Towards a Methodology of Virtually Augmenting a Knowledge Sharing Community of Practice: A Case Study of the Local Food System of Denton, Texas

Andrew J. Miller
mail@andrewjm.co

Laura A. Pasquini
laura.pasquini@unt.edu

Leila A. Mills
leilamills01@gmail.com

Mark Evans
markevans@my.unt.edu

University of North Texas

Abstract

Observation, interviews, and a pilot study were conducted to identify requirements for social media to support knowledge sharing that will foster organization and growth of the Local Food System (LFS) in Denton, Texas. Due to lack of infrastructure, participants of this grassroots, self-organized, self-sustaining community of practice currently do not have access to physical or virtual space needed to share, retrieve, and archive LFS knowledge. Proposed system design and implementation will be based on completion of a mixed methods community study. Ethnographic techniques for a close-to-home investigation will examine how the existing LFS community operates. The goal is to design an unobtrusive LFS knowledge sharing social media site that is optimized for thoughtful archiving, accessible information retrieval, and lifelong community learning.

Keywords: media, knowledge sharing, community of practice, local food system, ethnography

---

Executive Summary

Introduction

The Local Food System (LFS) of Denton, Texas is composed of passionate individuals who make up a self-sustaining community of practice. It is a community with no clearly defined leader, which has grown organically out of pre-established agriculture practices in North Texas and with the rising national interest in organically grown, locally sourced food. Individuals and organizations bring varying specialized skills to the community that sustain the LFS. They communicate through a variety of channels, sharing information and knowledge integral to the community. There exist several organizations, such as the Denton Community Market, that strive to integrate the LFS community with the encompassing Denton community in order to bring awareness to the LFS. These organizations tend to communicate knowledge that encourages participation. Currently, no one is collecting all the knowledge the LFS relies on into one accessible interface. Knowledge within the community tends to be organized modularly with no infrastructure to facilitate an accessible outlet for shared community knowledge. It is not uncommon to be a member of the LFS community and not know about the existence of organizations that contribute integral knowledge to the community. In short, the knowledge base for the LFS community is disorganized, which is reflected in community awareness and growth.

Members of the LFS facilitate strong community bonds. They address issues of environmental sustainability by emphasizing native plant life and shorter delivery distance of food, decreasing fossil fuels burned during delivery. They also stimulate local economies through the production, exchange and consumption of their goods. Currently, the LFS community awareness and growth is limited by the lack of

---

accessibility to community knowledge. An individual must invest substantial time and energy into becoming a part of the community in order to learn the ins and outs. As a result, members tend to be very active in the community and share passionate interests in local food, while much of the population of Denton seems to remain largely unaware or unwilling to participate.

Organizational Background

Denton's LFS is a grassroots, self-organized, self-sustaining, community of practice woven together by business pursuits, consumer demand, and passionate interest in local food and community action. The primary purpose of the community is to facilitate the production, distribution, and consumption of locally sourced food (within 100-200 miles of the site of purchase). It is unclear when the community initially formed. Agriculture has naturally been an important element of any Denton community since the formation of the city in the mid 1800's ("History of Denton County," 2011). The community does not feature a clearly defined hierarchy of power or management, and financial profits gained within the community do not trickle up to any one owner. The demand for locally sourced food tends to exceed the supply. Though bonded by common interest, there is no single physical or virtual space where members may access community goods or shared knowledge.

Setting the Stage

Theoretical Frameworks

Increasingly, innovations both nurture and contribute to communities of practice (Lave & Wenger, 1991; Wenger 1998) where individuals learn through their engagement in social practice that is spontaneous, self-organizing, and fluid. It is through participation in informal communities that groups share activities, practices of social communities, construct identities and practice sensemaking (Wenger, 1998). Participation in communities of practice results in exposing and sharing diverse information and knowledge among group members. Lave and Wenger (1991) argue that individuals start out as peripheral members of communities of practice until the newcomer has engaged in learning of knowledgeable skills. Wenger (1998) views communities of practices as a place of negotiation, learning, meaning making, and identity.

Similar to Granovetter's (1973; 1983) strength of weak ties, communities of practice involve interpersonal connections where the diffusion of cultural ideas develop and disseminate among a network cluster. In the case of innovations or developments, the weak ties are transformed from the periphery and become the center of the network (Granovetter, 1983) to contribute to the community of practice. Nahapiet and Ghoshal (1998) thought that communities were useful narratives for transferring tacit knowledge, exchanging narratives, and preserving rich information. Chiu, Hsu and Wang (2006) found social interaction ties was a strong predictors for developing contribution interest and sustaining knowledge exchange in virtual communities. Digital communities and networks require a critical mass whereby the value of the technology increases as more members are actively participating in that virtual space. The network effect allows for information flow, ease of connectivity, organic growth, and rapid iteration for the improvement of ideas and concepts.

