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Carl Lawrence

Department of Information Processing Science, University of Oulu, Oulu, Finland, carl.lawrence@oulu.fi

Jungwon Kuem

Department of Information Processing Science, University of Oulu, Oulu, Finland, jungwon.kuem@oulu.fi

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Recommended Citation

Lawrence, Carl and Kuem, Jungwon, "Getting From "Know-What" To "Know-How" Via Online Communities: A Conversational Analysis Of An Openoffice.Org Language Project" (2012). *PACIS 2012 Proceedings*. 53.
<http://aisel.aisnet.org/pacis2012/53>

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GETTING FROM "KNOW-WHAT" TO "KNOW-HOW" VIA ONLINE COMMUNITIES: A CONVERSATIONAL ANALYSIS OF AN OPENOFFICE.ORG LANGUAGE PROJECT

Carl Lawrence, Department of Information Processing Science, University of Oulu, Oulu,
Finland, carl.lawrence@oulu.fi

Jungwon Kuem, Department of Information Processing Science, University of Oulu, Oulu,
Finland, jungwon.kuem@oulu.fi

Abstract

Information systems (IS) innovation researchers explain that in the early phases of IS innovation, organizations must acquire knowledge about, "what", "when", "why" and "how" to innovate with information technologies (IT). To acquire this knowledge, innovators with IT may access business and technology publications or the more costly option of consulting services. However, widespread use of online communities has created a more cost effective way of learning about IT innovations and is now being used by organizations. Using online communities, organizations can circumvent logistical constraints to take advantage of networks of human capital. In this study we analysed collaborations in the online community OpenOffice.org. The study showed that successful knowledge sharing in online communities where interaction is temporal and focused requires context specific knowledge gaps. The analysis revealed patterns in the communication that exposed a taken-for-granted knowledge sharing mechanism we conceptualise as "gap-filling". Within this mechanism "what I know" and "what I don't know" statements provided a mechanism for identify context based knowledge gaps that enable participants to go from "know-what" to "know-how".

Key words: knowledge sharing, conversational analysis, online communities, ethnomethodology

1 INTRODUCTION

Information systems (IS) innovation researchers explain that in the early phases of IS innovation, organizations must acquire knowledge about, “what”, “when”, “why” and “how” to innovate with information technologies (IT) (Swanson, 2010; Swanson & Ramiller, 1997, 2004; Wang & Ramiller, 2009). To acquire this knowledge innovators with IT may access business and technology publications, such as technology whitepapers and case studies, or the more cost prohibitive option, consulting services. However, widespread use of online communities (Mason, Mckenney, & Copeland, 1997) has created a more cost effective way of acquiring knowledge about how to innovate with IT, and is now being used by organizations (Denning & Yahlkovsky, 2008; Satish Nambisan, 2003; Zhang & Watts, 2008). Using online communities organizations can go from “know-what” to “know-how” cost effectively, by circumventing logistical constraints to take advantage of networks of human capital (Ganley & Lampe, 2009).

The ability to collaborate across organizational boundaries is a key competency for organizations innovating with IT (Levina & Vaast, 2005). Technologies, such as the Internet, increase the accessibility of boundary crossing ten fold. Previous research investigating online communities shows their ability to facilitate collaboration for innovative activities such as knowledge sharing and learning (e.g., Fuller, Muhlbacher, Matzler, & Jawecki, 2009; e.g., Malhotra, Majchrzak, Carman, & Lott, 2001; e.g., McLure Wasko & Faraj, 2000; Vlaar, Van Fenema, & Tiwari, 2008). The need for more direct interaction between organizations and the IT community is driven by the growing complexity of our multicontextual world. Organizations that look to new IT innovations to improve their organizational productivity must not only select the appropriate technologies but they must also understand how it can be tailored and implemented to fit their unique organizational context (Avgerou, 2001b). Ignoring this step is cited as a major cause of IS innovation failure (Joshi, Barrett, Walsham, & Cappleman, 2007; McCoy, Galletta, & King, 2007; Myers & Tan, 2003). Organizations with limited resources however, may find the investment into learning about and tailoring IT innovations for their organizations cost prohibitive.

