ABSTRACT

Collaborative Narratives:
Collaborative learning in Blogosphere

by

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From the dialogues between Plato and Socrates to modern day classrooms, narratives have had a well-established tradition of aiding the learning process. Similarly, there is also a rich body of literature to support the relationship between collaborations and learning where it is acknowledged that learning takes place best in groups. Furthermore, much research has been conducted on the use of collaborative technologies to aid the learning process. What has been less explored, however, is the intersection between these three areas: narratives, collaborative technologies and learning. There is great potential when these three concepts meet, and from their inter-relationship, the case for collaborative narratives to enhance the learning experience can emerge.

This research explores the use Blogs as an application that is well suited for the development of a learning community. When aggregated through the use of syndication technology, student maintained Blogs form a community known as a Blogosphere. The study proposes that such a Blogosphere promotes the construction of a learning community where individuals are able to conduct reflective analysis, observe how others grapple with new information, interact with classmates and receive feedback from the instructor. The interaction with people and knowledge afforded by the use of the Blogosphere takes place through the use of narrative construction on both the individual and group levels. It is argued that this interaction through the use of narratives fosters both cognitive and social processes that influence both individual and group knowledge acquisition. This ability to construct and articulate knowledge collectively through the use of narratives is superior to learning new concepts individually and in the abstract.

A study of a University of Michigan Business School class was undertaken with the notion of how a Blogosphere can be utilized to facilitate collaborative learning. This investigation will employ empirical methods of analysis to argue for the potential of group authored narratives as a means to convey information and to form knowledge.

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Chapter One

Introduction

1.1. The state of learning technology today:

Learning within classrooms has come a long way since the days where instructors conventionally employed the teaching strategy of "chalk and talk". Schools today have largely risen to the challenge of technology becoming a more ubiquitous aspect of modern living. This is demonstrated by the widespread adoption and use of technology by educational institutions. Efforts to make information relevant and vital to learners' lives has resulted adaptations of new technologies and bandwidth for a learning environment such as the Chickscope (http://chickscope.beckman.uiuc.edu/) and Bugscope (http://bugscope.beckman.uiuc.edu/) projects from the University of Illinois. However, such projects that try to incorporate advanced technologies with learning process are few and far between as well as expensive to maintain.

An area that has seen the most development activity is Learning Management Systems (LMS), which are software applications or Web-based technologies used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. The development of such learning management systems tends to be particularly concentrated at the tertiary level, and seems to pertain mainly to syllabus scheduling, file sharing and storage of class notes. One of the main problems with such systems however, is that they are very often disembodied

from the actual *learning* process within the classroom. Fundamentally, as the name suggests, LMS are *management* systems and as such, their function is more in information dissemination rather than knowledge creation. Education cannot be reduced to mere information processing or sorting knowledge into categories. Its objective is to help learners construct meanings, not simply to manage information. Furthermore, the efficacy of these systems depend largely on the frequency and willingness with which the instructor uses them, as well as the nature of this use; students have little agency in determining their own learning experience. I posit that this disembodiment from the learners themselves is counter to the kind of learning process I see as truly productive and educative.

A more interesting technological development and also one which is more relevant to this thesis, is the attention paid to the use and design of collaborative learning systems in the past decade or so, by research fields such as Computer Supported Cooperative Work (CSCW) and Computer Supported Cooperative Learning (CSCL). The flurry of activity is in part attributable to 1) the desire to transfer the emphasis from supporting individual users to supporting small groups and 2) the influence of constructivist theorists such as Lev Vygotsky and Jerome Bruner who seek to integrate the learning process with cultural artifacts and social processes outside of the individual (Newman, 1990). However, the problem with the incorporation of CSCW technologies and principles into pedagogical practice is that presently, much of the research tends to center around the support of work where software tools are used to create, analyze and communicate information. However, the use of technology in education tends not to follow the information-based approach that is being investigated in CSCW. Instead

educational technology adopts a program-based approach where computers are used to deliver graded sequences of instructional programs to cover portions of the curriculum. It is the opinion of this author that if the developments in the fields of CSCW and Educational Technology can be reconciled, there is much prospect in the adoption of collaborative technology for pedagogical practice.