Communities of practice are more influential in looking at how knowledge is created and transferred (Brown & Duguid, 1991; Lave & Wenger, 1991). A growing number of communities of practice use social media and online spaces to share information. Increasingly "individuals voluntarily contribute their time, effort, and knowledge toward the collective benefit" (Wasko & Faraj, 2005). Retna and Ng (2011) found that communities of practice can be an effective mechanism for promoting knowledge transfer both within itself and to other broader organizations. Knowledge is constructed through complex processes of social negotiation and interpretation shaped by the access to resources, reputation, social networks, and access to those involved in developing the knowledge (Greenhow, Robelia, & Hughes, 2009). The social constructivist nature of knowledge itself has not changed (Prawat & Floden, 1994); however the broad impact of social media has increased knowledge fluidity and information sharing.

In a networked society Castells (2004) stated that "power continues to be the fundamental structuring force of its shape and direction…located in the networks that structure society" (p.224). With

the advent of the social web, an increasing number of communities are using this power of the network with online resources that are accessible, easily deployable, and increasingly easy to manage. Zhang & Watts (2008) found that a high level of activity is vital to support engagement between members, which in turn helps members of the community shape the organization. Ardichvili, Page and Wentling (2003) learned that participants were more willing to use the community of practice as a source of knowledge if they trust it as a reliable and objective resource. Online networks make use of social media websites and applications to allow users to customize how they get information, engage in sharing knowledge, and interact within a community based on personal interests or affiliations. The key would be to assess the "virtual settlement" of this online community of practice with regards to the group's computer-mediated communication (CMC) to understand the interactivity, variety of communicators, sustained membership levels, and the virtual comm.-public space (Jones, 1997).

Organizations are embracing technology and innovation to develop and exchange information at a rapid pace. Argote (1996) indicates that knowledge can depreciate if individuals leave the organization and if technologies become inaccessible or difficult to use. Knowledge transfer is critical for organizational survival and sustainability. By providing communication opportunities and shared documents between members of multiple organizations, transfer of knowledge flows through the general environment and benefit the organizations (Argote, 1996). Virtual networks have the ability to share and distribute information and knowledge among a community of practice. This research paper will explore how knowledge sharing in online communities of practice can improve the organization of this grassroots movement.

Technologies Used

In the scope of this paper, three views of used technology are relevant. First, the technology currently being used by this LFS. Second, the technologies the researchers have arranged, with limited development and financial support, to begin augmenting this LFS into a knowledge sharing social media. Third, the technologies the researchers aim to use in the future.

Through ethnographic fieldwork conducting interviews with community members, observing, and participating in the community both online and offline, researchers identified online presence and use of social media among eight influential organizations in the Denton Local Food System (LFS) Community. A review of online spaces revealed Denton LFS Community use of Facebook Fan Pages (e.g. http://www.facebook.com/pages/Cardos-Farm-Project/230389597022699?fref=ts), Wordpress blogs (e.g. http://www.earthwise-gardens.com/), and moderate use of custom-designed websites (e.g. http://www.kensproduce.com/). Much of the online communication within the community takes place on Facebook and via email newsletters. After speaking with several highly active members of the community, it was confirmed that a large part of the communication takes place via word of mouth or other face to face means.

Currently a number of free web applications are being used to begin organizing the Denton LFS community online. A blog has been arranged and acts as the current version of the researchers' end product. It serves as a webspace where the researchers can organize and publish the knowledge collected about the community in an accessible manner for community members to access. The applications being used are: 1) Wordpress for the blog www.feeddenton.org, 2) Gmail for email feeddenton@gmail.com 3) YouTube for video sharing www.youtube.com/user/FeedDenton 4) Mailchimp for collecting emails and sending newsletters 5) Ustream for livestreaming LFS events http://www.ustream.tv/channel/feeddenton 6) Facebook for interfacing with the community http://www.facebook.com/FeedDenton 7) Twitter for interfacing with the community http://twitter.com/feeddenton 8) Instagram for photo sharing 9) HootSuite (http://hootsuite.com/) for managing social media accounts and scheduling posts, and 10) Google Alerts for collecting the latest news on a number of LFS related keywords which are then curated and shared through the social media channels.

