece of jargon.” Taking this perspective, Web 2.0 can be seen as “a consequence of a more fully implemented Web.” However, Millard and Ross note “Web 2.0 (meaning the set of applications, web sites and companies that define it) is not totally analogous to the vision of the early hypertext pioneers, mainly because the attributes that they were seeking are not available ubiquitously across all the systems of the Web.” They also find that “Web 2.0 has purposely rejected some of those old aspirations, and the assumptions that went with them, in favour of a more flexible, lightweight and responsive approach.” However, without question, Web 2.0 utilizes all of the same technology as Web 1.0, although it includes some new, additional technology that was not available in Web 1.0. Hence, it is not sufficient to say that Web 2.0 is simply the end-product of an early vision of the Web because there is not complete overlap nor is all aspects of the initial vision incorporated.

Although the development of Web 2.0 is difficult to pin down, the creation of the term is traced back by Anderson to the team at O’Reilly Media, Inc., who were interested in making “explicit certain features that could be used to identify a particular set of innovative companies, including business characteristics,” which was later captured in the influential paper, “What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software.” This paper included the equally influential Web 2.0 meme map, which outlined the characteristics of a Web 2.0 environment. Some of these memes (or characteristics) include “radical trust” of the user, “participation” (“not publishing”), “tagging” (“not taxonomy”), and “software that gets better the more people use it.” Anderson finds that the term captures an important set of ideas and that it is “more than a set of ‘cool’ and new technologies and services.” These ideas that are deemed important to education and derived from the O’Reilly report include: (1) individual production and user generated content, (2) harnessing the power of the crowd, (3) data on an epic scale, (4) architecture of participation, (5) network effects, and (6) openness. Anderson, Cormode and Krishnamurthy also agree, despite the difficulty of pinning down Web 2.0, that there are salient concepts that distinguish Web 2.0 from Web 1.0 or just the Web. These ideas are manifested in concrete site features, which include:

- Users as first class entities in the system, with prominent profile pages, including such features as: age, sex, location, testimonials, or comments about the user by other users.
- The ability to form connections between users, via links to other users who are “friends,” membership in “groups” of various kinds, and subscriptions or RSS feeds of “updates” from other users.
- The ability to post content in many forms: photos, videos, blogs, comments and ratings on other users’ content, tagging of own or others’ content, and some ability to control privacy and sharing.
- Other more technical features, including a public API to allow third-party enhancements and “mash-ups,” and embedding of various rich content types (e.g., Flash videos), and communication with other users through internal e-mail or IM systems.

Given the high degree of coherency of what Web 2.0 is amongst business thinkers (e.g., O’Reilly) and researchers (e.g., Anderson), why is Web 2.0 so difficult to pin down? The difficulty stems from the contingent, social nature of Web 2.0. Anderson notes that it is important to acknowledge that these ideas are not necessarily the preserve of Web 2.0 but are, in fact, direct or indirect reflections of the power of the network: the strange effects and topologies at the micro and macro level that a billion Internet users produce. Thus, Web 2.0 cannot simply be distilled to a technology or set of affordances, but must be looked at in micro-level perspective (individuals interacting with ICTs) and a macro-level perspective (the social, cultural, and network byproduct of massive micro-level interactions). Pinning down Web 2.0 can be difficult because although the individuals interacting with the environment can be viewed as rather straightforward, the large-scale outcomes cannot be easily described as the sum of all interactions. Despite this difficulty, this paper maintains that it is a useful concept for describing a set of important ideas that manifest themselves in design patterns and ultimately in features available to the user. Those design patterns that are the preserve of Web 2.0 and were enacted in an institutional repository will be discussed in the following section.