The increased complexity of IT innovations threatens to increase knowledge gaps on a global scale both for individuals and organizations. If online communities are to facilitate greater knowledge sharing they need to be effective and efficient in order to maintain the cost advantage for organizations. This has prompted further investigation by IS researchers into the factors that enable effective knowledge sharing in online communities (Haider & Mariotti, 2010). Online communities give organizations with limited resources an opportunity to collaborate with experts enabling them to tailor and implement IT innovations in their organization. Essentially allowing them to go from “know-what” to “know-how” cost effectively. Thus our research question is *how do innovators with IT collaborate via online communities, enabling them to get from know-what to know-how effectively?* With this knowledge we can better inform organizations and online community facilitators how to use this medium effectively.

Purpose base collaboration in online communities provides a unique context for research. Resent research provides important direction for our study. Man and Agarwal (2007) saw the need to investigate how progressive interaction between participants developed shared social norms that can inform us about the interaction mechanisms that enable collaboration. Man and Agarwal (2007) also suggested the use of an interactionist perspective in future studies. Investigating such a phenomenon however is challenging for existing methods that have been retrofitted to support the study of online collaboration. The ethnomethodology approach of conversational analysis is designed to investigate temporal and focused interaction through talk. Ethnomethodologists believe that interaction is a unique area of study that can be investigated independently (Heritage & Clayman, 2010b). In the context of interaction in online communities, participants are engaged in interaction temporally to satisfy a particular objective, such as acquiring specific knowledge about IT. In this study we use conversational analysis to investigate collaboration for innovation in the online community Openoffice.org.

Our analysis reveals an important mechanism that facilitates knowledge sharing between participants. The conversational patterns uncovered exposed the knowledge sharing mechanism “gap-filling”. Within this mechanism “what I know” and “what I don’t know” statements provided an effective mechanism for filling gaps in knowledge that is appropriate to the context. From this knowledge we propose that successful knowledge sharing in online communities where interaction is temporal and focused requires an explicit knowledge gap that is created when “what I know” and “what I don’t know” is expressed clearly. The research report proceeds with a review of the literature on knowledge sharing in online communities. This is followed by a description of the research approach and analysis method. Our findings are revealed and subsequently discussed in the context of extant literature.

2 KNOWLEDGE SHARING IN ONLINE COMMUNITIES

Nambisan (2003) asserted that IT has an untapped potential for facilitating efficient collaboration. Online communities open up many opportunities for innovators, primarily to facilitate knowledge sharing that leads to knowledge creation and learning. For innovators with IT, knowledge sharing that facilitates learning, is essential in all phases of the IS innovation process, which includes the phases comprehension, adoption, implementation and assimilation (Swanson & Ramiller, 2004). Thus the use of online communities for IS innovation focuses on acquiring knowledge about, when, why, what and how to innovate with IT.

According to Wang and Ramiller (2009) know-what in the study of IS innovation refers to “interpretations of the principles, features, or components of the innovation” while know-how refers to the “strategies/capabilities for adopting, implementing, or assimilating the innovation”. While making the decision to adopt an IT innovation requires know-what that is typically acquired through explicit knowledge, the task of properly tailoring and implementing the innovation in the organization requires know-how and more tacit knowledge. Furthermore, because of the complexity of our global society, this knowledge needs to be understood within the context of use for organizations in order to extract the greatest benefits (Lindgren, Andersson, & Henfridsson, 2008; Ramiller & Swanson, 2003; Swanson, 2010; Swanson & Ramiller, 1997, 2004; Wang & Ramiller, 2009).

As we said previously, due to innovations such as the Internet, online communities are flourishing and individuals and organizations are continuously finding new uses for this technology. Motivated by low communication costs and increased flexibility, online communities are growing rapidly even outside popular informal social networks (Denning and Yeholkovsky, 2008). Inter-organizational knowledge sharing is vital to innovation and is said to require specific knowledge sharing practices and mechanisms. Knowledge sharing mechanisms are formal and informal methods for sharing knowledge embedded in individuals and groups (Boh, 2006). It is proposed that distinct organizational settings require unique knowledge sharing mechanisms (Ding & Peters, 2000). Knowledge sharing mechanisms are perceived as either individual or institutional. Individual mechanisms are seen as informal and unstructured, while institutional mechanisms are formal and structured (Boh, 2006).

