

“Build It and They Will Come?”

A Case Study of the Use of a Wiki in a Higher Education Research Unit

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Abstract—With collaborative web technologies such as wikis becoming increasingly popular in the workplace, this case study examined how workers at an education research unit within a graduate school of education perceive the wiki as a platform for communication and collaboration, and the extent to which they actually use a workplace wiki for that purpose. Twenty staff members, for whom a wiki was built, were surveyed, while records of their activities on the wiki over a 6-month period were retrieved and analyzed. Findings reveal that though most of these staff members have positive views towards the wiki as a space that can effectively promote information sharing and collaboration, they are not quite as enthusiastic about engaging the wiki as a medium for their daily collaborative work activities. The possible reasons for this discrepancy are discussed together with recommendations on the strategies similar organizations can adopt to help encourage and maximize wiki usage in the workplace.

Index Terms—Collaboration, Participatory work culture, Web 2.0, Wiki

I. INTRODUCTION

A wiki is server-based software that enables users to create and edit content on a web page through a web browser [1]. Key characteristics of wikis include collaborative participation, co-construction of knowledge, and fluid content [2]. Furthermore, wikis challenge traditional notions of knowledge generation and expert authority as they emphasize constructivist and pragmatic models of inquiry/learning [3]. Consequently, content on wikis is fluid—changing based on the nature of contributions and collaboration during collective practices, which further contributes to a collaborative workplace culture, or a *participatory culture* [4].

Wikis embody “Web 2.0” principles as they emphasize user-generated reciprocity content in a hypertextual system for open information editing and sharing [5]. This is in contrast to the Web 1.0 unidirectional “shopping experience.” Wikipedia (www.wikipedia.com), a highly popular website that was launched on January 15, 2001, is probably the best-known example of a wiki. It was purposefully created to be a publicly editable English language encyclopedia. Today, it is a free, multi-lingual, open content encyclopedia with more than two million articles in the English Wikipedia alone. It is among the top 10 websites in terms of traffic, and has more than 600 million visitors annually. Although it is criticized for being written by “volunteers,” it is reported as having high quality content [6]. Its operational model involves communities of volunteers performing tasks such as content creation, administration, and operations. There are various types of wiki sites today, including sites designed for aca-

demic environments (e.g., www.squeak.org, in the field of computer science) and those aiming at corporate use (e.g., www.twiki.org and www.clone.org).

Despite the widening use of wikis, as pointed out by Ruth and Houghten (ref. [3]), previous research on wikis to a large degree focus on “the technical road” [7], tending to explain the use of wikis as tools of collaboration and knowledge accumulation rather than as part of an epistemological shift in the “social ethos” for interaction and community practice [4], [8].

Studies of workplace wiki use in learning organizations would thus expand our understanding of how wikis can contribute to a *participatory culture* in the workplace, and how the features of wikis might influence the dynamics of co-workers’ contribution and collaboration on web. Limited studies specifically focusing on workplace collaboration via wikis and how users might perceive their use of wikis have been reported, and a discrepancy between the easy-access wiki features and users’ reluctance to use wikis have been identified [8]. This study therefore investigated wiki use within a higher education research group context with the purpose of identifying: (1) staff members’ general perceptions of the effectiveness of wikis for encouraging collaborative work activities; (2) the frequency of use of wikis for collaborative work; and (3) how staff’s perceptions correlate with the frequency of their wiki use in the work place.

II. THEORETICAL PERSPECTIVES

The theoretical foundation of this study builds on the idea of the web 2.0 *participatory culture* [4] in the workplace, as passive content consumption in the web 1.0 era is replaced by “a social ethos based on knowledge-sharing” (p. 50):

... a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one’s creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices. A *participatory culture* is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the least they care what other people think about what they have created). (p. 3)

Thus, this culture values technologies as new “ethos stuff” in addition to new “technical stuff” [8] to solicit more “civil voices” and nurture community collaboration in the contemporary digital age. This culture further distinguishes itself from earlier media culture in various ways as argued by Jenkins et al. (Ref. [4]), including the promotion of distributed cognition [10] and collective intelligence [11] which are grounded in Vygotsky’s social constructivist theory, where he asserts that learners’ un-

derstanding comes from a “spiral” process of meaning making through social interaction by the use of language [12]. Vygotsky further states that the individual’s process of knowledge construction is fluid, discursive and conversational with a learning curve that reaches a “zone of proximal development” in rich collaborative situations.