**Designing an Institutional Repository Using Web 2.0**

The basic design rationale captured in the term Web 2.0 is the notion that the web should be used to buttress connections between individuals and provide them unfettered opportunities to express themselves, rather than attempt to curate all possible combinations of knowledge resources or attempt to censor individual contributions. For the design of this institutional repository (PocketKnowledge), Web 2.0 design patterns were explicitly employed, most notably the patterns that (a) users can control their own data, (b) users should be trusted, (c) flexible tags are preferable to hierarchical taxonomies.
the attitude should be playful, and (e) the expectation that the software gets better when more people use it. These patterns manifest themselves in concrete design affordances, and in some cases in combination with continued use of the system by users. For example, the pattern (a) users control their own data, is manifested in a design affordance which allows the user to post or delete any of their own content at any time. The design pattern (e) the software gets better the more people use it, is both an outcome based on the interactions of the users as well as something that is manifested in concrete design affordances. It is not easily known ahead of time if a system will be used by a large number of individuals, but the system can be designed in such a way that if it does get used it should get better with that increased interaction. For example, PocketKnowledge displays visual clues that indicate the size and composition of where the increased user activity is coming from. The colors indicate the role of the contributor (student, faculty, staff, other) and the size of the pie chart provides a visual clue of the extent of that interaction (see Fig. 1). This feature is enacted in the system design and becomes more useful once the system gets used more heavily.

“For the design of this institutional repository (PocketKnowledge), Web 2.0 design patterns were explicitly employed, most notably the patterns that a) users can control their own data, b) users should be trusted, c) flexible tags are preferable to hierarchical taxonomies, d) the attitude should be playful, and e) the expectation that the software gets better when more people use it.”

These particular design patterns are made particularly salient when compared against other similar systems that do not use Web 2.0 design patterns. For example, a system in use for the same community (Teachers College) called the Community Program Collections (CPC) aimed to provide the same basic functionality of allowing community members to share their knowledge products and resources they think others would find useful. However, CPC did not specifically employ Web 2.0 design patterns. Instead, it used more traditional hierarchical models, such as (a) organizing information based on a taxonomy derived from institutional structures (e.g., programs and departments), (b) lack of user control over their own content (e.g., a user cannot remove their content from the site), and (c) centrality of authority (e.g., a user can only suggest content to be added to the collection; however, ultimate authority resides with an institutional librarian). These design patterns are manifested in concrete design affordances, or the omission of design affordances (such as the lack of a “Delete” button or inability to add new categories of classification).

Fig. 2 is a screen capture from CPC that illustrates how information is organized according to institutional structures. The design differences exhibited in PocketKnowledge and CPC are most evident when viewed in terms of affordances and constraints. With a web-based system, this refers specifically to those functions and features that allow a user to accomplish some action, as well as the barriers (intentional and unintentional) that the system enforces. One particularly salient constraint that CPC enforces is the inability for users to directly post materials to the system, but rather to make “suggestions” for addition. Before a user is allowed to make a suggestion, a warning message is displayed in caps and bold that reads “IMPORTANT: PLEASE READ CAREFULLY” as well as a three paragraph statement on copyright (see Fig. 3).

After a user makes a suggestion, the system displays the following message:

Thank you for your suggestion. We will review the item, and if possible, make it a part of the Arts & Humanities Program Collection. You will receive an e-mail either way.

This particular set of constraints highlights certain attitudes toward the end-user. First, the warning message in bold and caps indicates that the system distrusts that the user will read the
copyright statement. Secondly, the system reinforces the knowledge authority relationship between library or university and the individual by allowing users only to make “suggestions” and if a suggestion is made, it must be “reviewed.” Given these set of constraints, it is plausible to believe that many users, especially those who are less confident in their knowledge expertise (e.g., students), would hesitate to make a suggestion out of fear of being rejected by the knowledge authority.

This design approach is in sharp contrast to PocketKnowledge, which allows any user to post any files instantly and trusts that an addition does not violate copyright laws. Fig. 4 shows the “add an item” window, which asks the user if the file violates copyright laws, giving the option for cases where the user “doesn’t know” if copyright would be violated. This type of design choice illustrates that the system trusts the user to a high degree, with the realization that true violations of copyright are relatively rare and can be handled on a case-by-case basis.