The context of interaction where knowledge is shared is thus important for improving this process. Brachos et al. (2007) studied the role context plays in knowledge sharing, revealing contextual factors that influence its success. Interacting in different contexts defined by technology, group or environment thus presents opportunities for research (Ciborra & Andreu, 2001). Jeon et al. (2011) used behavioural social theory to find both internal and external motivational factors for knowledge sharing, where internal factors proved more telling. Interestingly, there was also a relationship between the formal and informal knowledge sharing mechanisms and motivations. McLure et al (2000) investigated why people participate in electronic communities of practice and share knowledge. The research proposes that people participate because they want to be part of a community and see opportunities for knowledge acquisition not just information. Jarvenpaa and Majchrzak (2010) explored how users of online wikis deal with trust and how trust influences contributors willingness to post and accept information posted.

Other studies try to assess the best or most practical knowledge sharing mechanisms for distributed work. Studies show that different knowledge sharing mechanisms are better suited for distributed work and specifically for transfer of knowledge and sensemaking (Chai, Gregory, & Shi, 2003). Majchrzak et al (2005) study found that improving knowledge of how to work in virtual environments would help contextualization that creates communication know-how that impacts sensemaking and knowledge sharing among distributed teams. One study that saw the necessity of micro-level analysis was Haider and Mariotti (2010). They use retrospective procedural analysis to study previously enacted procedures for knowledge sharing. The value of these forms of close-analysis provides specific practices that inform us about effective collaboration.

Research on knowledge sharing in online communities promotes the development of mechanisms and seeks to identify positive and negative social behaviour that encourages or constrains it (Lin, Hung, & Chen, 2009). The previous research shows the depending on the context of the collaboration different knowledge-sharing mechanisms are enacted to achieve learning. These mechanisms may appear to be mundane but are functional elements of the larger phenomenon of knowledge sharing and learning. Essentially these micro functions ensure macro successes.

3 RESEARCH APPROACH

Ethnomethodological methods have helped sociologist uncover taken-for-granted social norms and practices that are used in social interaction (See, Garfinkel, 1967, p 35). An offshoot of this approach used to investigate the specific context of talk-in-interaction is conversational analysis (Harvey & Myers, 1995). Created by Harvey Sacks, through a synthesis of both Goffman and Garfinkel work, conversational analysis provides us with a method particularly suited to the contextual nature and goals of this study. In this study we are interested in interaction through discourse, one that is facilitated through text-based interaction. Known as computer-mediated communication (CMC), interaction in online communities is a new domain of research in IS. In formal environments, online collaboration is transacted generally through text-based interfaces and is defined by focused conversations. This interaction is considered institutional talk by conversational analysts –focus interaction enacted to achieve institutional objectives (Heritage & Clayman, 2010b). Conversational analysis was chosen because it gives us the ability to study and expose shared methods of interaction that can be deemed as successful of effective. Conversational analysis has previously been successfully used in IS and human computer interaction (HCI) studies (Bowers, Pycock, & O'Brien, 1996; Condon & Cech, 2001; Ross & Chiasson, 2005; Tang, 2007).

The use of conversational analysis to study CMC is relatively new. It now falls under the domain of computer-mediated discourse analysis (CMDA). There are three important assumptions that correlate with long standing linguistic discourse analysis methods, which includes conversational analysis. First, CMDA assumes that all discourse exhibits recurrent patterns. Forming the basic goal of the approach, researchers using this method attempt to identify patterns in discourse that are “demonstrably present”, while potentially oblivious to the casual observer. Second, CMDA assumes that the speaker has agency in the discourse. She or he chooses what to say and when to say it. However, this is mediated by linguistic considerations and social factors. Finally CMDA assumes that CMC can be shaped by the technological features inherent in CMC systems (Herring, 2004, pg. 342).

