

DISSERTATION

ESTABLISHING GROUP NORMS THROUGH WIKI TECHNOLOGIES WITHIN A
HEALTH-CARE SETTING: A CASE STUDY

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ABSTRACT

ESTABLISHING GROUP NORMS THROUGH WIKI TECHNOLOGIES WITHIN A HEALTH CARE SETTING: A CASE STUDY

Within rapidly changing environments in today's health care organizations, new technologies are sought to bridge gaps in processes, create connections between people, and facilitate workplace efficiencies. This study, anchored in diffusion of innovation theory, examined how one new technology is being utilized and diffused in a medium sized, multi-hospital health care system. Wiki technology allows multiple users opportunities to asynchronously collaborate and communicate through a web (internet) based application. Although potential benefits of this technology are exciting, the diffusion of this technology within a complex system is still a relatively unknown process. This case study examined how actors, or users, of three wikis perceived the establishment of group norms and rules that helped govern use of the wiki and diffusion of the technology to other members. Perception was measured through the distribution of an online questionnaire, interviews with the wiki administrators, and examination of wiki content. It was determined that group norms were ultimately helpful as new members learned how to use the wiki. In addition to wiki specific norms, this study determined group norms were perceived to be established at a higher organizational level than the wikis themselves; meaning, organization norms and rules strongly influenced how wiki

specific norms and rules were determined. This study highlights the importance of strong organizational culture as it relates to members trying and adopting new, web-based technologies.

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What's next . . . ?

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CHAPTER 1

INTRODUCTION AND BACKGROUND

Background

Over 500 million Facebook users can't be wrong, right?! The explosion of social media use and growth of social media services throughout the past five years has created a new landscape of communication and collaboration. The latest trending data from Pew Internet (2010) indicates 79% of Americans are actively engaged in some form of online usage. In a typical day, 38% of Internet users visit a social networking site, 23% watch a video, and 17% search for information on Wikipedia. Trending data from Pew shows an increase in internet usage related to online social media as well as usage of media-rich material such as online video.

The Internet has moved from traditional websites, clicks, and views to a more collaborative process of user-generated content, participation, collaboration, and community (Tapscott & Williams, 2008). This new internet, often referred to as Web 2.0, has been referred to as the first technology that truly has the potential to facilitate collaboration since the table (Shirky, 2010). Although difficult to ultimately define, Web 2.0 technologies and interactive applications allow participants an opportunity to engage in much more rich and deeper interactions than previously available through the internet. Facilitated by Web 2.0, the possibilities of new forms of collaboration, learning, and creating in organizational settings are enticing propositions.

Can Web 2.0 enhance communication, collaboration, participation, and innovation within a health care setting? Before answers can be found to these questions, an examination of the diffusion of Web 2.0 technology with a health care system needs further examination. Health care settings provide a unique organizational environment of 24 hour, 7 day a week, highly-regulated operations. The diffusion of innovations with a health care setting can be challenging due to cultural, procedural, and process limitations. Health care may be the most entrenched change-adverse industry in the United States (Christensen, Bohmer, & Kenagy, 2000). This study examines the diffusion of Web 2.0 technology in a health care setting.

Theoretical Base

Diffusion of innovations theory describes the process in which a new idea, concept, technology, or product is spread and accepted into a social system (E. Rogers, 2003). Rogers published *Diffusion of Innovations* in 1962. Since then, the theory has been applied to a wide variety of processes that describe how a new idea, concept, or product gains acceptance and use as it moves from one actor to others. Diffusion of innovation (DOI) outlines the steps, processes, characteristics, and behaviors that a new idea or concept goes through as it moves from a single actor to many. Within DOI, Rogers identified four main elements that are present within every diffusion process; these elements are: (1) an innovation, (2) communication and channels (of communication), (3) time, and (4) social system (E. Rogers, 1995). From these broad categories, two models of diffusion were developed. Figure 1 shows the s-shaped curve that highlights time (on the horizontal axis) and percentage of adopters (on the vertical axis).

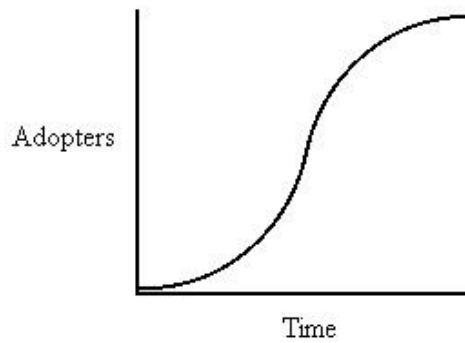


Figure 1 Rate of adoption s-curve

Figure 2 breaks the diffusion process into categories of adoption based on percentages of a population and how quickly they adopt a new innovation.

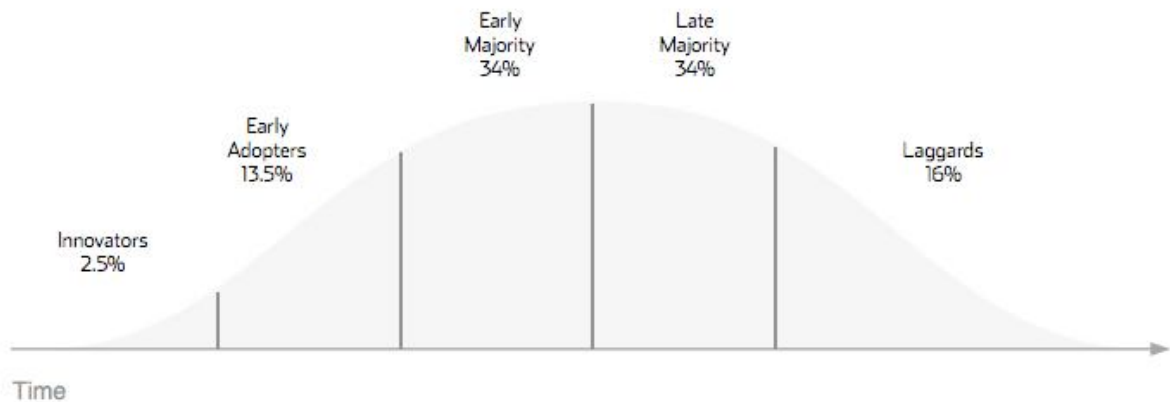


Figure 2 Rate of adoption bell curve

DOI theory contends that diffusion is “a generic process, not bound by the type of innovation studied, by who the adopters [are], or by the place or culture” (Rogers, 2004, p. 16). Essentially, the process through which an innovation is diffused is universal in its applications, regardless of topic, or field of study. Diffusion is defined as “the process in which an innovation is communicated through certain channels over time among the members of a social system” (E. Rogers, 2003, p. 5). Innovation is identified as “an idea,

practice, or object that is perceived as new by an individual or other unit of adoption” (E. Rogers, 2003, p. 12).

The outcomes of the diffusion process are adoption, implementation, and institutionalization. *Adoption* refers to acquiring an innovation. In the case of organizations, it could be a policy change or the choice of selecting a new technology and then providing training and support for that decision. *Implementation* is distinguished from adoption as not every actor who adopts a new innovation uses that innovation. Finally, *institutionalization* occurs when the use of an innovation becomes routine and is no longer viewed as new. It is at this point when the idea, concept, or technology becomes integrated into a system and becomes indispensable, or actors’ use of the innovation has become the standard (Dusenbury & Hansen, 2004).

Key Diffusion of Innovations Terms

- *Communication* is a process by which participants create and share information with one another to reach a mutual understanding (E. Rogers, 2003, p. 5).
- *Innovation* is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (p. 12)
- *Norms* are established behavior patterns for the members of a social system . . . the norms of a system tell individuals what behavior they are expected to perform (p.26).
- *Social Change* is the process by which alteration occurs in the structure and function of a social system (p. 6).
- *Opinion Leadership* is the degree to which an individual is able to influence other individual’s attitudes or overt behavior informally in a desired way (p.27)

- *Diffusion Network* is the collection of an adopter's near peers, with whom the adopter maintains close communication experiences (p. 330-331).

Statement of Problem

Health care organizations are challenged to create an environment that fosters employee participation and collaboration. This challenge leads to the question of: how can employee participation, collaboration, and innovation be enhanced within a health care setting? The environment present in most health care settings (hospital-based) includes a 24 hour, 7 day a week operation. Health care providers are often required to be close to patients and are unable to spend time in meetings and other face to face communication settings. This is compounded by the fact that the majority of the face to face communication (in terms of meetings and committees) occurs during the typical weekday shifts, therefore limiting participation from employees working the other shifts. Dissemination and communication of information is limited to memos, emails, and some personal interactions. This type of communication limits elements of feedback and two-way participation.

Are there other opportunities or avenues available to employees that will allow them to increase two-way participation in the communication process? Two-way participation includes a co-creation of communication, not simply the digestion of information. With greater opportunities to collaborate, can more innovative ideas be created, shared, and ultimately implemented?

Can Web 2.0 technology help fill a void in communication considering the 24/7, complex environment present in a health care setting? If so, how is that technology diffused within the system, what elements of diffusion assist with adoption, and what are potential barriers that inhibit adoption?

Employee Participation. The area of employee participation and involvement has a history of research from an organizational perspective (Delbridge & Whitfield, 2001; Forrest, Cummings, & Johnson, 1977; Hackman & Lawler, 1971; Lawler & Hall, 1970), according to Shadur, Kienzle, and Rodwell (1999):

There is an assumption held by many academics and managers that if employees are adequately informed about matters that concern them and they are allowed to make decisions relevant to their work, then there will be benefits for both the organization and the individual. On the other hand, if employees are not given sufficient information and work where little or no interaction with fellow employees occurs, then it is unlikely that employees would be able to carry out their work satisfactorily. (p. 479)

Fundamentally, greater employee participation leads to better productivity, satisfaction, engagement, and retention. From an organizational perspective, fostering employee participation and involvement are important elements of overall performance management (Cummings & Worley, 2008). Cotton, Vollrath, Froggatt, Lengnick-Hall, and Jennings (1988) argue that novel forms of employee participation must be explored to better understand the impacts of participation and organization (and employee) benefits.

Web 2.0. Web 2.0 is an evolving technological and social form of communication. In contrast to earlier versions of the Internet, where most people simply consumed information by visiting websites, Web 2.0 facilitates information sharing, interoperability, user-centered design, and collaboration. In essence, Web 2.0 provides a technological base in which people can generate content, both synchronously and asynchronously, and post that content for anyone else in the world to see. Instead of information being generated and disseminated by a relative few, it is now possible for anyone with a connection to the Internet (via computer or cell phone) to participate in both information creation and information distribution (O'Reilly, 2007).

Web 2.0 has become both a method for harnessing collective intelligence (O'Reilly & Battelle, 2009) and a social movement that promotes it. Websites, such as Wikipedia and Craigslist, have content that is completely created and disseminated by users (or actors). The concept of crowdsourcing (Surowiecki, 2004) describes how a large group can create a collective work whose value is greater than that created by any of the individual participants. Applications and validity of crowdsourcing are being explored by organizations such as Google and Microsoft (Fuxman, Tsaparas, Achan, & Agrawal, 2008), and are making their way into academic literature (Alexander, 2008).

An overarching question of interest to this study is: Can this new technology facilitate greater employee participation and involvement within a health care setting?

Key Web 2.0 Terms

- *Enterprise 2.0* refers to the process of utilizing Web 2.0 tools within a workplace.
- *Semantic web* refers to the capability of the Internet to understand content (generally through “tagging” and complex algorithms).
- *Tagging* refers to an authors’ use of keywords and/or phrases.
- *Real Simple Syndication (RSS)* is a system of transporting articles and content across the Internet.
- *Social networking* refers to the process of building online networks and communities through the use of websites capable of providing synchronous and/or asynchronous communication processes.
- *Wiki* refers to a website designed to allow multiple people (actors) the ability to collaborate, generate, and edit content.

Innovation. “Few issues have been characterized by as much agreement among organizational researchers as the importance of innovation to organizational competitiveness and effectiveness” (Wolfe, 1994, p. 405). In general terms, organizational innovation refers to the creation or adoption of an idea or behavior new to the organization (Daft, 1978; Damanpour & Evan, 1984). Innovation is an important process for many organizations, yet creating and sustaining innovation is a difficult task. In addition, Bartel and Garud (2009) promote:

Innovation requires the coordinated efforts of many actors to facilitate (1) the recombination of ideas to generate novelty, (2) real-time problem solving, and (3) linkages between present innovation efforts with past experiences and future aspirations. (p. 107)

Organizational innovation requires structures to promote advantageous social interactions. However, linking people to bring forth these social interactions can produce new sets of problems or barriers to success (Bartel & Garud, 2009). Ideas that come from disparate or diverse areas (or populations) within an organization may have greater difficulties reaching an audience with significant enough numbers to promote those ideas.

Putting it all Together. Creating an environment in which employees can contribute, generate and collect ideas, and disseminate knowledge throughout an organization structure is challenging. Web 2.0 technologies bring the potential of augmenting the collaboration and participation processes by allowing synchronous and asynchronous collaboration opportunities. Web 2.0 does present new technologies and new methods of operation. This innovative process must undergo a diffusion pattern throughout an organization for its potential benefits to be utilized. This study will look at the elements of that diffusion process, leading the way for future research to develop the potential for learning, change, and growth that Web 2.0 may offer.

Purpose

From a very broad perspective, the overarching of interest to this study is: Can this new technology (Web 2.0) facilitate greater employee participation and involvement within a health care setting? To that end, however, smaller steps must first be taken.

The purpose of this study is to examine the diffusion of a Web 2.0 technology (wiki) within a health care setting. Utilizing classic diffusion theory, the researcher will examine if elements of diffusion theory are applicable to the diffusion of Web 2.0 technologies within a setting that is geographically dispersed (not all employees work in the same building or same area), that operates 24 hours per day, 7 days per week, and that includes a diverse population of employees (in terms of job tasks). Of particular interest to this study is the development of group rules and norms in the diffusion of a particular Web 2.0 technology: a wiki. Focusing on a single Web 2.0 technology (wiki), and a single element of the diffusion of innovations (social system norms), this study will begin to provide some clarity on the larger questions surrounding Web 2.0 diffusion, innovation, and employee participation within a health care setting.

Research Questions

To help determine how Web 2.0 is being diffused within a health care system, the following research questions are addressed: Within a health care setting . . .

RQ1: How are group norms established within the context of a wiki?

RQ2: How does the establishment of norms affect the use of the wiki?

RQ3: How do actors perceive the violation of (wiki) norms?

RQ4: Does the establishment of norms reduce perceived barriers for wiki use?

Delimitations

This case study will examine the diffusion of wiki technology within one health system. The health system includes two regional hospitals, a mental health hospital, numerous outpatient clinics, and significant support services (including administration, billing, and environmental services) that facilitate operations; the system currently has about 5,500 employees. The case study methodology is appropriate for use in this study, as the real-life events of a diffusion of innovation are examined:

The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events – such as individual life cycles, organizational and managerial processes, neighborhood change, international relations, and the maturation of industries. (Yin, 2003, p. 2)

This study examined the diffusion of wikis within three settings in the health care system: (1) the use of a wiki in the pharmacy in one of the hospitals, (2) wiki use in a leadership development setting, with the intent of allowing the leadership participants an opportunity to co-create the content of the leadership development courses, and (3) wiki use in a support (non-clinical) department designed to provide participants an opportunity to receive communication and collaborate with peers who may work different shifts and/or at different locations.

The study took place over a three-month period in the spring/summer of 2011. The two areas of focus listed above were chosen as they were in the process of development within the health care system at the time of the research. Four employees were interviewed, twenty-seven questionnaires were collected, and the researcher examined the content of three wikis.

Significance

The significance of this study can be defined from a few different points of view. First, this study adds to the current body of diffusion literature by overlaying diffusion elements to the relatively new phenomenon of Web 2.0 technology. Furthermore, the diffusion of this particular technology within a health care setting helps fill voids in the literature, including the examination of Web 2.0 use in health care settings. Second, from a personal perspective, the researcher is very interested in creating an environment in which employees in a health care setting are provided greater opportunities for collaboration and participation. As health care continues to evolve, the researcher believes that an organization's ability to create innovation and agility through more participative communication practices will be a key element; the study of how Web 2.0 is diffused is an important first step in this process. Finally, the researcher hopes that the health care system studied can gain insight into their own Web 2.0 adoption methods and create more efficient processes of adoption if advantages are gained in doing so.

Researcher Perspective

The researcher has been involved in both people and system development for nearly twenty years. Throughout this work, he has witnessed the benefits and challenges of maintaining effective communication structures as organizations grow. In his experience, it seems that at the very time that these organizations need communication processes that allow for rapid transfer of information and for greater employee involvement, the growth and changes taking place create an opposite environment.

It needs to be acknowledged that the researcher probably operates from pro-innovation and pro-technology mindsets. In order to achieve different results, the researcher

encourages new thinking and new applications of processes and technologies. The researcher is aware of this orientation and has built in checks throughout the project to provide alternative perspectives (including interviewing participants who did not adopt, and by utilizing member checking to insure interview responses matched intent). Other tests for quality and validity as outlined by Yin (2009), including pattern matching, informant review, use of case study theory, and the development of proper protocols will be used to further insure research quality.

CHAPTER 2

REVIEW OF CURRENT LITERATURE

The purpose of this review of literature is to provide a foundation for the study of diffusion of innovation in the applied context of Web 2.0 adoption within a health care setting. This chapter is divided into four sections. The first section examines diffusion of innovations theory, including current research directions. Section two examines Web 2.0 technologies – both from a technological and social behavior perspective. Section three explores research surrounding barriers of adoption. Finally, section four highlights the unique health care organizational environment, and supports the need for diffusion of innovation studies within this setting.

Is Diffusion of Innovations Still Relevant?

Diffusion of innovations (DOI) theory was selected for both its breadth of application and its depth of study into areas of change and learning. Rogers (1962) highlights the work of early diffusion researchers Ryan and Gross as they examined how Iowa farmers adopted the use of hybrid corn seed. Rogers (2003) defines diffusion as a process in which an innovation is communicated through channels over a period of time by members of a social system. The communication is focused on messages that are concerned with new ideas. Within the health care setting examined in this study, a number of social networks exist that serve to facilitate communication centered on new ideas. In this case, the new idea examined is Web 2.0 technologies.

Rogers' work has provided the foundation for most diffusion research. Diffusion research focuses on five elements: (1) the characteristics of an innovation (which may influence adoption), (2) the decision-making process that occurs as individuals consider adopting new ideas, (3) characteristics of individuals that make them more or less likely to adopt, (4) consequences (for individuals and society) of adoption, and (5) the communication channels used in the adoption process (E. Rogers, 1995). Of particular interest to the current study is the research surrounding the innovation-decision process:

The innovation-decision process is the process through which an individual (or other decision making unit) moves from gaining initial knowledge of an innovation, to forming an attitude towards the innovation, to making a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision. (E. Rogers, 2003, p. 168)

The five stages of the innovation-decision process are: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation. Table 1 highlights behavior in each of these five stages and figure 3 provides a graphical representation of the innovation-decision process.

Table 1
Stages of the Innovation-Decision Process

Knowledge	Persuasion	Decision	Implementation	Confirmation
when an individual is exposed to an innovations existence and gains functional understanding	when an individual forms a favorable, or unfavorable attitude towards the innovation	when an individual engages in activities that lead to a choice to adopt or reject the innovation	when an individual puts the new idea into use	when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse their decision if exposed to conflicting messages about the innovation

DOI is also a study of social behavior, defined by processes of adaptation and change that occur within the fabric of a social system. As new ideas are invented, they are diffused and either accepted or rejected. Both can have certain consequences and social change can occur (E. Rogers, 2003). The process by which an innovation is diffused, even when it meets the five elements listed above, can be slow and tedious – particularly in the mind of the inventor. Regardless of the rate, adoption of any innovation is a difficult process (E. Rogers, 2003). Figure 3 serves as a graphical representation of the diffusion process and highlights the concepts that Rogers believes must be considered throughout the diffusion of an innovation. Ultimately, as a user proceeds through the process, they can make a decision to adopt or reject at any stage. Furthermore, rejection can occur even after an innovation is adopted if the user does not receive adequate confirmation that their decision to adopt was the correct decision. At the same time, adoption decisions can be restarted even after rejection, again if changes occur within the process.

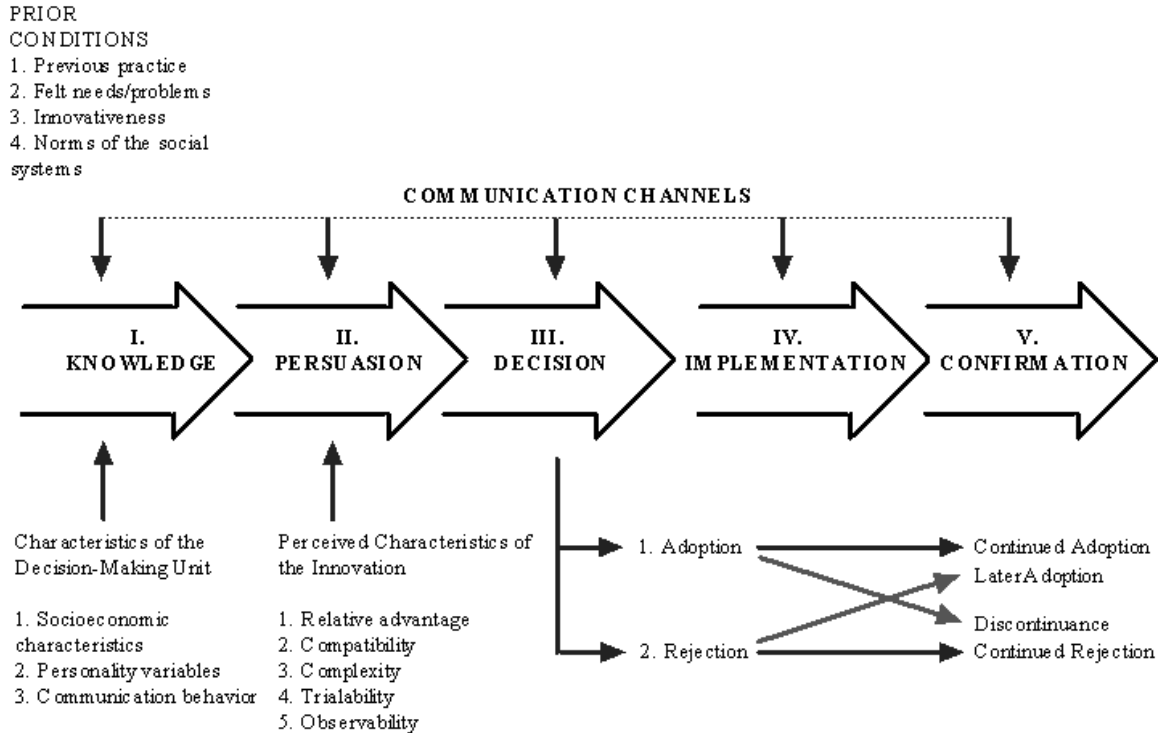


Figure 3 5 Steps of the diffusion communication process (E. Rogers, 2003, p. 170)

Rogers (2003) highlighted the complexities of the adoption process through the example of the QWERTY keyboard. The QWERTY keyboard was designed to slow the rate in which early typists could type so they would not jam early typewriters. Intrinsically, the QWERTY keyboard should be a ripe landscape for innovations that would help increase the rate and ease of typing as we no longer have to worry about manual typewriters becoming inoperable due to speed.

In 1932, Professor Dvorak at the University of Washington designed a keyboard that improved the positioning of the most commonly used characters on a keyboard as well as balanced the workload of each hand, resulting in smaller movements between rows. Ultimately, the Dvorak keyboard provided the user an opportunity for greater typing speed

and less manual stress. Despite the advantages of the Dvorak keyboard, nearly 80 years later, the QWERTY keyboard is still the choice of manufacturers and end users (Rogers, 2003).

Group Norms and the Diffusion of Innovations. Group norms can play a significant role in the diffusion of innovations within cultural and organizational settings. Rogers (2003) highlights a number of examples of how norms affect (often adversely) the diffusion of innovations. Examples include the 200-year struggle of the British Navy to end scurvy when evidence was clear that the consumption of citrus fruit was the answer; the challenge of convincing a Peruvian village to boil water in order to minimize disease, when heating any food went against cultural norms; and the previously mentioned Dvorak keyboard.