An emerging area that might provide some hope with respect to this is the increasing popularity and use of Social Software, such as weblogs, or more commonly known as blogs. Social Software is a loose term that describes a variety of web applications that allows individuals and groups to communicate with one another and track discussions across the web as they happen. (Tepper, 2003) With the development and rise in popularity of such interactive and collaborative technologies, there now exists new opportunities to create environments where students can learn by doing, receive feedback, continually refine their understanding and build new knowledge. (Bransford et al, 1999)

Blogs are especially useful in education where reflective learning, open collaboration and exchange of ideas are both natural and important. Coined by Jorn Barger [1]in 1997, a blog referred to "a webpage where a weblogger (sometimes called a blogger, or a preserfer) 'logs' all the other webpages she finds interesting. The format is to add the newest entry at the top of the page, so that repeat visitors can catch up by simply reading down the page until they reach a link they saw on their last visit." (Barger as cited in Downes, 2004) In the past few years, blogging has evolved into a highly popular web publishing system, dubbed "personal publishing" (Downes, 2004), that

[1] Jorn Barger has been credited with coining the term Weblog or Blog in 1997.

orients users to make short pointed posts on a specific topic and allows related sites to easily link to each other.

Additionally, individual blogs can be syndicated using aggregation technology such as RSS aggregators or XML readers. An RSS aggregator is a software application that is integrated within a web site or web browser and which gathers regularly updated material from other web sites and blogs and delivers that information to you. This new information is displayed on the RSS aggregator as a hyperlinked page which contains the most recent updates for each channel you receive. Through the use of RSS feeds, hyperlinking and other syndication technologies[2], blogs and other web sites can be interconnected to form a Blogosphere[3]. This community of blogs allows bloggers to read other blogs, to link to them, and to reference them in their own writing.

What is perhaps more relevant to this paper is that blogs, when syndicated, explicitly use social conventions rather than software features to facilitate collaboration and information exchange. It is envisioned that the use of social software such as blogs will enable students to asynchronously collaborate with one another in order to form a learning community. A more thorough discussion of blog technology and the functionality that it affords will be made later in this thesis.

At this point, it must be first underscored that in order for blogs to be effective as a collaborative *learning* tool, it must be operationalized with the notion of narratives.

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[2] There is a variety of competing syndication technologies being used on the market. The most notable and popular ones include RSS, atom and OPML.

[3] A term coined by William Quick in 2001 to encompass the entire world of blogging. The word was meant as a clever pun combining "Blog" with "logos", a Greek word meaning logic and reason. However, the term has recently come to represent heavily interconnected weblogs where bloggers read other's blogs, link to them, reference them in their own writing, and post comments on each other's blogs. The resulting community or social network that results is what this thesis refers to as a “Blogosphere”.

Narratives form the basis upon which text-based mediums of communication such as blogs become transformed into an instructional as well as learning device.

1.2. The use narratives as a learning tool:

One of the primary challenges of addressing the topic of narratives is the scope to which it can be applied to. From entertainment to shaping our memories, knowledge, and beliefs, narratives pervade our everyday lives. For instance, the daily news that we receive on the radio or the television is transmitted to us in the form of narratives. The influence and impact that narratives have on our daily lives is often overlooked. To illustrate, consider the significance of narratives in courts of law and the role they play in persuading a jury.

Narratives are not only very compelling sources of information, linguists have argued that narratives are deep structures which are genetically hardwired into our brains much like our capacity for grammar. Studies have shown that narrative ability shows up in infants as early as the third year of their development, and the case can be made that "… our very definition as human beings is tied up with the stories that we tell about our own lives and the world in which we live." (Peter Brooks as quoted in Abbot, 2002) This is largely because human experience and perception tends to be constructed through our narrative consciousness as a sequence of events. We tend to grasp and understand our experiences by shaping them as a sequence of events over time. This gives a frame or context for us to convey our understanding and enables us to make sense of the world around us.

