

A Proposed Model for Authenticating Knowledge Transfer in Online Discussion Forums

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Received: April 10, 2014

Accepted: April 25, 2014

Online Published: April 29, 2014

doi:10.5430/ijhe.v3n2p106

URL: <http://dx.doi.org/10.5430/ijhe.v3n2p106>

Abstract

Discussion forums are often utilized in the online classroom to build a sense of community, encourage collaboration and exchange, and measure time on task. A review of the literature revealed that there is little research that examines the role of the online discussion forum as a mechanism for knowledge transfer. Researchers reviewed 21 course sections of a graduate organizational behavior course in an effort to determine if knowledge transfer occurred in the discussion forums. Student and faculty responses in the discussion forum were analyzed using NVivo10. The authors conclude that there is evidence to support authentic knowledge transfer in the online discussion forums on a student-to-student basis but not from faculty to student. This paper discusses the results of the study and proposes a model to evaluate and authenticate discussion question prompts as knowledge transfer agents. The proposed model provides a mechanism which focuses on the enablers of trust/reputation, creativity/innovation, expression of existing knowledge, real world application, and knowledge stewardship in the discussion forums in an effort to promote knowledge transfer. This model may be beneficial to instructional designers, subject matter experts and faculty when designing and delivering online discussion assignments.

Keywords: Knowledge transfer, Discussion forum, Online education, Distance learning, Higher education, Online learning

1. Introduction

The flexibility of online college programs often appeals to non-traditional students such as working adults or non-degree seeking students (Harmon & Lambrinos, 2007), but does the online instruction format, specifically discussion forums provide a vehicle for authentic transfer of knowledge among students? The question of quality and comparability of online education as compared to its traditional counterpart is a topic that has been well researched. A recent study suggests that 66% of academic leaders rate the learning outcomes of online courses the same as or superior than face-to-face courses (Allen & Seaman, 2010). In addition, student satisfaction and learning effectiveness have not varied much between different modalities of learning such as online, blended or face-to-face (Picciano, 2006; Prendergast, 2004; Dave, 2010). These results would indicate that online learning has become an effective educational medium for non-traditional students seeking higher education.

The discussion forum serves as a backbone for the online learning class in terms of providing a method of fostering faculty-to-student and student-to-student connections. The structure of the online classroom is designed to facilitate collaborative learning opportunities for students (Fisher & Baird, 2005). Online learning environments may provide advantages over face to face classrooms by promoting collaboration and problem solving which may aid in the student learning process (Clark, 2001). Studies demonstrating the performance of students in the online classroom have indicated that online courses are useful in transferring the application of classroom knowledge to real-world projects (Hansen, 2008). Additionally, research has shown that there is no significant differences between work submitted by online students and their face to face counterparts (Dell, Low, & Wilker, 2010; Bernard et al, 2004; Herman & Banister, 2007). However, it remains to be determined if the online classroom, specifically the discussion forum, provides an effective means of transferring knowledge among student.

2. Background

Discussion forums provide the main mechanism for significant time on task measures that drive student class/connection time metrics. Therefore, it is important to understand the impact of this mechanism on successful student learning outcomes. At present, there is little research that examines the role of the online discussion forum in knowledge transfer, which is considered an accepted learning outcome (Chrite, 1998). The authors take the position that authentic knowledge transfer may be possible in online discussion forums, but currently there is little empirical evidence to support this assertion.

One goal of higher education is to ensure that students are able to apply the knowledge they learn in the classroom to the work place. President Barrack Obama's administration has challenged higher education institutions to establish standards and assessments that prepare students for success in the workplace (U.S. Department of Education, 2011). Higher education institutions focus efforts on developing assessments and tasks which evaluate the knowledge of students. However, there is little evidence that suggests that experiential story telling in an online classroom aids in transferring useful knowledge beyond the confines of the classroom.

Hansen (2008) found that online courses may be better at transferring knowledge than traditional course delivery. However, this research indicates that there may be a number of factors that impact this ability to transfer knowledge. One factor is the subject taught. The technical subjects provided a better ability to apply new knowledge to external settings than non-technical subjects. Additionally, students found that there was a greater satisfaction with the online process when different tools were available, such as online chat rooms for student-to-student engagement. Finally, although there may be an increased volume and quality of communication between instructor and student, students express dissatisfaction in the lack of various communication access channels. Hansen's (2008) research confirms that students were able to translate the information presented in the course and create learning artifacts that represent projects found in the real world better than traditional classrooms, suggesting that the online classroom offers a better mechanism for the transfer of knowledge. However, this study failed to address the influence of the online discussion board in this transfer of knowledge. Knowledge transfer quality was judged solely on the basis of scores received on practical coursework and did not address the mechanism through which this learning occurred.

3. Theoretical Perspectives

The learning theories applied to this research include social and collaborative approaches, as well as knowledge transfer theories. Kolb and Fry (1975) posit through their experiential learning theory that there is a cyclical relationship between experience and the application of new knowledge. This cycle suggests an ability to create new knowledge through the observation, reflection, conceptualization, and application of knowledge gained as a result of these experiences. Bandura (1977) suggests in his social learning theory that individuals, through observational learning, may model these learned behaviors, thus applying this new knowledge within their own contexts. Finally, Lave and Wenger (1991) suggest in situated learning theory that learning occurs through the observation and subsequent application of experiences with the support of more capable peers. These group learning activities resemble communities of practice, where individuals of varying degrees of experience come to share and learn from one another.