In sum, this singular example illustrates a broad distinction in design approach between PocketKnowledge and CPC systems. The point is that differences in design patterns, which manifest themselves in design affordances that look to promote certain user outcomes (e.g., a system getting better as more people use it), lead to very different systems when employed in practice. Because of the importance of the design approach, several more examples of how Web 2.0 design patterns are captured in PocketKnowledge will be discussed.
PocketKnowledge includes a Simplified Copyright Compliance Policy

Figure 4

Upload file:

Title: Social Network Analysis Online

Author #1: Anthony

Firstname: Cocciolo

Lastname/Organization: Cocciolo

Published/Created Date: (mm/dd/yyyy or mm/yyyy or yyyy)

Abstract/Description:

Tags: (separate tags with commas or new lines)

Copyright: Is there a copyright issue related to uploading this document to PocketKnowledge?

Permissions: I would like this item to be accessible to:

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One important design pattern captured under the term Web 2.0 is the idea that you trust the community to a high degree. This notion is captured in Fig. 5, where any logged-in user can change the name and about entries for a pocket (a pocket is similar to a collection). Many systems, especially those used in higher education and academic libraries, go to great lengths to ensure that information is secure and cannot be changed by anyone other than a select few. The Web 2.0 paradigm reverses this trend and allows anyone to edit these entries, which is a radical break from more traditional arrangements. Tapscott and Williams describe how a Web 2.0 approach is indeed a radical break:

![PocketKnowledge](image)

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Although Tapscott and Williams are speaking of the corporate firm and the economy, the use of openness within higher education technologies was rare as well. For example, the learning management system (such as Blackboard, Web CT, among others) created a hierarchy of roles, beginning at the top administrative level and bestowing greater privilege on the instructor, and less privilege on the student, and little or none to the unaffiliated with the institution. This trend of providing varying levels of control based on institutional role is pervasive in higher education and the prospect of moving away from that arrangement concerned individuals across the library organization. For example, when it came time to roll-out PocketKnowledge to the community, it was collectively decided that database backups should be very frequent in case “trusting the community” did not work and entries were defaced. In the over 2-year period that PocketKnowledge has been available to the TC community, restoring data because of destruction by disaffected community members was never needed. Rather, no acts ever occurred that could be considered transgressive (e.g., illegal, derogatory or offensive).

Zittrain uses the urban planning example to explain the workability of both examples, further research is required to firmly explain why community trust is a design pattern in Wikipedia and PocketKnowledge: indivi-

duals feel respected and treat others with such respect when they are trusted to behave in a socially constructive manner. Despite the workability of both examples, further research is required to firmly

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More generally, order may remain when people see themselves as a part of a social system, a group of people—more than utter strangers but less than friends—with some overlap in outlook and goals. Whatever counts as a satisfying explanation, we see that sometimes the absence of law has not resulted in the absence of order. Under the right circumstances, people will behave charitably toward one another in the comparative absence or enforcement of rules that would otherwise compel that charity.

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establish Zittrain’s observation with respect to individual behavior in web-based systems.

Another important Web 2.0 design pattern is the non-authoritative information organization. This is the idea that a central authority cannot decide ahead of time all the possible meta-data words, phrases, or combinations that can be used to describe content. The premise of non-authoritative information organizations is that users themselves know best how to describe the information that they are providing since they are often the creators of the information. In PocketKnowledge, information can be organized based on tags, which is a descriptor a user decides to assign to the contribution he provides. This design pattern is related to the notion of community trust: if a member of the community is able to create his own content, there is a high likelihood that he should be able to describe it using a few phrases or tags that others can understand. The basic notion is that if an individual is contributing some distinctive piece of work, he wants it to be accessible to others as clearly as possible. The best way to do this is to describe it appropriately.

A further design pattern captured under the term Web 2.0 is the notion that the system should be fun and playful. The notion of enjoyment and play are central to understanding the motivations and inner-workings of successful participatory communities, and thus should be instantiated into the design of the ICT. For example, Benkler discusses the role of enjoyment in motivating the types of social production exhibited on the Internet:

For all of us, there comes a time on any given day, week, and month every year and in different degrees over our lifetimes, when we choose to act in some way that is oriented towards fulfilling our social and psychological needs, not our market-exchangeable needs. It is that part of our lives and our motivational structure that social production taps, and on which it thrives.