Additionally, narratives are important tools that people use to define individual and shared contexts. (Polkinghorne, 1988) Many cultures use narratives as a tool that taps the power of social dynamics to create the foundations of a common heritage, culture and language. Narratives are a richer, more compelling, and more memorable means by which information and knowledge can be conveyed.

In the educational arena, narratives have long been used as part of pedagogical practice. Consider this, a teacher who is able to encapsulate his/her learning point in a story or analogy tends to be viewed as more interesting and engaging. The use of narrative forms in classroom pedagogy ranges from using stories to convey knowledge and information to role-playing in the classroom to convey understanding. Unlike teaching concepts in the abstract, narratives are more compelling and more memorable. This is because narratives tend to be a more compact way of expressing an important idea, it is also *easier to understand* and *easier to remember*. (italics mine; Walker, 2004) The power of narratives as a means of knowledge transfer and learning has been adopted by fields such as Organizational and Management studies. In these areas of study, it is asserted that one of the skills of an effective leader is the ability to create vision and motivate audiences through narratives. “Nothing serves a leader better than a knack for narrative. Stories (narratives) anoint role models, impart values, and show how to execute indescribably complex tasks." (Stewart, 1998) Despite popular acknowledgement of the role narratives play in the educational process, empirical studies that quantify the benefits of using narratives are still few and far between. Furthermore little attention has been paid to the use of narratives to create applications which disseminate information more coherently in order to facilitate learning.

Overarching Problem Statement:

Current learning systems in educational technology have not been able to harness the possibilities presented by having students working collaboratively to create meaning and demonstrate their understanding of what is learned. This thesis seeks to make a case that the use of group authored narratives (i.e. Collaborative Narratives) in a Blogosphere will result in enhanced learning.

1.3. What are Collaborative Narratives?

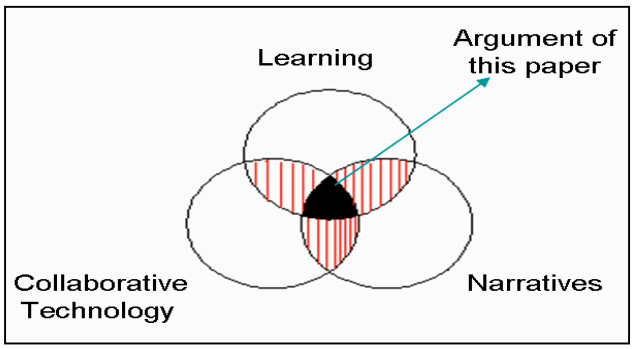

Figure 1: Overlapping Domains for Collaborative Narratives

This author would like to therefore make a case for the idea of Collaborative Narratives, which are cooperatively authored narratives, utilizing syndicated Blogs, where learners are able to make sense of new information and transform it into knowledge. This perspective is informed by the literature from the 3 separate but overlapping domains of Narrative Theory, Collaborative Technology and Learning. (See Fig.1 above) In this thesis, I propose that the overlap of these three domains produces an area for research that has yet to be fully explored by educational technologists, user interface designers and educational practitioners. I argue that understanding the use of syndicated Blogs from the lens of collaborative narratives will enable us to more productively harness the potential of technology to improve learning outcomes. Furthermore, the ways in which narratives function also involve the work of deep mental

processes. Learners are not viewed as passive receptors but required to exercise adroit critical thinking skills.

It is my contention that these complex learning outcomes occur when collaborative narratives enable learners to engage in an act of production, where they seek to construct meaning from the myriad of information that is made available to them. Thus, through the use of Blogs, the individual "narrative" that each learner constructs is an expression of the learner making sense and coherence out of the new information that the learner receives. As seen in Figure 2 below, the act of constructing narratives out of new information constitutes the formation of new knowledge for the learner. And in turn the knowledge that is gained needs to be articulated through narratives in order for it to be used as information by other learners.