Knowledge transfer is one practical application of knowledge management theory. Nonaka and Takeuchi (1995) postulate that knowledge passes through stages as it transfers from one individual to another. These stages are referred to as the SECI model (socialization, externalization, combination, and internalization) and help explain how knowledge moves from tacit to explicit among individuals. Polanyi (1966) defined tacit knowledge as that knowledge that is embedded within, is difficult to articulate but is that instinctive knowing that we possess. Tacit knowing is often thought of as "*we can know more than we can tell*" (Polanyi, 1966, p.4).

4. Literature Review

4.1 Knowledge and Learning

Knowledge and information are two distinctly different things. Information is generally thought of as a stand-alone, independent, self-contained entity, while knowledge is commonly associated with a person or people. Knowledge is information with context, often used to solve problems, and lives within the individual. It is "broader, deeper, and richer than information or data" and "derives from minds at work" (Davenport & Prusak, 2000, p. 5). Knowledge is assimilated and digested rather than being held, and is not easily given to someone else as is self-contained information (Brown & Dugid, 2002).

Learning is not the same as knowledge transfer, but they are related. Learning affects and is affected by the knowledge transfer process (Kiehl, 2004). Learning is acquiring knowledge or skills by instruction and study (Bos & Vaughn, 1998) and is a "remarkably social process" (Brown & Dugid, 2002, p.137). Knowledge transfer implies that

students learn from the experiences of others (Kolb, 1984; Lave & Wenger, 1991). Creating and transferring knowledge is a core principle of higher education, but measuring this relationship can be challenging. Students are bombarded with information while in college, but according to Leonard and Swap (2005) “Information does not become knowledge until it connects with something we already know” (p.33).

There are two fundamental approaches to the management of knowledge. Tacit knowledge focuses on the type of knowledge people already have but cannot articulate, such as intuition, where explicit knowledge is easier to document such as an instruction manual or a database (Sanchez, 2001). Tacit knowledge, in comparison to explicit knowledge, can be difficult to transfer to another person. Michael Polanyi (1966) described tacit knowledge as: ‘We know more than we can tell’ (p.4).

Tacit knowledge is only realized by unconsciously using the knowledge to apply to another problem, perspective, or issue. Tacit knowledge is highly contextual and cannot be separated from its context as a *line item* and still be useful. For example, Pinocchio could be told that some noses grow, but unless he also knew that lying *caused* wooden noses to grow, then Pinocchio would not find the line item ‘wooden noses grow’ to be very useful. Applying the context (tacit knowledge) to the new information allows one to problem solve without specifically being aware of the tacit information. We do not know what we know until we know it in context of another problem/perspective. Nonaka and Takeuchi (1995) offer that there are ways to improve the dissemination of tacit knowledge by providing “...meaningful dialogue or collective reflection in which using appropriate metaphor or analogy that helps team members to articulate hidden tacit knowledge that is otherwise hard to communicate” (p.70). Accordingly, Davenport and Prusak (2000) suggest that in order to transfer tacit knowledge within the organization one should “hire smart people and let them talk to one another” (p. 88).

The idea of generational knowledge is explored in Polanyi’s (1966) and Lave & Wenger’s (1991) work, which noted that this type of information is also tacit and is passed from generation to generation by exposure to previous contexts. The information is passed to the next generation by discussion, storytelling, and simple exposure to those who have experiential knowledge. The ‘been there, done that’ experiential story can pass on a wealth of tacit knowledge. Polanyi also implies that teachers, leaders, and others who incite thought, such as philosophers, pass on knowledge via experiential story telling. For Polanyi (1966), using *intuition* for problem solving or seeing new applications in previously undiscovered data has its basis in tacit, contextual knowledge. This concept of experiential story telling is again noted by Lave and Wenger (1991) who suggest that learning takes place through legitimate peripheral participation. Students learn from more capable peers while watching or participating in legitimate activities, or through the sharing of stories from one’s own experiences.

Denning (2007) indicates that “Rather than making decisions by careful intellectual effort or following cues, we make most of our conscious decisions through narrative” (p.105).

Indirect stories are designed to prompt thought about similar issues that the listener/reader may be facing. Denning (2007) uses biblical parables as an example and notes that these stories are often *not* well told, and in fact, are often very sketchy in foundational details; however, they still serve to impart nuggets of wisdom or knowledge to others. Indirect stories are not designed with the intent to supply all the details of the event, only the most salient details are included, but rather they are crafted to encourage one to come to one’s own conclusions about the issue.

These stories are intended to teach and to provide enough context for the implied or tacit knowledge to be shared. DeLong (2004) states “... one of the major values of stories is their ability to communicate knowledge that can’t be represented as propositions or rules. Stories can be effective for transferring both implicit knowledge about how things get done, as well as deeper tacit knowledge ...” (p.101-102). Social knowledge is also a form of tacit knowledge – it is part of what makes up the culture of organizations, societies, and any other group of people. It is the unspoken rules, mores, and values of the culture. Mentors are those who have a deep well of tacit knowledge, and who are able to guide mentees through the subtleties of new events or contexts within organizations often using experiential stories to demonstrate the concepts. In the context of the online classroom, instructors act as experiential storytellers in the discussion forums by guiding students with their subject matter knowledge and real world experiences.