There is nothing mysterious about this. It is evident to any of us who rush home to our family or to a restaurant or bar with friend at the end of a workday, rather than staying on for another hour of overtime or to increase our billable hours; or at least regret it when we cannot. As described by Benkler, enjoyment and fun (however that is defined for the individual) are central to the Web 2.0 approach. One way to make people feel more playful and at-ease is to integrate fun imagery into the ICT design. With regard to PocketKnowledge, this is accomplished through the use of playful iconography (see Fig. 6). The iconography is playful, welcoming, and makes light of serious situations (like system errors). The notion is that people will have more fun (and be more open to participating) if they feel at ease and welcomed. This is rather different from many other academic technologies, which embody a certain seriousness that may not engage individuals’ intrinsic motivations for enjoyment and well-being.

"[Users] also have the option to remove anything they have uploaded at any time. This differs from many institutional repositories, where new contributions need to approval to be added or removed."

The second to last design pattern captured under the term Web 2.0 is the pattern that users maintain a high degree of control. This pattern is enacted in PocketKnowledge by allowing users to upload a profile picture, enter a description of themselves, and upload and
download anything they want. They also have the option to remove anything they have uploaded at any time. This differs from many institutional repositories, where new contributions need to be approved or to be added or removed. Users also have a high degree of control by being able to assign their work to any pocket (there are hundreds of pockets available at this time), assign extra fields to describe their work, and describe how their respective roles will be displayed to outside users (this is especially helpful for users who may be students, faculty, staff, or other roles at different times throughout their affiliation with TC). Users are also allowed to keep their accounts for life (e.g., the username and password will continue to operate after the institutional affiliation ends). Users can also decide who has permissions to access their work (only themselves, a group of friends, the entire University—available with an institutional login, or the whole Internet). They also have the option to create their own pockets, assign friends or colleagues to them, and read an RSS feed from their personal blog. Hence, providing users with extensive control illustrates that the system designers trust the users to a high degree, which may prompt greater involvement.

The last Web 2.0 design pattern captures the idea that the system gets better the more people that use it. This design pattern is enacted in PocketKnowledge by visually showing users the extent of user-contributed content available to them. This display of user activity may encourage new users to become involved and contribute. Tag clouds and pie charts are used to illustrate where user activity is coming from. These visualizations can be toggled between different factors that a user may be interested in, such as who has the most contributions by volume, the most recent contributions, and the most commented-on content. Providing individuals these options allows them to see for themselves that the system is getting more interesting and engaging the more it is used.

In conclusion, Web 2.0 design patterns were explicitly employed in PocketKnowledge to promote greater participation and involvement by the community. These patterns include: (a) users control their own data, (b) users should be trusted, (c) flexible tags are preferable to hierarchical taxonomies, (d) the attitude should be playful, and (e) the expectation that the software gets better when more people use it. All of these patterns were instantiated in system design and affordances. In the case of “the software gets better when more people use it,” this pattern was instantiated in the system design and is an outcome of continued use of the system.

**Research Overview**

To study if Web 2.0 design impacts community participation, this study will compare two institutional repositories used by the same community across two continuous (and non-overlapping) periods of time, with one system explicitly designed with Web 2.0 design patterns and the other not. The Web 2.0 system is PocketKnowledge, and the non-Web 2.0 system is Community Program Collections, both described in the previous section. Both systems provide the basic functionality of sharing intellectually authored materials, such as publications, working papers, research data, and audio/video content. Additionally, both were prominently highlighted on the Teachers College library homepage.

The context for this investigation is the community of students, faculty, and staff at Teachers College, Columbia University, a large graduate and professional school of education located in New York City. The demographics for TC are the following (from the 2008 to 2009 school year): 5117 students (3234 Masters, 1584 Doctoral, and 229 Non-degree); 31.8% full-time and 62.8% part-time; 76.6% female and 23% male; average age of student is 31; 12% are international students; and 260 faculty and approximately 400 professional staff.

This investigation will test the following hypothesis: the Web 2.0 institutional repository generated greater community participation than the non-Web 2.0 institutional repository.

**Data and Methods**

Data were collected from Community Program Collections from November 2004 to August 2006 (22 months). These data included the contribution made to the system (through the suggested additions interface) and information on the role of the contributor (e.g., faculty, staff, student). Data for PocketKnowledge were gathered from September 2006 to July 2008 (22 months), and included information on both the contribution and contributor. To illustrate participation, the study will use frequency counts of contribution. Contributions made by library staff members, such as making available archival collections or other works, have been excluded from the data set because our focus is on community participation and not library staff.