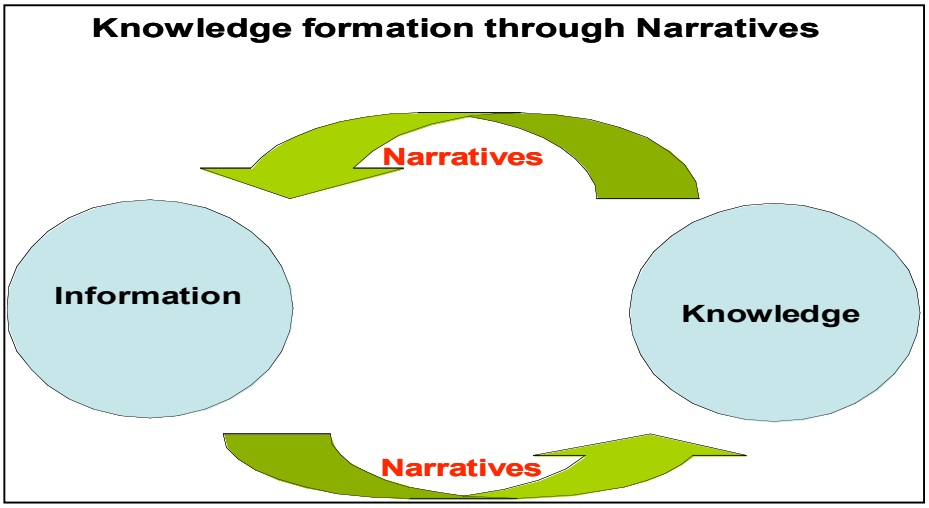

Figure 2

Another educational void which blogs fill is the untapped social aspect of Learning Technology. Current learning systems still have yet to fully exploit the interactive and social capabilities that new electronic collaboration tools have to offer. Interface design for learning systems could take a lesson or two from technological trends

such as syndicated Blogs which emphasize group consensus and collaborative meaning-making. Syndicated Blogs allow the learner to construct his/her individual learning "narratives" and share them with fellow learners through interactive features such as commenting functionality and trackbacks, which will be discussed in the next chapter. Additionally, the use of RSS aggregators allows individual blog posts to be fed into a website and creates a unified view of the class learning community.

The community that results from such aggregation and interlinking can be termed as a Blogosphere. The use of a Blogosphere allows the learner to explore and expand his/her own knowledge and contribute to a steadily growing body of communal knowledge easily by constructing a personal learning narrative in his/her blog. The articulation of one's learning in a blog entry will, in turn, trigger an iterative process of knowledge formation in the Blogosphere. (See Figure 3)

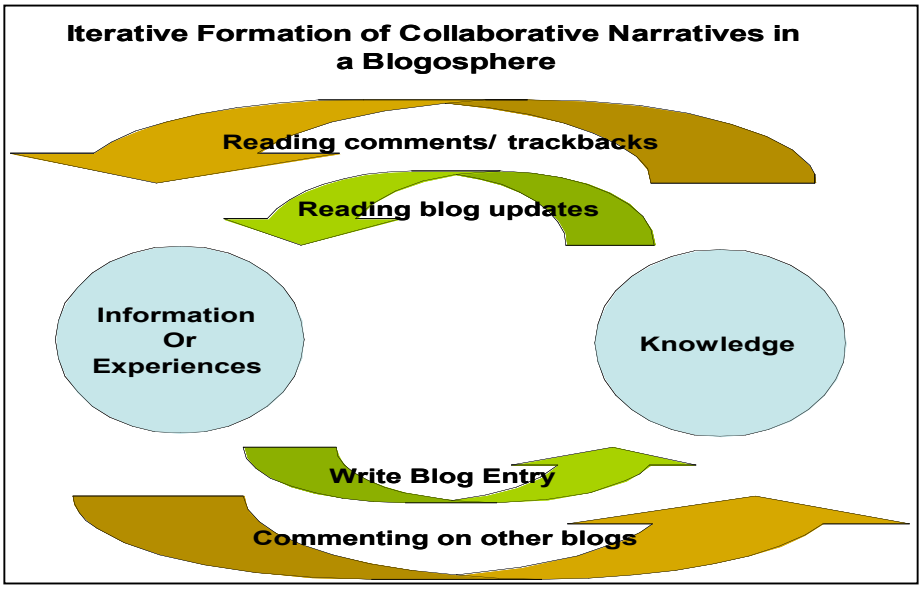

Figure 3

When a student posts a learning narrative in his/her individual blog, this post will then be fed into the aggregated website which other members of the class are able to view. Being able to view and read this initial blog post will trigger a series of interactions with