3.1 Data Collection

Conversational analysis demands naturally occurring interaction for data. Prior to the information age, data for conversational analysis consisted of recorded conversations whether by phone or in person. This data was then specifically transcribed using specific guidelines to capture all talk. Online technologies give us the ability to access interactions that previously occurred and have been archived in their original form. These are complete representations of conversations, thus they are presented in their original state.

The setting for our research is the online community, openoffice.org. A description of the particular conversational instances that were recorded is presented in the next section. Data was selected using temporal sampling. Temporal sampling in CMDA provides a rich context and a coherent dataset (Herring, 2004, pg. 350). A temporal chunk of the total threads were selected, exactly 363, for coding and analysis. Given the closeness of the analysis method it was sufficient to identify patterns related to knowledge sharing. Interactions in online communities are depicted by exchanges through threads, which are sequential. The emphasis is on interactivity, specifically “interaction as a jointly negotiated accomplishment” (Herring, 2004, pg. 351). Further details on the analysis method are described in our analysis section. The following is a description of the OpenOffice.org online community.

3.2 Openoffice.org Language Projects

The software package Openoffice.org is an opensource productivity suite that is available in multiple languages and compatible with common computing platforms. It is free of charge and its use has grown significantly since its introduction twenty years ago¹. To support the inclusion of the wide range of languages in use in our world, Openoffice.org created the OpenOffice.org localization project or I10n project. The I10n project provides tools and process workflows for both localization (I10n) and internationalization (I10n) to facilitate collaborative work on native-language inclusion in OpenOffice.org releases. The projects are facilitated through the I10n.openoffice.org website that brings together native-language teams along with OpenOffice.org experts to localize OpenOffice.org releases through translation and coding². While the OpenOffice.org community is much bigger and involves traditional community issues, this study focuses on these interactions as they are more focused and goal oriented.

Participation and execution of the language projects are done exclusively online. Once a local group has decided to localize OpenOffice.org in their language they must first register and initiate their project. This includes identifying team roles, such as team leader. Once the team is setup and the language project is approved, members of the team collaborate through mailing lists. For I10n.openoffice.org the dev-subscribe@I10n.openoffice.org mailing list is used³. This mailing list is thus the primary collaborative medium. The focus is on collaboration between individuals on the OpenOffice.org and local teams. It was assessed that the primary product of these interactions is knowledge sharing and learning.

There are four main tools used in the localization project, Pootie server, TCM, Gsichck and SunGloss. The Pootie server is a web-based translation tool that local language teams must use to translate their language. The TCM is a testing tool used to test the translated version of OpenOffice.org. The Gsichck verifies gsi and sdf translation files and the SunGloss is a terminology management tool. New local teams must learn how to access and use these tools in order to achieve success. Much of the discussion cited in this study mentions these tools. There are thus two main teams, a local language team and an OpenOffice.org team. All the discussions between the teams are facilitated though the previously mentioned mailing list except for IRC meetings that are facilitated through a chatroom interface.

3.3 Conversational Analysis

Conversational analysis is a widely used method in disciplines ranging from sociology to psychology. It is useful for analysing phenomena that includes; turn taking, sequencing and topic development procedures (Herring, 2004; Sacks, Schegloff, & Jefferson, 1974). This study requires “close analysis” and conversational analysis is employed as a qualitative method for analysing and interpreting our findings (Fairhurst & Cooren, 2004; Heritage & Clayman, 2010a). The aim is to find recurring patterns of interaction in conversations (Heritage & Clayman, 2010a). These conversational patterns in our study illustrate taken-for-granted knowledge sharing mechanisms between interacting

¹ <http://why.openoffice.org/>

² <http://I10n.openoffice.org/>

³ <http://I10n.openoffice.org/mailling-lists.html>

participants. This interaction mode of analysis focuses on patterns of communication and not meanings of words, which would have required the use of semantic or pragmatic methods such as content analysis.