4.2 Transfer of Knowledge

Szulanski (2000) acknowledges that knowledge transfer is a process, not an action, and various factors affect the opportunity for knowledge transfer. Barriers to the transfer of knowledge include that knowledge is distributed (the process of gaining knowledge involves multiple inputs such as processes and people), ambiguous (barriers such as syntactic and semantic, need shared understanding) and disruptive (changes which challenge what we consider knowledge is often resisted) (Tsoukas, 1996). Credibility of the source of information may significantly affect the

transfer of knowledge (Walton, 1975). Both trust and the reputation affect knowledge transfer (Yoo & Torrey, 2002). Ichijo, von Krogh, and Nonaka (2000) found that the quality of the discussions and dialogues in an organization were improved when trust was a factor. Levin, Cross, Abrams, and Lesser (2004) went so far as to label trust as the "magic ingredient" (p.37) leading to knowledge transfer. When a source is perceived as untrustworthy, the recipient may consider the knowledge to be suspect or unreliable, and as a result, the recipient is less likely to internalize the knowledge communicated by the source (Szulanski, 1996).

Knowledge stewards are communities of practice (CoP) that exist in areas of expertise and are focused on gathering and sharing knowledge with others in the field or outside of it. They are often *grand central station* for connecting people with others who may know the information being sought. Information stores for CoP are often electronic, such as online message boards and other collaboration tools. However, being facile with the collaboration tools does not mean knowledge is, or can, be transferred to others. "New knowledge created as a result of increasingly complex work environments is often abstract, conceptual, and interdisciplinary. Equally important, it is best acquired only through experience, which is frequently driven by a passion for solving difficult problems" (DeLong, 2004, p.201).

Collaboration is a good way to enhance knowledge, but is not the only way or the best way to transfer knowledge; solitary research and experience is necessary and often the only way for some tacit knowledge to be taught (Goldman, 2003). The transfer of learning is the application of skills, knowledge, and attitudes that were learned in one situation to another learning situation (Perkins & Salomon, 1992). Research has shown that while a knowledge object such as a lecture or video plays a role in the learning process it is not THE learning process (McGreele, 2004).

4.3 Discussion Forums

In the online classroom, interaction between students and instructors occurs mostly in an asynchronous environment via discussion boards or email. Research indicates that the quality of interaction in the online environment impacts the success of learning in the classroom (Maor & Volet, 2007; Persico, Pozzi, & Sarti, 2010; Thorpe, & Gordon, 2012). Activities in the online environment such as participation in the discussion forums can assist learners in sharing and gaining knowledge from each other (Nandi, Hamilton, & Harland, 2012). Students enjoy when war *stories* are exchanged in the discussion forum; storytelling within the forums is one method of presenting challenging concepts in an easy to understand format (Powell & Murray, 2012).

Instructors can utilize the online discussion forums to guide and support student learning and to construct knowledge (Albion & Ertmer, 2004). Discussion forums promote both student to student and student to instructor interactions, but there is a lack of research indicating whether this interaction actually aids in the knowledge transfer process. Research has shown that participating in the discussion forums can lead to increase engagement which may lead to increase student satisfaction (Cheung, Hew, & Ng, 2008; Bliuc, Ellis, Goodyear, & Piggott, 2009; Brown, 2012) and may promote deeper learning of the material (Nandi, Hamilton, & Harland, 2012; Shan, Feng, & Shieh, 2012), but little has been written on whether these discussion forums actually lead to knowledge transfer outside the online classroom setting. There is a growing focus on the benefits of knowledge transfer in the work place. The U.S. Department of Defense (DoD) has recognized that their employees must be able to respond to situations through "creativity, innovation and flexibility" and have described the increase need of "knowledge sharing, mutual understanding and collaborative decision making" in preparing for the challenges of the future (Knowledge transfer through people, 2009, p.4). In today's competitive job market, it is not enough for college graduates to leave college with only subject knowledge; companies are looking for individuals who can integrate knowledge, skill and personal qualities (Stephenson, 2001; Zaineb, 2011).

Knowledge transfer in the online classroom hinges on the idea that students draw on their existing knowledge and then can use that existing knowledge to expand on the concepts being presented (Jesson, McNaughton, & Judy, 2011). The learning that takes place takes on meaning only when students can also transfer out that learning and apply it to *real world situations*. Authentic assessments and activities in the classroom should help students produce knowledge not just reproduce it (Burke, 1992) and should allow them to connect, reflect and give and receive feedback (Scott, 2000). If discussion forums are being used as authentic assessments in the classroom, students should be able to demonstrate specific skills and competencies within their responses and transfer this learning to tasks beyond the classroom. Discussion forums are often measured on objective criteria such as number of posts, timeliness of post, and word count, but the ability to evaluate the actual construction of knowledge in the forums is limited.