Ultimately, the researchers aim to develop a custom knowledge sharing social media that would facilitate user-generated content and cater to the particular communication methods practiced between the various roles in the community, which the researchers have observed through ethnographic methods. The envisioned product will utilize 1) Responsive Web Design to ensure a clean interface for mobile, tablet, and pc users, 2) a Mobile First philosophy, spearheaded by Luke Wroblewski, which advocates designing for small screen mobile devices first in order to push only the most important functionality

forward, 3) the mongoDB non-relational database system for high scalability, and 4) the Node.js server-side javascript language for highly asynchronous, event-driven data, and immediate, real-time updates delivered to users across the network.

Notable Players and Roles

Rarely do members of the LFS community play only one role. The community tends to be filled with passionate members who are willing to be both patrons and community informants. We are aware of several individuals who are producers, vendors, organizers, information disseminators, and patrons. It is individuals like these who comprise the core leaders of the community. Six roles have been listed with brief descriptions:

- Patrons - These members purchase and consume locally-grown food and provide monetary compensation to vendors and producers. They are somewhat equivalent to the end user of the LFS.
- Vendors - These members serve as intermediaries between producers and patrons. Sometimes will travel to pick up yields, other times will accept delivery from producers. Vendors sell local food to patrons at community markets, shared spaces, or their own storefronts. Some vendors sell raw yields while others, such as restaurants, sell prepared local food.
- Producers - These members research and practice agriculture techniques specific to North Texas and are responsible for growing, harvesting and delivering crops to vendors and patrons.
- Event Organizers - These members arrange community events around participation and/or education in the LFS community. Some events are recurring, such as the community market, farm to table dinners, and weekly potlucks.
- Community Informants - These members bring awareness within and around the community by disseminating LFS knowledge. Often times utilize social media as an outlet for reaching the community.
- Charitable Participants - These members donate some kind of service in support of the community. Typically this is in the form of volunteer labor, or free space for events or vendors. For example, one particular bar allows for a local producer to use their back patio as a vendor location every Thursday, and a Montessori school offers a similar service bimonthly for another local food coop.

Purpose of the Study

By utilizing online social networks, the Denton LFS community has the ability to create, share and distribute knowledge in a new and organized way. The purpose of this study is to understand the online environment, motivation for sharing knowledge, and technological needs for this community of practice.

Methodology

Research Questions

1. What community factors create a suitable environment for virtual knowledge sharing community development?
2. Which motivational factors are thought to influence the willingness or tendency of community members to share knowledge?
3. What are the technology requirements to fulfill an unobtrusive ICT design of a knowledge sharing social media for the Denton LFS?

Research Methodology

Our research is in part inspired by results of a pilot quantitative study, which suggested positive willingness on behalf of the LFS community to integrate social media into their infrastructure. A survey was submitted to the community yielding n=68 where all respondents are residents of Denton, TX between the ages of 18-50.

Ethnographic methods have been applied to gather data thus far. The researchers have conducted interviews with members of the community, observed the community, and participated in the community for a number of years. This practice has yielded important regarding member roles, knowledge types, and communication practices that will help to inform the design of an knowledge sharing social media that can best facilitate an unobtrusive transition into a digital communication system.

In the future, a concurrent mixed-methods approach will be applied to allow for researchers to integrate the information when interpreting the results (Creswell, 2009). Ethnographic techniques will allow observation, while the research process remains flexible to the realities encountered in the field to better understand the social and environmental elements of knowledge sharing using social media (LeCompte & Schensul, 1999). This investigation will produce a detailed description of how the existing LFS community operates the modes of community participation, as well as the information sharing needs of the community in order design and implement social media that will support community growth based on knowledge sharing in the LFS setting. Semi-structured interviews, web-based surveys, with open- and closed-questions, and analysis of the current online community documents and artifacts will be implemented to identify system requirements.

Technology Components and Organizational Concerns

Many highly influential producers and vendors of the LFS community are already using Facebook as a primary channel for marketing their product. This combined with the positive technology integration data collected in the pilot study leads us to believe that spending time online to support the community may not be a large obstacle for community members. Preliminary findings from ethnographic research such as interviews, observation, and participation, point to specific functionality requirements for this LFS to effectively share knowledge through social media. Though members have expressed comfort in using such popular sites as Twitter and Facebook, this LFS would benefit from additional functionality not typically associated with these sites, such as archiving and organizing knowledge by type for future retrieval in a highly accessible and unobtrusive manner. LFS knowledge can be divided into four specific categories:

- Agricultural Practices - Knowledge generated by and shared amongst producers. Currently stored in individual's memory and online in a location indifferent manner. Shared most commonly through word of mouth and other face to face modes of communication.
- Participation Methods - Knowledge that concerns ways existing members and new members can participate in the community. This may include a list of producers and vendors, volunteer opportunities, or common locations for food pick-ups. Currently stored in individual's memory a well as lightly around Facebook, Twitter, and Blogs.
- Spontaneous Event-based Knowledge - Knowledge concerning time relevant information, much like that which is commonly shared on Twitter. This could be events, sales, or how producers are dealing with inclement climates. Currently shared through word of mouth as well as heavily on Facebook and Twitter.
- Community Improvement - Knowledge concerning the state of the community, what is limiting the community, and what could be done to improve the community. This knowledge tends to be generated by the most active members and is commonly shared through face to face communication.