The establishment of norms is linked, in part, to the intricacies of the social structure in which the diffusion is being introduced. In 1961, Katz (as cited by Rogers, 2003) stated “it is as unthinkable to study diffusion without some knowledge of the social structure in which potential adopters are located as it is to study blood circulation without adequate knowledge of the veins and arteries” (p. 25). The social system is the fourth main diffusion element in Rogers’ work (innovation, time, communication, and social system). A social system is defined by the common objectives, goals, and rules that bind a group together:

Diffusion occurs within a social system. The social structure of the system affects the innovation diffusion in several ways. The social system contributes a boundary within which an innovation diffuses. Here we deal with how the system’s social structure affects diffusion, the effects of norms on diffusion, the roles of opinion leaders and change agents, types of innovation decisions, and the consequences of innovation. Each of these issues involves relationships between the social system and the diffusion process that occurs within it. (E. Rogers, 2003, p. 24)

The creation of group norms within the social structure of a continuously evolving environment, as created through Web 2.0 technologies such as wikis, is an area of research that is being defined. Some researchers contend that the establishment of cohesive norms is a

result of selecting the right participants in the beginning, those with pro-technology bias and abilities (Chui, Miller, & Roberts, 2009). Other researchers cite the work of Coleman (1994) and contend that Web 2.0 simply provides another form of a “constructed social organization.” Lai and Turban (2008) discuss the macro group and the micro group when examining the formation of Web 2.0-based communities. The implications for research include examining the norms of the corporate actor, or the basic rules, policies, and regulations that govern the larger organizational environment, as well as the norms and rules that develop at the micro level, or the level occupied by actors who are engaged in the development and implementation of Web 2.0 technologies.

From a traditional perspective, group norms are established in four ways within an organizational environment: explicit statements by supervisors or co-workers, group history, primacy or recency (first norms established are more likely to last), and carry over from past situations (Feldman, 1984). Norms established by supervisors and co-workers can create increased certainty as to what is expected of the group as well as set a clearer tone and direction for the group. At the same time, these directive norms may also hinder innovation and collaboration as members who do not comply, or who question the norms of the group may be seen as outsiders. Norms established by critical events in a group’s history or a precedence of behaviors are often perceived as a method of protecting or insulating the group from similar experiences in the future (Feldman, 1984). This too, may be perceived by some members of the group as limiting to the development and implementation of innovation as outside or foreign ideas may represent danger to the group and its established methods of operations. Norms established by primacy are often informal cues and clues of “accepted behavior.” A student’s establishing their own “turf” in a classroom by repeatedly sitting in

the same seat is an example of primacy norms. Within organizations, meetings are often conducted the same way for many years as that is the way the meeting started and members expect the same behavior to remain. Finally, norms established through carry-over situations identify those rules (real and perceived) of behavior that follow professions, cultures, and organizations. For example, the manner in which a doctor interacts with their patient may vary slightly from hospital to hospital. However, standardized professional training will determine, at some level, how the doctor interacts with patients (norms of interaction) from hospital to hospital). Oftentimes, these engrained norms are seen as standards of professional behavior. They too can adversely impact innovation and diffusion, as once again an actor moving contrary to the norms can be regarded as an outsider.

Group Norms and Barriers to Diffusion of Innovations. Norms are the regularities in attitudes and behavior that characterize a social group and distinguish it from other groups (Hogg & Reid, 2006). Hogg and Reid (2006) also describe norms as shared patterns of thoughts, feelings, and behaviors. Furthermore, how norms are communicated in itself describes and defines norms in a system. So, in essence, once norms are established, it can be challenging to move contrary to or redefine them in a social system. In organizations, the tension that occurs as a result of innovation could be due, in part, to the contrary movements against established norms. Additionally, when examining an organization that produces a service rather than an actual product, the norms (and values) that define the culture are vitally important when applying the lens of innovation (Lyons, Chatman, & Joyce, 2007).

Group norms can adversely influence the creation and implementation of innovations. An actor pushing new ideas for change (innovation) challenges the shared practices, behaviors, and theories within an organization (O. Janssen, 2003). Janssen concludes,

“Therefore, a worker’s innovative behavior is likely to be obstructed by resting co-workers who have an interest in safeguarding the existing paradigm or who want to avoid the uncertainty and insecurity surrounding change” (p. 347). An innovative actor’s contrary movements and ideas (to established norms) can be emotionally and physically taxing for both the actor and for their co-workers within an organizational setting. These efforts may cause frustration, antagonism, and animosity, and ultimately could lead to less positive interactions between the innovative actor and their co-workers (Janssen, Vliert, & West, 2004).

Lai and Turban (2008) provide additional thoughts when addressing the role of norms established by supervisors and co-workers in the diffusion and use of new technology. The role of the supervisor adds yet another layer to the potential barriers created by group norms in the diffusion of innovations within organizations:

Even when implanted and implemented well, these new technologies will certainly bring with them new challenges. These tools may well reduce management’s ability to exert unilateral control and to express some level of negativity. Whether a company’s leaders really want this to happen and will be able to resist the temptation to silence dissent is an open question. (p. 399)

Traditionally, understanding group norms has been important on a few different levels. First, they can help determine whether or not the group will be productive. Second, understanding how norms are established can help managers within organizations facilitate effective and efficient behavior patterns and help reduce tension and uncertainty within their staff (Feldman, 1984). At the same time, trying to move in a different direction (innovation) of the group norms can provide another barrier to the diffusion of the innovation and ultimate implementation of new ideas, technology, and direction (Lai & Turban, 2008).

Diffusion of Innovations Within Health Care Settings. Researchers are examining the diffusion process as it relates to certain elements in a health care setting. In response to ever-rising health care costs and complexities for patients and health workers, Christensen, Bohmer, and Kenagy (2000) advocate for the diffusion of lower cost technologies that simplify complex problems, instead of investing in high-end complex and expensive technologies. These “disruptive innovations” could allow for a health care system that treats patients on a tiered level based on need rather than always trying to kill a mosquito with a sledgehammer (ordering high-cost tests for every condition). An interesting perspective emerges in their argument – it is about intentional diffusion efforts more than processes, “instead of working to preserve the current system, health care regulators need to ask how they can enable disruptive innovations to emerge” (Christensen, et al., 2000, p. 110).

“Innovation in health service delivery and organization has become a central issue” (Jippes et al., 2010). In examining this central statement, Jippes et al. found a strong effect for social networks in the adoption of innovations, as it relates to a structured approach for feedback. Their finding seem to relate back to the findings of Coleman, Katz, and Menzel (1966) in that stronger social ties created a better environment for diffusion of innovations as opposed to weaker social ties.

Berwick (2003) examined three factors that influence the rates of adoption with health care: (1) the perception of the innovation, (2) the characteristics of the individuals who may adopt the change, and (3) management and organizational variables. He concluded that if we want to create a health care future different from its past, health care leaders need to understand innovation and how it spreads. They need to understand the diversity of

innovations and they must also find the people (within the organization) who can nurture and promote innovations.

Chew, Grant, and Tote (2004) applied Rogers work on trialability, relative advantage, observability, compatibility, and complexity as it applies to family physician adoption of Internet resources. Their findings support Rogers work, and make the case for creating space and time for innovations to work. Doctors who were able to spend more time observing peers using the Internet were more likely to follow a path to adoption.

The variety of diffusion research within health care settings is evidenced by the work of Giddens and Walsh (2010) as they detailed the experiences of two nurse educators as they tried to diffuse a new method of nurse training and education that involved virtual communities. The diffusion of this innovation were occurring simultaneously in the United States and in England; however, the two innovators were not connected at the time of the innovation, but “compared notes” when they learned of their similar paths. They concluded that innovators need persistence and confidence in their work as they will meet a number of barriers. Innovators need allies, both within and outside of their system. Innovators and innovations must be adaptable and creative as they maneuver through the adoption life cycle. Innovators must find a way to evaluate the effectiveness of their innovations. Finally, innovators must be aware of their organizational contexts and environments, as pushing too hard in a direction not supported will be ultimately met with enough resistance to kill an innovation.

Current Directions for Diffusion of Innovations Research. Building upon the foundation of Rogers and other earlier diffusion researchers, modern diffusion scholars are both building upon the classic theories and are taking the study of diffusion in new directions. In response

to the vast and sometimes disconnected diffusion research, Wejnert (2002) examines diffusion of innovations from a different conceptual framework aiming to group variables that influence diffusion. Wejnert proposes the following classification of diffusion variables (Table 2):

Table 2
Classification of Diffusion Influences

Characteristic of Innovations	Characteristics of Innovators	Environmental Context
Public vs. private consequences	Societal entity	Geographical settings
Benefits vs. costs	Familiarity with the innovation	Societal culture
	Status characteristics	Political conditions
		Global uniformity
	Socioeconomic characteristics	
	Position in social networks	
	Personal characteristics	

Wejnert's classification allows for new directions in diffusion research as relationships among the three main categories as well as among the various sub-categories could yield new insights into the patterns and rates of adoption.

Choi, Kim, and Lee (2010) examine the evolving dynamics of the impact of social networks in the diffusion process. Social networks have always been a foundation of diffusion research; however, the methods in which social networks are being formed and developed are changing. Their findings show that network effects, or the number of adopters, has an impact on the diffusion process; if an innovation does not have a sufficient adopter population, the chances of failure (in adoption) are greater. An actor will be less likely to adopt a new innovation if they do not have another adopter to communicate with.

Lack of adopter population does not allow an innovation to reach a critical mass, or tipping point, at which time the innovation becomes accepted and diffused. Marketers of new software are beginning to understand this aspect of diffusion and often give away their software for a period of time in order to build a sufficient adopter base. As soon as a sufficient base is developed, they can then start charging for their products (Choi, et al., 2010).

Finally, other researchers are attempting to push diffusion of innovations research to new horizons. Vannoy and Palvia (2010) represent a movement to consolidate a number of sociological, technological, and diffusion models into a single model. The social influence model of technology adoption is an example of this consolidation effort. Boyd and Ellison (2008) represent a group of researchers who are attempting to explain the adoption of online social networking sites. These sites have a history of starts and stops resulting in relatively short and intense adoption processes “Although the situation is rapidly changing, scholars still have a limited understanding of who is and who is not using these sites, why, and for what purposes” (Boyd & Ellison, 2008, p. 224).

The diversity and directions of current diffusion research confirms its relevance in today’s environment. “It seems that today, scholarly research on the diffusion of innovations knows almost no boundaries. This fact is a kind of affirmation that the generalizability of the diffusion model has been borne out by history since 1962” (Rogers, 2004, p. 18).

What is Web 2.0?

The term “Web 2.0” is an audacious attempt to classify and clarify an amorphous collection of tools, services, and social movements. Many people critique the use of Web 2.0 as an overarching definition, as the very nature of Web 2.0 does not allow for easy

boundaries in which to anchor definitional terms (Alexander, 2006). Tim O'Reilly (2007), often considered the person who coined the term Web 2.0, offers the following description of Web 2.0:

Like many concepts, Web 2.0 doesn't have a hard boundary, but rather, a gravitational core. You can visualize Web 2.0 as a set of principles and practices that tie together a veritable solar system of sites (web) that demonstrate some or all of those principles, at a varying distance from that core. (p. 18-19)

Another conceptual definition of Web 2.0 is offered by Tapscott and Williams (2006), "While the old Web was about websites, clicks, and eyeballs, the new Web (2.0) is about communities, participation, and peering" (p.19). Finally, Murugesan (2007) offers the following description of Web 2.0:

Web 2.0 is both a usage and a technology paradigm. It's a collection of technologies, business strategies, and social trends. Web 2.0 is more dynamic and interactive than its predecessor, Web 1.0, letting users both access content from a Web site and contribute to it. Web 2.0 provides a technical platform that facilitates a level of collaboration and co-creation not seen and not available until now. (p. 34)

In his book *Cognitive Surplus*, Clay Shirky (2010) contends that prior to the Internet (Web 2.0), the last technology that truly had any real effect on the way people collaborate was the table! The facilitation of a new form of collaboration becomes one of Web 2.0's greatest potentials within an organizational context. Collaboration is the key to solving the complex issues in today's organizations (including health care) and we must understand, promote, and not resist the idea of collective creativity and intelligence (Bennis, 1997).

Table 3 highlights some Web 2.0 technologies, their descriptions, and a broad category of technology in which they can be classified. The information within the table is based on the work of Chui, Miiler, and Roberts (2009).

Table 3
Web 2.0 Technologies

Web 2.0 Technologies	Description	Category
Wikis, shared documents, shared workspaces	Facilitates co-creation of content	Collaboration
Podcasts, video uploads, blogs	Provides opportunity to share information to and across broad populations	Communication
Tagging, bookmarking, RSS	Adds additional information to primary content, building value	Data creation
Social networking	Creates and leverages connections between individuals	Connection, social capital

Although challenging to define, the manner in which Web 2.0 operates is easier to determine. Asynchronous and synchronous user-generated content, the web as a platform, dynamic content, crowdsourcing, and collaboration are areas that help define Web 2.0.

Asynchronous User-Generated Content. Many Web 2.0 sites allow users to generate and edit content in an asynchronous fashion. One of the most popular examples of this Web 2.0 element is Wikipedia. “Wikipedia is a free, web-based, collaborative, multilingual, encyclopedia project supported by the non-profit Wikimedia Foundation. Its 16 million articles (over 3.4 million in English) have been written collaboratively by volunteers around the world, and almost all of its articles can be edited by anyone with access to the site” (Wikimedia, 2010). Wikipedia reports that it now has over 16 million articles, and nearly 80 million people visit its sites every month. The web information company Alexa ranks Wikipedia as the 6th most visited website in the world (Alexa, 2010).

Asynchronous, user-generated content is both the reason for Wikipedia’s success, as well as its primary point of criticism. Can a multitude of users truly create content that equals that of experts? Is validity and reliability compromised because the standards of the

crowd are not as rigorous as the standards of the institutions that have traditionally created and published similar content? Giles (2005) determined that accuracy and error rates of Wikipedia articles was virtually the same as similar articles published in the Encyclopedia Britannica:

Considering how Wikipedia articles are written, that result might seem surprising. A solar physicist could, for example, work on the entry on the Sun, but would have the same status as a contributor without an academic background. Disputes about content are usually resolved by discussion among users. (p. 900)

The Web as a Platform. Throughout its relatively short history, most computer software programs had to be manually loaded onto a computer, where the user could then use the program. Although enterprise use of software programs was common within organizations (where software is located on a central server allowing multiple users access), the software was still physically installed on a machine (usually on the premises). Furthermore, programs often operated in isolation, without the ability to interact with other programs. The experience of the user was very siloed, meaning that they could engage in one task at a time.

Web 2.0 offers a platform of service, software, and programs that are highly interactive and that are hosted not on an individual's computer, but instead on a server (or multiple servers) throughout the world. Figure 4 shows how O'Reilly (2007) visualizes the web as a platform concept:

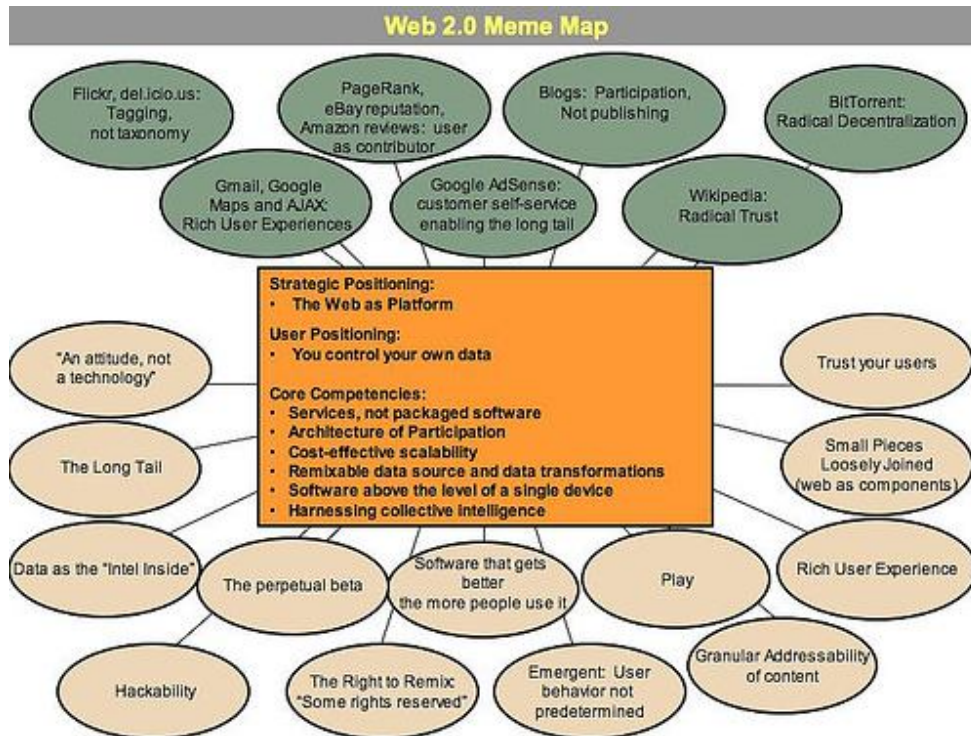


Figure 4 Web 2.0 as a platform (O'Reilly, 2007)

The concept that the web is evolving into a collective of programs, processes, social interactions, and even economic drivers is a challenging concept; however, looking at the current and future potential of Web 2.0 technologies, it seems as if it could hold some merit:

From its inception as a global hypertext system, the web has evolved into a universal platform for deploying loosely coupled distributed applications. As we move towards the next-generation web platform, the bulk of user data and applications will reside on the network cloud. (Raman, 2009, p. 52)

Dynamic and Rich Content. Dynamic content can be defined by its antonyms as effectively as trying to classify all it entails. Dynamic content is not: boring, dull, inactive, passive, or unexciting (Thesaurus.com, 2010). Instead, dynamic and rich content provides users with a unique and specific Internet experience. Web 2.0 allows websites to provide user-specific content based on needs and tastes. Dynamic content changes frequently to engage the user; it can include animations, audio, and video (Webopedia, 2010).

Web 2.0 allows users the opportunity to create and share content that is both visually and audibly stimulating. YouTube and other video sharing sites provide avenues for sharing highly rich and dynamic content when compared to previous web options that included mainly text and some images. Additionally, tools such as *Real Simple Syndication* (RSS) allow users to tag (or specify) words and terms. As terms and words are identified, many Web 2.0 services will then send or link relevant information (relevant as defined by the tags) to a user's email, homepage, or website. In this case, Web 2.0 offers a passive interface for users to continuously receive the latest information, videos, images, etc. on whatever interests them. Figure 5 shows an example from Google Reader in which a constant stream of hyperlinked information is delivered to a user based upon the user's tags and interests.

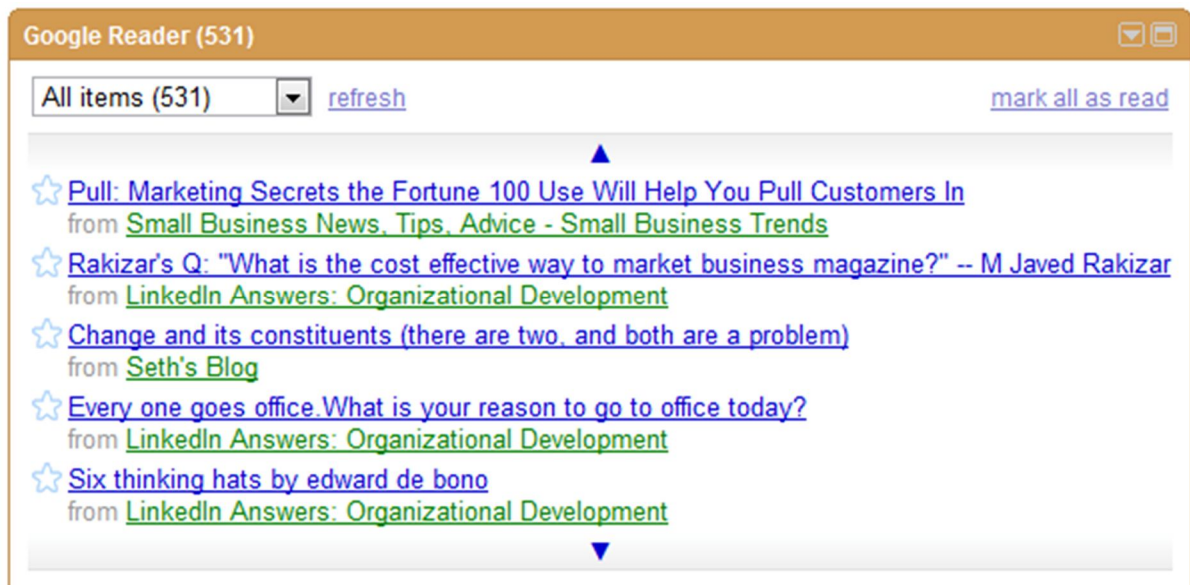


Figure 5 - RSS feed example (Google, 2010)

Crowdsourcing. Studies showing that groups of people can make better decisions (particularly when judging questions of fact) as a collective when compared to single individuals have been around since the 1920s (Surowiecki, 2004). Surowiecki highlights the popular television game show “Who Wants to be a Millionaire” as an example of crowd

intelligence. Contestants on the game show have a number of choices when asked a question in which they do not know the answer. Among the choices are to either call a friend (a relative expert) or ask the audience (who records their answers using clickers or an audience response system). The “experts” were able to provide correct responses 65% of the time, whereas the audience provided the correct answer 91% of the time. Surowiecki is quick to point out that this “experiment” was not conducted under scientific scrutiny; however, the results are still interesting.

Returning to the Web 2.0 technology of wikis, is the collaboration of many equal to the wisdom of an individual? Wikipedia details Web 2.0 with web applications that “facilitate information sharing, interoperability, user centered design, and collaboration on the World Wide Web” (Wikipedia, 2010). This definition, although complete, provides yet another challenge when examining Web 2.0 within scholarly research. In order to maintain rigor within scholarly research, we rely on the peer review process. When utilizing Web 2.0 technologies such as Wikipedia, the concept of “peer review” is challenged. The Wikipedia definition I provided for Web 2.0 comes from at least two sources. Wikipedia (or more accurately the anonymous contributor) gives credit to one source (Sharma, 2008) through both an end of article reference, and also through the use of hyperlinking key words back to the original source. The additional sources of the definition are anonymous and could have been written and re-written thousands of times – literally by every person who visits the site if they choose. I broke a rule of scholarly research by including Wikipedia as a citation, currently not supported by most scholarly practices, but why not?

The idea that one person is more intelligent than the masses is being challenged. Could the constant ebb and flow of a definition (through user-generated edits) such as Web

2.0 ultimately lead to one that is satisfactory for everyone? The benefits of this multiple review process are now being referred to as the wisdom of crowds (J. Surowiecki & Silverman, 2007; Tapscott & Williams, 2006). Applications and validity of crowd wisdom are being explored by many organizations including Google and Microsoft (Fuxman, et al., 2008). Crowd wisdom is also making its way into the world of scholarly research (Alexander, 2008; Kittur & Kraut, 2008). Kittur and Kraut conclude that having more editors generally produces higher quality articles (on Wikipedia) than having fewer editors. This is particularly evident when the editors coordinate their contributions based on both implicit and explicit communication interactions. In other words, when editors decided to implicitly contribute their knowledge and when coordinated explicit communication tools (email, online message boards) were employed, article quality improved.

Collaboration. As identified in research conducted by Kitter and Kraut, collaboration is a key element that helps define Web 2.0. Additionally, collaboration is a key element in organizations (Cummings & Worley, 2008), and has been the focus of numerous organizational research studies (Braithwaite & Westbrook, 2010; Liebeskind, Oliver, Zucker, & Brewer, 1996).

Web 2.0 allows for both asynchronous and synchronous collaboration to occur. Perhaps, the greatest influence that Web 2.0 provides is in the form of asynchronous collaboration. Asynchronous is defined by Dictionary.com (2010) as: “not occurring at the same time.” In the past, one of the greatest barriers to collaboration within organization contexts was separation of actors either by time, geographic location, or work environment. Web 2.0 allows for those barriers to be removed by providing a tool that does not require every actor to meet at the same time and same location. A popular example of asynchronous

collaboration is Facebook's wall feature. Actors can post messages on someone's wall whenever and from wherever they want (with a connection to the Internet). Figure 6 shows an example of Facebook wall postings.