**Results**

This hypothesis is borne out: the Web 2.0 system generated significantly more community participation than the non-Web 2.0 system, as illustrated by the 9.728% increase in user contributions (from 54 to 5,307 contributions, see Table 1). Important calculations include the fact that 23% of the faculty (both tenure and non-tenure track) made at least one contribution to the Web 2.0 institutional repository. Another remarkable trend is the reversal in use patterns. The non-Web 2.0 system prompted involvement primarily from faculty, which is illustrated by the fact that 59% of all contributions were made by faculty. This trend is reversed in the Web 2.0 system, where 79% of the contributions are from students and 10% are from faculty. However, as a group, the faculty is better represented (in terms of distinct contributors) on the Web 2.0 IR (23%) as compared to the student body (9%). This would suggest that a healthy balance...
Similarly, the Teachers College community is at-best illustrative of a
example, it is possible to imagine some Web 2.0 environments that
entirely represent either Web 2.0 or other learning communities. For
(PocketKnowledge) and the community (Teachers College) may not
evening to thinking on perhaps more accurately capturing
improvement: although 31% of the student body has created a user
account for the Web 2.0 IR, only 8% of the student body has actually

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Faculty</th>
<th>Staff</th>
<th>Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Web 2.0 IR</td>
<td>32 (59%)</td>
<td>16 (30%)</td>
<td>6 (11%)</td>
<td>54 (100%)</td>
</tr>
<tr>
<td>Web 2.0 IR</td>
<td>511 (10%)</td>
<td>580 (11%)</td>
<td>4,216 (79%)</td>
<td>5,307 (100%)</td>
</tr>
<tr>
<td>Individuals who made at least one contribution (% of total population)</td>
<td>60 (23%)</td>
<td>14 (4%)</td>
<td>430 (8%)</td>
<td>504 (9%)</td>
</tr>
<tr>
<td>Individuals who created an account (% of total population)</td>
<td>77 (30%)</td>
<td>42 (11%)</td>
<td>1,604 (31%)</td>
<td>1,723 (30%)</td>
</tr>
</tbody>
</table>

has developed: the Web 2.0 environment is a comfortable environ-
ment for students to share their intellectual creations and is
simultaneously not an alienating space for faculty (e.g., viewed as
not serious or worth his time). Possible reasons for the workability of
this model is that faculty may be interested in having their work more
widely read by students (which could help attract the best students to
work with and have in class), and students appreciate having a
meaningful space to share their creations (e.g., sharing work with
colleagues and friends). However, there is still much room for
improvement: although 31% of the student body has created a user
account for the Web 2.0 IR, only 8% of the student body has actually

**“The non-Web 2.0 system prompted involvement primarily from faculty ... This trend is reversed in the Web 2.0 system, where 79% of the contributions are from students and 10% are from faculty.”**

**RESEARCH LIMITATIONS**

This study has several strengths but also has a series of limitations.
With respect to methodology, this study has the limitation of being a
study of two cases and is hence unable to make scientifically precise
comparisons between factors (such as specific design decisions) that
may be more possible by using an experimental design. For example,
it is possible to imagine setting up an experimental design that teases
out how particular design decisions prompted certain kinds of user
behaviors using a variety of control and experimental conditions. This
would be important work that could follow from the present study
that shows general design decisions' effects. However, this project has
the strength of perhaps more accurately capturing "in the world" user
activity than studies using either an artificial context (a tool or
condition that would not be realistically used) or user population
(individuals who may only be doing something for the sake of the study).

Related to this issue of methodology is the issue of the data that
was collected, which does not capture the verbal or written utterances
from the user population with regard to how they felt the ICT was
impacting himself or the community. Hence, this study does not
capture the rich qualitative data that is often used in ethnographies
and strongly qualitative studies.