other fellow learners in the Blogosphere through responding to and referencing the blog posts of others. This cycle of interaction is made possible through interactive functionality such as comment boxes and trackbacks. The interaction that results between the blogger and his/her readers, through the narratives in their individual blogs, will be archived in the Blogosphere and functions as a form of collectively created knowledge. This body of knowledge collectively created by the group, as a result of the interaction and further narrative construction, is what is meant by "collaborative narratives" in this thesis.

The advantage of using a Blogosphere is that the social conventions of the group, and not the software, would ensure group consensus and generation of a shared understanding amongst group members. Thus the learners are not just applying and regurgitating knowledge that they have encountered. Rather, the group has to apply critical thought and insight into the process of selection and refinement in order to create a collaborative narrative. Additionally, by being able to work collaboratively in a group, learners attain social skills that would otherwise be very laborious to impart.

1.5 Chapter Outline:

Chapter 2: Theoretical Underpinnings:

Due to the scope and breadth of the research, there is some amount of theoretical knowledge I will present. This includes:

- Definition of narratives
- The impact of narratives on learning
- How collaborative learning can take place with narratives.

- Discussion of collaborative narratives in the Blogosphere.

Chapter 3: Methodology Employed

In this chapter I will outline the methods that have been employed to understand how the collaborative construction of narratives would result in learning. The chapter will consist of the following sections:

- Research Questions
- Research Setting
- Methods employed:
    - Analysis of the posting patterns of the students
    - Analysis of the content of the students' blog posts
    - Survey of student opinions
- Ethical considerations

Chapter 4: Study of BIT 320 (Distributed Learning Blogosphere)

In order to better understand how the use of emerging electronic collaboration tools like blogs may affect people's learning I conducted a study of BIT320, a database class at the University of Michigan Business School, which requires that each student maintain a blog. This study consisted of the following components:

- A survey that assessed the students' opinions of how blogs can be used to enhance learning.
- An analysis of the individual Narratives within each student's blog to assess the learning.

- An analysis of the comments made on each student's post to assess if collaboration contributes to learning.
- An evaluation of effective aspects of learning systems through user testing

Chapter Two

Theoretical Underpinnings

2.1 Introduction

This literature review seeks to summarize the body of research that has been established in the fields of collaborative technologies, cognition and learning, and narratives. The base argument which this chapter seeks to make is that existing learning systems have yet to fully exploit the interactive and social capabilities that the use of narratives and new technologies has to offer. By exploring the educational implications of narratives in relation to the design of a Blogosphere, this thesis hopes to make a case for the notion of "Collaborative Narratives" that enhances the learning of both the individual as well as the collective. As such the literature review will attempt to cover the following topics:

- Definition of narratives
- The impact of narratives on learning
- The role of narratives on a Collaborative Learning Community
- Theoretical proposal of a Collaborative Narratives in a Learning Blogosphere

This literature review does not intend or attempt to fully summarize the entire arena of either narrative theory, learning and cognition or the design of groupware applications; this project is too limited in duration for an analysis of that scope. Instead, this chapter identifies several key approaches in each topic area, and strives to evaluate them in the

light of potential applications to the research, analysis and support of the use of narratives in the design of collaborative learning systems.