The data contains in-depth threads, which exhibit reciprocity –the exchange of knowledge for mutual benefit. The participants form a core group dedicated to accomplishing a specific goal –the localization of Openoffice. The analysis was conducted in three steps. First we organized the threads by temporal sequences. Second, each turn was coded within the threads using selective coding. Finally, sequences were identified based on recurring coded turns. Once a sequence was identified it was checked for recurrence throughout the dataset. Turns in the dataset represented each posting. The designs of the turns are important to understanding the sequences, thus we first present the turn patterns followed by our sequences.

4 FINDINGS

4.1 Turn Patterns

The designs of turns, or postings, give us insights into the taken-for-granted mechanisms that together enable effective knowledge sharing. In this unique interaction setting where the participants only know each other by name, taken-for-granted mechanisms are used to carry out knowledge sharing without any explicit formal agreement on how to share knowledge. Social norms take over and these are negotiated in the conversation. Our findings reveal two patterns in our turns related to knowledge sharing. We refer to these patterns as “What I know” and “What I don’t know”.

Resources available from openoffice.com are valuable and limited, thus participants provide as much detail as possible in their postings. “What I know” and “what I don’t know” are important elements in the conversation that focuses the conversation and limits further questioning. Let’s review an example. The “what I know” pattern was used to create the initial context for the rest of the posting. It determined or created focus for the conversation. The example below shows both patterns in a single posting.

Posting

Date: Sun, 19 Apr 2009 21:23:05 +0200
From: [name removed]
Subject: Oromo language (was: [l10n-dev] [Fwd: [discuss] Proposal])

Hi [name removed], On Friday, 2009-04-10 00:42:10 -0700,

[name removed] wrote: > Thanks for your support. When I fill the data I have to fill following. > '''Code''' > | '''MS Locale ID''' > | '''MS Locale ID (hex)''' > '''Environment Variable''' > | '''N-L''' > But I don't have the data to fill these values. Would you mind helping me on these. I mean How can I get these values?

[name removed]

Response

MS didn't define LCID values for Oromo, just omit them. I'll assign IDs with the issue in work.

In this posting the author indicates, “What I know” by telling the recipient that they have performed an action in a particular way. The author then indicates, “What I don’t know” by stating exactly what is missing in their knowledge to complete the task. It is followed by an even more explicit reference to “what I don’t know”. As we can see from the response, the knowledge gap is directly addressed, as

the knowledge being requested is presented in the context of “what I know” and “what I don’t know”. In our analysis when “what I know” was not part of the message design the response was either further questioning about the knowledge request or it was a response that did not provide the knowledge requested. This in conversational analysis is called a repair. “What I know” and “what I don’t know” was a recurring pattern that is constructed in the conversations. When the receiver of the message does not see this pattern they try to repair the conversation by attempting to recreate the reoccurring pattern.

These reoccurring patterns indicate simple but important taken-for-granted assumption for knowledge sharing. While mass publications of instructional documents often accompany IT innovations they are generic and try to provide the most general information on what they think innovators need to know so it can be used across diverse contexts. Because IT innovations are so complex and context of its use is so diverse, providing “what I don’t know” by confirming “what I know” is essential for effective knowledge sharing. This thus provides a context for knowledge sharing and reveals a gap. Generalized documentation provides more often than not, knowledge you already know.

4.2 Gap Filling Sequences

Through identifying sequences we can understand why did this turn or posting follow the previous one. To understand the flow of the conversation we need to know how the turns stitch together. In the data set several threads were found that in CMC represent extended sequences. A sequence can comprise of just two turns –a posting and a response. Many such sequences were found but we only discuss those related to our topic of knowledge sharing. Sequences are the desired product of conversational analysis. In institutional talk sequences provide the mechanisms by which meaning is constructed. The reoccurring sequence of interest in our study is “**gap filling**”. The postings in this sequence are comprised of the turn design elements previously described. Bellow is an example of the gap filling sequence.

Date: Tue, 17 Nov 2009 05:50:05 -0800 (PST)
From: [name removed]
Subject: Why Installation wizard & strings under contents tab of help still in English?