Another perspective is built on collective intelligence given by Levy (ref. [11]), which is specifically situated in the digital age, aiming at pooling knowledge and sharing both the knowns and unknowns as a whole group. Group intelligences emerge from synchronous or asynchronous interaction, collaboration, and even competition among individuals’ mass communications and mass behaviors happening on the web via a variety of web 2.0 technologies. The idea of group intelligence is in line with Lave and Wenger’s concept of *community of practice*, defined as a group of members who share an interest, a craft, or a profession, and with the group evolving naturally because of the common interest and a goal of gaining knowledge shared by members [13]. *Communities of practice* can exist in real life, or online, such as in the case of a wiki space.

An additional perspective informing the current study is design-based research, an approach that involves creating innovative and experimental learning contexts to understand the mediating factors among contexts, groups, and individuals [14], [15]. The design process (represented in this case by the development of a wiki space) “involves design work coupled with the continual production of naturalistic interpretations based on both qualitative and quantitative data over extended time frames and at multiple sites” (ref. [14], p. 92). Thus, a project design is a continuing outcome and process of quantitative evaluation and qualitative interpretive data based on users’ participatory feedback. In our study, based on a prototype wiki space created for co-workers, we intend to improve the design based on our investigation of site statistics and user feedback.

Previous research on wiki use focused on the increasing use of such spaces in the field of teaching and learning. However, the majority of such studies (e.g., refs. [16], [17], [18]) focused more on new “technical stuff” by examining technical dimensions and how embedded technologies can address pedagogical requirements, and to a lesser extent on the degree of their collaborative use as representative of a “new ethos” [8]. Ruth and Houghten (ref. [3]) are an exception, in that they examined how a large group of student research fellows used a wiki space during a course period. Data from their study include wiki content and student reflections. Data analysis focused on emergent concepts and on the use of various wiki features by the students. Their findings indicated that students shift perceptions when interacting with peers in the virtual space, from an isolated, closed process of assessment of their course activities to a more collaborative and open form that embraces a new community-based learning model presented by the web space.

Few studies on workplace usage of wikis have been reported, and in most of these findings suggest limited use of most wiki features. For example, Raman (ref. [9]) presents a case study of wiki use in a higher education institution and concludes that though the majority of features in wikis are easy to use, working with wikis might not be an intuitive experience for all users. As reported, most users treat the wiki as a “read-only” web-based system rather

than creating dynamic changes via the edit function. The author suggests sufficient staff training before involving co-workers in wiki use. Thus, it is meaningful to explore further in our study how a wiki space can contribute to a *participatory culture* in the workplace and how staff members perceive the effectiveness of wikis for encouraging collaborative work activities.

III. METHODOLOGY

A. Study Context

The wiki space involved in this study was initially designed and created in late September, 2009 as an internal prototype used by co-workers within a development and research division of a research, design, and development unit within Teachers College, Columbia University. This unit envisions and pilots knowledge projects in education and publishing, including reimagining schooling, innovations for online learning, new directions for online publishing, efficiencies in educational research, and charting the future of libraries. The approximately twenty staff members of the research division include both software developers and educational researchers interested in the future of education. After examining a few potential sites (see Appendix A) for hosting the division’s documentation, one of the division members initiated the wiki space under this study as a prototype. All staff members in the division are encouraged to use the wiki prototype as a platform for sharing work-related content, including various planned, ongoing, and submitted unit project proposals, conference proposals and papers, as well as grant proposals.

The rationale for creating this prototype wiki space included five goals: (1) create one common space where all projects are housed in an organized manner; (2) help staff learn to document and copyright intellectual property of the unit; (3) minimize personnel hours and the waste of resources by investigating potential issues during a design phase rather than reworking prototypes to accommodate unanticipated problems; (4) provide storage for a working copy of project goals and decisions so new team members can take over projects conveniently; and (5) provide an online mechanism for staff to provide feedback on project proposals. The ultimate goal of the wiki space is to create a central, browsable, and searchable location for all the workplace projects, for not only archiving but also networked work collaboration purposes.

The wiki space includes clear guidelines for co-workers’ submission of proposals related to their workplace development projects, research projects, publications, and grant applications. In addition to developing the wiki prototype using the principles of design theory [13], authors of all projects housed in the space are encouraged to follow design-based processes (see Figure 1).

B. Data Sources

Site statistics based on entries and visits made by co-workers within the division between October 2009 and January 2010 were retrieved by the researchers who are also the administrators of the website. The researchers limited the site data to this four-month period because the site was created in late September, 2009 and was moved to a new server in early February, 2010; thus data within the four-month period was drawn from the logs of a single