Figure 6 - Facebook example (Facebook, 2010)

Hastings (2009) highlights the California State University library staff's use of a wiki to increase collaboration:

The library staff at California State University at Fullerton has created a wiki that they are using to track and manage their implementation of the Verse e-resource management system. The wiki is an excellent example of how collaborative tools allow a project to run smoothly with collaborators communicating asynchronously. It gives people a place to store information, comments, and concerns that are raised during the implementation procedure . . . By encouraging staff to use the wiki, all of the documents are now available whenever they are needed and can be accessed, edited, commented on, and discussed without concern as to when the material was created or whether the creator is online or available to discuss the issue at that time. (p. 17)

The rise of the popularity of Facebook and other Web 2.0 sites designed to promote collaboration and social sharing is evidence to its usefulness for actors and users. The ability to seamlessly communicate with individuals or masses is a key element of Web 2.0 and will continue to drive its growth and popularity as the technology moves forward.

Web 2.0 in Context. As Web 2.0 is applied specifically to the health care setting, more and more health care organizations are realizing the benefits and potential that Web 2.0 offers, even if they are unable to clearly define its specific use. “There is a need to raise awareness of Web 2.0 tools and the possibilities they offer, and an urgent need to conduct quality research to inform better use of Web 2.0 applications” (Kamel Boulos & Wheeler, 2007, p. 20).

“Good ideas sometimes occur simultaneously to different people in different parts of the world” (Giddens & Walsh, 2010, p. 449). This quotation provides an insightful glimpse at how two nurse educators realized the power of Web 2.0 as they worked to develop very similar nurse education thousands of miles apart. For years, one of the nurse educators was working to develop a virtual nursing community as a means of advancing nursing studies in the United States. During the same period, another nurse educator was following a similar path in the United Kingdom. Although they did not collaborate as the projects started, and both thought they were engaging in the development of these virtual communities on their own, as soon as they learned of each other’s work, they engaged in collaborative efforts to better understand how the diffusion of these virtual networks could be better achieved. Primarily, they utilized the concept of virtual communities (in the sense of collaboration and learning) to help develop their own programs (Giddens & Walsh, 2010).

What are Potential Barriers to the Adoption of Innovations?

In determining how a health care system (or any organization) will or will not adopt an innovation, it is critical to examine the factors that may contribute to non-adoption, or provide potential barriers to adoption. Rogers (1995) identifies the innovation-decision process as a process in which individuals pass through an evolution of gaining information about an innovation, to forming an attitude about the innovation, to making a decision to adopt or reject, to implementation, and finally to confirmation of their decision. Referring back to Figure 3, each of the steps has its own set of variables that can influence adoption and rejection.

The influence of decision makers or top executives within health care organizations is a key element of innovation adoption (England & Stewart, 2007). Whether or not these decision makers are ready to implement an adoption, understand its strategic benefit, are able to implement, are willing to use, or feel that the innovation creates opportunities are all important elements to be considered and all provide their own potential barriers (England & Stewart, 2007).

Butler and Sellbom (2002) identify barriers of adoption including reliability, lack of time to learn, uncertainty of benefit, and lack of support. Figure 7 shows additional factors that affected the adoption of technology in their study.

Factors Affecting Adoption of Technology*		
Factor	Mean	Standard Deviation
Reliability of the technology	3.64	0.61
Knowledge of how to use the technology	3.57	0.64
Believe the technology improves or enhances learning	3.36	0.80
Difficulty in using the technology	3.15	0.87
Institutional support for using the technology now	3.06	0.89
Institutional support for using the technology in the future	3.04	0.91
Difficulty in learning to use the technology	2.98	0.96
I have used the technology often in the past	2.69	1.00
The technology helps me with thinking and planning	2.59	1.08
I expect the technology to save me time in the long run	2.55	1.14
Unique or innovative technology	2.35	0.98
Others in my department are using the technology	2.00	0.93

* Range is 1–4, where 1 = not important and 4 = very important.

Figure 7 - Factors affecting the adoption of technology (Butler & Sellbom, 2002)

Returning to the work of Rogers (1995), diffusion of innovations within organizational context presents challenges for early innovators. For example, if an early innovator would like to try a new communication system, it is very difficult to reach a critical mass if the early adopter does not have anyone else within the organization at the start of the diffusion process in which to communicate with utilizing the new communication system.

Paré and Tudel (2007) demonstrate diffusion barriers in their work surrounding the adoption of new communication systems surrounding medical imaging. Although new technology allows for greater diagnostic care, the processes of acquiring and communicating information must also accompany the new technology in order to provide the highest value of care (Paré & Trudel, 2007). Figure 8 highlights some of the barriers and the lessons learned from their experiences.

Main conclusions	Lessons learned for practitioners
Merely deciding to adopt PACS does not guarantee success; effective PACS implementation is also necessary	To demonstrate the financial viability of the project is a necessary, but not sufficient condition for success Share the project vision with all the concerned authorities and parties Conduct an early assessment of the project context and derive a substantive plan describing potential key challenges
A planned and rational implementation strategy centered on technological considerations, with a relative exclusion of wider organizational and human concerns, is most likely to lead to project failure	Treat any PACS deployment not simply as a rollout of new technology but as a project that will transform the organization Do not believe in "magic thinking" Rather, adopt a proactive strategy that takes into consideration all the technical, economic, organizational and human factors and that does so from the very first phase of the innovation process
The quality of the implementation strategy can largely be predicted by the key actors involved in the process, given their backgrounds, commitment, and levels of motivation	The active and sustained involvement of highly motivated actors with complementary skills and interests is likely to favor project success Key actors must exert enough decision-making power to oversee the PACS acquisition process

Figure 8 - Summary of lessons learned through a diffusion process (Paré & Trudel, 2007)

Barriers affecting the diffusion of innovations have been well established by Rogers (1995) and many others. Recent studies have confirmed that these barriers are still relevant and necessary to consider when engaging in any diffusion process (Cochrane et al., 2007; Harting, Rutten, Rutten, & Kremers, 2009; Henderson & Dancy, 2008; Pagoto et al., 2007). Understanding the barriers to diffusion of innovations can help frame current diffusion studies by allowing researchers to focus their attention and questions.

Why is the Study of Diffusion of Innovations Important for Health Care Organizations?

“Too often, American health care – arguably the best in the world – fails to deliver the best care it could” (Berwick, 2003, p. 1969). This statement, as concerning and sobering as it is, is not about the quality of doctors, nurses and other health care professionals, it is not wholly about the technology, the facilities, or the way in which care is provided. It is about the manner in which current health care in America fails to use innovations that could create a much better health care experience (Berwick, 2003). These innovations are not limited to technological or clinical areas, but also to the numerous process improvement initiatives that

are in play in progressive organizations. “In health care, invention is hard, but dissemination is even harder” (Berwick, 2003, p. 1970). Health care may be one of the most change-adverse industries in the United States; however, many believe that innovations that are needed to help create the best system in the world are here, we simply need to find better processes of implementation (Christensen, et al., 2000).

To bridge the gap between the health care system we want (and can have), and the system we currently have is the key reason to study diffusion processes at every level within health care settings. The ultimate goal is to help create an arena where patients can receive the very best care, from the very best providers, at an optimal cost.

Coleman, Katz, and Menzel (1966) published their seminal diffusion study examining how a new drug treatment was adopted among physicians on the heels of Roger’s initial diffusion work. Their findings were loosely the same as Roger’s study of the diffusion of hybrid corn seed adoption among Iowa farmers. In essence, both of these studies utilized a network partner approach to study the diffusion of an innovation. In other words, did the number and strength of network ties have an effect on the rate of adoption? As the state of health care continues to change and evolve in this country and throughout the world, does the traditional understanding of diffusion of innovations still hold water? Does the introduction of new technologies, new patient requirements, and new management structures create a new environment for the diffusion process?

An Evolving Health Care Landscape. Traditional hospitals were set up and designed to treat acute illness, or in other terms, provide episodic care. Currently, these hospitals and health care systems as a whole are increasingly being pressed to treat chronic disease as it occurs over time, in addition to the acute patient. Chronic disease treatment is a different model of care that is highly dependent on complex collaboration between multiple providers

and multiple locations, throughout a longitudinal period of time. As a result, the potential for errors in treatment, poor care coordination, and patient dissatisfaction increases (Schoen, Osborn, How, Doty, & Peugh, 2009). In their recent examination of patient experiences in eight countries (Australia, Canada, France, Germany, the Netherlands, New Zealand, United Kingdom, and the United States), Schoen et al. (2009) concluded that patients in the United States were the most negative about their care, with one third calling for a complete rebuild of the system (see Appendix A [*exhibit 1 from Schoen Article*]). Additionally, U.S. patients were significantly more likely to report wasted time because of poorly organized care. Perhaps related, U.S. patients also had the highest cost for health care; almost double that of the average of other countries. U.S. patients were the most likely to forego care due to the costs involved. U.S. patients had the highest out-of-pocket costs for their care (\$1000) (see Appendix B [*exhibit 2 from Schoen article*]). Issues related to care coordination, prescription errors, safety, chronic care management, and insurance were also noted by patients in the United States.

Organizational Structure. From an organizational standpoint, health care organizations operate in a rich and complex climate. In addition to an environment that operates 24 hours per day, 7 days per week, and 365 days per year, the very structure that exists in many health care organizations creates gaps in processes, collaboration, and communication.

Furthermore, Jack and Powers (2009) provide the following graphic of organizational and management considerations for health care (Figure 9):

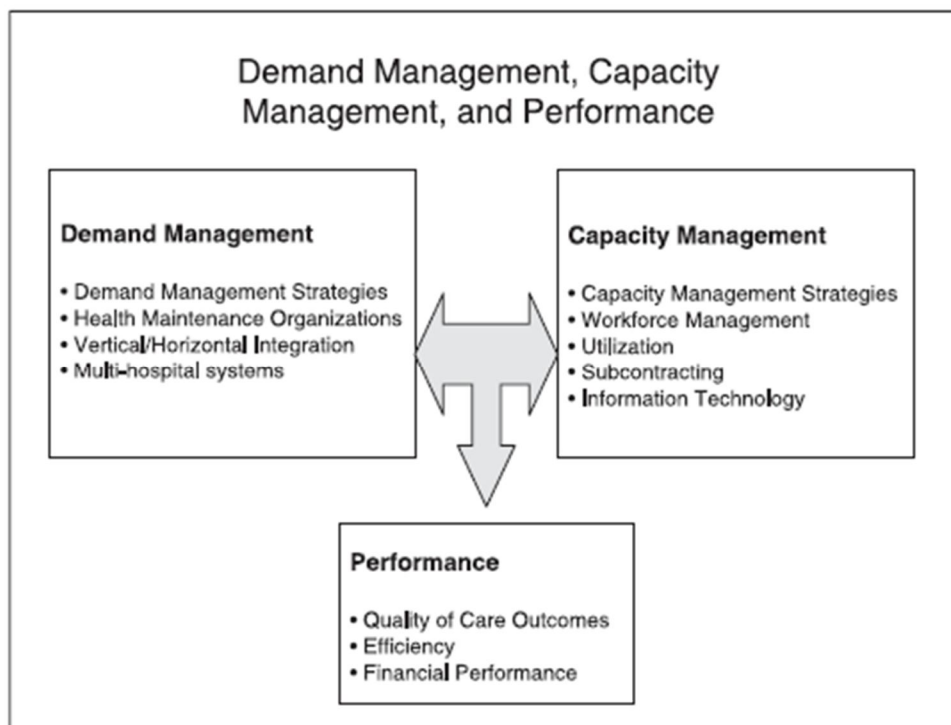


Figure 9 - Demand and capacity management and performance in health care (Jack & Powers, 2009)

Although a simple representation of demand, capacity, and performance, this graphic encompasses (at a very high level) many of the challenges faced within a modern health care setting. To add an even greater sense of urgency, at the heart of everything a health system does is the patient and their care. If something goes wrong in a health care setting, the potential for intense personal and emotional distress or trauma is much greater than in most other industries. In short, we have to get this right!

Highlighting the complexities of the health care environment, Rouse (2008) defines modern health care settings as complex adaptive systems. Complex adaptive systems are defined by Rouse in terms of the following characteristics.

1. They are nonlinear and dynamic and do not inherently reach fixed equilibrium points.

As a result, system behaviors may appear random or chaotic.

2. They are composed of independent agents whose behavior is based on physical, psychological, or social rules rather than demands of system dynamics.
3. Because agents needs or desires, reflected in their rules, are not homogeneous, their goals and behaviors are likely to conflict. In response to these conflicts or competitions, agents tend to adapt to each other's behaviors
4. Agents are intelligent. As they experiment and gain experience, agents learn and change their behavior accordingly. Thus overall system behavior inherently changes over time.
5. Adaptation and learning tend to result in self-organization. Behavior patterns emerge rather than being designed into the system. The nature of emergent behaviors may range from valuable innovations to unfortunate accidents.
6. There is no single point of control. System behaviors are often unpredictable and uncontrollable, and no one is in charge. Consequently, the behaviors of complex adaptive systems can usually be more easily influenced than controlled.

(Rouse, 2008, pp. 1-2)

Health care systems could be described as a set of networks within networks, or systems within systems with a large number of independent stakeholders. Approaching a complex system through traditional management and organizational structures is confusing and possibly overwhelming (Rouse, 2008). Understanding new methods of connecting the networks within networks and the enormous number of independent stakeholders requires new and innovative methods of communication and management.

It becomes even more critical for the innovation to make sense to the stakeholders within the health care environment. At the same time, understanding why innovation

succeeds and fails within these settings is critical. Ball and Bierstock (2007) argue that any technology that seeks to enable or assist in the way clinicians and other health care workers do their job must not increase the complexities or tasks in their jobs. If the technology provides few, if any, benefits, the adoption of that technology will be difficult.

Understanding both the nature of diffusion of innovations within health care organizations, and the complexities in which these organizations operate are critical elements of future health care success.

CHAPTER 3
RESEARCH METHODOLOGY

Introduction

To help determine how norms are established through the use of a wiki within the environment of a health care system, the research questions examined in this study are: (1) How are group norms established within a wiki?, (2) How does the establishment of norms affect the use of the wiki?, (3) How do actors perceive the violation of wiki norms?, and (4) Does the establishment of norms create barriers for use of the wiki?

Chapter 3 details the methods and procedures used to gather data about the diffusion of Web 2.0 within a health care setting. This chapter will: (1) explain the research design/methodology used for this study, (2) describe the sample selection, (3) detail the procedures utilized to analyze the data, and (4) discuss the limitations of this study.

Research Design

Case Study Approach. The case study research method was selected for this area of research due to the content, context, environment, and nature of the responses sought to understand actor's perceptions of the diffusion of Web 2.0. Contrary to popular perception, qualitative research can produce vast amounts of data. These may include verbatim notes or transcribed recordings of interviews or focus groups, jotted notes and more detailed "field notes" of observational research, a diary or chronological account, and the researcher's reflective notes made during the research (Pope, Ziebland, & Mays, 2000).

Case study research allows for the study of context-dependent knowledge and development (Flyvbjerg, 2004). In other words, when examining a complex phenomenon involving human interaction, there are hundreds if not thousands of data points that could prove relevant in determining how and why a person makes the choices they do. “In case studies, the richness of the phenomenon and the extensiveness of the real-life context require investigators to cope with a technically distinctive situation” (Yin, 2009, p. 2).

Case studies seek to answer the “how and why” questions related to a contemporary event. Furthermore, in areas where the researcher has little control over phenomenological variables, the case study methodology emerges as solid methodological foundation. In the current study, the researcher examined the adoption of Web 2.0 technologies already in the process of development when the study was started. The researcher had no control over the method in which the technologies were implemented, or the environment in which the technologies were being used.

Criteria and Rationale for Case Study Research. Three conditions must be examined when determining what type of research method to apply to a study. (1) The type of research question posed; (2) the extent in which an investigator has control over behavioral events; (3) the degree of focus on either contemporary or historical events. Applying these conditions, case studies seek to answer how and why related research questions in which the investigator has no control over contemporary events (Yin, 2009). Table 4 highlights the conditions for various research methods.

Table 4
Conditions for Research Design (Yin, 2009, p. 8)

Method	(1) Form of Research Question	(2) Requires Control over Behavioral Events	(3) Focus on Contemporary Events
Experiment	how, why	yes	yes
Survey	who, what, where, how many, how much	no	yes
Archival Analysis	who, what, where, how many, how much	no	yes/no
History	how, why	no	no
Case Study	how, why	no	yes

The current study meets the conditions for case study research, as the researcher examined how and why a contemporary phenomenon was being perceived (by the actors) in which he had no control over behavioral events.

Case study research is also appropriate when the researcher believes that contextual environments and conditions may play a role in the phenomenon being examined. When context enters as a possible variable in the research, multiple and complex areas of interest may arise. Case study research allows the researcher to examine multiples areas of emerging interests without the limitations of establishing casual links with specific controlled behavioral events (experiments).

Case study methodology is highly relevant in organizational related studies. Dul (2008) examined all publications in scholarly journals between 2000-2005 in the areas of strategy, finance, operations, human resource (organizational behavior), and marketing. Dul determined that, depending on the database examined (Proquest or ISI) between 8.1%-19.6% of articles published related to human resource and organizational behavior were in the form

of a case study. The current study is aligned with the broader context of human resource and/or organizational behavior.

Unit of Analysis “The Case”. Constructing the unit of analysis, or the case in which the research centers upon is an important step in the development and ultimate definition of the scope of research to be conducted. The unit of analysis may cover an event, an individual, group, organization, or even multiple organizations. The unit of analysis must be inclusive of the study’s ultimate question and its propositions (the how and why questions). At the same time, the unit of analysis must be well enough defined so that it does not cover “everything” about the group being studied. (Yin, 2009).

For the current research, the unit of analysis is three department level wikis, and their corresponding members. The researcher did not examine department members who were not also members of the wiki, nor did he include other wikis, or individuals belonging to wikis outside of the three department level wikis. The scope of the unit of analysis provided sufficient evidence to address the study’s propositions, while at the same time providing appropriate boundaries limiting the size of the study.

Selection and Solicitation of Respondents

Site selection. The researcher selected a health care system close to his home for convenience. The system was in a growth stage during the time of the research and was looking into new methods of creating an environment in which employees could increase their level of participation and communication throughout the system. One of the methods explored within the system was the use of Web 2.0, particularly in the facilitation of collaboration across departments and hospitals within the health care system.

Secondly, the health care system was selected because the researcher had access to participants within the system for questionnaires, interviews, and personal observations. The health care system is representative of multi-hospital systems throughout the United States in terms of its organizational structure, financial model, and patient care practices.

Individual Selection. “Qualitative samples tend to be purposive, rather than random” (Miles & Huberman, 1994, p. 27). This study gathered the perceptions of individuals through an online questionnaire and through the use of semi-structured interview questions.

An online questionnaire was used to gather the perceptions of individual members of the wikis (Appendix D). To be included in the study, individuals had to be active participants in the department’s wiki. Individuals were invited to participate in the study through a direct email (Appendix E), and also through a direct request posted on the home page of two of the three wikis (Figure 10).

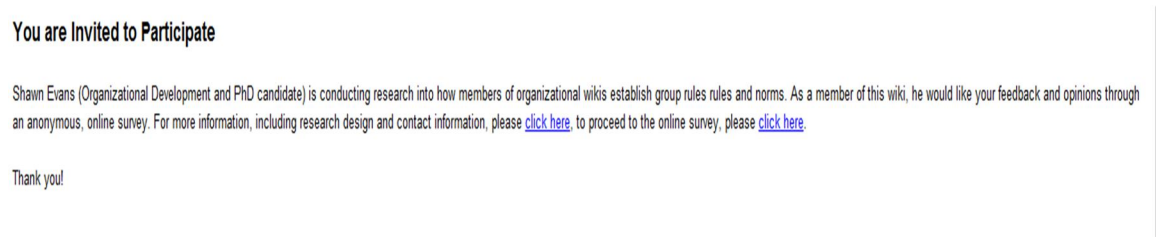


Figure 10 - Wiki Invitation to Participate in Survey

The researcher knew that the population had at least minimal experience (were active participants) with the wiki as they had all logged into the sites and created a username and password. The researcher did not know the extent of adoption of each of the individuals before their responses were recorded. During the study, the entire population of the three wikis studied was approximately 48 individuals. (Wiki one had approximately 20 individuals, wiki two also had 20 individuals, and wiki three had 8 individuals)

Wiki administrators were individually solicited through email correspondence and interviewed using the questions in Appendix J. The researcher interviewed an administrator for each of the three wikis, and also included a representative of the organization's IS department to provide additional perspective to overall wiki use within the organization.

Interview Protocol

A focused interview method was employed to gain insight into wiki administrator's perceptions. Focused interviews allow for an open-ended format in which the tone of the interview is conversational while at the same time the direction of the interview is based on a set of core questions or themes (Yin, 2009). The researcher asked six core questions of each actor and then followed up with secondary questions based on the actor's responses.

The interviewer interviewed actors in a location of their choice for comfort and convenience. Prior to the interviews, all actors signed a consent form and were told that their identity and their responses would remain anonymous.

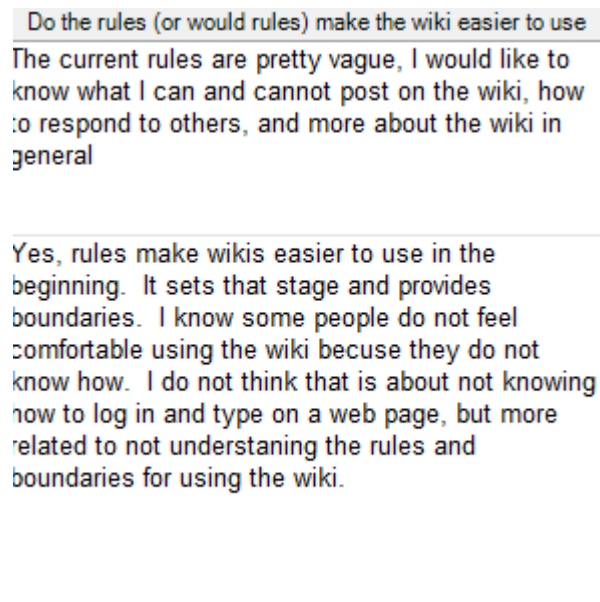
Questionnaire Development and Deployment

The online questionnaire contained questions designed to gain the actor's perception of their experience using the wiki. Because of the nature of the case, (i.e. small population) the researcher did not pilot the questionnaire since the chances of the pilot influencing responses to the actual questionnaire were great as they would both be targeting the same limited population. The researcher did vet the questions with his dissertation committee, a research related class, and also a third party who had knowledge of the organization. The questionnaire contained nine open and close ended questions. (Appendix E) As detailed above, individuals were invited to complete a questionnaire through a direct email and through a posting on their department's wiki.

Analysis Methods and Procedures

Data analysis is the process of making sense of the data (Miles & Huberman, 1994). This section describes the methods employed for data management and analysis. **Data Gathering and Coding.** Questionnaire data was downloaded into an Excel formatted file, and then the entire data set was uploaded into NVivo. Although NVivo will not analyze data, it is a useful tool in the management and reduction of data into useable themes. Coding the data and making comparisons is the core of qualitative data analysis (Creswell, 2007). The researcher developed codes and themes based on the culmination of all data received (interviews, questionnaires, and content analysis).

The series of figures below outlines how NVivo was used to code, and reduce the text into usable themes. Figure 11 highlights a set of raw data as it was imported into NVivo.



Do the rules (or would rules) make the wiki easier to use

The current rules are pretty vague, I would like to know what I can and cannot post on the wiki, how to respond to others, and more about the wiki in general

Yes, rules make wikis easier to use in the beginning. It sets that stage and provides boundaries. I know some people do not feel comfortable using the wiki because they do not know how. I do not think that is about not knowing how to log in and type on a web page, but more related to not understanding the rules and boundaries for using the wiki.

Figure 11 - Raw Data as Imported Into NVivo

Figure 12 shows raw data being coded and reduced into themes.