2.2 What are narratives?

To begin an exploration of the use of narratives in collaborative learning, it is crucial that we understand very clearly what narratives are. The very etymology of the word narrative comes from the Latin terms "gnarus" and "narrow" which means to know and tell respectively[4]. This definition ties in with the previous discussion of narratives as being a universal tool for constructing knowledge as well as for articulating knowledge gained. At its very simplest, narratives can be defined as "a representation of an event or a series of events" (Abbot, 2002) that often requires (though not always) a narrator to represent them to an audience. To be more precise, narratives are "a structured, coherent retelling of an experience or a fictional account of an experience." (Schank & Berman in Green et al, 2003) This structured retelling of experience, through what it includes or excludes, reveals how people make sense of the world and what their interpretation of the events are, in short what they know. (Feldman, 2004)

Gerald Genette (in McQuillan, 2000) furthers the definition of narratives as functioning on three levels: (1) the narrative content being described, (2) a form of narrative discourse itself, and (3) narrating as the producing act. These distinctions in the forms of narratives are crucial to my argument of what constitutes a narrative in learning systems and how they are used. For the purposes of this thesis, my definition of narratives focuses on how narratives can take place on Genette's three levels; as

[4] "The words 'narrative', "narration", "to narrate", and so on derive via the Latin *gnarus* ("knowing", "acquainted with", "expert", "skilful", and so forth) and *narrow* ("to relate", "tell") from the Sanskrit root *gna* ("know")." (White, 1981)

information/content, as a form of discourse and as the act of producing narratives. Each of these levels has important significance to how narratives can be used as a universal tool for learning, articulating knowledge and provoking active thinking as it helps the reader or the narrator to work through problems. This will be looked at in the next section of the Literature Review.

Researchers of narrative structures have tended to distinguish between "fictional" and "empirical" narratives. This draws a distinction between a novel as opposed to a newspaper report. While there are obvious differences in terms of the narrative voice used, audience and purposes for writing such narratives, theorists such as Jerome Bruner (1990) feel that such distinctions are not useful. Narratives, according to Bruner, have the same form whether fact or fiction, and both are seen as ways of constructing and segmenting, events and experiences in the world. Hence, for the purposes of this thesis, what is important is the *cognitive process* that is enacted as we try to structure accounts of events, knowledge or perspectives through our own subjective views.

From this attempt to define the nature of narratives, it would seem that any instance of information put into a chronological sequence would constitute as a narrative. However, this is not so. It is thus important to distinguish in this study what constitutes a narrative and what does not. A distinguishing criteria would perhaps take into account the idea that narratives possess a structure or order of meaning which is not present if information were presented as a mere sequence. (White, 1981) For instance, if information were to be presented in a mere sequence, it might look something like this:

1890 The King died

1891 The Queen died

1892

1893 Great famine

In the information presented above, there is no central subject, no well-marked beginning or end, no identifiable narrative voice, and more importantly, no suggestion of necessary connection between one piece of information and the other. It is this *relationship* between pieces of information that is conveyed in narratives. In depicting these relationships, the individual composing the narrative conveys his/her understanding or meaning.

2.3 The impact of narratives on learning:

The use of narratives for learning is based on two perspectives of how cognition and learning take place in the human mind. The first perspective is informed by the constructivist philosophy of learning[5] which posits that active reflection of new experiences aids in the formation of understanding or "mental models" [6]. Learning in this sense is an active process where the learner is continually adjusting his/her mental models to accommodate new experiences. (Bruner, 1990) The other perspective comes from the Information Processing approach towards cognition. This view uses the metaphor of the computer or information processor for the human mind and argues that learning and cognition take place in the overcoming of constraints such as limited short-

[5] Constructivism is a broad conceptual framework that has informs many domains in both the sciences and the humanities. What is shared amongst these disparate domains is that experiences are constructed by the knower based upon mental activity. "What the mind produces are mental models that explain to the knower what he or she has perceived.... We all conceive of the external reality somewhat differently, based on our unique set of experiences with the world and our beliefs about them." (Jonassen, 1991)

[6] A "mental model", also referred to as a "mental representation" is a person's conception of something. A classic example is when someone mentions the word chair; three different people are likely to imagine three different looking chairs in their minds. Although they have somewhat different representations of what a generic chair looks like, their representations of the chair are functionally the same, in that they will all know that it is something created for the purpose of supporting one sitting person. Mental models or mental representations correspond with the world but are not exact copies of it. (Schank & Berman, 2003)

term memory capacity by creating mental structures such as schemas and scripts. (Simon, 1972)