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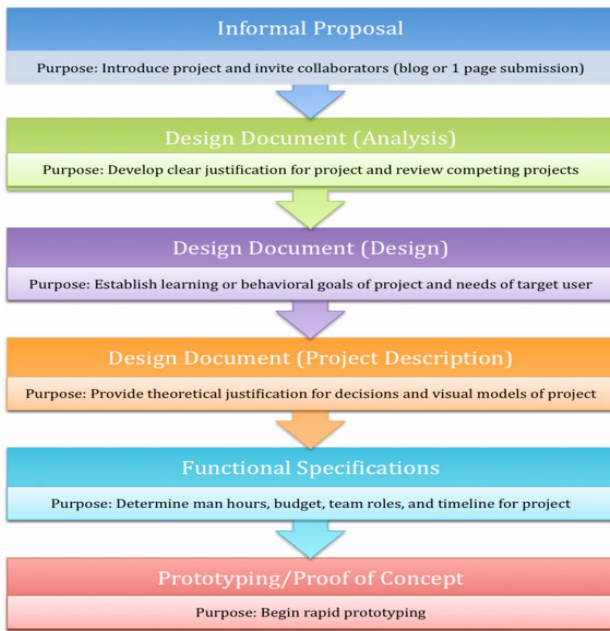


Figure 1. The project submission processes

server. The data so obtained thus contained records of all wiki entries within this period, along with such details as the author, date and time of entry, and accompanying comments and identities of contributors of such comments. The investigation began by assessing overall wiki activities, including the specific numbers of total page visits, total edits, and total entries by each user.

To assess staff members' perceptions of the value of wiki activities and relate these to their actual wiki use, online survey questionnaires (see Appendix B) were distributed to 20 staff members of the division, using online survey software. Survey items consisted of 5-point Likert scales along with statements to which respondents were to indicate their level of agreement or disagreement etc. Nineteen of the twenty staff members responded, and their data were recorded and analyzed.

C. Data Analysis

Site statistics were retrieved from the site and sorted according to general page visits, new pages and edits made by users, as well as whether users were actual page creators or not, in addition to users who are general browsers. Sorted data under each category were also totaled using Microsoft Excel. Responses to the survey questionnaire were automatically processed by the online survey software.

IV. RESULTS AND DISCUSSION

With regard to staff members' perceptions of the effectiveness of wiki use as a means for promoting collaborative work, the majority of respondents (16 out of 19) strongly agreed or agreed that the use of the wiki can effectively promote information sharing, and fourteen members strongly agreed or agreed on the use of the wiki to enhance work collaboration, while only seven of them agreed that the use of the wiki can promote getting feedback from co-workers. However, with regard to their own use of the wiki space, seven of the respondents strongly agreed or agreed that they tended to use the wiki to share their project/proposal ideas and eight staff strongly agreed

or agreed that they tended to update their project/proposal progress on the wiki space, while three agreed that they tended to use the wiki to ask for feedback and six reported that they tended to give feedback to projects on the wiki space. The results further indicated how actively the respondents reported their self use of the wiki to share their project/proposal ideas, and update their work progress. Indeed, while over half of the 19 respondents (14) reported that they used the wiki space at least once a week, two of them posted their wiki entries at least once a week.

Table 1 displays the total and weekly average page visits (excluding visits by site administrator), numbers of pages created and edited, and number of persons who created pages. The wiki space is not very active, evidenced by its weekly page creations (i.e., 10.85 per week) and users who are actual page creators (i.e., 14 in total). Furthermore, very few comments were seen left on the wiki space during the researchers' data analysis.

Figure 2 presents the variations of the nineteen users' individual edits of wiki pages during the four-month period. The quantities of edits by users vary from 1 to 199. There is a salient discrepancy found between co-workers' perceptions of the positive effects brought by the wiki in the workplace and their actual use of the wiki prototype within the division.

V. IMPLICATIONS AND CONCLUSION

With most research findings highlighting the value of the wiki as a tool from supporting and promoting collaborative knowledge sharing and creation particularly within a learning environment, this study sought to determine, first, if the wiki is perceived as such in a typical work

TABLE I.
A SUMMARY OF SITE STATISTICS (FROM OCT 2009 – JAN 2010)

Item	Total	Weekly Average
Page Visits	6666	512.77
Page Creations	141	10.85
Page Edits	719	55.31
Page Creators	14	-
Wiki Users	19	-

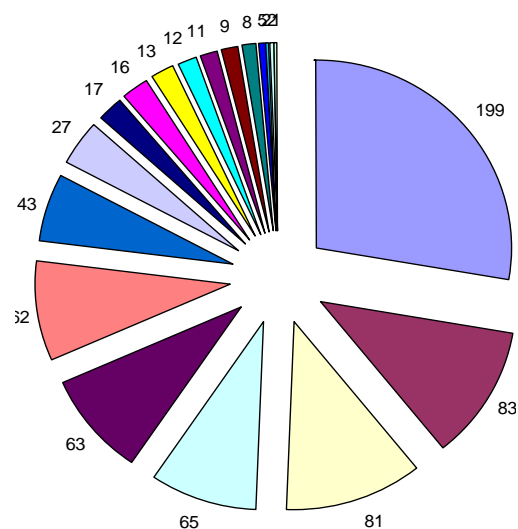


Figure 2. Numbers page edits by nineteen wiki users

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place, and secondly, if an existing wiki is actually put to use in this direction. Though limited both in scope and methodological approach, the findings of this study suggest that the study participants, who are representative of workers within a higher education institution, generally agree that the wiki can support academic research projects, just like it does with learning. However, the behavior of these workers does not seem to confirm their stated beliefs, as the wiki purposefully set up to enable them to collaborate remains largely unused for that purpose.