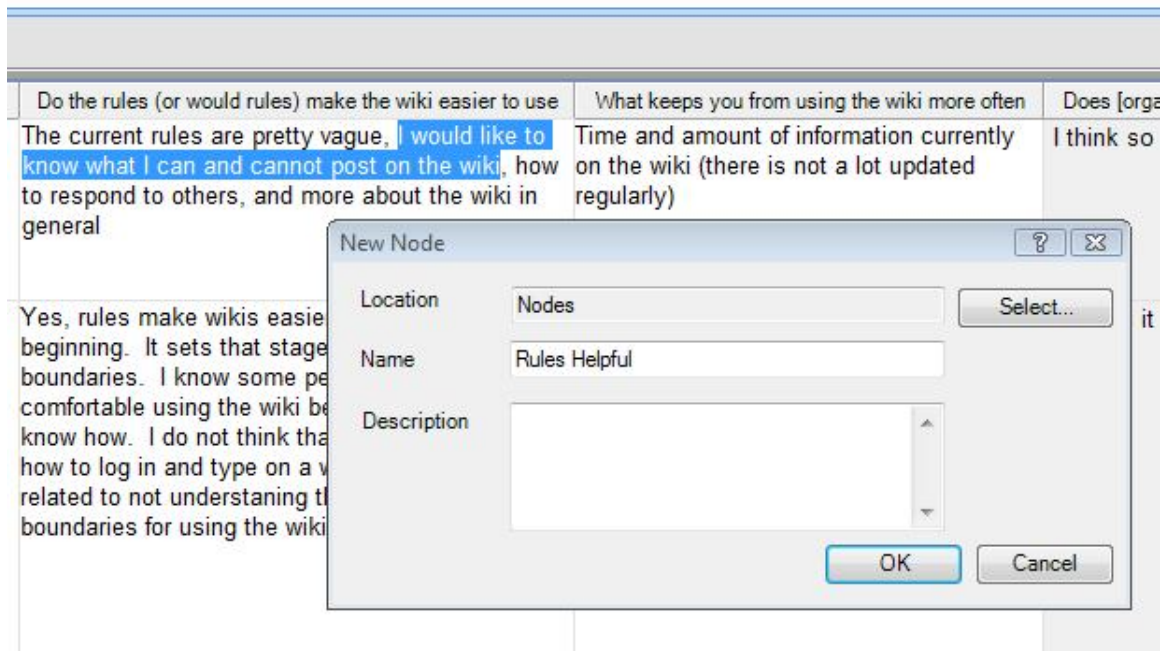


Figure 12 - Raw Data Being Coded

Figure 13 highlights how individual responses were categorized and grouped through the use of coding.

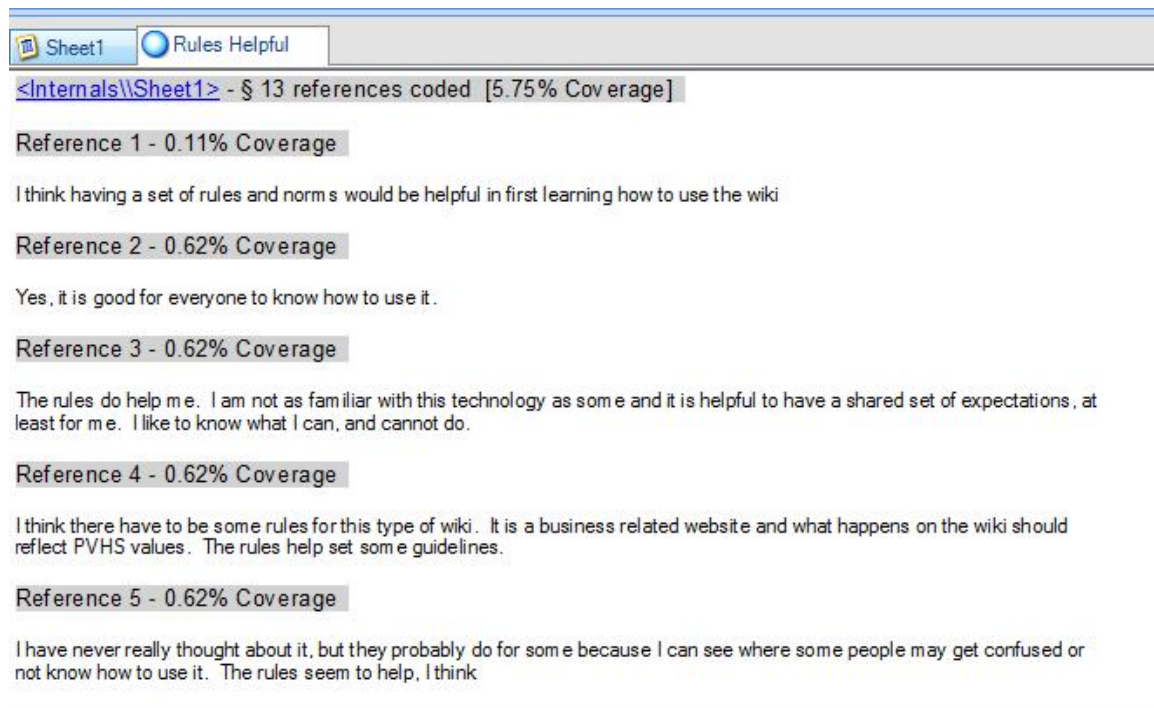


Figure 13 - Grouping of Codes

After the entire data set was reduced into themes, the task of analysis began.

Data Analysis. Even though computer aided tools such as NVivo provide an aid in managing data, they do not analyze, or make sense of what is in front of a researcher. In the current study, the researcher took the advice of Yin (2009) and Miles and Huberman (1994) as they suggested it is necessary to “play” with the data. The researcher arranged the data into different arrays, matrices, and flowcharts to see if natural patterns or modes of explanation could be determined. The researcher used both classic word frequency counters and Web 2.0 related frequency displays (an example is highlighted in Appendix K) to help determine analytical directions. Finally, the researcher returned to the work of Yin (2009) as he honed the data into usable information. Yin (2009) outlines four general strategies to data analysis, the researcher gravitated towards the strategy of relying on theoretical propositions to ultimately use and present the data in a way that it made sense to the case at hand and still provided useful insights.

If a study is designed well from the beginning, the “most preferred strategy is to follow the theoretical propositions that led to your case study” (Yin, 2009, p. 139). In essence, with this strategy, the researcher returns to the propositions that framed the case in the beginning – the how and why questions. By focusing on the propositions defined for the study, a researcher is better able to determine what information fits, and what doesn’t fit to the current study.

After data is assigned to the categories within the propositions of the study, the next step is to apply an additional level of analysis. Again, Yin (2009) outlines a number of methods that a researcher can use. In the current study, the researcher matched patterns of

data with variables in each of the propositions. For example, with the proposition; how does the establishment of norms affect the use of the wiki, the variables could include; (1) the establishment of norms helped the use of the wiki; (2) the establishment of norms did not help the use of the wiki; or (3) it is not clear if the establishment of norms helped in the use of the wiki (neutral). As the researcher assigned, compared, and analyzed the data utilizing these methods, segments of responses began to emerge. Furthermore, as the data was segmented, a clearer picture began to emerge as to how the establishment of norms truly impacted the use of the wiki, at least as perceived through the eyes of the actors involved with the wikis.

Validity and Reliability. Conducting qualitative research in a method that allows for the greatest levels of validity and credibility is a key element to a good study. One process for establishing validity and credibility is the implementation of the four tests philosophy. Four tests are used to establish the quality of empirical social research. “Because case studies are one form of [empirical research], the four tests are also relevant to case studies” (Yin, 2009, p. 49). Figure 14 shows Yin’s development of the four tests for case study research.

Tests	Case study tactic	Phase of research in which tactic occurs
Construct validity	Use multiple sources of evidence	Data collection
	Establish chain of evidence	Data collection
	Have key informant review draft case study report	Composition
Internal validity	Do pattern-matching	Data analysis
	Do explanation building	Data analysis
	Do time-series analysis	Data analysis
External validity	Use replication logic in multiple case studies	Research design
Reliability	Use case study protocol	Data collection
	Develop case study database	Data collection

Figure 14 Case study tactics for four design tests (p. 41)

Table 5 shows how the four tests were constructed and applied to the current research

Table 5

Four Tests Applied to Current Study

Tests	Tests as Applied to Current Research
Construct Validity	Questionnaire, interviews, and wiki content analysis used as multiple sources of evidence. Raw data from questionnaires imported directly without alterations. Data reviewed by peer.
Internal Validity	Data linked to studies propositions, patterns and similarities coded, explanations build based on compared data. Strong chain of evidence was established and followed.
External Validity	Study could be easily replicable in other settings; results may be generalizable either through naturalistic and/or analytic methods.
Reliability	If repeated and if the design was followed, researchers would be able to gather similar types of data.

Triangulation. To create further validity and trustworthiness of the data, the researcher triangulated, or compared data from multiple sources. In addition to data collected during interviews, the researcher also compared data from past wiki contributions and posts. By utilizing the historic cataloging capacity of wikis, the researcher was able to access content from the very beginning of the wiki’s existence through its current form.

Member Checking. Krathwohl (1998) details member checking as a process that provides a check on the authenticity of the researcher’s data. During the interviews, the researcher summarized, restated, and paraphrased the information received to provide further authenticity and validity. Additionally, after the interviews were transcribed, the researcher contacted actors for further clarification as needed to confirm accuracy.

Peer Review. As a final test of validity and reliability, the researcher engaged a process of peer review. Peer review is: “a process of exposing oneself to a disinterested peer in a manner paralleling an analytical session and for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer's mind" (Lincoln, 1985, p. 308). Through a peer review process, a researcher can uncover biases, perspectives and

assumptions that may have been taken for granted through a critical debriefing process. This process can also shed additional light onto the researcher's dispositions towards both the data and its analysis. Peer review also provides the researcher an opportunity to test and defend emergent hypothesis and themes to see if they are reasonable and plausible to a disinterested debriefer. (Lincoln, 1985).

The researcher selected a debriefer who did not have a vested interest in the study and who served as a critical voice as the data is coded, themed, and analyzed. The debriefer understood research methodology and had obtained their PhD prior to engaging in the peer review process.

Ethical Considerations. “We need to attend more to the ethics of what we are planning on doing” (Miles & Huberman, 1994, p. 288). Intentional consideration to the ethics involved in qualitative research was foundationally important to the researcher and to this study. Creswell (2007) agrees that ethical considerations must be taken into account as qualitative research is undertaken, “regardless of the approach to qualitative inquiry, a qualitative researcher faces many ethical issues that surface during data collection in the field and in analysis and dissemination of qualitative reports” (p. 141).

The researcher appreciated the use of core ethical principles as outlined by Miles and Huberman (1994), and first developed by Sieber (1992). These core principles serve as a guide as a qualitative researcher moves throughout their research, and include:

Beneficence – maximizing good outcomes for science, humanity, and the individual research participants while avoiding or minimizing unnecessary harm, risk, or wrong.

Respect – protecting the autonomy of persons with courtesy and respect for individuals as persons.

Justice – ensuring reasonable, nonexploitative, and carefully considered procedures and their fair administration; fair distribution of costs and benefits among persons and groups. (Miles & Huberman, 1994, pp. 289-290)

To these ends, the researcher fully explained the purpose of the study to each participant and secured informed consent from each participant (see Appendix F). The researcher purposefully did not select participants within the organization who either reported directly to him (in a management structure), or had a working relationship that could be adversely affected by participating in the study (real or perceived). Participants had an opportunity to withdraw from the study at any time and all participants remained anonymous.

Participants did not incur any more professional risk from participating in this study than they would from normal professional conditions. Finally, the findings were shared with participants prior to publication, both as a process of member checking, and as a final ethical check to insure participant's perceptions were accurately represented.

Study Limitations

Every study has limitations, every study could have been done differently, and every study could be improved (Browner, 2006). Limitations for the current study include scope, methodology, and possible generalizability.

Did the scope of this research capture the true perceptions of participants in their use of Web 2.0? The researcher interviewed a limited sample, during a short time span, within a fairly dynamic organizational environment. Could variations in time, sample, and environment provide different results?

The qualitative method employed in this research allowed for deep data to be collected at the sacrifice of a broad sample size. Other methods of data collection, including

additional qualitative as well as quantitative methods, could yield data that represents a broader set of experiences and perceptions.

Is the information learned generalizable to a larger population? Would elements in other health care systems confirm or contrast the data collected in a single health care system. This study did not look beyond the walls of a single system. The researcher did not have access to the Web 2.0 usage of other health care systems at the time of this study, but would like to consider expanding the study into other health care settings as an option for future research.

That being said, the concept of naturalistic generalization may prove useful in this case. “When explanation, propositional knowledge, and law are the aims of an inquiry, the case study will often be at a disadvantage. When the aims are understanding, extension of experience, and increase in conviction in that which is known, the disadvantage disappears” (Stake, 1978, p. 6). Naturalistic generalizations develop as a result of tacit knowledge, of an understanding of how things are both in and out of context. They do not allow for predications, but may result in expectations and guidance of actions. Whereas the aim of much scholarly inquiry is to discover and validate laws, the aim of some studies is to develop a pragmatic sense of purpose, often by applying information and knowledge from a variety of directions to the greater understanding of a particular phenomenon.

Furthermore, another form of generalization may be applied to this inquiry. Analytic generalization allows for generalizations to be applied to theories, not to populations. “To generalize to a theory is to provide evidence that supports (but does not definitively prove) that theory” (Firestone, 1993, p. 17). Generalizing to a theory is relevant when the theory can be applied diversely, through wider population bases.

Summary

This qualitative case study utilized semi-structured interviews as the primary investigation tool in determining participant perceptions on the use of Web 2.0 tools within their health care setting. Credibility was established by utilizing the four questions as well as triangulating the data with multiple sources. Structured processes of data collection, coding (with the help of NVivo), analysis, and dissemination allowed for a rich and descriptive study. Ethical considerations provided a foundation as to how data was collected, analyzed, and distributed. These processes provided significant opportunities for participants to share relevant and reliable perceptions on their use of Web 2.0 technology.

CHAPTER 4
DATA ANALYSIS AND RESULTS

Introduction

This chapter will provide detail into the data and information gathered for this study. Because of the richness of data collected in many case studies, presentation of the data becomes a key element in the analysis and assessment of what was found. This chapter outlines the data as it relates to the studies propositions. At times, raw statements will be shared, at other times links between the raw data and the context of the study will be highlighted, and finally, at times data may not neatly fit into a particular category, however, in the spirit of openness and transparency, it is also included.

The context of this case study centers on actors' perceptions. It is through their eyes and their experiences that we begin to see how and why wikis are used, as well as the challenges and obstacles for diffusion of this technology. To provide a snapshot of real people in real time utilizing a new technology within a health care setting, questionnaires, interviews, and document review was utilized to collect rich and dynamic data. The researcher collected 27 detailed questionnaires, conducted interviews with the three administrators of the wikis (one for each wiki examined), a member of the organization's information services (IS), and analyzed content posted on the wiki (along with historical content). The results are organized and presented through the general outline of the research questions (the study's propositions).

Research Questions. To help determine how Web 2.0 is being diffused within a health care system, the following research questions are addressed: Within a health care setting . . .

RQ1: How are group norms established within the context of a wiki?

RQ2: How does the establishment of norms affect the use of the wiki?

RQ3: How do actors perceive the violation of (wiki) norms?

RQ4: Does the establishment of norms reduce perceived barriers for wiki use?

HOW ARE GROUP NORMS ESTABLISHED WITHIN THE CONTEXT OF A WIKI?

Normative influences in group interactions, group development, and group maturation are based on the desire to conform to the expectations of others within the group. Group members make choices based on their desire to integrate with the choices and preferences of others within the group (Kaplan & Miller, 1987). Traditional methods of group normalization are challenged within the context of online groups. Face-to-face interactions are replaced with text, often void of context necessary for group members to determine intention and preferences. Although challenging, group norms must still be established for successful interactions. In the current case, group norms were established through a few different methods.

Direct questions relating directly to this research question included:

1. Do you interact with others on the wiki? If so, how did you learn how to interact with others on the wiki?
2. Does the wiki have any rules of use?
3. If the wiki has rules, what are some of the rules (procedures, norms) of use?

An indirect question related to this research question included:

1. Do the rules (or would rules) make the wiki easier to use?

Seventy-four percent of respondents indicated that their wiki had some established rules for use. Analysis of the questions that specifically mentioned the word “rules” indicated that the rules identified by actors fell into two main categories; organizational rules and wiki-specific rules.

Group Norms. The first method in which group norms were determined was for actors to revert back to the norms and expectations of a larger, all-encompassing group; a group that has already established norms and a group that all members already belonged to. The organization as a whole can be viewed as a group. The organization has rules, policies, and procedures that govern, or at least influence, the manner in which members interact with each other. Comments that support the rules and norms of the organization being used in the wiki setting include:

- “We try to live by the professional rules as we do throughout [the organization]”
- “Things on the wiki have to be work related and communication must follow the same standards as we do in all of our communication with customers and each other”
- “Treat the wiki like all other professional communication within [the organization]”
- “All of the communication is to be professional and it must follow the behavior standards whenever applicable”
- “I think the rules center around professional communication (just like email)”
- “Standard communication rules that apply to professionalism in the workplace. I cannot think of any others.”

Wiki Specific Norms. Secondary rules and norms that were reported as present within the wiki included specific instructions actors were provided. Most of these rules and norms centered on specific rules for posting as well as the type(s) of content that was appropriate for posting on the wiki. These responses included:

- “We agreed to not completely delete each other’s postings, and there is an expectation that we review the wiki every day or so for new information. Other than that I cannot think of any rules”
- “Do not delete what others have posted, Post you[r] schedule in the proper time frame so that the monthly schedules can be set”
- “Anything posted on the wiki must be professionally relevant. Of course no patient specific data, be respectful to others, make corrections as needed, but check your facts first because maybe the other person is correct also.”
- “Do not erase what others have requested. Be professional”
- “We also discussed how and when to edit other people's posts, but I do not think anyone is doing that at this point. We had a person from IS show us Wikipedia and he explained how the wiki worked. He also told us that we could not post any material that is copywrited or the property of someone else.”
- “You must type in the date you requested time off (since it's first come, first serve) You cannot erase another's entry. (the administrators can check in the background if there is a challenge on who asked first)”
- “You may update the document and then "save". Biggest request is to log out after use.”

The secondary rules originating from specific, non-organizational, instructions seem to provide direction, however, it is not always clear from where these rules originate. Although the questions, “Do you interact with others on the wiki? If so, how did you learn how to interact with others on the wiki?”, do not specifically mention the words rules, norms, or procedures, the intent of the question was to gain insight into the origin of wiki-specific rules and norms. In order to be classified as a group, whether online or in person, there must be both interaction and boundaries (Lipnack & Stamps, 2000). Boundaries and interaction help the group establish appropriate trust and confidence in members, therefore enabling the group to operate with degrees of cohesion and productivity. Boundaries and interactions are governed by shared context and understanding of what is expected and what is acceptable. Without this shared context, group members may run the risk of boundary crossing and even alienation. Without the face-to-face cues that people rely on in order to determine if their actions are within the norms of a group, how are they learning how to create the shared context that allows for boundary setting and appropriate interactions?

Boundaries and Interactions within the Wiki. In response to the questions: “Do you interact with others on the wiki? If so, how did you learn how to interact with others on the wiki?”, respondents indicated the following:

- “Another pharmacist showed my [me] how to use the wiki. I am not sure that I interact with others as much on the wiki, if we ever have issues with the schedule, we try to work it out face to face.”
- “Trial and error mainly. You showed us during one of our sessions, briefly how to use it, and I just gave it a shot. It is not hard to learn how to use, once you have the basic navigation down, adding stuff is actually pretty easy.”

- I do not interact with others on the wiki. I see if people have scheduled time off, or have put down shifts that they want to work. If I have questions, I either email them or talk to them in person.
- “Trial and error I guess. I think I am still learning this. I know that we are supposed to add and edit other people's comments and posts, however, that still seems a little rude to me, it almost feels like I am interrupting, or discounting what they have to say.”
- “I watched the video that is on the home screen and then just started messing around a bit. I asked a few questions here and there, mainly about what the wiki can do (how much) and who was on it. The interaction is actually pretty easy and anyone who uses Facebook can do it.”
- “I am not sure I ever learned. “
- “I am not sure. It seems intuitive doesn't it, I mean we all know how to use these kinds of websites, they are all really similar.”
- “I really do not interact with anyone yet. I am not sure that there is a proper place to do that.”
- “Trial and error”
- “Our wiki does not have a lot of interaction.”
- “Yes, in that we use it as a communication tool for scheduling purposes.”
- “Understandable, short video that explains wiki use.”
- “I do not interact with anyone on the wiki”
- “We had a short class at my last hospital that taught us how to interact and use the wiki. The class was not that helpful, but it was nice to learn what the expectations

were, kind of the rules for using the wiki. This is something I should look into doing with our unit.”

Data was coded in four categories for this question. (1) Personal interaction with another member(s) of the wiki, i.e. “*another pharmacist showed me,*” or “*we had a class.*” (2) Learning via online content, i.e. “*understandable, short video.*” (3) Personal trial and error. (4) No interaction. Of these categories, personal trial and error was indicated more often than the other three. Actors identified their efforts as either trial and error, or an innate ability to operate the site through previous learning with other sites such as Facebook: “The interaction is actually pretty easy and anyone who uses Facebook can do it.”

Rules and Ease of Use. The final survey question related to the first research question was; “Do the rules (or would rules) make the wiki easier to use?” The intent of this question was to gain insight into whether or not rules are, or would help, participants navigate and engage in wiki use. Responses to this question included:

- “I think having a set of rules and norms would be helpful in first learning how to use the wiki. I am not a technology person and it would be helpful for me to know what I can and cannot do. Can I “break it” if I do something wrong?”
- “I am not sure. I suppose they helped as I was getting started . . . The wiki, at least has some more clear rules and is easier for me to understand.”
- “Yes, it is good for everyone to know how to use it.”
- “The rules do help me. I am not as familiar with this technology as some and it is helpful to have a shared set of expectations, at least for me. I like to know what I can, and cannot do.”

- “I am not sure. I guess they could be useful if more people were using to it to post stuff. It would be like being in a meeting and everyone was talking at once. We would need to have some rules in that case.”
- “The rules help set some guidelines.”
- “I do not think so, it is pretty straight forward.”
- “I have never really thought about it, but they probably do for some because I can see where some people may get confused or not know how to use it. The rules seem to help, I think”
- “I am not sure if they make it easier to use or not. The rules seem pretty basic to me, but I also spend a lot of time online when I am not at work. For my department, just knowing who is here, I think rules are a good thing.”
- “Yes, for me it would. I admit that I do not know what to do on these kinds of sites. I am never really sure what happens when I type something, who sees it, what am I supposed to be typing, those types of things”
- “Like is said for the last question, rules would help, training would help also. I am afraid we do not know what we do not know, if that makes sense. “
- “The rules make it easier to use in the beginning but then once it becomes a habit, the rules are no longer as useful”
- “Yes, it leads to civility in the schedule process, especially so the schedulers, who are staff not managers, aren't abused if there is an issue.”
- “Yes”

Analysis of Wiki Content Related to the Establishment of Group Norms

In addition to questionnaire responses, the researcher also examined postings on three wiki sites within the organization that related to the establishment of group rules and norms. Through the history function of the wikis, the researcher was able to comb through the wiki, all the way back to the initial postings and interactions. Through this process the following information was identified as either directing the participants of the wiki in its operation, or as serving as guiding or suggestive input into its use: (1) a short video, (2) a page dedicated to wiki rules, (3) text on the front page.

A common tool used on all 3 wikis was the insertion of a video called “Wikis in Plain English.” This four-minute video (Figure 15) is easily viewable on the home page of the wiki and walks through a detailed and user friendly explanation of what wikis are, how they work, and how people can/should use them.

Wikis in Plain English



Figure 15 - Wikis in Plain English (Commoncraft, 2011)

Two of the three wikis had a page titled “Wiki Rules.” On the page a series of rules that address both personal use, and some attempts at regulatory compliance were present.

(Figure 16)

Below is a good set of rules and code of conduct for using a wiki. (adopted from Oracle)

Use Appropriate Language

- Be respectful of others; do not use language that is obscene, defamatory, invades others' privacy, or promotes bigotry, racism, hatred, or harm against any group or individual.