The constructivist philosophy of learning is founded on the belief that each of us generates our own "mental models" which we use to make sense of new experiences which we encounter. Hence, "learning is simply a process of adjusting our "mental models" to accommodate new experiences. Influential proponent of constructivism, Jerome Bruner, claims that that narratives are inherent to human thought as it is the manner through which we organize our experiences and "make meaning". (1990) Meaning, from the constructivist perspective, is arrived at through social interaction, which more often than not occurs through a process of "negotiating and renegotiating meanings by the mediation of narratives." (Bruner, 1990) This view sees narratives as a basic tool that individuals use to communicate and create understanding with other people and for themselves. (Weick in Feldman, 2004) As such, narratives are invariably closely associated with learning, understanding ourselves, as well as the community within which we live and interact.

The information processing approach towards learning is based on the assumption that humans are genetically prepared to process and organize information in specific ways. New experiences and information are always understood through prior knowledge or experiences which are stored in our minds. The process of comparing new experiences with prior knowledge involves storing and retrieving from indexes in our memories (Anderson, 2000). These indexes correlate relate to a variety of features contained within a previous experience and serve as triggers for reminding and tends to be grouped together as generalized conceptions known as "Scripts" (Schank & Abelson in Green et

al, 2003). Scripts, or amalgamations of triggers from previous experiences, are used to lessen the burden of understanding new events by reducing our cognitive workload. It has been argued that these scripts are structured in the form of narratives and evidence is drawn from studies which show that children make advances in learning language driven by a need to construct meaning through narratives. (Bruner, 1990) As new information is received, we seek similarities in our prior knowledge by triggering the indexes of scripts which are used to compare "between cases of similarities" (Siefert, McKoon, Abelson & Ratcliff, 1986). If the new experience encountered is anomalous to the scripts in our memories, this contributes to "expectation failures"[7] and may lead to new generalizations or "scripts" being formed (Schank & Abelson in Schank & Berman, 2003). According to one definition of learning, learning is the product of the complex amalgamation of mental representations or "scripts" which can be formed from experience. These mental models can be formed not only from direct experiences but also from vicarious ones; from the narrative reports about the real or imagined experiences of others. Both direct experiences and those that are vicariously conveyed through the narratives of others are inherently concerned with the development of a coherent mental representation of the situation.

While the previous two paragraphs detail how humans utilize narratives to make sense and learn from new experiences, another perspective is that the learning process is also enacted as we engage in the narrative producing act. As mentioned in the previous section (2.2), Genette's description of the narrative as an act of production has great

[7] Expectation failures take place when something contrary to what is expected happens. According to Schank & Berman (2003), expectation failures result from experiences and information that challenge our pre-existing beliefs or show them to be faulty, we need to generate explanations based on what we already know or modify our existing memory structures to incorporate this new information/experience.

implications for learning and for the focus of this thesis. It is in the act of producing narratives- which are constructed out of prior experiences and knowledge- that our understanding is evidenced and applied. The act of constructing narratives involves a process of "levelling and sharpening" (Allport and Postman, 1945) where narrative details are embellished or left out altogether. By "leveling and sharpening" the process of critical thought and discernment is enacted. This occurs as the individual constructs the narrative by selecting relevant episodes from memory in order to cater to the audience as well as his own purpose for telling the story.

In conclusion, the act of forming a narrative, as well as reading, causes us to shape our experiences into a form that will interest our audience by selective embellishing or neglecting facts and information. This act of forming a narrative thus becomes a highly intellectual activity that involves selective recall and, in a sense, knowledge formation. The reception of stories too has the effect of causing us to match what is being told to us with our prior beliefs. If there is no match, we learn something new or have to revise a belief. In sum, the impact of narratives tends on learning can be seen in ability for students to make sense of new experiences and be able to represent past experiences and knowledge in a way that others can understand.

2.4 Collaborative Learning with narratives

Collaborative learning theory postulates that learning occurs when students and instructors work together to construct knowledge. This suggests that knowledge is socially produced by consensus amongst the members of the class. Here, knowledge is seen as "something people construct by talking together and reaching agreement."