Knowledge will be uploaded by community members in video, photo and also in text formats. Knowledge uploaded will be categorized appropriately by knowledge type and organized accordingly for accessible retrieval. Most of the knowledge has an address and sometimes a date and time attached to them. These

pieces of knowledge will be added to a map and/or calendar. When considering LFS, geographic location tends to be an important factor patrons consider when deciding who to purchase food from.

Conclusion

Solutions and Recommendations

The Denton LFS features unique member roles as well as knowledge types. Communication patterns within the community are likely to be similar to those of other LFS communities. This LFS shows signs of being willing and ready to organize online. Due to lack of ability to cater to the particular member roles and knowledge types found in this LFS, current popular social networks will not suffice. A custom online application developed in accordance with the unique communication patterns found within this community is necessary to facilitate positive and unobtrusive community growth online.

We believe that a knowledge sharing social media will stimulate community growth and participation, thus increasing social practice amongst community members. Operating under Wenger's axiom of "Engaging in social practice is the fundamental process by which we learn and so become who we are," it follows that we believe a knowledge sharing social media will stimulate learning. Because we aim to design a knowledge sharing social media that is optimized for thoughtful archiving and accessible information retrieval, we believe this application will facilitate lifelong learning by providing a knowledge base the community can rely on and build on top of.

Additionally we suggest that an ethnographic study be conducted over the community of interest. This will aid in providing insight necessary to designing and implementing a social media that is unobtrusive. The social media should fit into the community as seamlessly as possible, and should organize information in a manner that is parallel to how the community already organizes information.

Based on our initial research, we see a need to move forward with the proposed mixed methods study. The opportunity for increased learning and community growth is strong. Members of the community tend to be very receptive to the idea of organizing online and themselves acknowledge the potential benefits. We believe a knowledge sharing social media is an appropriate design to begin facilitating increased informal learning within the LFS community of practice in Denton, Texas.

References

Ardichvili, A., Page, V. & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management*, 7(1), 66-77.

Argote, L. (1996). Organizational learning curves: persistence, transfer and turnover. *International Journal of Technology Management*, 11 (7-8): 759-769.

Brown, J.S. & Duguid, P. (1001). Organizational learning and communities: Towards a unified view of working, learning and innovation. *Organization Science*, 2, 40-57.

Castells, M. (2004). Afterward: Why networks matter. Network logic: Who govern an interconnected world? DEMOS, UK. Retrieved from http://www.demos.co.uk/files/File/networklogic17castells.pdf

Chiu, C., Hsu, M, & Wang, W.T.G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42, 1872-1888.

Creswell, J.W. (2009). Research design: *Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications, Inc.

Granovetter, M.S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6); 1360-1380.

Granovetter, M.S. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 1; 201-233.

Greenhow, C., Robelia, & Hughes, J.E. (2009). Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now? *Educational Researcher*, 38(4); 246-259.

History of Denton County. (2011). Retrieved December 1, 2012, from http://dentoncounty.com/history.asp

Jones, Q. (1997). Virtual-communities, virtual settlements & cyber-archeology: A theoretical outline? *Journal of Computer-Mediated Communications*, 3(3).

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

LeCompte, M.D. & Schensul, J.J. (1999). *Designing and conducting ethnographic research*. Walnut Creek, CA: AltaMira.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Beverly Hills, CA: Sage Publications, Inc.

Nahapiet, J. & Ghoshal, S. (1998). Social capital, intellectual capital and the organizational advantage. *Academy of Management Review*, 23(2), 242-266.

Patton, M. Q. (2001). Qualitative evaluation and research methods (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Prawat, R. S., & Floden, R. E. (1994). Philosophical perspectives on constructivist views of learning. *Educational Psychologist*, 29(1), 37-48.

Retna, K.S. & Ng, P.T. (2011). Communities of practice: Dynamics and success factors. *Leadership & Organization Development* Journal, 32(1), 41-59.

Wasko, M.M., Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly*, 29(1); 35-57.

Wenger, E. (1998). *Communities of Practice*. Cambridge, UK: Cambridge University Press.

Zhang, W. & Watts, S. (2008). Online communities as communities of practice: A case study. *Journal of Knowledge Management*, 12(4), 55-71.