Hi all, We have already translated almost all of the UI and help part. But the localized build of openoffice.org for our language - Oromo(Macredie & Sandom) has untranslated parts. For example on Help the strings under contents tab are still English, on UI the installation wizard is still fully in English. How can we get those strings in our language?

Thanks

Next in Thread

Date: Tue, 17 Nov 2009 14:58:26 +0100
From: [name removed]
Subject: [l10n-dev] Why Installation wizard & strings under contents tab of help still in English?

Hello, as far as I know, parts of installation wizard strings are in the po files, and part of them is taken from the installer software repositories - NSIS is used so that piece of software must be localized as well. When you localize it do not forget to ask to include those new/updated files in the build process. As far as help is concerned, do you mean index entries (keywords) or titles of Help topics? Do you have a screenshot?

[name removed]

Next in Thread

Date: Tue, 17 Nov 2009 17:08:59 +0100
From: [name removed]
Subject: [l10n-dev] Why Installation wizard & strings under contents tab of help still in English?

Hi, regarding the installer, we have the problem that the microsoft installer only supports a small set of languages. A instset with "om" string locale simply would not start up thus we are forced to build for some languages a installer with en-US strings. The strings in the whole help are shown en-US or only the part there in the content tab? I will have a look onto this.

Cheers,
[name removed]

In this sequence, the turn patterns “what I know” and “what I don’t know” are exhibited. In the first posting the author has indicated that the Oromo team has “*already translated almost all of the UI and help*”. The next sentence exhibits further information pertaining to “what I know” providing the initial context of the knowledge gap. The next sentence further provides “what I know”, “*for example on help the strings under contents tab are still English*”. Finally there is “what I don’t know”, “*how can we get those strings in our language?*” In this first posting the two patterns create knowledge gap created by expressing “what I know” and “what I don’t know”.

The next posting or turn in the thread begins with a qualifier “*as far as I know*” and provides “what I know” based on their understanding of the previous posting. The next few sentences draw directly from experience and seek to fill the gap in knowledge. However, only part of the gap is filled and the sequence continues. In the next thread another actor chimes in with “what I know” to fill the gap. The posting start with a reference “regarding the installer” that specifically addresses the knowledge gap and presents more “what I know”. In this particular thread further work still needs to be done to solve the problem but the gap in knowledge is satisfied.

A second example of the gap filling sequence identified is related more to context. The main difference between this sequence and the previous is the response. It was observed that even though the initial turn may be similar in structure the response was difference as it provided knowledge not to fill the gap directly but to provide a path to the knowledge. Lets look at this sequence through the example bellow. This sequence fills out knowledge by putting it into context like creating a map.

Date: Sun, 29 Nov 2009 04:05:16 -0800 (PST)
From: [name removed]
Subject: Need to incorporate thesaurus and spell checker into installset for Openoffice.org

Hi All,

The Oromo language version Openoffice.org3.2 will be released according to OpenOffice.org 3.2 release schedule. We have already prepared the Thesaurus and Spellchecker for this language. How can we include it in the installset so that users will not bother to add those extensions separately?

Thanks in advance,
Oromo Language Translation Team

Next in Thread

From: [name removed]- Sun Germany - ham02 - Hamburg
[name removed]
Subject: [lingu-dev] Need to incorporate thesaurus and spell checker

into installset

Hi [name removed],

[name removed] wrote: > Hi All, > > The Oromo language version Openoffice.org3.2 will be released according to OpenOffice.org 3.2 release schedule. We have already prepared the Thesaurus and Spellchecker for this language. How can we include it in the installset so that users will not bother to add those extensions separately? >

Just file an issue, attach the working extension, and then assign the issue to me. I will take care of the rest. The extension will then be a part of the installation set IF a Oromo language version of OOo will be build. But I understood that is exactly what you are going to do...