There is increasing pressure on online education institutions to promote critical thinking, improve student interaction, and increase the credibility of online learning (Strang, 2011). A Babson Survey Research Group report (Allen & Seaman, 2013) found that only 30% of academic leaders believe that their faculty considers online learning a valid or legitimate modality. In addition, interacting and communicating with peers using technology in the workplace are

critical components in most businesses operating in the 21st century. The goal of this paper was to develop a model based on previous and current research on knowledge transfer which would bridge the gap between learning which takes place in the online classroom and the development of skills needed to apply this learning outside the classroom.

5. Method

5.1 Procedure

Using a qualitative research approach, twenty-one sections of a graduate organizational behavior course at a major for profit University were observed. One discussion question, which was assigned to all the sections reviewed, was chosen for the analysis. The particular question was chosen because it was an open ended question which the researchers believed would lead to the most interaction between and amongst students and faculty. The data was delivered in the form of several spreadsheets that had been produced by the data analytics department at the university. The data included student and instructor replies, reply dates, thread identification key numbers which matched the thread replies to the parent thread, and the text of the replies. The discussion data had been *sanitized* to remove all persona identifying information such as instructor and student names. These were replaced with unique identifiers, i.e. instructor1, instructor2, and student25, student26, and so on. Data for 21 classes was received in multiple spreadsheets which were then imported into NVivo10. Each class was designated as a separate source and identified by a unique name, i.e. Class2, Class3, and so on. The 21 sources included in this study yielded 2,045 replies with an average of 97.38 replies per source. Across all sources, there were 285 replies by instructors, of which 26 replies were coded at any node. There were 42 notes with 1,669 references coded over the 21 sources.

This is the nomenclature used in this discussion:

- A source = class
- A reference = coded area in a source
- A node = a theme or recurring element/concept

Once the data was imported and the classes identified as sources, coding the data began. With the study framework and discussion question in mind, the researcher examined each post in the first class. The initial pass on this source was to get a *feel* for the types of ideas, concepts, and phrases contained in the data. As the data from this source were examined, phrases that reappeared were identified as *nodes* and the sections in which the phrase was contained, was coded at that node (Charmaz, 2006; Saldana, 2013). The coding process for this research was initially *In Vivo*, which allows the data to supply the phrases and themes from the subjects own words (Charmaz, 2006; Saldana, 2013). This process is also considered one of the *elemental methods* for reviewing and coding narrative-type data (Saldana, 2013).

As the researcher examined the data, phrases that might indicate knowledge transfer (KT) were identified. The nodes identifying KT were phrases taken directly from the discussion posts and were intended to capture a concept identified in the data (Saldana, 2013). Because KT is also subject to interpretation, some of the phrases identified could be interpreted differently on the surface and out of context. To the researcher, the phrases were identified as possibly indicative of KT because of the underlying context in which the response was made. Indeed, some of the coded replies by themselves would not be particularly telling; however, taken in context with the overall tenor, or *flavor* of the source and its participants, many of the phrases appeared to indicate KT. For the researcher *flavor* meant that there was an accepted way in the classroom among the participants to present information and responses – in this limited way, *flavor* could be interpreted as the *culture* of the classroom.

Each source examined had a slightly different flavor, which included slightly different phrases that could indicate possible KT. As an aside, an ancillary observation by the researchers was that the flavor of the class was established early on by the initial student respondents to the discussion question (DQ), after which certain phrases were prevalent. The phraseology also appeared unaffected by any posts the instructor might have made subsequently to the initial student posts. This might be an avenue of future study in the relationship of linguistics of the initial respondents and the likelihood of KT.

While there were phrases identified that would appear to indicate KT, there were also many other phrases and concepts which were common in the data. These were not necessarily directly related to KT, and in fact, many of these were contextual information indicators which provided support for the ongoing discussion in the posts. Phrases and concepts of this nature were also identified as nodes.

The researchers examined the data in a serial fashion by date. Due to the nature of the data received, each source was sorted and reviewed by date rather than by thread. The first two classes provided many of the common phrases, while the balance of the classes identified several flavors of the basic phrases, such as *I can see how*, *I can understand*, and *I*

know what you mean. These were consolidated as child nodes under a primary theme, i.e., *I can relate to your experience, I understand*

The researchers examined each post and interpreted the reply based on content, phraseology/connotations, and the flavor of the course. Also part of the interpretation was the researcher's *perception or impression* of what the post implied. This is important because of the subjectivity of the data. The researchers had to take the reply in context with the rest of the conversation data in the course/class and interpret the meaning implied by the response. As noted earlier, taken out of context many of the coded sections would mean little in the way of KT; however, in context there was a whole different interpretation of the reply. Take for example, this coded verbiage from a student's post:

"I can see how your example of lack of effective communication caused some serious problems as this event probably impacted other programs or projects whereas you could have used those wasted work hours on them thusly ensuring overall mission readiness."

Found in the *I can relate to your experience, I understand.../I can see how* child node, this section from a student reply can be interpreted differently as a standalone comment phrase or in context with the discussion. Alone, the section could be interpreted as merely an agreement; however, in context the replying student was actually applying the concept to another aspect of the initial student's scenario. The researcher coded this section as an example of KT.

Another example of interpretation is this section of verbiage from another student's post:

"I agree that clear communication is key to building a team that can collaborate on projects and share responsibilities, and trust can be built through those collaboration. However, without that trust and leadership mindset between team mates, the chance of communicating effectively and being able to think as a team is near impossible."