Reasons for this outcome cannot, however, be easily established as several other variables, which can be potentially confounding, were not controlled in the study due to time and logistical constraints. The first of such factors is that the workers in question all share a single workspace and are therefore in physical contact with each other during most of their working hours. Sharing ideas will, therefore, more likely be verbal rather than written, except in situations where the written text is absolutely necessary. Secondly, the wiki is in competition with other available collaborative technologies such as Instant Messaging and Google docs, which are equally well patronized by the workers.

These factors notwithstanding, this study confirms the understanding that the typical "build it and they will come" approach does not work. Deploying a wiki that is supposed to be used actively in the workplace thus involves more than technology and user sentiments; it must also take the prevailing conditions into account. Additional empirical studies can help establish the factors that generally influence effective wiki use in the workplace. Such research should consider data from various sources, possibly including user behavior as captured by their recorded activities on the wiki. Also, though this study assumed that all group members would be content creators on the wiki, it will be worthwhile to investigate if and how learning takes place on the workplace wiki platform, particularly as most visitors to the wiki were found to be content readers rather than creators.

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APPENDICES

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APPENDIX A

TABLE II.
REVIEW OF EXISTING WIKI SPACES

Site Name	Price per Month per User	Total Users	Total Cost per Year	Corporate Network	Workspace Limit	Storage	Audit Logging	Milestones/Task Management	Integrated Wiki	Notes
Zoho	80	Unlimited	960	Yes	Unlimited	25GB	Yes	Yes	Yes	Very slow access makes it impossible to use regularly.
PBWorks	20			Yes	Unlimited	Unlimited	Yes	Yes	Yes	Clean and easy to set up templates. Rather pricey for an organization with 50 staff.
Central Desktop	10			Yes	Unlimited	5GB	Yes	Yes	No	Cluttered and confusing. No intuitive templates for our purposes.
5pm 40 Users	2.2	40	1056	Yes	80	4GB	N/A	Yes	No	No space for online project creation. File upload only.
5pm Unlimited	175	Unlimited	2100	Yes	Unlimited	10GB	N/A	Yes	No	No space for online project creation. File upload only.
CoMindWork	100	Unlimited	1188	Yes	50	Unlimited	Yes	Yes	Yes	Wiki space is cluttered and not intuitive. No templates. The speed is very slow.
Basecamp Plus	49	Unlimited	588	Yes	35	10 GB	Yes	Yes	No	Uses whiteboards. More for management than creation of project information.
Basecamp Premium	99	Unlimited	1188	Yes	100	20 GB	Yes	Yes	No	Uses whiteboards. More for management than creation of project information.
Basecamp Maz	149	Unlimited	1788	Yes	Unlimited	50 GB	Yes	Yes	No	Uses whiteboards. More for management than creation of project information.

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APPENDIX B

1. Please indicate your employment status

1. Full-time staff
2. Part-time staff
3. Graduate Assistant

2. Please indicate your role at the EdLab (e.g., researcher, software developer, etc.):

.....

Please indicate the extent of your agreement or disagreement of the following statements about the EdLab wiki space:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

3. I believe the use of the wiki can effectively promote information sharing.	1	2	3	4	5
4. I believe the use of the wiki can effectively promote work collaboration.	1	2	3	4	5
5. I believe the use of the wiki can effectively promote getting feedback.	1	2	3	4	5
6. I tend to use the wiki to share my project/proposal idea.	1	2	3	4	5
7. I tend to use the wiki to update my project/proposal progress.	1	2	3	4	5
8. I tend to use the wiki to ask for feedback.	1	2	3	4	5
9. I tend to give feedback about projects on the wiki.	1	2	3	4	5

10. How often do you use the EdLab wiki space (i.e., project space)?

1. At least once a day
2. At least twice or three times a week
3. At least once a week
4. At least once every two weeks
5. At least once a month
6. Less than once a month
7. Never

11. How often do you post your projects/proposals on the EdLab wiki space?

1. At least once a day
2. At least twice or three times a week
3. At least once a week
4. At least once every two weeks
5. At least once a month
6. Less than once a month
7. Never