Regards,
[name removed]

The turn begins with a similar turn design, “What I know” and “What I don’t know”, providing the context. “What I know” is shown in the first two sentences. It is then followed by a statement that specifically states “What I don’t know” – “*how can we include it in the install set so that users will not bother to add those extensions separately?*” The response provides a diversion from what was observed in the other sequence. It starts by specifically reference the previous posting. This could be user preference in the use of the CMC tool but from the analysis this is believe to be a choice in where emphasis is placed on what is the posters understanding of what is known. The response starts immediately, not with what is known but it is followed by instruction and direction – “*Just file an issue, attach the work extension, and then assign the issue to me*”. This response is not to fill the gap directly but to indicate a path to solving the problem. For this situation you “*file an issue*” and someone will take care of the rest. This type of sequence is not commonly extended. The solution is often accepted and the path to the next point is simply registered.

The knowledge sequence “gap filling” enables knowledge sharing in temporal and focused interaction in online communities by providing knowledge in context. The context is simply created by providing “what I know” and “what I don’t know”. The result of this process is not just shared knowledge but learning. Knowledge in context provides the opportunity for its use in similar contexts. The statement below shows a message from one of the successful projects. The participants through knowledge sharing using these mechanisms where able learn and are now able to apply this knowledge in a similar context.

“Thanks a lot for your response. What we want is that we need to have openoffice.org released in these languages. Our team is well prepared and already acquired good experience during the localization of openoffice.org to Oromo language. In addition, our team has also agreed to localize openoffice.org to Somali language of Ethiopia. So we want the next version of openoffice.org to be released in these three additional languages (Afar, Sidama and Somali). Hence, we are ready to pass through whatever level is needed to achieve this”

4.3 Getting from “know-what” to “know-how”

We found two turn patterns that we described as “what I know” and “what I don’t know”. The turn patterns were used to reveal a specific knowledge gap. The knowledge gap exposed was filled through our sequence “gap filling”. The analysis showed what when “what I know” and “what I don’t know” where clearly expressed knowledge sharing was more effective. This sequence is conceptualized as a

knowledge sharing mechanism by the same name. In each progressive turn knowledge is not only shared but it is also confirmed. When knowledge is presented in the context of “what I know” and “what I don’t know” learning can also occur. The knowledge seeker acquires appropriate and precise knowledge that contributes to their know-how that is specific to their task. The knowledge provider also learns about different context based perspectives on the IT innovation. Both are now able to be more effective collaborators. The study of this online community setting shows that effective knowledge sharing can occur and be effective. Reflecting on face-to-face⁴ vs. CMC we can see that the expression of “what I know” and “what I don’t know” could be seen as more effective because of the ability to review saved information. That means information about the knowledge gap is readily available.

The gap filling mechanism is able to take the innovators from “know-what”, their existing knowledge about openoffice language localization to “know-how” the ability to localized openoffice through collaboration. This knowledge allows for the replication of the process as seen in our example. The knowledge sharing mechanism gap-filling enables innovators with IT to acquire knowledge about how to innovate with IT. Though this mechanism knowledge previously acquired about openoffice was enhanced and put into the context of use that was specific of that organization. The openoffice suite will thus be more effective in improving productivity in the organization.

5 DISCUSSION

In this study the question *how do innovators with IT collaborate via online communities, enabling them to get from know-what to know-how effectively?* is answered through a conversational analysis of collaborative discourse using a sample from the openoffice.org online community. The analysis revealed turn patterns and a sequence that exposed the knowledge sharing mechanism “gap-filling”. Within this mechanism “what I know” and “what I don’t know” statements provided an efficient mechanism for identify context specific knowledge gaps allowing for appropriate responses. From this knowledge we propose that successful knowledge sharing in online communities where interaction is temporal and focused requires an explicit knowledge gap created when “what I know” and “what I don’t know” is expressed clearly. When these two patterns are exhibited in conversations the knowledge gap can be filled with relevant and precise knowledge. To improve knowledge sharing in the context of temporal and focused online interaction we need to improve the ability for participants to express “what I know” and “what I don’t know”.