This is found in the *Agreement-Offers confirmation/I agree that ...* child node. The student was recapping the discussion, and while this could be seen as KT, the researcher interpreted this as merely agreement because of the context surrounding the discussion. This student replied to a peer to offer agreement but did not apply the concepts to anything new or offer anything interesting/relevant beyond recapping the discussion. Content of this type can add foundation but do not show KT; this response is more of an example of a conversation bridge, where the participant is providing feedback in order to keep the conversation going.

The researchers continued to code each source in an iterative fashion as described by Charmaz (2006). As the researcher became familiar with the flavors and phrases in the data, it was common for the researchers to reevaluate previously coded sources in light of the data emerging from the ongoing coding (Charmaz, 2006; Saldana, 2013). In some cases, previously coded sources were coded at additional nodes based on what was discovered and learned about the data as the coding progressed. Note that this re-evaluation process was iterative, and occurred during the first pass through the data sources.

The researchers also included observations about the data in forms of memos attached to specific nodes or sources. The memos provided a way for the researcher to capture observations/thoughts/and questions about the data as coding progressed. The memos have proved to be a valuable source of documentation about the process and progress of the coding effort.

The researchers coded each source, adding nodes as determined by the data. Upon completion of the first pass at all 21 data sources, there were 42 nodes that had been identified and coded in the source data. The 42 nodes were then sorted and consolidated as child nodes to the primary themes identified in the data. This is referred to as *process coding* where the posted text indicated "ongoing action/interaction/emotion taken in response to situations, or problems, often with the purpose of reaching a goal or handling a problem" (Corbin & Strauss, 2008, pp. 96-7). The researchers used this method to determine if the references coded at the node were indicative of a process as described by Corbin and Strauss (2008), and in this case, the *process* is KT.

To sort the nodes into the themes, the data coded to each node was reexamined as the sorting progressed, which resulted in further refining the codes into thematic representations of the data (Saldana, 2013). Therefore, the second pass at the data in this manner served to verify the assumptions and impressions of the researcher's initial coding of the data. Depending on the level of similarity between the impressions/phrases/content of the coded data, nodes were collapsed and merged into one of the primary themes or as a child node.

The researchers examined the data references coded at the node to determine if the node constituted a theme itself, or was part of a larger theme. Based on the data at the coded references, nodes were sorted into the major themes found in the data. The review and consolidation resulted in 13 themes:

- 1) Acknowledges suggestion or advice
- 2) Agreement-offers confirmation
- 3) Agreement- offers suggestion
- 4) Commentary-discussion based in experience
- 5) I can relate to your experience, I understand
- 6) I never realized or I never thought of it that way
- 7) I think... I believe
- 8) In my experience... I have worked... I have dealt with
- 9) Offers Suggestions
- 10) Providing clarification of point
- 11) Seeking clarification
- 12) Sharing personal experience
- 13) Situation analysis, may offer suggestions

Each of the thirteen themes identified contained child nodes that code areas of KT based on phrases identified in the data. Examples of child nodes include:

Theme 8: In my experience... I have worked... I have dealt with

Child nodes:

I have seen....

I have learned the hard way

I have learned, I have found, I have realized...

I have not had that exact experience, but I had...

I have observed.....

What I have done

I've done that and...

I have had a similar experience

There were three primary categories of themes: KT, Possible KT, and commentary. KT was the identification of what appeared to be knowledge transfer based on the definition in the study and the researcher's interpretation of the data. Possible KT and commentary consisted of elements such as personal experience related to descriptive examples prompted by the initial discussion question, commentary, contextual information, clarifications, and general suggestions.

Because KT is often subjective, there were occasions where the replies could have been KT, but it was not clearly indicated as such, and as a result these were categorized as possible KT. Other replies were clearly not KT and these were categorized as commentary.

Each theme was categorized by color and coded as green (KT), yellow (Possible KT), red (Commentary).

The green responses which represented knowledge transfer began with phrases such as: I can relate to your experience, I understand, In my experience... I have worked... I have dealt with, and provided situation analysis and offered suggestions. The yellow responses which represented possible knowledge transfer provided clarification of points, agreement which offered confirmation, commentary which discussed experience and acknowledged suggestions or offered advice. The red responses which did not indicate any knowledge transfer began with phrases such as think... I believe, I never realized or I never thought of it that way, sought further clarification or shared personal experience.

Following the identification of the primary themes in the data was the determination of whether the theme actually represented KT, whether it was possible KT or fell into the commentary classification. The major themes and the child nodes associated with the theme are identified as part of the three categories (KT, Possible KT, & Commentary) show different aspects of the respondents' replies. For example, in the KT category, there are three primary aspects to student replies:

- 1) In '*I can relate to your experience, I understand ...*' shows introspective observations based on personal experience;
- 2) '*In my experience ... I have worked ... I have dealt with ...*' shows personal experience and the results of the experience, and
- 3) '*Situation Analysis, may offer suggestions*' shows application of concepts to external situations.

As with this example, the other major themes have varying perspectives within the theme as well.

5.2 Validity and Bias

Sections could be coded at multiple nodes throughout this process, depending on the phrases, concepts, and implications in the data. Because qualitative data is subjectively interpreted, there may be several layers of meaning perceived in a post. Additionally, because the data is qualitative and contextual in nature and must be interpreted from the researcher's perspective, researcher bias can be a risk.