Create Appropriate Content

- Use the Wiki in a non-commercial manner only; spammers will be banned.
- Do not create empty pages and expect the community to respond. That's lazy.
- Make sure your contributions comply with copyright regulations. Don't use copyrighted material. Always give proper attribution when quoting others. Use other people's work only when allowed (e.g. CreativeCommons).
- Use a neutral tone - do not use the wiki as a platform for political or personal views/opinions, personal publishing projects, or shameless self-promotion (get a blog for that).
- Create, share, have fun!

Make Appropriate Edits

- Be respectful of each contributor's work, both in structure and language.
- Limit your edits to those that are "tactical" in nature (e.g., to correct a mis-statement of fact) and add whatever comments you please, but don't replace the author's original work wholesale. (Violations of Rules of Conduct excepted.)

Report Behavior That Breaches These Rules: We need everyone's help to keep the wikii shiny and clean!

Figure 16 - Wiki Rules (Wikispaces, 2011)

Finally, one of the wikis had additional text posted on the front page providing even more detail on the use and function of a wiki (Figure 17)

What is a Wiki?

A wiki is a collaborative website that can be edited by anyone who has access. This site is co-created by everyone, it is a collection of wisdom, best practices, ideas, techniques, and resources dedicated (in this case) to enhancing leadership abilities and skills.

The Wiki, by its very virtue allows for people to edit, add to, or delete content. If you put something on the Wiki and it is edited, do not be offended, be proud that you helped spark conversation. At the same time, nothing happens anonymously, we are all accountable for how we interact with the site and respond to other's ideas and postings. I would hope that this site promotes conversations that may not always be comfortable, but are always necessary!

Above all, if you have questions ask - - either [email me directly](#) ²³, or post them [here](#) and I will do my best to respond. Or, if you know the answer to someone's posted question, please feel free to answer!

Figure 17 - What is a Wiki? (Wikispaces_Leadership, 2011)

Other than what is highlighted here, direct content on the wiki as it relates to group norms and rules was limited. None of the wikis had a FAQ (frequently asked questions) page, or any other information related to specific rules and norms of use regarding the wiki. Additional discussion regarding the benefits of including information related to rules of use will be included in Chapter 5.

Analysis of Interview Content Related to the Establishment of Group Norms

An overriding theme shared by the administrators of the wikis was that group norms and rules (on the wikis) followed the same norms and rules as set forth throughout the organization.

- “I think everyone assumes that the wiki is just like company email, don’t say anything inappropriate, patient related, or disrespectful to co-workers.”
- “The main rules are to be respectful of what other people post and to follow the same behavior standards that we do within the department and the system.”
- “The rules regarding scheduling were relatively the same as we had before, it just switched to the wiki from the traditional way of submitting requests (email, pieces of paper, verbal).”

Because the wikis are used so closely in relationship with traditional department communication and job duties, the norms established within the system as a whole seem to migrate to the use of the wiki. As I interviewed the administrators, all three seemed as if they

had never considered establishing separate rules and norms for wiki use, and all seemed to assume that organizational rules and norms would simply apply to the wiki as well.

HOW DOES THE ESTABLISHMENT OF NORMS AFFECT THE USE OF THE WIKI?

Data from the questionnaire related to this question were first coded into responses that positively identified rules (and the establishment of norms) as helpful, those that were neutral, and those that indicated that rules were not helpful. Of the twenty four responses to this question, twenty indicated that rules either were, or would be, a positive addition to the wiki. Three respondents indicated that they were neutral regarding the usefulness of the rules. Finally, one person indicated that rules were not helpful.

Information from interviews also supports the establishment of rules as a helpful practice. One of the wikis is primarily used for scheduling professionals within a 24 hour a day, seven days a week environment. For this wiki, not only are the rules for scheduling well understood, the rules for using the wiki to make scheduling requests are also understood. “People now know the rules, and it is a lot easier on everyone.” As new hires are hired into the department, they go through a formal training session on the use of the wiki. “It is just not part of the department and the way we do things, people understand it and like it.” In addition to the rules and norms being discussed early, they are adhered to without deviation (except in rare cases). This adherence has been tested recently as a new scheduler has taken on some of the wiki duties; however, as soon as they understood how the wiki works, rule and norm violations have stopped. Violation of rules and norms will be addressed in a later section.

Rules are Helpful. Sixteen of the respondents indicated that rules are helpful in determining how to use the wiki and what the wiki can be used for. One of the responses provided a type of summary of what was present in many of the responses:

I think having a set of rules and norms would be helpful in first learning how to use the wiki. I am not a technology person and it would be helpful for me to know what I can and cannot do. Can I "break it" if I do something wrong? Should I post more or less information on the wiki? Is there a better way to add to the wiki so that it is easier for others to understand? I think our department has worked through a number of these issues by default, not because we had rules in place. Rules, or at least best practices would be nice.

As indicated above, for some respondents, the rules provided much needed clarity as they began using a tool that was not easily understood, for example: "The wiki, at least has some more clear rules and is easier for me to understand" and "I can see where some people may get confused or not know how to use it. The rules seem to help, I think." Related to clarity, some respondents indicated a desire to have a more defined, or robust sets of rules: "The current rules are pretty vague, I would like to know what I can and cannot post on the wiki, how to respond to others, and more about the wiki in general." Others indicated that even though they understood how to use the wiki, the rules made it easier for others (in their department) to use the wiki: "For my department, just knowing who is here, I think rules are a good thing" and "I know some people do not feel comfortable using the wiki because they do not know how. I do not think that is about not knowing how to log in and type on a web page, but more related to not understanding the rules and boundaries for using the wiki."

A second set of people who indicated that rules are helpful also clarified that rules were helpful in the beginning, but not so much as the wiki gained momentum and history. "I am not sure. I suppose they helped as I was getting started" and "The rules make it easier to use in the beginning but then once it becomes a habit, the rules are no longer as useful." It

was not clear from the responses if people who indicated that rules were no longer helpful as people became familiar with the wiki were referring to the group at large, or just their own personal experience.

Not Sure if Norms are Helpful (neutral). Three respondents indicated that they were not sure if the rules were helpful or not. Two of the responses lacked depth or explanation: “I am not sure,” “neutral.” One response, however, seemed to indicate a level of tacit understanding and knowledge of Web 2.0 tools: “For me this seems like second nature, if my mom was here we would definitely need some rules. I think the whole interacting with people over the net is a more foreign concept for her, maybe not?” Taken out of context this response may not have as much impact, however, when combined with some of the perceptions of the wiki administrators, it may have more weight.

Two of the three administrators reported a perception that the younger members in their department adopted the use of the wiki more quickly, however, at the same time they feel as if their contributions to the wiki are the same as other generations. Meaning, they understand how to use the wiki, but they do not necessarily use it more often than anyone else. “We have a younger nurse who took the lead and actually taught others how to use the wiki.”

Norms are Not Helpful. One respondent indicated that the rules were not helpful: “I do not think so, it is pretty straight forward.” Looking horizontally across the responses from this individual, they indicated that they like the wiki, but that they do not interact with anyone on the site “I really do not interact with anyone yet. I am not sure that there is a proper place to do that.”

Analysis of Interview Content Related to the Usefulness of Norms

Wiki administrators agreed that rules/norms were helpful within the context of wiki use. Two administrators reported the following:

- “I think the rules are helpful in letting people know what they can expect and making it clear what is OK and what is not. That being said, the rules on the wiki, just like outside of the wiki are only good if someone is able to enforce them and hold people accountable to them.”
- “I think they are helpful for everyone involved.”

The third administrator reported norms as being useful and shared a story of how she helped the members of the wiki learn the norms of use after a slow start.

I was so excited when we got the wiki going, I thought everyone would see this as a useful tool and literally jump on it as soon as it was announced [via email]. People did sign up for the wiki right away and we had the majority of the department on board, I thought. However, after weeks of nobody actively participating on the wiki I knew we had problems. I found out that people were not using the wiki because they were not sure how to, or they did not know what they should post. I put together a brief presentation and gave it to the staff during the next two staff meetings. After that, wiki use seemed to go up. We still had some who were not confident in using the tool, but they could see the usefulness and would stop me in the hall and make suggestions for content that could be posted on the wiki.

Agreement that the establishment (and possibly enforcement) of wiki norms is a helpful process seems to span both norms set by the system, and norms set specifically for wiki usage.

HOW DO ACTORS PERCEIVE THE VIOLATION OF (WIKI) NORMS?

Violation of norms was not readily identified in any of the responses on the questionnaire. To gain insight into norm violation, interviews with the wiki administrators as well as history searches on the wiki (combing through historical posts) was utilized.

Wiki Content. When examining the historical content of the wikis, it was not clear from the additions and deletions within the wiki how people were reacting if norms were being violated. Although there were a few times when rules and norms were violated, there was not a response from the group on the wiki. During one instance, an actor used the wiki to disagree with a decision made from the organization’s senior leaders. Although the disagreement was okay, the response bordered on a personal attack, which violated both the rules of the wiki and a code of conduct present within the organization. When the administrator of the site noticed the posting she immediately deleted it (Figure 18). As the administrator was also the unit’s manager, she also addressed the issue with the actor in a private manner. It was unclear of whether or not the posting was not on the wiki long enough to elicit response from the group or the group simply did not perceive the violation as needing a response.



Figure 18 - Wiki Violation Example

Interviews. Wiki administrators reported very few violations of the group norms on the wiki after initial learning curves were met. One administrator reported: “I think people were scared to use the wiki, so we did not see many going over the lines with its use.” Another said: “We never really saw a lot, or any violation of the rules and norms that we set for the

wiki. If someone had questions, they would come and ask, before doing anything on the wiki for the rest of the department to see.” Finally, a third administrator reinforced the responses of the other administrators by saying: “This was so new for nearly everyone in our department that people simply did not know what to do and therefore, I think, followed the rules that were set. We do not have a lot of risk-takers in our area and most will do what they are asked, especially if it is something that they are unfamiliar with.”

Even though the researcher did not find a significant amount of overt data that spoke to perceptions of norm violation, clues to why violations were not being seen were reported. Possibly related to the lack of information surrounding violation of norms and rules is the relative immaturity of the wikis examined. Use of wikis in this health system is a relatively new occurrence. One administrator reported that they have not fully realized everything that they can do on the wiki; therefore they haven’t run into problems with people going outside of the rules.

Additionally, a strong information services (IS) presence within the health system was reported as a deterrent to wiki use. “We do not know how much of this IS will allow or not, I think we do not use the wiki as much because we are afraid IS will force us to stop.” The perception of IS control was reported, at some level, by all three administrators. The general tone was a lack of confidence that IS would be supportive: “From past experiences, I am not sure that IS would react positively to this as it did not go through the official approval processes.”

Although this perception does not specifically correspond with norms set by the group through the wiki, it does speak to the larger context of system norms that may trump those of the individual wiki. The context of the study becomes an important piece in the

examination at this point. As these wikis are being used in a professional capacity with people being paid for their time, and utilizing equipment owned by the organization, norms and rules established by the organization hold as much, if not more weight than those applied by the individuals themselves.

As a case study, these responses prompted the researcher to want to gain the perspective of the organizations IS department in response to the perceptions of tight control over the wikis. This created a significant dilemma, however, as the researcher did not want to be the person to tell IS that these wikis were being used by the system, therefore possibly contributing to the very thing that the administrators feared, IS would force a shutdown of the wikis. To that end, the researcher interviewed a manager in the IS department and asked about general technology and innovation guidelines that the IS department follows.

The IS department is tasked with providing the structure and foundation of all technology within the health system. Considering the breadth of operations, this is a very large and complex task. The challenges not only consist of trying to make different computer systems, software, and users work well together, but also to try to control the IS environment (the network, platforms, and software). This control means not having devices or software that could disrupt the entire network and also not allowing disruptive and possibly harmful data to either enter or leave the system. Usually when the term “harmful data” is used, it is in reference to viruses, which is a concern; however, in health care situations, it also means data and information related to patients. All information related to patients and patient care falls under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). HIPAA is defined as:

The HIPAA Privacy Rule provides federal protections for personal health information held by covered entities and gives patients an array of rights with respect to that information. At the same time, the Privacy Rule is balanced so that it permits the disclosure of personal health information needed for patient care and other important purposes.

The Security Rule specifies a series of administrative, physical, and technical safeguards for covered entities to use to assure the confidentiality, integrity, and availability of electronic protected health information (HHS, 2011).

In response to a question that centered on why technology may not be approved for use by IS, the following response was offered: “. . . particularly regarding web-based programs, are concerns regarding possible HIPAA violations. We take HIPAA very seriously.” In follow up, the researcher asked: “So, from the HIPAA standpoint, you do not want employees sharing health data?” and the interviewee responded “Right, but even more than that, maybe health data is not directly being shared, but the technology opens a security breach in which data could be accessed.” The researcher asked if there had been previous breaches, or if they had any examples: “I cannot think of any right now” was the response.

Regardless of whether or not a breach of patient data has resulted from the use of wikis, there is an underlying tone of extreme caution when approaching any type of new technology within the system. Additional discussion centered on web 2.0 use in health care as it relates to HIPAA will be offered in chapter 5.

DOES THE ESTABLISHMENT OF NORMS REDUCE PERCEIVED BARRIERS FOR WIKI USE?

There are two parts to this question. First, does the establishment of norms help people understand what they can and cannot do with the wiki, therefore reducing anxiety for entry and ultimate collaboration using the wiki? Second, does the establishment of norms

help develop levels of trust with other members so, once again, anxiety is reduced allowing ease of entry and use?

Does the Establishment of Norms Help People Understand What They Can and Cannot Do?

There was an overall positive view to this question from both questionnaire respondents and from those who were interviewed. An example includes (questionnaire response):

I think having a set of rules and norms would be helpful in first learning how to use the wiki. I am not a technology person and it would be helpful for me to know what I can and cannot do. Can I "break it" if I do something wrong? Should I post more or less information on the wiki? Is there a better way to add to the wiki so that it is easier for others to understand? I think our department has worked through a number of these issues by default, not because we had rules in place. Rules, or at least best practices would be nice.

Reduction of anxiety when engaging in a new technology has been shown to increase usage (Meuter, Ostrom, Bitner, & Roundtree, 2003). Technology anxiety becomes the perceived barrier, information in the forms of rules and norms become the catalyst that helps people navigate through the anxiety. The concept of simply knowing what can and cannot be done within the wiki as it relates to barriers of use was related throughout the range of questionnaire responses.

I am not sure. I suppose they helped as I was getting started -- it is kind of like Twitter, I have no idea how to use that website effectively because I do not know what I can and cannot do, or who sees what and when. The wiki, at least has some more clear rules and is easier for me to understand.

Wiki administrators also reported that rules seemed to reduce barriers to use of the wiki by giving them more insight into what they can and cannot do. One administrator related his experiences as he started the wiki in his department. "I was so excited when we got the wiki going, I thought everyone would see this as a useful tool and literally jump on it

as soon as it was announced [via email]. People did sign up for the wiki right away and we had the majority of the department on board, I thought. However, after weeks of nobody actively participating on the wiki I knew we had problems.” In order to better determine why people were not actively engaged in the wiki, the administrator spoke with key members of the staff and learned that people simply did not know how to use the new tool, and that their general level of anxiety with “doing it right” was keeping them from doing anything at all. As a result he put together a brief presentation on general wiki use and presented it during the staff meetings for the next two months. He reported that wiki use went up after the staff meetings and that more and more people started to actively contribute to the wiki, as well as passively make suggestions for content that could be put onto the wiki. (Figure 19 provides an example of a staff member’s use of the wiki after the staff meeting) “We still had some who were not confident in using the tool, but they could see the usefulness and would stop me in the hall and make suggestions for content that could be posted on the wiki.”

Update 7/7/11:
I wanted to elaborate on the new process with [redacted], that I don't think was clear in the power point. Every morning [redacted] are designating set times to eval and work with our patients; distributing the [redacted] between different therapists. They are writing the designated time next to the patient's name on the Rehab Census sheet. The rehab census sheet is faxed to us every morning at around 8. The understanding is that [redacted] will be there at the designated time, unless they call and tell us otherwise. Please plan for [redacted] be there at this time to evaluate and work with our patients.
The *new & improved* process. Each morning the UA II on for the day will take the rehab census sheet and highlight our patient's name & time, place it on a clipboard and leave it by the UA II computer. The UA II on for the day will also place the designated PT/OT time on the everyday mobility tracking board in each patient's room. RNs, please be aware of your patient's designated PT time.
Please let me know if you have and questions.
Emily

Figure 19 - Example of Wiki Use

This administrator clearly felt that participation increased after an intentional effort of providing rules and norms of use. After the staff meeting, this administrator also added a

page to the wiki specifically designed to address questions about rules and norms of use (Figure 20).

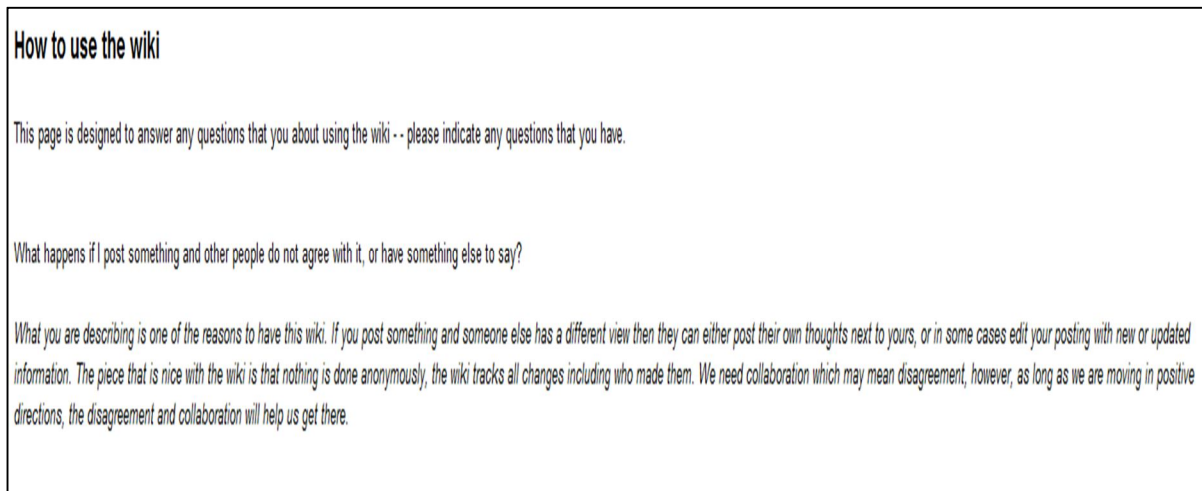


Figure 20 - Wiki page designated to rules and norms

Another administrator reported similar experiences with her department’s wiki. “It seems to me that adoption of the wiki was very, very slow!” After creating the wiki and telling her staff about it, she felt as if everyone was as excited as she was to get this new tool going, particularly as her department was spread over many different locations and had people operating during all shifts. “To me, this was the perfect tool to allow people from all locations and shifts to get the same information, and add their own information as needed.” In reality, however, even though people may have been excited about the tool, they did not immediately start using the wiki. The administrator arranged for a manager who was using a wiki on their unit to come in and give a presentation to the staff regarding what the wiki could be used for as well as rules and norms of use. “After that presentation, they seemed clearer about how to use the wiki.” In this case, even though staff may have felt clearer about how to use the wiki, wiki use did not increase. The administrator believes that the staff

never really engaged in the why of use, even though they understood how to use the wiki:

“Wiki use, however, did not increase - - people did not get the why.”

Does the Establishment of Norms Help Develop Levels of Trust With Other Members?

“Trust originates in small groups – families, friendships and myriad formal and informal associations based on shared interests and common concerns” (Lipnack & Stamps, 2000, p. 91). As Lipnack and Stamps examined virtual teams, they realized that trust is a key element of success, just as it is with non-virtual teams. Does the establishment of common rules and norms then help facilitate an environment in which trust is present?

Data from participant questionnaires did not indicate that trust was an issue, either positively, or negatively, when it came to wiki use – reasons for this will be discussed in Chapter 5. Evidence for trust within wiki use can be seen in one of the most mature wikis studied. For over three years, one department has been using their wiki to schedule professionals in a 24 hour/day seven day/ week environment. Within this context, professionals request and help construct their schedule based, in part, on their preferences and needs (both personally and professionally). This is all done in the open environment of the wiki. As members request their preferences for upcoming schedules, they do so in plain sight of the rest of the department, there is a general level of professional and personal trust that the other members will not use that information adversely. Figure 21 shows ongoing special requests posted by the professionals in the department, and Figure 22 shows shift preferences.

★ Ongoing Special Requests Protected page discussion history notify me

prefer eve spread out please
no eve please on tues for fall ball
FALL 2011: prefer mon wed fri during school year if possible, prefer mon or fri as day off around weekend I work
prefer 0700 shifts on weekends

Every 2nd Tuesday of the month--noon meeting (falls committee).

6/3/09: I received the "green light" from Heidi to have 3 or 4 project days per schedule in order to work NICU/Peds stuff.

Fall 2011 (Begining 8/22/11): STRONG preference for Tuesdays and Thursdays only.
Monday best if working 3 weekdays (i.e. Monday, Tuesday, Thursday)
Wednesdays off whenever possible...no scheduled child care.

Remember, my PC shifts are limited to Medical these days!
Beginning May 26, 2010, summer schedule: Tuesday, Thursday only

SUMMER 2011 Request:
2 days/week on MONDAY and WEDNESDAY, If you need me a 3rd day, I will consider a Thursday, Sat, or Sun, but call me 1st!

SCHOOL SCHEDULE 2011-2012
Max 3 days/week unless confirmed before
No weekends unless confirmed before
Mondays and Thursdays need to be a D shift if scheduled
No Wednesdays
I can fit in FMC just about any day.

Figure 21 - Ongoing Special Requests

★ **Shift Preferences** Protected page discussion history notify me

Most preferred: D,PC, PC SURG, XD, CH
Least preferred: E1430, E1330, E1230

Most Preferred: PC, especially PC-surg
Least Preferred: E, CH

Most preferred: E, Xe
Least preferred: D, PC

Most Preferred: D, PC
Least Preferred: (PC) Surgical and Xd

Most Preferred: D, PC, XD (but not > 1/week)
Least Preferred: E

Most Preferred: PC
Least Preferred: Evenings, especially 1330 and 1430

Most Preferred: D, Xd, PC
Least Preferred: E-1330, E-1430

- updated 6/18/11

Most preferred: PC (1st choice), D
Least preferred: Xe, Xd, E-1330

- PROJECT day every **Thursday** through at least Dec 2011 for Zynx/CPOE team meetings (OK per Heidi/Katherine) **

Figure 22 - Shift Requests

Although it may not be apparent, the level of trust that has been established with the use of the wiki in this department to allow for members to overtly share shift requests and special requests is high. Contrasting the way in which this department is handling these types of requests with the manner in which these types of requests are handled within other departments, we can see how the transparency helps minimize conflict. Within this health care system, most scheduling is done in a very traditional manner. Schedule requests are

brought to the person in charge of the schedule at an individual level. For example, if a nurse has a special request, or an employee has a shift preference, they bring those requests to the scheduler, the scheduler then has some level of power to grant those requests or not. This type of system lends itself to distrust as people are not sure if their requests are being handled in a systematic manner. It has been described going to a busy restaurant and putting your name on the list to be seated. The host or hostess may tell you that it will be about 20-25 minutes. As you wait, you see other people walk in, some with the same number in their party as yours, and speak to the host or hostess. As you wait to be seated, you witness some around you being led back to be seated, and some waiting their turn. All is okay, until you see one of the parties that seemingly came in after you being led back to be seated before you. Now you are not sure if the “system” for seating is really fair? Did that party call ahead and get their name on the list before you, is calling ahead even allowed? Do they simply know the host and are being treated differently because of that relationship? Do they know something that I do not? Is our name still on the list? All of these questions arise because of a lack of trust in the system; of course many elements can go into the levels of trust felt.

The use of the wiki in a way that prescribes transparency in the scheduling process is possible because members trust each other, and they all trust the process. Although the manner in which trust was established is a bit beyond the scope of the current study, it does seem evident that trust in the process, in each other, and in the wiki is a critical element in wiki usage.