In relation to other studies, this study’s contribution helps to provide the micro-level roots of effective knowledge sharing. It supports research that emphasizes context specific knowledge. According to previous studies, knowledge is historically constructed and socio-culturally shaped by our engagement in activities at work and in society (Avgerou, 2001a). Using an interactionist approach, differences between the use of informal and formal knowledge sharing mechanisms in online communities would provide an indication of their effectiveness. This supports studies that promote the use of mechanism to enhance knowledge sharing (Jeon et al., 2011). In an organization, individual knowledge is a primary source of innovation. Our study shows that this is achieved in interaction (Ding & Peters, 2000) and that the mechanisms at the interaction level are structured the methodological.

The mechanisms can also provide help understanding social issue in knowledge sharing (Jarvenpaa & Majchrzak, 2010) . By applying these mechanisms to other conversations geared at knowledge sharing we can identify deviations that could indicate other social phenomenon. The mechanisms can also be used to support the design of knowledge sharing features in online communities. Based on the knowledge sharing mechanisms exposed in our study, features can be designed to improve the representation of “what I know” and “what I don’t know”. For example features of online communities could support greater contextualization in messages by linking exiting knowledge automatically with specific information presented.

⁴ This is assuming that other tools such as presentation slides are not being used.

For IS researchers the implications of studying phenomenon at the interaction only provides support for exiting findings at the macro-institutional levels. Institutional researchers already recognize the important of micro-institutional level phenomenon and taken-for-granted assumptions are important findings for qualitative researchers. The advent of online communities present challenges to traditional qualitative methods and new methods are need to study temporal and focused interactions that are virtual.

In Haider and Mariotti's (2010) study they also saw that organizations cross organizational boundaries to fill gaps in their knowledge and support the need for this type of research. Dialogue can be facilitated to increase the potential for knowledge creation (S. Nambisan, Agarwal, & Tanniru, 1999). For many organizations and individuals, getting expert advice or consulting is restricted due resources and even location constraints. Online communities provide an opportunity for innovators with IT to access knowledge cost effectively. However, this interaction has to be productive and efficient in order to be useful. This study is thus valuable for providing the understanding that could improve the effectiveness of knowledge sharing in online communities. As IT innovations become progressively complex the knowledge gap will widen and technologies like online communities need to provide effective communication across time and space to close this gap.

6 CONCLUSION

This study set out to understand how innovators with IT get from "know-what" to "know-how" using online communities. The study investigated the existence of mechanisms in temporal and focused collaborations that facilitate knowledge sharing in online communities. The analysis revealed turn patterns and sequences that exposed the knowledge sharing mechanism "gap-filling". Within this mechanism "what I know" and "what I don't know" statements provided context specific knowledge gaps. These specific knowledge gaps can then be easily filled by knowledge providers. From this research we propose that successful knowledge sharing in online communities where interaction is temporal and focused requires an explicit knowledge gap created when "what I know" and "what I don't know" is expressed clearly.

The product of the research informs research on innovating with IT, specifically how to effectively gain innovation know-how. The conversational analysis of the online community openoffice.org provided specific findings that contribute new knowledge to the areas of knowledge sharing and online communities. However our selection of method and the study's context inevitably presents some limitations. Similar to other qualitative studies the generalizability is from population to theory (Lee & Baskerville, 2003), meaning it is encouraged that the knowledge sharing mechanisms identified and refined in other interactions contexts with a similar knowledge sharing purposes to improve its generalizability. The selection of a single online community was deemed sufficient because it involved participants from diverse backgrounds. Also due to the closeness of the analysis method large quantities of data are discouraged.

Interaction in online communities provides a unique and necessary context for further study. It requires creativity and novel research methods and approaches. While ethnomethodology has been frequently used in HCI research (Crabtree, 2004), its use in IS has been limited. Future research should explore other methods in the ethnomethodology approach, such as breeching experiments, and other creative methods for understanding online phenomenon. Such research should look at knowledge roles and identities that are important in boundary spanning in practice (Levina & Vaast, 2005), Future research could use the ethnomethodological approach to identify how these roles are created and identified in focused and temporal interaction. Additional changes in technology will influence the effectiveness of knowledge sharing mechanisms, thus future research needs to understand how changes in technology features disrupt or enhance effective knowledge sharing mechanisms.

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