The researcher who examined and coded the data has also taught the course the discussion question came from. Because the data was sanitized, it was unknown to the researcher whether or not any of the data came from classes the researcher previously taught. While the data interpretation and coding was done by one of our team, the other team members reviewed the findings and examined the data elements for veracity. The possibility of researcher bias was kept in mind during the coding process. Every effort was made to interpret the data in a non-biased manner; the researchers documented any areas that might have been cause for bias – i.e., the researcher having previously taught the course.

Part of the validation process by the other team members was the review of a sampling of the coding done by the researcher. Subsequent examination of the categories, themes, nodes, and data by the other team members provided veracity of the assumptions made by the researcher's findings in the data. The team members reviewed data associated with the nodes and themes identified by the researcher. The final step in the process was to draw conclusions from the results of the coding and analysis.

While there were 21 sections of the course evaluated, there were only a total of 13 unique instructors and approximately 710 unique students across the 21 sources, with an average of 34 students per course. Due to the possibility of students repeating the course, the *approximate* qualification is necessary, as the unique identifiers supplied during the sanitizing process did not cross reference students to previous classes. Appendix A contains a sample of student responses and how they were coded as a representation of the overall data interpretation used in this study.

6. Results and Discussion

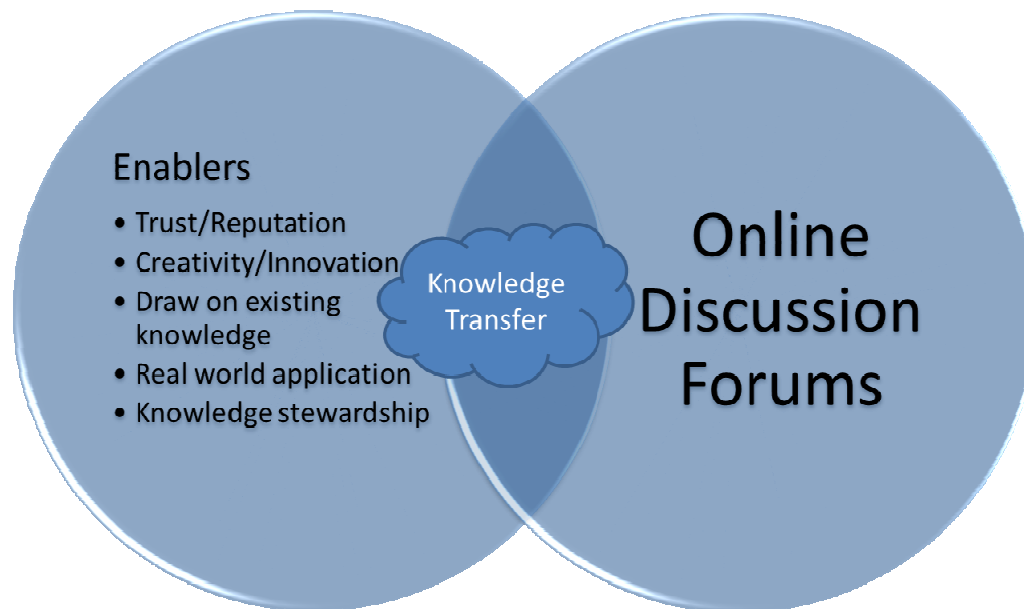
Based on these observations, the authors conclude that there is sufficient evidence to support authentic knowledge transfer in the online discussion forums. A total of 23% of student responses were coded as authentic knowledge transfer, in some form, representing a significant positive result. However, it is important to note that this evidence supports knowledge transfer on a student-to-student basis only. With only 26 out of 284 responses from faculty coded as commentary and no responses coded as knowledge transfer, there was little evidence of knowledge transfer occurring faculty-to-student. This finding is significant and refutes the researcher's original beliefs that instructors play an intricate part in facilitating knowledge transfer in the online discussion forum.

As a result of these findings, the researchers would suggest that there is room for improvement, certainly in terms of faculty-to-student knowledge transfer. Nash (2011) suggests that faculty who are used to teaching face-to-face may have a difficult time transitioning to the online environment. This can result in exposing poor pedagogy which can include a failure to properly lead online discussions. Nash (2011) further suggests that the asynchronous discussion forum is an environment where faculty manages student interactions to enable rich discussions. Management requires careful planning and attention to assure student learning. Reonieri's (2006) study sought to determine the optimum number of students in an online discussion forum to construct knowledge. In addition to recommending an optimum discussion board size of 16 students, the study also found that real-life experiences shared student-to-student and faculty-to-student as well as thought-provoking faculty responses aided in constructing knowledge. Baglione and Nastanski (2007) conducted a study of 122 full-time faculty that teach both online and face-to-face. Over three-fourths of the faculty surveyed indicated that the online environment provides for the opportunity to lead a more substantive discussion than face-to-face. Finally, faculty need to take an active role in facilitation of online discussions to encourage critical thinking and active learning (Halstead, 2005). Halstead asserts active learning requires faculty to assume the role of facilitator in the teaching-learning process, encouraging students to become engaged with the

content by identifying learning needs and the resources necessary to meet those needs. Reflecting on the content, associating it with real-life experiences, and applying the content are other essential elements to active learning that serve to promote critical thinking skills in students (Halstead, 2005, pg. 144).