The concept of mutual trust is also supported through the analysis of another wiki. The context of this wiki is leadership development. Advanced leaders within the system have access to this wiki. Figure 23 highlights an interaction on the wiki that requires a high

degree of trust and confidence as the subject matter starts to border on a subject that may be emotionally charged and even damaging to an individual if the conversation is taken out of context and/or shared with the wrong people within the organization.

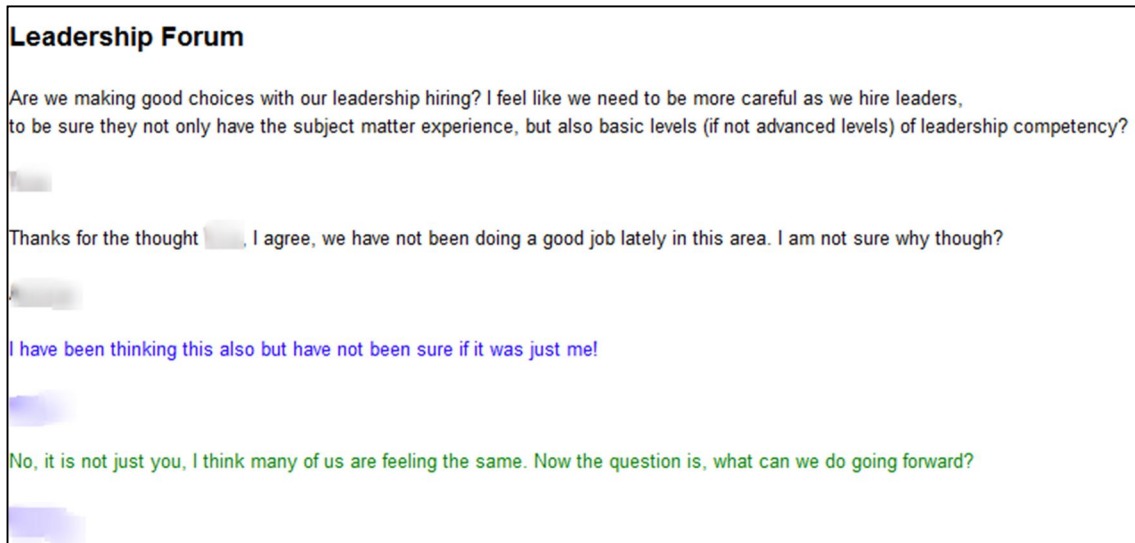


Figure 23 - Example of Trust

Whether trust is a function of the organizational culture, the rules of the wiki, or the transparency inherent in wiki use, it seems to be an important element of wiki interaction.

SUMMARY OF DATA

In summary, data collected through questionnaires, interviews, and wiki content analysis seems to point to the need for rules and norms to be present within the context wikis used in a health care setting. Norms and rules specific to wiki use are important, but overall development and adherence to rules and norms that govern the overall organization play a greater role in the overall use of the wiki. Respondents indicated that norms and rules of use eased their anxiety in using the wiki and helped guide them in proper use. At the same time, rules and norms help create a shared understanding of what can, cannot, should, and should not be posted on the wiki.

Rules and norms did not overtly point to increased wiki use; however, they did indicate and promote greater ease in using the technology. Barriers to using the wiki still exist even when both system and wiki-specific rules and norms are present. System barriers such as IS (IT) control and system equipment were indicated as elements of decreased wiki use. Wiki specific barriers including a lack of knowledge surrounding how to use the wiki, as well as a general understanding as to what the wiki was good for (why should we use it) also contributed to decreased wiki use.

CHAPTER 5

DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

The case study process yields a tremendous amount of data and information, some of which, although difficult to classify, is critical in creating the overall picture of the phenomenon being studied. On one hand, a researcher may become overwhelmed by the perceived lack of focus. On the other hand, however, in an attempt to gain a truer understanding of a phenomenon in the beginning stages of its development, approaching the phenomenon without preconceived notions is crucial in gaining a more robust overall understanding of its subtle complexities. On many occasions, I was given the advice to “live with the data before trying to make sense of it.” This advice has proven to be incredibly useful as I work to make sense and connections between and among the various sets of information gained within this study.

HOW ARE GROUP NORMS ESTABLISHED WITHIN THE CONTEXT OF A

WIKI?

AND

HOW DOES THE ESTABLISHMENT OF NORMS AFFECT THE USE OF THE

WIKI?

Within the context of this study, group norms were established in a variety of ways. First norms and rules that existed in, and governed, the organization (outside of the wiki) set the foundation for how actors interacted and collaborated with each other using the wiki.

Second, rules and norms were established within the individual wikis. Third, general rules governing online interactions were engaged.

System Rules and Norms. The health care system that was studied has spent a significant amount of time and effort to provide clear messaging regarding norms and rules surrounding employee conduct and behavior. The organization adopted behavior standards about five years ago and has since established a number of processes and procedures in which to promote and enforce the standards (Figure 24 highlights one of the behavior standards that addresses communication).

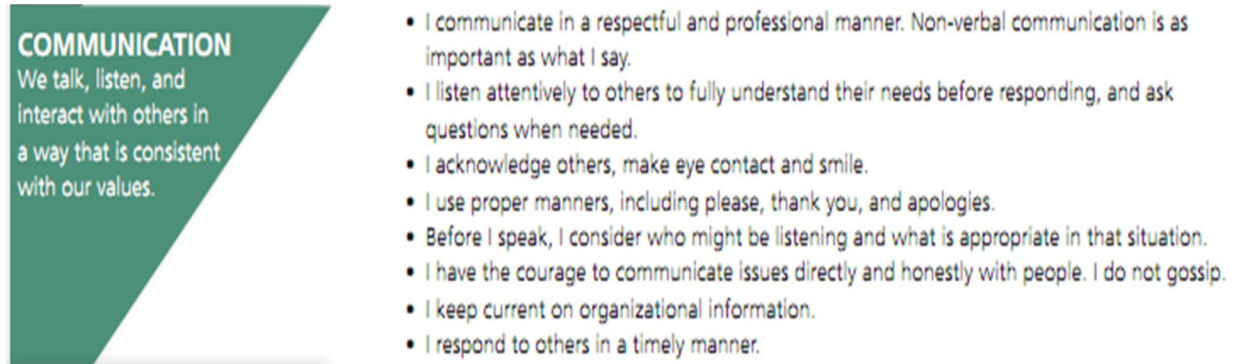


Figure 24 - Organization's Behavior Standards

Although the online communication within the context of the wiki was not considered as the behavior standards were created, they are general enough so they are easily applied to the wiki. Questionnaire responses such as “we try to live by the professional rules as we do throughout [the organization],” and “things on the wiki must be work related and communication must follow the same standards as we do in all of our communication with customers and each other” indicate system norms and rules are considered as actors engage in the wiki. This supports previous research into how rules and norms are established within organizations. Strong culture, written policies regarding communication, and a willingness

of members to share written and unwritten rules with each other have all been shown to improve overall communication (Gilsdorf, 1998).

Adding to Gilsdorf's work, this study shows that some of the same elements that create positive communication foundations within organizations also support interactions within an online setting such as a wiki. If an organization can successfully develop and promote robust standards surrounding all communication, it seems easy to make the link (for actors) that wiki communications fall within those parameters.

Feldman's (1984) work on groups is also supported within the context of the online wiki groups.

Groups, like individuals, try to operate in such a way that they maximize their chances for task success and minimize their chances of task failure. First of all, a group will enforce norms that facilitate its very survival . . . Second, the group will want to increase the predictability of group members' behaviors. Norms provide a basis for predicting the behavior of others, thus enabling group members to anticipate each other's actions and to prepare quick and appropriate responses. (Feldman, 1984, p. 48)

The policies and norms of the organization were established in order to better train and govern the way in which its members interacted with each other and with their customers (patients, providers, peers, families, vendors, etc.) in order to achieve higher levels of customer satisfaction and quality. As the organization is dependent on satisfaction and quality for its survival, rules and norms are well supported at an individual level as they also provide for their organizational survival.

Survival of the wikis requires the same level of predictability of member behavior as Feldman identifies in traditional groups. Trust at a personal level within the wiki, as well as trust related to how members will act, helps create a positive environment. Similar to traditional organizational communication, the wiki does not allow for anonymous communication (all postings are tied to a registered individual), the transparency forces

actors to be accountable for what they post on the wiki. This transparency also promotes a type of self-governance in what is posted on the wiki and nearly completely eliminates negative, personal, and unsubstantiated attacks.

Rules Established on the Wiki. Rules established on the wiki, beyond those established within the larger context of the organization also proved to be beneficial in creating a positive environment for wiki use. Eighty-one percent of respondents indicated that rules were present on the wiki. Rules were initiated by the administrators of the wikis. Rules included a short video that showed members how to use the technology, a page dedicated to specific rules of use, training provided about how and why to use the wiki, and personal enforcement.

Rules proved beneficial in learning how to use the technology as well as providing context as to why to use it. Rules helped ease anxiety in the actual use of the wiki. Since demographics on the units using the wiki includes members of up to four generations, rules provided structure for people who were not familiar with the technology. Rules also provided professional guidance for those familiar with the technology, but possibly not as familiar with professional standards of communication in general. These rules helped establish the norms of use for the wiki and ultimately seemed to increase the diffusion of the technology by minimizing the barriers of uncertainty and anxiety in use.

Respondents who indicated that rules did not exist on their wiki were all members of the same wiki. Interestingly, this wiki has been around the longest in the system and has the highest level of participation. Upon further examination, it was discovered that the wiki did have very specific rules of use, much more defined than

the other wikis. Because, however, this wiki has been so well-adopted by the unit, those rules are now seen as norms of use and simply seen as the way the tool is used. It was not clear if the rules helped establish a foundation for this level of interaction in the beginning; however, it is clear that rules do exist on the wiki, and that members adhere to those rules tightly.

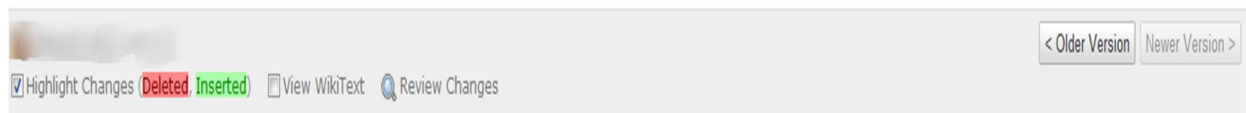
In summary, regardless of how rules were established on the wiki, the rules helped create an environment in which members could more easily use the technology. Circling back to diffusion of innovation, ease of use is a critical element of diffusion. Diffusion of wiki technology within a health care setting is promoted when clear rules and norms exist at an organizational level (related to communication and professional interactions) as well as when specific rules are present and enforced on the wiki itself. Without rules, anxiety is increased, as members may not understand both the how and the why of wiki use, therefore creating a barrier to adoption.

HOW DO ACTORS PERCEIVE THE VIOLATION OF (WIKI) NORMS?

Again, as a result of the case study methodology, this question took on a new level of significance as the study progressed. First, in addressing the original intention of this question, members rarely reported rule violation as a concern surrounding wiki use. There could be a few elements that contribute to this. First, the wikis are relatively new tools and the very fact that they have not achieved high levels of adoption has limited the population of the wikis to people who may have a more positive orientation to this type of technology and realize how to use it. Second, because the wiki promoted ultimate levels of transparency, rule transgression is an open book, available for all to see, members cannot hide behind the

blanket of anonymity. As discussed before, this may lead to greater levels of self-governance. Finally, there may be an environment of newness in which everybody feels, and possibly expects, mistakes to take place. As these mistakes are placed within the context of the wiki, they do not create conflict.

When examining specific content on the wiki, and when rules were violated, members would simply correct the violation and move on. The research did not uncover any adverse aftereffect of the corrections. Figure 25 highlights an example of a peer correction to a wiki posting, Figure 26 shows the response to the correction.



Billing Processes

When we get bills from foxtrail clinics, we need to make sure we look at verify coverage in the top right part of the bill same way we do with all other clinics. We do not need a different process for insurance information. It is important for us to verify that coverage matches current DRG, this clinic.

Figure 25 - Wiki Peer Correction

Billing Processes

When we get bills from foxtrail clinics, we need to make sure we verify coverage in the same way we do with all other clinics. We do not need a different process for this clinic.

Thanks for the clarification!

Figure 26 - Peer Correction Response

The research question took on new significance when the researcher realized that everything that was happening within the wikis in this organization was in violation of larger system policies. Although system rule violation is well beyond the scope of this study, future research may further examine how, why, and the results of deviation of organizational rules

and norms as they apply to web 2.0 technologies. Desai (2010) has done some work in this area, summarizing the phenomenon as:

As organizations drift further from alignment with their environments, past research suggests that their performance tends to decline, often prompting searches for solutions designed to address the shortfalls and improve environmental fit . . . Organizations that respond to rule violations by adjusting operating routines or practices may adapt toward their environments prior to experiencing more problematic performance shortfalls. Furthermore, they are more likely to avoid rigidity and inertia that characterize organizations in periods of excessive decline (p. 185).

Within the context of this study, as the diffusion of the type of technology continues to grow, how will the organization choose to respond to the deviance?

DOES THE ESTABLISHMENT OF NORMS REDUCE PERCEIVED BARRIERS FOR WIKI USE?

This study seems to indicate that the establishment of norms does reduce barriers for overall wiki use. Barriers of use could include both the ability to access the technology, and/or fear and anxiety related to understanding how to use the technology.

Within the context of this study, actors did not have issues with accessing the technology from work. The organization does not block access to most social networking sites, nor other sites (such as wikis) that fall within the Web 2.0 banner. Actors can gain access to the wiki at any time that Internet use is permitted (Internet use is restricted for nursing and other clinical areas if it interferes with direct patient care).

Barriers surrounding anxiety and fear with how to use the technology were reduced when rules and norms were clearly present and well understood. The following quotation provides a sense of what the research identified regarding rules and norms:

I think having a set of rules and norms would be helpful in first learning how to use the wiki. I am not a technology person and it would be helpful for me to know what I can and cannot do. Can I "break it" if I do something wrong?

Should I post more or less information on the wiki? Is there a better way to add to the wiki so that it is easier for others to understand? I think our department has worked through a number of these issues by default, not because we had rules in place. Rules, or at least best practices would be nice.

Norms help actors understand how to use the technology. Without this understanding, more complex elements of use will be challenging. For example, if an actor does not understand the very basics of use, it would be hard to expect the same actor to push the limits of what the wiki can offer in terms of content creation, collaboration, and even technological capacities.

Once again, norms can be broken into two categories, norms established at a global organizational level, and norms established at a wiki level. As already mentioned, norms established and actively promoted at a global organizational level were shown to have a large impact on the norms of use at the wiki level. Actors repeatedly reported that the norms of the organization (standards of professional behavior and communication) must be part of the wiki, for example; “We try to live by the professional rules as we do throughout [the company].” One of the strongest conclusions and realizations of this study is the strong connection between organizational norms and wiki norms. Even though use of Web 2.0 tools, such as a wiki, operates in the grey area of organizational control, norms established at the organizational level seem to have an impact. A possible conclusion regarding the diffusion of this technology within an organizational setting could be that well understood norms at an organizational level positively influence the rate of diffusion of Web 2.0 technology as actors have an understanding of the foundational expectations of use. The culture of the organization studied is very strong and it has spent a significant amount of time and effort cultivating the norms that were repeatedly identified in this study.

At the same time, norms related to specific wiki use seem critical to engaging actors in the use of the wiki. Professional standards set the foundation for use; however, specific

norms as applied to the wiki are also important as actors use the new technology. The following sequence of responses from a single respondent highlights the utility of wiki specific norms and rules:

What are some of the rules? “Things on the wiki have to be work related and communication must follow the same standards as we do in all of our communication with customers and each other.”

Do the rules make the wiki easier to use? “I have never really thought about it, but they probably do for some because I can see where some people may get confused or not know how to use it. The rules seem to help, I think.”

The combination of organizational norms and wiki specific norms and rules seem to help actors navigate the new technology, therefore increasing the likelihood of diffusion. After spending significant time with wikis and the data, at times it is helpful to engage in analysis by asking the opposite and seeing how it plays. In this case, what if the organization and/or the wiki did not have specific rules and norms, how would actors be using the technology and how successful would it be? I believe that Web 2.0 technology, including wikis, would suffer in use and adoption without rules and norms that actors can refer to, and rely on, as they begin and continue their use.

ADDITIONAL ITEMS FOR DISCUSSION AND THOUGHT

Because of the broad nature of this type of study, some data collected and observations made, do not necessarily fall neatly within the context of the original research questions. At the same time, the information may prove useful as research continues in this area.

Establishing Trust. Trust has been shown in the literature to be a critical element of online group interaction (Lipnack & Stamps, 2000). The groups in the current study had a hybrid relationship. Not only did they interact on the wiki, they also interacted in-person regularly. The in-person interactions superseded the online (wiki) interactions, so elements of trust were already present when the wiki was created. Trust within the wiki context was probably also augmented by the fact that actors were forced (by their job functions) to interact face-to-face with other actors regularly, therefore possibly reducing the trust-degrading behavior that can be seen in other online interactions (negative comments, direct attacks, etc.). Future research may explore this element more deeply to see if in-person trust can be augmented by Web 2.0 interactions, or if those interactions have limited effect on trust when in-person interactions are also required.

Use of Other Web 2.0 Tools. A majority of respondents in this study also used other Web 2.0 tools (Facebook, Twitter, etc.). It was not clear whether or not these actors could truly be described as early adopters of technology, therefore skewing some of the findings towards a more positive technology framework. Actors in this study, however, did report using Web 2.0 websites with a greater frequency than the general population; 81% of actors in this study use at least one additional Web 2.0 site in addition to the wiki as compared with 65% of the general United States online population (Madden & Zickuhr, 2011).

Does the increased Web 2.0 usage of the group studied have an impact on the results? Based on the general consensus that rules and norms are valuable in wiki use, I do not believe that results are skewed; however, future research may point to adoption patterns as correlated with frequency or amount of Web 2.0 use.

Organizational Control of Web 2.0. This study uncovered a challenge for organizations as they struggle to control wiki (and other Web 2.0 use). Part of the challenge is to create meaningful use of Web 2.0 tools while at the same time living within the organizational constraints of IS, marketing, etc... The web has allowed people to explore this possibility at greater levels as control becomes much more difficult when an actor does not have to install software onto their computer.

Traditional technology control included various locks and passwords aimed at limiting the types of software that actors can install on individual computers. Web 2.0 technology lives outside of the individual computer, therefore, limiting the usefulness of traditional controls. All wikis in this study were created and are being operated outside of traditional IT control and permission. Even if IT control tightened, there are as many ways to circumvent control and these types of web-based technologies will continue to operate on the fringes of organizational control.

HIPAA and Web 2.0. The Health Insurance Portability and Accountability Act (HIPAA) provides protections and regulations regarding the use and disclosure of personal health information. Although originally designed to govern large insurance plans, the act now covers a wide array of health care entities. Health care organizations can face serious penalties, fines, and even law suits for breaches in individual health information. The health system studied, like most in the country, are very careful with online communication and records as the potential for serious breaches increases through electronic dissemination. Even though the content of the wikis (in this study) was not patient-specific and never contained patient specific information, the health system has adopted a very conservative approach and attitude towards new technology. The results of this approach include a highly

regulated and secure technology environment and tendencies to be very cautious when engaging in new technologies.

From an organizational perspective, HIPAA is a very real concern and something that will have to be reconciled as Web 2.0 technology increases in use. If these technologies prove to be advantageous for actors in their work, they will continue to be explored, whether supported by the organization or not. At the same time, the IT functions within health care organizations are charged with maintaining the security of the system. This natural tension should be examined in greater detail moving forward, particularly as it relates to a symbiotic relationship between the traditional IT functions and the use of this new, web-based technology.

Understanding the What and the Why. A telling piece of information was uncovered during the interviews with two of the wiki administrators. Although they reported that rules and norms seemed to help with wiki use, they also reported that they were disappointed in the relatively slow rate of adoption overall. One administrator reported that wiki use increased after rules and norms were explained, but also mentioned that they still wished that more people were using the tool. Another administrator shared that wiki adoption in their department was slow, and (again) although it increased after rules and norms were explained, overall adoption seemed slow. This administrator made a comment at the end of the question that raised additional questions; “I don’t think people get the why.”

This study focused on how rules and norms help actors increase their comfort level with both the group and the technology. Although evidence in this study shows that rules and norms do increase levels of comfort and adoption of wiki technology, it did not examine if actors understand why to use the technology. Research from Chui, Miller, and Roberts

(2009) indicates that understanding the purpose, and creating a workflow need for Web 2.0 technology increases adoption. In the current study, wiki use was placed outside of normal workflow activities and seen as yet another thing to do; its use ranked very low on the priority list in two of the three wikis examined. Within these wikis, actors participated on more of a voluntary level than a mandatory one. They engaged in the wiki when it was convenient for them, not as a normal part of their everyday job.

One of the wikis examined had a much higher rate of use. This wiki was used to schedule professionals for their work. The only way in which these professionals were scheduled for the next 30-60 days was through the wiki. Because it became part of the overall flow of work, this wiki's adoption was 100%! The "why" for the members of this wiki was clearly understood and supported.

Future research is needed to explore the effect of understanding why to use a wiki, in addition to how. It may be concluded that there is a hierarchy of needs when adopting this type of new technology, starting with trust in members, and understanding of how to use the technology, and then moving into the area of understanding why to use the technology. Do early adopters of this type of technology gain an understanding of why and the potential of this type of technology more rapidly than those who are more slow to adopt?

FINAL CONSIDERATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The ultimate goal of this study was to add to the research surrounding how Web 2.0 technologies are diffused within a health care setting. To that end, the study of specific wiki use provided an insight into how actors establish and view rules and norms of use, and how rules and norms contributed to the overall diffusion of this technology - in this setting. Rules

and norms of are useful in the adoption and diffusion of this type of technology within this setting.

This study was limited to a small population within a single health care system. The health care system did not have formal wikis in place and all of the wikis that were studied evolved as a result of individual efforts. The organization has invested a considerable amount of time and effort into establishing a culture that is highly-collaborative, professional, and focused on providing the highest quality of patient care. That strong organizational culture significantly influenced norms and rules of use on the wikis -- wiki norms and rules were governed at the higher organizational level before the individual wiki level. Future research may examine wiki use in an organization that does not have the same sense of culture. Are rules and norms of use established differently absent strong organizational influences?

This study examined wikis within a single system. Future research should be conducted examining Web 2.0 use with an inter-organization lens. When competing organizational rules and norms exist, how do actors reconcile the differences within a wiki (or other Web 2.0 technologies) setting? Does the wiki become a focal point in the establishment of rules and norms, how is trust established, and how do actors reconcile deviances from established rules?

For this study, the case study methodology worked well as it was necessary to view the phenomenon from a global perspective. Future studies may try to establish quantitative measures to wiki use. Does the sheer number of posts, edits, and discussion comments contribute to ultimate success of the wiki, over time, as actors enter and leave the wiki?

This study did not consider demographic details. Future research may need to be completed that examines generational influence in Web 2.0 adoption. Clearly some assumptions can be made; however, are those assumptions accurate and do they match reality within an organizational setting? Workforce demographics are constantly shifting; how are organizations using Web 2.0 to help facilitate the transitions? Should organizations be concerned with using this technology to facilitate the transitions (is there a return on investment)?

The use and diffusion of new web-based technologies within organizational settings provides a vast plain of opportunities for future research. We are at the beginning of the journey!