Although this study was interested in shedding light on how Web
2.0 technologies are used in learning environments, both the tool
(PocketKnowledge) and the community (Teachers College) may not
entirely represent either Web 2.0 or other learning communities. For
example, it is possible to imagine some Web 2.0 environments that
share some but not all of the design patterns with PocketKnowledge.
Similarly, the Teachers College community is at-best illustrative of a
graduate-level learning community and may not well represent other
contexts, such as undergraduate learning communities or other
institutional contexts.

The final limitation is that since the study spanned a period of 44
months, the user community may not be completely consistent (e.g.,
students graduate, faculty and staff take other jobs). And since this is a
relatively long time period, individual's comfort (and willingness to
use online technologies) may have changed over time. For example,
an individual may have been more willing to use an institutional
repository in the year 2008 versus 2004 because he is more
comfortable with online technology in 2008. However, none of
these limitations seriously detract from the major finding that greater
community participation resulted from a Web 2.0 approach.

**DISCUSSION**

The case of PocketKnowledge at Teachers College illustrates that Web
2.0 design patterns and approaches have a great deal of potential for
enhancing participation in institutional repositories. The increase in
participation can be attributed to a system design approach that
looks to buttress connections between individuals and provides them
unfettered opportunities to express themselves, rather than attempt
to curate all possible combinations of knowledge resources or
attempt to censor individual contributions. This approach is enacted
using Web 2.0 design patterns, particularly: (a) users control their
own data, (b) users should be trusted, (c) flexible tags are preferable
to hierarchical taxonomies, (d) the attitude should be playful, and
(e) the expectation that the software gets better when more people
use it.

Given the results of this study and on a more fundamental level,
why would a Web 2.0 approach to an institutional repository lead to
greater community participation? Although this study only looked at
participation rates and not at motivations for individual contributors,
we can begin to extrapolate. A limitation with some of the earliest
approaches to institutional repositories is that they focused on
library goals (such as collecting and preserving scholarly work), and
yet did not directly tap into the motivations of faculty members to
contribute. Davis and Connolly make note of this, quoting the
Mellon-sponsored study of scholarly communication that found that
“approaches that try to ‘move’ faculty and deeply embedded value
systems toward new forms of archival, ‘final’ publication are destined
desirably to fail in the short term.” From this study, it would appear that faculty has no motivation for contributing to an
institutional archive. However, fairly good faculty participation was
evidenced in this study. How can these two positions be reconciled? I
would argue that institutional repositories have more potential to
motivate faculty contributions through their roles as teachers rather
than as researchers. By this I mean that the faculty is interested in
improving the classroom-based experience by having students as
well versed and engaged within their area of expertise as possible. If
a faculty member perceives that students are participating and
consuming work within an institutional repository, they may feel
more motivated to contribute their work in hopes that students will
become familiar with it. Thus, strong student participation in an
institutional repository could lead to greater faculty participation.
However, it is important that the repository remain mostly academic or risk faculty perceiving it simply as a social space for students. This prospect makes sense on another level. Davis and Connolly note that faculty identify with an “international community of researchers working in a narrow discipline” more strongly than their own institution. However, teaching is primarily done at an institutional (or local) level than international level. Hence, making an institutional repository more focused on teaching (which happens at the institution) than on research (which primarily interests international researchers) could more fully engage the intrinsic motivations of faculty.

In conclusion, this paper suggests that institutional repositories may garner greater community participation by shifting the focus from library goals (such as an interest in preserving and indexing the scholarly work of the institution) to one that focuses on building localized teaching and learning communities through connecting individuals with the creative and intellectual output of one another. By creating a system for supporting such exchange, library goals are advanced because a more detailed record of intellectual activity at the institution is stored and preserved than would be possible by simply storing the scholarly work of faculty. In order to make possible such a system for connecting individuals, Web 2.0 offers a set of approaches and design patterns for creating systems that help promote greater community participation. And lastly, greater student participation in an institutional repository may prompt greater faculty involvement because the institutional repository becomes more focused on the teaching and learning community than the research community. This is a sensible arrangement: teaching and learning has tended to occur at an institutional-level.

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Notes and References


9. ibid., pp. 5.

10. ibid., pp. 5.

11. ibid., pp. 6.


13. ibid., pp. 30.


17. ibid., pp. 53.

18. O’Reilly, op. cit.


22. ibid., pp. 129.