Many discussion questions are written at a lower level of Blooms taxonomy (define, describe, identify, explain) and ask questions in ways which do not promote critical thinking and analysis. In addition, the authors see evidence that students simply read and regurgitate material from the sources provided in the class or agree and restate what they read. As written, discussion questions are often not developed to encourage the internalization/externalization of knowledge, or the demonstration of applied knowledge. Students do not always use critical thinking skills to respond to discussion prompts. Finally, faculty do not always exercise prompts within discussions to encourage critical thinking or authentic knowledge transfer. This leaves students to determine, on their own, how best to proceed through the discussion and may leave the discussion lacking academic rigor or authentic knowledge transfer.

The authors propose the following KT Discussion Model as a means of facilitating knowledge transfer in online discussions:



Revising discussion questions based on the five enablers presented in the model, will establish the instructor as a knowledgeable subject matter expert of the topic and will encourage active instructor facilitation. Questions that encourage the instructor to share personal experiences or knowledge should be encouraged. This may build trust between the instructor and the student as the student may be more likely to share personal experiences since the instructor has done the same. These prompts help focus discussion on real-world experiences and applications of course concepts. The creating and sharing of experiences may promote knowledge stewardship as students discover, create and share their stories and make connections between the topic presented and real world applications.

7. Limitations

This study was conducted among 21 graduate courses examining a single discussion question at a for-profit institution. This institution requires students to contribute three discussion responses to each discussion. Students must respond to the initial discussion question no later than day three of the week. However, the additional responses may be submitted anytime up until the end of the week. This timing issue may contribute to low faculty-to-student engagement as students may wait until later in the week to meet discussion requirements. Furthermore, the ability to generalize these findings is impacted by the single subject orientation of the study.

7.1 Recommendations for Future Research

Due to the limitations of this study, additional research could assist in determining if similar results occur in different segments of higher education. Questions to further the study might address the timing requirements of students in terms of response, whether specific requirements exist as to the quality or quantity of posts, or how much research is required with the post. Studies to address the specific quality of faculty posts to students might provide insights into the

impact on student performance and knowledge transfer in the discussion. Blignaut and Trollip (2003) measured the quantity of faculty participation in the online classroom in an effort to define the amount of participation that lead to the appearance of instructor presence. Students indicated that the most important communication that occurs between student and faculty occurs in the online discussion. As this communication is considered essential to the student, additional research may be warranted that addresses the quality of these engagements. An emphasis on whether high-quality faculty-to-student engagements lead to knowledge transfer should be considered. Finally, additional research in other subject areas could uncover whether low levels of faculty prompts leading to knowledge transfer is unique to this subject, domain, or segment of higher education.

8. Conclusion

With the importance of discussion forums to the overall online educational experience, it is important that these discussions yield the expected results by providing students a mechanism for authentic knowledge transfer to occur. Although there is evidence of knowledge transfer occurring at some level, there is opportunity for significant improvement. There are improvements that need to be made in both the content of the discussion questions and the types of engagements that occur during the discussions. As noted by the proposed KT Discussion model, the authors suggest that knowledge transfer could be facilitated in online discussion forums when the enablers of trust/reputation, creativity/innovation, expression of existing knowledge, real world application, and knowledge stewardship are actively encouraged. Additionally, discussion questions should be worded in a manner that encourages students to think of ways in which they have or may apply the information. For example, scenario-based questions in which students are asked to “describe a time when they have or might” can be helpful in gaining an overall perspective of the application of the information outside of the classroom environment.

Furthermore, faculty should share their own “real world” experiences and seek comments from their students. One way faculty can encourage the exploration of application of knowledge may include sharing a professional experiential story and asking students what might they do differently, or how they could envision a different outcome. In addition to knowledge stewardship, this behavior encourages trust and creativity, two key knowledge sharing enablers. Finally, students should be encouraged to share their own experiences with a critical eye on what worked well and what might be done differently to encourage a different outcome. While drawing on existing experiences, students can be encouraged to convert that experience into future knowledge. Others in the class may be able to learn valuable skills from peer experiences that they can translate into action when faced with the same or similar situations. Approaching learning from multiple perspectives can help students expand their vision of the application of learning to real world working scenarios. Finally, opportunities exist for faculty development that will assist the faculty member in developing and using prompts within the discussions to encourage knowledge sharing and transfer. Faculty should be encouraged to understand the important role they play in the success of knowledge creation, sharing, and transfer within the online discussion forums.

This research should prove beneficial for instructional designers/content experts as a means of developing discussion questions that support authentic knowledge transfer, to faculty by providing recommendations for prompting behaviors within the discussions that will encourage the needed behaviors, and to faculty development professionals in designing appropriate training for faculty regarding to identify and facilitate the needed behaviors to support active learning, knowledge creation, knowledge sharing, and knowledge transfer.

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10. Appendix A – Student Quotes and Coding, Both as Knowledge Transfer and Commentary

In my experience ... I have worked ... I have dealt with .../I have learned the hard way

All true, and I wish I had known then, what I know now! The altercation has left a lasting effect on me. I realize now, that someone who is pursuing higher education, should definitely not resort to such primal means to resolve a conflict. If I had taken better steps to preserve my own work, like you suggested, I might not have failed the assignment ... (Student139),

I can relate to your experience, I understand ...