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Appendix A

Demographic and Costs Experiences

EXHIBIT 1
Adults With Chronic Conditions: Demographics, System Views, And Cost Experiences, Eight Countries, 2008

	AUS	CAN	FR	GER	NETH	NZ	UK	US
Final sample of sicker adults (unweighted N)	750	2,635	1,202	1,201	1,000	751	1,200	1,205
Has any of 7 chronic conditions, doctor diagnosis	74%	72%	67%	68%	66%	64%	75%	78%
Hypertension	30	32	32	41	34	25	37	43
Heart disease, including heart attack	15	13	14	22	16	13	14	14
Diabetes	13	17	12	15	13	10	11	21
Arthritis	36	33	12	15	19	20	35	38
Lung problems (asthma, emphysema)	23	20	15	11	15	20	18	22
Depression	30	26	34	15	16	17	25	31
Cancer	11	11	10	10	9	14	9	13
Adults with any chronic condition (unweighted N)	593	1,956	851	967	736	518	933	1,007
Has 2 or more chronic conditions (out of 7)	63% ^{a,f,h}	62% ^{a,d,f,h}	53% ^{a,h}	56% ^h	55% ^h	51% ^{a,h}	61% ^h	71%
Age 60 or older	58% ^{a,d,g}	57% ^{a,d,g}	67% ^h	72% ^h	73% ^h	59% ^h	71% ^h	58
Health care use in past 2 years:								
Hospitalized for other than normal pregnancy	59% ^{a,h}	47% ^{d,f,g}	57% ^{a,h}	58% ^{a,h}	45% ^h	59% ^h	42% ^h	48
Major surgery	25% ^{d,h}	29% ^d	33% ^a	36% ^{a,g}	23% ^h	29	26% ^h	34
Number of doctors seen								
2 or fewer	37	40	40	24	36	42	41	37
3	23	24	27	26	31	22	25	21
4 or more	39% ^{a,d,g}	32% ^{d,h}	31% ^h	50% ^{a,g,h}	34	34	31% ^h	38
Overall health system views								
Only minor changes needed, system works well	22% ^{a,d,g}	32% ^{a,d,g,h}	41% ^{d,h}	21% ^{a,g}	42% ^h	29% ^h	38% ^h	20
Fundamental changes needed	57% ^{b,c,d,f,g,h}	50% ^f	33% ^{a,f,g,h}	51	46	49	48	46
Rebuild completely	20% ^{a,g,h}	16% ^{a,d,f,g,h}	23% ^{a,h}	26% ^{a,h}	9% ^h	21% ^h	12% ^h	33
Perception of inefficient or wasteful care in past 2 years								
Doctors recommended treatment you thought had little or no health benefit	22% ^{a,g}	22% ^{a,g,h}	35% ^{a,f,g,h}	24% ^{a,g}	14% ^h	19% ^h	15% ^h	27
Often/sometimes felt your time was wasted because your medical care was poorly organized	28% ^{a,h}	25% ^{a,f,g,h}	20% ^h	31% ^{a,g}	21% ^h	23% ^h	18% ^h	36
Either/both problems	39% ^{a,d,g,h}	40% ^{a,g,h}	43% ^{a,g}	43% ^{a,g}	29% ^h	34% ^h	27% ^h	46
Out-of-pocket expenses for medical care in past year, US\$ equivalent								
Under \$500	43	57	49	57	72	61	81	31
More than \$1,000	25% ^{b,c,d,e,f,g,h}	20% ^{a,d,e,f,g,h}	5% ^{a,h}	13% ^{a,h}	8% ^{a,h}	14% ^h	4% ^h	41
Not sure/declined answer	21	13	44	14	12	17	10	19

SOURCE: Commonwealth Fund International Health Policy Survey of Sicker Adults, 2008.

NOTES: Reading from left to right starting with Australia, the letter indicates significant differences with countries to the right at $p < 0.05$, as indicated. ^aDifferent from CAN. ^bDifferent from FR. ^cDifferent from GER. ^dDifferent from NETH. ^eDifferent from NZ. ^fDifferent from U.K. ^gDifferent from U.S.

(Schoen, et al., 2009)

Appendix B

Barriers to Treatment in Eight Countries

EXHIBIT 2
Cost Barriers, Access to Physicians, And After-Hour Care Among Adults With Chronic Conditions, In Eight Countries, 2008

	AUS	CAN	FR	GER	NETH	NZ	UK	US
Unweighted N	893	1,956	851	867	736	519	933	1,007
Access problems because of cost in past 2 years								
Did not fill Rx or skipped doses	20% ^{a,c,d,e,f,g,h}	18% ^{a,d,e,f,g,h}	13% ^{a,e,f,g,h}	12% ^{a,f,g,h}	3% ^{f,g,h}	18% ^{a,g,h}	7% ^f	43% ^a
Did not visit doctor when had a medical problem	21% ^{a,c,d,e,f,g,h}	9% ^{a,f,g,h}	11% ^{a,f,g,h}	15% ^{a,f,g,h}	3% ^{f,g,h}	22% ^a	4% ^f	36% ^a
Did not get recommended test, treatment, or followup	25% ^{a,c,d,e,f,g,h}	11% ^{a,f,g,h}	13% ^{a,f,g,h}	13% ^{a,f,g,h}	3% ^{f,g,h}	18% ^a	6% ^f	39% ^a
Any of the above access problems because of cost	36% ^{a,c,d,e,f,g,h}	25% ^{a,f,g,h}	23% ^{a,f,g,h}	26% ^{a,f,g,h}	7% ^{f,g,h}	31% ^a	13% ^f	54% ^a
Do you have a doctor you usually see?								
Yes	89% ^{a,c,d,e,f,g,h}	92% ^{a,c,d,e,f,g,h}	89% ^{a,c,d,e,f,g,h}	87% ^{a,c,d,e,f,g,h}	89% ^{a,c,d,e,f,g,h}	95% ^{a,c,d,e,f,g,h}	92% ^{a,c,d,e,f,g,h}	82% ^{a,c,d,e,f,g,h}
No doctor but usual place of care	7% ^{c,d,e,f,g,h}	5% ^{c,d,e,f,g,h}	14% ^{c,d,e,f,g,h}	2% ^{c,d,e,f,g,h}	1% ^{c,d,e,f,g,h}	3% ^{c,d,e,f,g,h}	7% ^{c,d,e,f,g,h}	9% ^{c,d,e,f,g,h}
No regular doctor or place	4% ^{c,d,e,f,g,h}	3% ^{c,d,e,f,g,h}	1% ^{c,d,e,f,g,h}	1% ^{c,d,e,f,g,h}	0% ^{c,d,e,f,g,h}	2% ^{c,d,e,f,g,h}	1% ^{c,d,e,f,g,h}	9% ^{c,d,e,f,g,h}
Length of time with regular doctor or place								
5 years or more	61% ^{a,c,d,e,f,g,h}	66% ^{a,c,d,e,f,g,h}	76% ^{a,c,d,e,f,g,h}	80% ^{a,c,d,e,f,g,h}	79% ^{a,c,d,e,f,g,h}	62% ^{a,c,d,e,f,g,h}	73% ^{a,c,d,e,f,g,h}	53% ^{a,c,d,e,f,g,h}
Last time you were sick, how quickly could you get an appointment to see a doctor?								
Same day	36% ^{a,c,d,e,f,g,h}	28% ^{a,c,d,e,f,g,h}	42% ^{a,c,d,e,f,g,h}	43% ^{a,c,d,e,f,g,h}	60% ^{a,c,d,e,f,g,h}	54% ^{a,c,d,e,f,g,h}	49% ^{a,c,d,e,f,g,h}	26% ^{a,c,d,e,f,g,h}
Next day	15% ^{a,c,d,e,f,g,h}	11% ^{a,c,d,e,f,g,h}	18% ^{a,c,d,e,f,g,h}	16% ^{a,c,d,e,f,g,h}	24% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	14% ^{a,c,d,e,f,g,h}	17% ^{a,c,d,e,f,g,h}
6 days or more, or never	18% ^{a,c,d,e,f,g,h}	34% ^{a,c,d,e,f,g,h}	18% ^{a,c,d,e,f,g,h}	28% ^{a,c,d,e,f,g,h}	3% ^{a,c,d,e,f,g,h}	8% ^{a,c,d,e,f,g,h}	14% ^{a,c,d,e,f,g,h}	23% ^{a,c,d,e,f,g,h}
How easy or difficult is it to contact your doctor by phone during practice hours? (Base: tried contacting)								
Very easy	54% ^{a,c,d,e,f,g,h}	43% ^{a,c,d,e,f,g,h}	38% ^{a,c,d,e,f,g,h}	29% ^{a,c,d,e,f,g,h}	36% ^{a,c,d,e,f,g,h}	65% ^{a,c,d,e,f,g,h}	51% ^{a,c,d,e,f,g,h}	43% ^{a,c,d,e,f,g,h}
Somewhat easy	32% ^{a,c,d,e,f,g,h}	33% ^{a,c,d,e,f,g,h}	46% ^{a,c,d,e,f,g,h}	37% ^{a,c,d,e,f,g,h}	43% ^{a,c,d,e,f,g,h}	25% ^{a,c,d,e,f,g,h}	32% ^{a,c,d,e,f,g,h}	37% ^{a,c,d,e,f,g,h}
Somewhat/very difficult	13% ^{a,c,d,e,f,g,h}	22% ^{a,c,d,e,f,g,h}	15% ^{a,c,d,e,f,g,h}	32% ^{a,c,d,e,f,g,h}	19% ^{a,c,d,e,f,g,h}	10% ^{a,c,d,e,f,g,h}	15% ^{a,c,d,e,f,g,h}	19% ^{a,c,d,e,f,g,h}
When you needed care at night, weekend, or holiday, how difficult was it to get care without going to ER? (Base: needed after-hours care)								
Very difficult	34% ^{a,c,d,e,f,g,h}	33% ^{a,c,d,e,f,g,h}	29% ^{a,c,d,e,f,g,h}	15% ^{a,c,d,e,f,g,h}	15% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	40% ^{a,c,d,e,f,g,h}
Somewhat difficult	28% ^{a,c,d,e,f,g,h}	23% ^{a,c,d,e,f,g,h}	27% ^{a,c,d,e,f,g,h}	21% ^{a,c,d,e,f,g,h}	15% ^{a,c,d,e,f,g,h}	19% ^{a,c,d,e,f,g,h}	24% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}
Very or somewhat easy	38% ^{a,c,d,e,f,g,h}	39% ^{a,c,d,e,f,g,h}	42% ^{a,c,d,e,f,g,h}	63% ^{a,c,d,e,f,g,h}	65% ^{a,c,d,e,f,g,h}	55% ^{a,c,d,e,f,g,h}	53% ^{a,c,d,e,f,g,h}	38% ^{a,c,d,e,f,g,h}
Went to ER in past 2 years	53% ^{a,c,d,e,f,g,h}	64% ^{a,c,d,e,f,g,h}	41% ^{a,c,d,e,f,g,h}	39% ^{a,c,d,e,f,g,h}	26% ^{a,c,d,e,f,g,h}	45% ^{a,c,d,e,f,g,h}	40% ^{a,c,d,e,f,g,h}	59% ^{a,c,d,e,f,g,h}
Went to ER for a condition that could have been treated by regular doctor if available	17% ^{a,c,d,e,f,g,h}	23% ^{a,c,d,e,f,g,h}	9% ^{a,c,d,e,f,g,h}	6% ^{a,c,d,e,f,g,h}	6% ^{a,c,d,e,f,g,h}	8% ^{a,c,d,e,f,g,h}	9% ^{a,c,d,e,f,g,h}	19% ^{a,c,d,e,f,g,h}
Called a help line for medical advice in past 2 years								
Able to get advice needed: yes, completely	39% ^{a,c,d,e,f,g,h}	59% ^{a,c,d,e,f,g,h}	61% ^{a,c,d,e,f,g,h}	47% ^{a,c,d,e,f,g,h}	75% ^{a,c,d,e,f,g,h}	49% ^{a,c,d,e,f,g,h}	62% ^{a,c,d,e,f,g,h}	40% ^{a,c,d,e,f,g,h}
Wait for appointment with specialist (Base: needed to see specialist in past 2 years)								
Less than 4 weeks	45% ^{a,c,d,e,f,g,h}	40% ^{a,c,d,e,f,g,h}	55% ^{a,c,d,e,f,g,h}	69% ^{a,c,d,e,f,g,h}	69% ^{a,c,d,e,f,g,h}	45% ^{a,c,d,e,f,g,h}	42% ^{a,c,d,e,f,g,h}	74% ^{a,c,d,e,f,g,h}
1 month to less than 2 months	24% ^{a,c,d,e,f,g,h}	16% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	12% ^{a,c,d,e,f,g,h}	6% ^{a,c,d,e,f,g,h}	19% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	12% ^{a,c,d,e,f,g,h}
2 months or longer	29% ^{a,c,d,e,f,g,h}	42% ^{a,c,d,e,f,g,h}	23% ^{a,c,d,e,f,g,h}	20% ^{a,c,d,e,f,g,h}	25% ^{a,c,d,e,f,g,h}	33% ^{a,c,d,e,f,g,h}	33% ^{a,c,d,e,f,g,h}	10% ^{a,c,d,e,f,g,h}

SOURCE: Commonwealth Fund International Health Policy Survey of Sicker Adults, 2008.
 NOTES: Reading from left to right starting with Australia, the letter indicates significant differences with countries to the right at p < 0.05, as indicated. ^aDifferent from CAN. ^bDifferent from FR. ^cDifferent from GER. ^dDifferent from NETH. ^eDifferent from NZ. ^fDifferent from U.K. ^gDifferent from U.S. ER is emergency room.

Appendix C

Semi-Structured Interview Questions

1. Please describe your experience with the wiki
2. Is the wiki a useful tool
 - a. Why/why not
3. How did you learn how to interact with others on the wiki
4. Does the wiki have any “rules” of use
5. What are some of the rules, or norms of use
6. Do the rules (would rules) make the wiki easier to use
 - a. What happens if a person uses or edits the wiki outside of the rules
7. What keeps you from using the wiki more often
8. Does [the company] support the use of the wiki
9. What other web 2.0 (social media) tools are you using?

Appendix D
Online Questionnaire

Wiki use at

Wiki Use at

Please describe your experiences with the wiki
How have you used it?

Is the wiki a useful tool (why/why not)?

Do you interact with others on the wiki? If so, how did you learn how to interact with others on the wiki?

Does the wiki have any "rules" of use?

Yes

No

If the wiki has rules, what are some of the rules, (procedures, norms) of use?

Do the rules (or would rules) make the wiki easier to use?

What keeps you from using the wiki more often

Does support the use of the wiki?

What other web 2.0 (social media) services do you use?

Facebook

Twitter

Flickr

LinkedIn

Other:

Please add any additional comments you have regarding wiki use at

Powered by [Google Docs](#)

Appendix E

Questionnaire Recruitment Email

As health systems grows and change, we are always looking for new methods of communication and collaboration. I am interested in learning how wikis are being used at [the company]. In particular, I am interested in hearing your thoughts and opinions regarding how rules and common processes and procedures (norms) were, and are, being established through the wikis. This topic will help Organizational Development provide more robust services and it also the central theme of my PhD dissertation. I am working with James Folkestad PhD (Colorado State University, School of Education) in order to better understand how rules and norms are being established.

To that end, I am asking people in our system, who are currently using a wiki, to complete a short (11 question) survey. I anticipate the survey taking about 5 minutes to complete. Information learned in the survey will be anonymously added to the data I am collecting for my dissertation as well as possibly frame future use and direction of wikis within [the company]. If initial survey data does not yield enough information, you may receive a reminder email from me with an additional option of providing information through a structured interview. If you are interested in participating, please contact me at 237-7954, or email [sce1@\[company\].org](mailto:sce1@[company].org), or follow the link below to be taken directly to the survey.

Survey Link: <http://goo.gl/uWsbm>

Thank you,

Shawn Evans

Appendix F

Interview Informed Consent **Consent to Participate in a Research Study** **Colorado State University**

TITLE OF STUDY:

ESTABLISHING GROUP NORMS THROUGH WEB 2.0 TECHNOLOGIES WITHIN A HEALTH CARE SETTING

PRINCIPAL INVESTIGATOR: Jim Folkestad, PhD, Associate Professor Educational Human

Resource Development, Colorado State University, 970-491-7823, james.folkestad@colostate.edu

CO-PRINCIPAL INVESTIGATOR: Shawn Evans (PhD Candidate), Educational Human Resource

Development, 970-231-2324, evans10@gmail.com

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH? Because of your involvement with one or more wikis at [the company], you are being asked to provide your thoughts and ideas about how wikis are being used within [the company]

WHO IS DOING THE STUDY? This study is being conducted by Shawn Evans for his PhD dissertation.

WHAT IS THE PURPOSE OF THIS STUDY? The purpose of this study is to understand how rules and common procedures are being established for wiki use; who is establishing the rules, where do they come from, who monitors the rules, and how are the rules impacting the ultimate use of the wiki?

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST? The study will consist of either a one-on-one interview, or an online questionnaire. Estimated time to complete the interview is 30 minutes. Estimated time to complete the questionnaire is 10-15 minutes.

WHAT WILL I BE ASKED TO DO? You will be asked to provide your thoughts, opinions, perspectives, and ideas regarding how rules and common processes are established through the wiki.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY? None

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS? It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY? This study aims to benefit individuals and organizations by helping users of wikis better understand rules and common procedures associated with the use of the tool. By better understanding the rules and procedures, it is thought that wiki users will feel more comfortable using the tool and therefore more quickly engage in creating and editing content.

DO I HAVE TO TAKE PART IN THE STUDY? Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE? We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. Additionally, we will code your identity and keep a list of the codes in a separate location. The code will include parts of your HR job code, your location, and your wiki username. The code list will be destroyed upon completion of the study

WHAT IF I HAVE QUESTIONS? Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, **Shawn Evans at 970-237-7954**. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655. We will give you a copy of this consent form to take with you.

This consent form was approved by the CSU Institutional Review Board for the protection of human subjects in research on *5/26/2011*

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 2 pages.

Signature of person agreeing to take part in the study Date

Printed name of person agreeing to take part in the study

Name of person providing information to participant Date

Signature of Research Staff

Appendix G

Questionnaire Informed Consent

Wiki use at [organization]

Consent to Participate in a Research Study Colorado State University TITLE OF STUDY:
ESTABLISHING GROUP NORMS THROUGH WEB 2.0 TECHNOLOGIES WITHIN A HEALTH
CARE SETTING PRINCIPAL INVESTIGATOR: Jim Folkestad, PhD, Associate Professor Educational
Human Resource Development, Colorado State University, 970-491-7823,
james.folkestad@colostate.edu CO-PRINCIPAL INVESTIGATOR: Shawn Evans (PhD Candidate),
Educational Human Resource Development, 970-231-2324, evans10@gmail.com

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH? Because of your involvement
with one or more wikis at [organization], you are being asked to provide your thoughts and ideas about
how wikis are being used within [organization]

WHO IS DOING THE STUDY? This study is being conducted by Shawn Evans for his PhD
dissertation. WHAT IS THE PURPOSE OF THIS STUDY? The purpose of this study is to understand
how rules and common procedures are being established for wiki use; who is establishing the rules,
where do they come from, who monitors the rules, and how are the rules impacting the ultimate use
of the wiki?

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST? The online
survey consists of 10 questions and should take about 5 minutes to complete.

WHAT WILL I BE ASKED TO DO? You will be asked to provide your thoughts, opinions,
perspectives, and ideas regarding how rules and common processes are established through the
wiki. With your approval, the interview will be audio taped. Your names will not be on the audio tapes
and all audio recordings will be destroyed upon completion of the study.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY? None

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS? There are no known risks to participants in this study. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY? There are no known benefits for participating. This study aims to benefit individuals and organizations by helping users of wikis better understand rules and common procedures associated with the use of the tool. By better understanding the rules and procedures, it is thought that wiki users will feel more comfortable using the tool and therefore more quickly engage in creating and editing content.

DO I HAVE TO TAKE PART IN THE STUDY? Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE? This is an anonymous and confidential survey. Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

WHAT IF I HAVE QUESTIONS? Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Shawn Evans at 970-237-7954. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655, or [organization contact]. Please print a copy of this consent form to keep with you. This consent form was approved by the CSU Institutional Review Board and the [organization] Institutional Review Board for the protection of human subjects in research on July 13, 2010. Clicking on the survey link below (continue button), acknowledges that you have read the information stated and willingly provide your consent to take place in this study.

Appendix H

Colorado State University IRB Approval



Research Integrity & Compliance Review Office
Office of the Vice President for Research
321 General Services Building - Campus Delivery 2011 Fort Collins,
CO
TEL: (970) 491-1553
FAX: (970) 491-2293

NOTICE OF APPROVAL FOR HUMAN RESEARCH

DATE: July 13, 2011
TO: Folkestad, James, Education
Lehmann, Jean, 1588 School of Education, Evans, Sharon, Education
FROM: Barker, Janell, , CSU IRB 1
PROTOCOL TITLE: ESTABLISHING GROUP NORMS THROUGH WEB 2.0 TECHNOLOGIES WITHIN A HEALTH CARE SETTING
FUNDING SOURCE: NONE
PROTOCOL NUMBER: 11-2546H
APPROVAL PERIOD: Approval Date: July 12, 2011 Expiration Date: May 17, 2012

The CSU Institutional Review Board (IRB) for the protection of human subjects has reviewed the protocol entitled: ESTABLISHING GROUP NORMS THROUGH WEB 2.0 TECHNOLOGIES WITHIN A HEALTH CARE SETTING. The project has been approved for the procedures and subjects described in the protocol. This protocol must be reviewed for renewal on a yearly basis for as long as the research remains active. Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

If approval did not accompany a proposal when it was submitted to a sponsor, it is the PI's responsibility to provide the sponsor with the approval notice.

This approval is issued under Colorado State University's Federal Wide Assurance 00000647 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under CSU's Assurance, please do not hesitate to contact us.

Please direct any questions about the IRB's actions on this project to:

Janell Barker, Senior IRB Coordinator - (970) 491-1655 Janell.Barker@Colostate.edu
Evelyn Swiss, IRB Coordinator - (970) 491-1381 Evelyn.Swiss@Colostate.edu

Barker, Janell

Appendix I

Organizational IRB Approval



July 19, 2011

Shawn Evans
PVHS Organizational Development
2002 Caribou Dr, Suite 100
Fort Collins, CO 80525

Dear Investigator:

Amendment for **#11-1098: "Establishing Group Norms through Wiki Technologies within a Health Care Setting,"** was given expedited IRB approval by the IRB Chairperson and/or Designee on July 12, 2011. Full acknowledgment by the [REDACTED] IRB was given at the convened meeting of July 13, 2011.

Expedited Amendment:

PI: Shawn Evans

DOCUMENTS w/DATES: Online Survey; Appendix D and E; Informed Consent Form, undated

Now that your Amendment has received expedited [REDACTED] IRB approval, your research may continue. Please continue to keep us informed regarding any future protocol activity (*requiring IRB approval*). All change in status forms are available on the [REDACTED] web site or internally on the employee's web page [REDACTED]. If I can be of further assistance, do not hesitate to contact me via email [REDACTED]. Thank you for your submission to the [REDACTED] IRB.

Sincerely,



Appendix J

Interviews

Wiki Interviews Data

Administrator 1 PP

How is the wiki currently being used?

It is mainly used for scheduling the [REDACTED]

Does the wiki have any rules of use/ how did people learn to use the wiki?

About 3-4 years ago we just switched. I think I showed people how to use it individually, it was really pretty easy. The rules regarding scheduling were relatively the same as we had before, it just switched to the wiki from the traditional way of submitting requests (email, pieces of paper, verbal)

Do the rules help people use the wiki?

I think they are helpful for everyone involved.

Do or have people violated any of the rules of use? If so, what is the perception or reaction of other users?

I think people were scared to use the wiki, so we did not see many going over the lines with it use.

In your opinion, what keeps people from using the wiki more often?

Time probably – we are all very busy and this is just one more thing.

Does [organization] support the use of the wiki?

I do not think that they know we are using it. From past experiences, I am not sure that IS would react positively to this as it did not go through the official approval processes.

Other thoughts?

The wiki is really working for us with the scheduling, I am looking at other possibilities for other wikis.

Administrator 2 LA

How is the wiki currently being used / Why did you start the wiki?

To me, this was the perfect tool to allow people from all locations and shifts to get the same information, and add their own information as needed, but It seems to me that adoption of the wiki was very, very slow. We had someone come in and give a presentation on how and why to use the wiki. After that presentation, they seemed more clear about how to use the wiki. Wiki use, however, did not increase - - I don't think people get the why.

Does the wiki have any rules of use?

The main rules are to be respectful of what other people post and to follow the same behavior standards that we do within the department and the system

Do the rules help people use the wiki?

I think the rules are helpful in letting people know what they can expect and making it clear what is OK and what is not. That being said, the rules on the wiki, just like outside of the wiki are only good if someone is able to enforce them and hold people accountable to them.

Do or have people violated any of the rules of use? If so, what is the perception or reaction of other users?

We never really saw a lot, or any violation of the rules and norms that we set for the wiki. If someone had questions, they would come and ask, before doing anything on the wiki for the rest of the department to see.

Why do you think there has not been any violations with this technology?

I think this is such a new thing for people in our system that they simply do not know it well enough to have done anything that would violate its use. Also, this is not private communication, everything that people do on the wiki can be seen by everyone else , that is probably a strong reason why people do not violate the rules, they are on their best behavior!

In your opinion, what keeps people from using the wiki more often?

I am not sure!

Does [organization] support the use of the wiki?

They do not necessarily support it, I couldn't call them if something went wrong. At the same time, they do not keep us from using it either.

Other thoughts?

Administrator 3 B1

How is the wiki currently being used?

We use it to announce new things happening in our department. I hope someday we will use it as a primary communication tool.

Does the wiki have any rules of use?

Right now the rules are pretty light. I think everyone assumes that the wiki is just like company email, don't say anything inappropriate, patient related, or disrespectful to co-workers.

Do the rules help people use the wiki?

I was so excited when we got the wiki going, I thought everyone would see this as a useful tool and literally jump on it as soon as it was announced [via email]. People did sign up for the wiki right away and we had the majority of the department on board, I thought.

However, after weeks of nobody actively participating on the wiki I knew we had problems. I found out that people were not using the wiki because they were not sure how to, or they did not know what they should post. I put together a brief presentation and gave it to the staff during the next two staff meetings. After that, wiki use seemed to go up. We still had some who were not confident in using the tool, but they could see the usefulness and would stop me in the hall and make suggestions for content that could be posted on the wiki. I still wish we had more people using this tool.

Do or have people violated any of the rules of use? If so, what is the perception or reaction of other users?

This was so new for nearly everyone in our department that people simply did not know what to do and therefore, I think, followed the rules that were set. We do not have a lot of risk-takers in our area and most will do what they are asked, especially if it is something that they are unfamiliar with.

In your opinion, what keeps people from using the wiki more often?

People are very busy and probably do not have enough time to completely use the wiki, although it is meant to be a time saver. Also, we do not know how much of this IS will allow or not, I think we do not use the wiki as much because we are afraid IS will force us to stop

Does [organization] support the use of the wiki?

I really do not know? They did not help me set it up

Other thoughts?

No

IS

Are there general guidelines that govern the use of technology in the system?

Yes we have policies in place that detail the use of technology as it relates to patient care and the general operations of the business units.

Do these policies detail how new technology is introduced and adopted by the system

Sort of, we do have a procedure in place anytime someone wants to add a piece of software or equipment that is not currently approved. There is a form that needs to be completed and signed by the director, then it goes to one of our analysts for testing, if it tests OK, then we can make a decision whether or not to support the software based on the business need of the unit.

How long does that process take?

About 4-6 weeks generally, maybe longer in some cases

What would keep a piece of technology from passing the testing phase?

A couple of main things: First, if it simply does not work with our current systems, for example a new software program does not work on the computers that we currently have. Second, and as important – particularly regarding web-based programs, are concerns regarding possible HIPAA violations. We take HIPAA very seriously.

So, from the HIPAA standpoint, you do not want employees sharing health data?

Right, but even more than that, maybe health data is not directly being shared, but the technology opens a security breach in which data could be accessed.

Do you have any examples?

I cannot think of any right now.

What about web-based programs, do they still fall under the same scrutiny?

Absolutely, and maybe even more. We like to try to control our environment as much as possible, 10 years ago it was much easier, now we have people daily coming to us and wanting to use some latest web-based program. The problem is that we do not know how all of these programs react, or act with the person's local machine, and therefore our entire network. Even though it may not seem like much, there is a lot of potential there for major security problems.

The system has a very liberal web policy with employees, and even allows sites like Facebook and twitter?

Yes, it is seen as a benefit and part of the future of health care.

What about HIPAA

Yes, that is a responsibility of the employee. Neither Twitter or Facebook allow for anonymous postings so we would at least know who posted HIPAA data and could then take action, even though the cat is out of the bag so to speak.

Have we had any problems with HIPAA and social media sites

Not yet, but we have had some near misses

Compared with other places you have worked, would you classify the system's IS policies as open or constrictive.

Probably depends on your perspective, I think most people would say constrictive

Questionnaire Responses

Please describe your experiences with the wiki	Is the wiki a useful tool (why/why not)?	Do you interact with others on the wiki? If so, how did you learn how to interact with others on the wiki?	Does the wiki have any "rules" of use?	If the wiki has rules, what are some of the rules, (procedures, norms) of use?	Do the rules (or would rules) make the wiki easier to use?	What keeps you from using the wiki more often	Does [organization] support the use of the wiki?	What other web services do you use?
I have been using a wiki at PVHS for about 2 years. Our department mainly uses it for scheduling pharmacists. I use the wiki to submit my schedule, check my schedule, and try to schedule time off or vacation time.	It is a ver useful tool for our scheduling. Scheduling used to be a very long process and the wiki has certainly made this easier. I like being able to see my schedule for months out (at least time off). We are a 24/7 department and people have lives outside of work as well. The wiki has helped us maintain a schedule and provide people with enough flexibility to take care of families, go to school, etc.	Another pharmacist showed my how to use the wiki. I am not sure that I interact with others as much on the wiki, if we ever have issues with the schedule, we try to work it out face to face.	Yes	I am not sure if there are rules for using the wiki or not. The rules center around how and when to submit your preferred schedule, but I am not sure if there are rules regarding how the wiki is used	set of rules and norms would be helpful in first learning how to use the wiki. I am not a technology person and it would be helpful for me to know what I can and cannot do. Can I "break if" if I do something wrong? Should I post more or less information on the wiki? Is there a better way to add to the wiki so that it is easier for others to understand? I think our department has worked through a	I use the wiki for what I need to. We do not use it for anything more than scheduling. I guess time would be the biggest reason I do not or would not use it more.	I guess it does since we have been using it for awhile.	Facebook
Well, I mainly use the wiki to get leadership information for the leadership academy.	completely know how to use it as well as others. I mainly use it to digest information where others seem to be using it more as a tool to communicate with each other. I have tried to use it in this way, but I do not like the fact that the communication is not in real time, you have to wait for others to log in and then reply to your comments. Of course, I may be expecting too much from the IM (instant messaging), when I should learn how to use	Trial and error mainly. You showed us during one of our sessions, briefly how to use it, and I just gave it a shot. It is not hard to learn how to use, once you have the basic navigation down, adding stuff is actually pretty easy.	yes	We agreed to not completely delete each others postings, and there is an expectation that we review the wiki every day or so for new information. Other than that I cannot think of any rules	I am not sure. I suppose they helped as I was getting started -- it is kind of like Twitter, I have no idea how to use that website effectively because I do not know what I can and cannot do, or who sees what and when. The wiki, at least has some more clear rules and is easier for me to understand.	Time mainly -- even though I check VIC everyday, I just haven't gotten into the habit of checking the wiki. I seem to only remember when someone reminds me. It is useful enough, just not quite to the point where I need it to do my job everyday, if that makes sense.	Yes	Facebook

	This is o much better than the old way of doing this (scheduling). It is nice to be able to see if and when we can take a vacation - -							
I use the wiki for scheduling. We list which days we would like to work and have off. We can view our schedules (everyone's schedule) for up to a year out - - at least time off.	depending on who else is taking time off at the time. We need to make sure we have coverage in this department, at the same time we all have other lives. The wiki, in my mind, is a great tool for scheduling the way we do it.	I do not interact with others on the wiki. I see if people have scheduled time off, or have put down shifts that they want to work. If I have questions, I either email them or talk to them in person.	Yes	Do not delete what others have posted, Post you schedule in the proper time frame so that the monthly schedules can be set	Yes, it is good for everyone to know how to use it.	I am not really sure. I guess I do not need to use it anymore than I already do - - is there something else I should be using it for?	I guess it does	Facebook
use for the leadership academy is the first wiki I have ever used. At first I found it to be an awkward experience, I wasn't quite sure how and when to communicate with other participants on the wiki. The flow of the conversation is not the same as face to face obviously, however, the wiki is good for communicatin g ideas, concepts and sharing best practices	minute ago, the wiki is a useful tool for some things, but not everything. I like being able to post, read, and watch material that includes a variety of choices. I am having a harder time understanding the rate and tempo of communication. You cannot expect someone to respond to questions, comments, or requests right away. I have had to send emails to people asking them to look at the wiki and respond - that seems	Trial and error I guess. I think I am still learning this. I know that we are supposed to add and edit other people's comments and posts, however, that still seems a little rude to me, it almost feels like I am interrupting, or discounting what they have to say. This is probably an age thing as my kids do not have a problem doing this with their friends on Facebook. It will be interesting when my kids and their generation enters the workplace and has to communicate				Time and understanding . I cannot seem to find a good time to login to the wiki. When I am at work, I seem to get interrupted, and when at home I try not to think about work. I would like to get into the habit of spending a few minutes each day browsing the wiki and adding comments as needed, but I haven't gotten		
				We have a rules page that provides a basic set of parameters of use	The rules do help me. I am not as familiar with this technology as some and it is helpful to have a shared set of expectations, at least for me. I like to know what I can, and haven't gotten			

<p>My experience with the wiki involves logging in a seeing if there are any updates for our department.</p>	<p>It is useful because I do not work next to the rest of the department. I like being able to see if there is anything new about what we are doing. I still feel disconnected from the rest of the department, but at least I know when things change. This is, of course, if the wiki is updated, which sometimes it is not.</p>	<p>I really do not interact with anyone on the wiki. I know I am supposed to be able to add things, but I do not have anything to add ever.</p>	<p>No</p>	<p>I am not sure. I guess they could be useful if more people were using to it to post stuff. It would be like being in a meeting and everyone was talking at once. We would need to have some rules in that case.</p>	<p>I am not sure</p>	<p>I do not know, I guess it does since it has not been shut down yet.</p>	<p>Facebook</p>
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	think it is a great tool. We have a lot of people doing great things in the hospitals and the leadership clinics, and I like the wiki at the end of last year. I have only posted a few comments and I have added one article to the articles page. I use the wiki to get new information or to learn what others are doing. I wish more people would use the wiki as I think it could be a valuable tool. At this point, it seems that there are only a few of use that use it.	I started using the leadership wiki at the end of last year. I have only posted a few comments and I have added one article to the articles page. I use the wiki to get new information or to learn what others are doing. I wish more people would use the wiki as I think it could be a valuable tool. At this point, it seems that there are only a few of use that use it.	I watched the video that is on the home screen and then just started messing around a bit. I asked a few questions here and there, mainly about what the wiki can do (how much) and who was on it. The interaction is actually pretty easy and anyone who uses Facebook can do it.	Yes	Anything posted on the wiki must be professionally relevant. Of course no patient specific data, be respectful to others, make corrections as needed, but check your facts first because maybe the other person is correct also.	I think there have to be some rules for this type of wiki. It is a business related website and what happens on the wiki should reflect PVHS values. The rules help set some guidelines.	At this point, probably the fact that it is not being used by others as much. There are only a few people who post information on the wiki, so I check it every other day or so.	Yes, it does not block the site.	Facebook
	We use the wiki for scheduling the pharmacists. Pharmacists can submit the schedule preferences, and then view the full schedule for up to 60 days and special requests (days off) for up to a year)	It is very useful, it is nice to be able to see what people are requesting for schedules, it actually helps some people to know that there isn't any preferential treatment happening. It almost promotes a very transparent process. I wasn't sure that I was going to like it at first, but now it is very nice.	Good question, I am not sure?	Yes	Do not erase what others have requested. Be professional	We are a pretty tight group, so the rules on the wiki probably just follow those that we already have in our department. It might be nice to see if there is more we can be doing with the wiki, although I do not know what that would be. In that case, rules would be helpful.	I use it as much as I need to -- after checking my schedule, I do not need to use it, except to look at future schedules and days off.	I am not sure	
	I use the wiki to check on what is new with our department.	At times it is, other times it feels like yet another place to check for information. It would be nice if we could get everything we need in one place. Now I check email, VIC, the wiki, and of course information that I get from meetings.	I am not sure I ever learned.	Yes	There is a page with rules on it, I cannot remember all of them. But they include things like be respectful and professional.	Probably a little bit. I am not sure who has read the rules, or who follows them?	Really it is not a habit yet, I mostly just forget that it is there. Maybe I could set a reminder to check the wiki on my groupwise calendar?	I do not know	Facebook

<p>I was invited to be a part of the PVHS Leadership wiki last year. I use the wiki to check PVHS class schedules, read articles on leadership, and see what other people are doing at PVHS.</p>	<p>I really like it. It is nice to have a central resource that is easier to use than VIC. It is a good place to get information and share ideas, although I have not done that yet. In my mind, we all need to be getting more and more use to this kind of technology as we move forward in our organization.</p>	<p>I am not sure. It seems intuitive doesn't it, I mean we all know how to use these kinds of websites, they are all really similar. The key I guess is to just jump on a try it, there is really no right or wrong way to interact. Just treat people and their ideas the same way you would in real life.</p>	<p>Yes</p>	<p>As I think about it, I am not really sure if there are rules specific to this wiki. The rules are more encompassing of how a person interacts with anyone online, in a business setting. I mean this isn't an anonymous idiot leaving rude comments on a blog, this is a professional setting where we know each other and must be respectful.</p>	<p>For me this seems like second nature, if my mom was here we would definitely need some rules. I think the whole interacting with people over the net is a more foreign concept for her, maybe not?</p>	<p>Time and what is on the wiki. Our wiki is not like wikipedia where a person can go on for days. Ours is limited and we do not need to spend a lot of time on it. Maybe in the future it will be used more, but for right now not really.</p>	<p>I think so</p>	<p>Facebook, twitter</p>
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<p>The wiki I use is for leadership development. This wiki includes many different types of resources specific to leadership development within our system. I mainly browse the wiki and check out what articles have been posted and also what people are saying on the comments.</p>	<p>I like it, it is one place to get information that we cannot get elsewhere.</p>	<p>I really do not interact with anyone yet. I am not sure that there is a proper place to do that.</p>	<p>No</p>	<p>I do not think so, it is pretty straight forward.</p>	<p>I am not sure. yes it does</p>	<p>Facebook</p>
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Our department started using a wiki a few months ago to help communicate all of the changes that are happening as we become part of PVHS. So far, I have only been on the wiki a few times. Every time there is an update, our manager also sends an email, she has told us that she is only going to post the updates on the wiki and not the email, but so far she is doing both.	It looks like it could be a very useful tool. I like the fact of having a single place to go for information. I also like how the wiki can be updated quickly. It is way better than email because you do not have to remember who sent the information and when, it is always posted on the site. It is also better because we can view videos and other types of documents, right on the wiki.	I have not interacted with anyone on the wiki yet, but I guess it is the same as Facebook, except at work. I hope the wiki gets to the point where we can interact and maybe even chat or IM each other. That would be a great addition to what we already have.	Yes	Things on the wiki have to be work related and communication must follow the same standards as we do in all of our communication with customers and each other.	I have never really thought about it, but they probably do for some because I can see where some people may get confused or not know how to use it. The rules seem to help, I think	Right now there isn't a lot of stuff on there so I do not need to use it very often.	I do not know if they do or not?	Facebook	
I am currently using a wiki for our leadership academy. It is a great way to continue learning, share information, and to stay in contact.	Absolutely, our team is able to stay in better contact, share information, and stay in constant communication.	It was taught to us via organizational development	Yes				I don't know that they do to a large degree yet, but I think they should it serves a route of communication and learning. It also could be a cultural builder as our system grows it could act to decrease the silo effect.	My only issue is time	Linkedin

<p>Our department started using a wiki last year when we became part of PVHS. I use the wiki to get information about what is happening within the department and if there are any updates to equipment and software that I need to know about. I try to share what I learn on the wiki with the rest of my team because I do not think they get on it too often.</p>	<p>It is useful for somethings. It would be nice if more people at PVHS used it because we could learn about what they are doing and vice versa. I do like having the option to go to a website and find information that is specific to our department. It is much easier to use than the PVHS site.</p>	<p>I think I interact the same way that I do on other sites like facebook. I just post information and read what others post. I am not sure if there is anything more than that, it is just the same really.</p>	<p>Yes</p>	<p>Our manager told us that it is a professional site and that we need to be sure that what we post is appropriate. We also discussed how and when to edit other people's posts, but I do not think anyone is doing that at this point. We had a person from IS show us Wikipedia and he explained how the wiki worked. He also told us that we could not post any material that is copywrited or the property of someone else.</p>	<p>I am not sure if they make it easier to use or not. The rules seem pretty basic to me, but I also spend a lot of time online when I am not at work. For my department, just knowing who is here, I think rules are a good thing.</p>	<p>I am not exactly sure what I can and cannot do with the wiki. I would like to put soe other stuff on there but I am not sure if it is work related or not. You know, things like motivational articles and things. I need to talk to my manager before I post, I just haven't done that yet.</p>	<p>I don't really know, I think they do. We had a guy from IS here so that means that they support it right?</p>
<p>We use a wiki to keep track of changes in the department</p>	<p>it is just another place that we have to go to get information that we need. It would be much better if we could all go to one place.</p>	<p>I do not interact with others on the wiki</p>	<p>No</p>	<p>I am not sure</p>	<p>We are really overloaded with all of the change going on and the wiki isn't helping (in my opinion), it just adds one more task to the mix.</p>	<p>?</p>	<p>Facebook</p>

<p>wiki on our unit to keep track of all of the changes that are going on. I am in charge of keeping the wiki up to date regarding policies, and also I am making sure the wiki is clean, meaning pages work and stuff is posted where it is supposed to be posted. This is the 2nd wiki I have used (the other was at a previous hospital) and I like it because it helps us stay connected on</p>	<p>for me and I think the other nurses think the same. We have so many policies, rules, and other things to try to keep track of, the wiki makes it easier. Now we just have to remember the wiki web address! I also like the fact that it is run by us, we do not have to send stuff to someone and then hope it gets posted on the internal website. It also allows for our department to post specific stuff related to what we do. I would like to expand the wiki to also recognize</p>	<p>We had a short class at my last hospital that taught us how to interact and use the wiki. The class was not that helpful, but it was nice to learn what the expectations were, kind of the rules for using the wiki. This is something I should look into doing with our unit.</p>	<p>Yes</p>	<p>Of course we cannot post any patient data, or anything that may be HIPAA. All of the communication is to be professional and it must follow the behavior standards whenever applicable. I think general rules are to be respectful of people and their ideas and to not post negative comments, or at least negative comments directly attacking another person or their postings. We have also decided that stuff put on the wiki must be job related.</p>	<p>Yes, rules make wikis easier to use in the beginning. It sets that stage and provides boundaries. I know some people do not feel comfortable using the wiki because they do not know how. I do not think that is about not knowing how to log in and type on a web page, but more related to not understanding the rules and boundaries for using the wiki.</p>	<p>I guess it does, our manager is the one who proposed that we start it.</p>	<p>Time I guess. I use it quite a bit.</p>	<p>Facebook, Twitter, Flickr</p>
<p>We are supposed to use the wiki to keep up to date with what is going on on our unit. I check it maybe once every 2 or 3 weeks to see if there are any updates.</p>	<p>I like the idea of having all of the information in one place. I am not sure of the usefulness beyond that though.</p>	<p>I do not interact with anyone on the wiki</p>	<p>Yes</p>	<p>I think the rules center around professional communication (just like email)</p>	<p>I think rules on how to use the tool beyond simply checking it for updates would be helpful for me and for others. We are not sure what the wiki can do, or what we can do on it.</p>	<p>I am not sure what to use it for beyond checking for updates and maybe as a resource.</p>	<p>I think so</p>	<p>Facebook</p>
<p>WE use it for scheduling for pharmacists</p>	<p>It seems to be useful for scheduling</p>	<p>I do not interact with others aside from simply putting in my scheduling requests. Our wiki does not do more than that.</p>	<p>Yes</p>	<p>The rules make it easier to use in the beginning but then once it becomes a habit, the rules are no longer as useful</p>	<p>There is not much else to do with the wiki other than scheduling, and that takes enough time as it is.</p>	<p>Not sure</p>	<p>Facebook, Twitter</p>	

					Probably comfort and familiarity with what the site is supposed to be used for. If				
				Yes, for me it would. I admit that I do not know what to do on these kinds of sites. I am never really sure what happens when I type something, who sees it, what am I supposed to be typing, those types of things	I knew that these sites helped me with my job or provided usable information, I would probably be more inclined to use them, but for now I have enough to worry about with my current job	I don't know			
I know we have a wiki for leadership, but I have not really used it since the very first time I signed on.	For me it is not yet, but maybe that is because I have not taken the time to learn how to use it very well	Like I said, I have not really used the wiki at all.		I do not know					
	It is useful, it is nice to know when I am working and when I have days off obviously, but	Trial and error, although it is really just like email but what you post stays on there (an other people can edit it). I think the interaction in our department setting is easier than if it is outside of work. We all know what the expectations are here as far as professionalism and conduct, so all communication falls in line with those expectations.			The rules really seem to focus on the scheduling piece. I am not sure if the wiki has rules. I think rules would be nice, maybe even going a step further and offering some well defined training on how to use the wiki and what it can be used for. I feel like we are just touching the surface as far as application of the wiki is concerned. Have there been updates in the last three years? Although that being said, I will say the wiki is the one piece of software we have that is stable and works exactly the way it is supposed to every time.	Like is said for the last question, rules would help, training would help also. I am afraid we do not know what we do not know, if that makes sense.	I do not know what else we can use it for beyond scheduling.	I don't know.	Facebook
I use our wiki for scheduling mainly. We put the dates that we would like off as well as other dates that may require a special schedule on the wiki. I then check back to the wiki to see when I am working.	with the wiki we are able to plan so much further out. In the past, that was hard to do. Some of us had talked about putting more stuff on the wiki besides scheduling, but we simply do not have anyone with enough time to invest in getting that project going.								

<p>I use the wiki to see if there is anything new in our department. I do not work in the same place as most of the rest of the department so I feel disconnected at times. At least with the wiki, I can see if there are any updates that I missed.</p>	<p>I like it, and it is useful although I wish it were updated more often.</p>	<p>Our wiki does not have a lot of interaction. One person adds information and the rest of us read it. It would be nice to be able to communicate with others on the wiki, or at least create documents or pages that provide answers to common issues.</p>	<p>Yes</p>	<p>Treat the wiki like all other professional communication within PVHS.</p>	<p>The current rules are pretty vague, I would like to know what I can and cannot post on the wiki, how to respond to others, and more about the wiki in general</p>	<p>Time and amount of information currently on the wiki (there is not a lot updated regularly)</p>	<p>I think so</p>	<p>Facebook, Twitter, LinkedIn</p>
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<p>WIKI for staff scheduling. There are several pages in the WIKI, including a page to request days off, a page to request schedule preferences (such as "prefer Monday evenings off for softball", a page that shows weekends and holiday schedules out 1-2 years. Staff who write the schedule are the administrators, and they e-mail the group with the WIKI close date so</p>	<p>Yes because unlike using a shared folder, staff can do this at home where they can plan with their family.</p>	<p>Yes, in that we use it as a communication tool for scheduling purposes.</p>	<p>Yes</p>	<p>You must type in the date you requested time off (since it's first come, first serve) You cannot erase another's entry. (the administrators can check in the background if there is a challenge on who asked first)</p>	<p>Yes, it leads to civility in the schedule process, especially so the schedulers, who are staff not managers, aren't abused if there is an issue.</p>	<p>As a manager, I only use it for information (for example, needing to schedule a meeting with a staff person past the current schedule, I can see if they've requested a specific day off)</p>	<p>Unknown. Never asked</p>	<p>Facebook</p>
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<p>Our department uses Wiki for scheduling purposes. Each employee enters their vacation requests and other special scheduling requests (ie: meetings, particular shifts, etc).</p>	<p>Wiki use for scheduling is handy. It allows employees to see if a number of staff have already made requests for days off, thereby changing plans if you need to. Also for the scheduler, all the requests are in one location with the date of the request available</p>	<p>no</p>	<p>Yes</p>	<p>working in the department attaching the day of the scheduling request</p>	<p>neutral</p>	<p>nothing</p>	<p>unknown</p>	<p>Facebook</p>
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