I'm actually working on a project team as we speak! I know exactly how you feel about everyone tossing around ideas and no decision being made. Luckily, we now have facilitators at each meeting that help keep the conversation focused and make sure we reach a decision. Team norms are definitely a difficult task on this project team. We are all new to the company and new to each other. Some of us are getting along well and some of us aren't. However, if we are going to succeed on this project we must come up with some team norms (Student164).

I hear you clearly! Those are the managers that make staff roll their eyes when they figure out that the person is scheduled to work with them. I find it is sometimes difficult to not become part of the gripe session that inevitably happens on those days. Keeping my personal feelings toward a fellow employee or supervisor to myself can sometimes be the hardest thing I have to do in a work day. But, I have discovered that voicing those negative [sic] feelings just makes the day seem to stretch out before me way too far. So far I have been able to convince some of my co-workers to try just letting go of the bad feelings and focusing on the job at hand and usually we quickly move on to happier topics that make the day much more enjoyable (Student174).

Student- I enjoyed reading your post, and I can relate to your communication problem. I know how communication is very important in every aspect of a group project. You made have clearly communicated to your team but if one this is not communicated clearly then it can cause problems. Thank you for putting this to my remembrance that everything needs to be communicated well so that whatever the task is, it can be7 accomplished well and successfully (Student220).

I can relate to your experience so much, that now I will call to confirm anything that I may have going on because of the lack of communication. Sometimes we get so busy in our lives, we forget to notify everyone of what is going on, I have done that as well. However, I can agree it can be annoying when you drive a certain amount of time as the gas is also being used to find out the outcome to be negative. That is why now I usually will call, or text like you have mentioned (Student50)

Situation Analysis, may offer suggestions

Your perspective that the addition of someone new to a group and unsettling their 'norms' is a great example. Take an intern or a temp, for example. These individuals are only there for a short time and could create confusion based on their own lack of adaption to the environment. Although I would argue that sometimes this is a good thing. I'm sure you've heard the adage, 'if its not broke don't fix it' but what if the norm is figuratively 'broke'? Sometimes it takes an 'outsider' to realize the truth of the matter; that what they've been doing is good but there is a better way in accomplishing the same task (Student105).

Situation Analysis, may offer suggestions\Disagree-Offer Alternate View

I'm not sure I agree when you say a team has a person who is well known as the 'leader.' I've been on teams before where there isn't truly a leader, or it takes a while before the leader emerges (or is picked) (Student33).

Student, As a manager I disagree you can not [sic] generalize a entire team by one person's action. Perhaps if this was a common occurrence then yea it could reflect a problem with the team. Would you consider this to have been a norm for your team? In any event I believe your manager over reacted, but in the same respect your team was rightful upset to have to correct another team members mistake. (Student79)

High self-esteem does not necessarily mean that individuals are able to work well with others. I have recently had a supervisor who had high self-esteem, she was also quite abrasive. This made many of her employees and other supervisors dislike her. It is just as, if not more, important for individuals to have good communication skills. Being confident in oneself can enhance or make communication easier but it will not create or destroy it. (Student243)

I would not have placed all of the blame on the onsite personnel because he was probably put under a lot of pressure to produce a member that had been promised to the team in the first place. I would like to know if the groups confidence in its president and executives was ever restored? Did they show respect and follow their organizations leaders at any point after that experience? I know you pulled it off smoothly with the group but they probably still had some issues with how the situation was handled. Great example of how lack of communication has caused problems for a team. (Student304)

Contrast KT with Commentary

Commentary. Discussion based in experience

It can cause a big conflict between the group, they all agreed to these norms. Chaos will set in and the trust will be broken until they communicate with each other and explain why they went around the groups norms (Student72).

Hi Student, This is when nepotism is not productive to the business world. A good human resources office would have cut that off at the knees immediately (Student316).

Student, when communication is done correctly the process is better, not only for managers but employees. In life and business there must be good communication skills, not only by leaders but all members of a team. If a person do not understand a task given to them and do not ask question or communicate this to their manager the task will suffer. Communicating skills will help a team be success, but if their [sic] is a short-fall it normally is because of a lack of communication. Trust is also important, I do not see a lot of that in my line of work, each man is for themselves (Student145).

I enjoyed reading your post and it brought back some memories of when I did my psychology course. You mentioned that should someone inside the norms in the group, they feel slight pressure from the remaining members of the group; allowing the individual to conform to 'groupthink'. With that said I again that in some cases group think is a good asset but in my personal opinion I believe groupthink deters individual thinking which at times can create more problems than help. For instance, (made up Characters) in a meeting Susie notices that Leory [sic] added the sales figure wrong and that the number he came up with is not accurate. It is evident that other members of the board noticed the mistake as well but no one chooses to say anything. Should Susie continue to be silent or should she say something? (Student143)

Trust and communication within a team is very important especially [sic] when everyone in the group will be affected and have to pay the consequences for one [sic] person mistake. Clear communication will greatly assist in getting things done on time and in a positive manner which will be beneficial to the team as a whole. (Student241)