(Bruffee, as cited in Barkley *et al*, 2005). The social interaction that collaborative learning affords exposes participants to multiple perspectives and provides opportunities to fill their knowledge gaps with the knowledge of others. (Singley et al, 2000) In a study that investigates the processes which account for the transfer of learning to individuals when they work in groups, Olivera and Straus (2004) showed that individuals who worked in groups demonstrated significantly greater improvement in performance and learning than did individuals who worked by themselves. A major factor that influenced this improvement is the social interaction that took place when people worked collectively.

Interaction with others allows students to ask questions, explain their reasoning for solutions and to reconcile differences in their knowledge with the ideas of others. Hence, such interaction emphasizes the role of *verbal elaboration* and the part it plays in the development and modification of the individual's cognitive structures. (Olivera & Straus, 2004). Additionally, verbal elaboration allows individual students to form social skills and the collective construction of meaning. Prior research suggests that help seeking and help giving through verbal elaboration contribute to the learning of both the help seeker and giver. (Slavin in Barkley et al, 2005)

The importance of verbal elaboration highlights the role that narratives play in Collaborative Learning as knowledge is "something that people construct by talking together and reaching agreement." (Bruffee in Barkley et al, 1993). Narratives are employed when knowledge is made coherent and structured when interacting with each other. This idea is furthered in Etienne Wenger's *Social Theory of Learning* (1998). In this theory he claims that learning is an inherently social endeavor and arises as a result

of active social participation in a community. According to Wenger, such participation takes the form of narrative interaction and it “shapes not only what we do, but also who we are and how we interpret what we do.” (1998). In this way, communities and groups construct knowledge and identity, through a process of negotiation and social interaction. The use of narratives thus provides a very persuasive argument for why learning should take place in groups. It is in the act of producing narratives collaboratively as a community that knowledge is constructed collaboratively. Carl Bereiter (2004) views knowledge building as “the process through which the cultural capital of a society is made available to successive generations” and where knowledge is situated in the practice of groups. If such practice can be located in the social or narrative interactions within the community, a case can be made for collaborative knowledge formation with the use of narratives.

2.5 Collaborative Narratives in the Blogosphere

When participation and social interaction is achieved in a group, I propose that a “Learning Community” would have been formed, an entity akin to Wenger’s “Communities of Practice” (1998). According to him, learning is inherently intertwined with the concept of “practice” in a community. I then suggest that a Blogosphere is an ideal manifestation of this community on-line. In the class Blogosphere, this "practice" is found in the posting of individual blog entries, as well as commenting on the entries of others. Through this “practice”, students are "mutually engaged" on the blogs through the "shared repertoire" of interacting with each other and collectively making sense of the information that they receive in class. This form of interaction and participation will lead

to the collaborative formation of a "shared understanding" in the class. (Wenger, 1998) This “shared understanding” or knowledge formed by the class is therefore firmly embedded within the context of the community that is formed. In other words, the knowledge and understanding that emerges from a community is more often than not situated in the interactions between the members. These interactions are made possible in an online community such as the Blogosphere, through functionality that “support posting and responding to questions, sharing stories of personal experience, and discussing and debating issues relevant to the community."(Wasko *et al*, 2000) It is thus essential to include these functionalities as they encourage open discussion, collaboration, and forums that in turn support the dynamic exchange of ideas and the process of knowledge formation.

What I hope to have shown is that in order for technology to help learning, it must not merely be about knowledge dissemination like LMS, but must necessarily be both constructivist and collaborative. Collaborative narratives thus offer tremendous potential through the medium of the Blogosphere.

Chapter Three

Methodology

3.1 Introduction:

The aim of this study begins with the recognition that social software, such as a class Blogosphere, provides the potential for learning in the classrooms to be enhanced through the collaborative formation of knowledge. The overarching goal of my study is to propose that the use of Collaborative Narratives in the classroom enhances students' learning experience. In this chapter, I outline a detailed proposal of the research methodology, schedule and plan of analysis to be employed in the study.

3.2 Research Questions

In this study, I make the case for the viability of Collaborative Narratives to be formed through the use of aggregated blogs in a class Blogosphere. I believe that Blogs are effective tools that enhance the learning experience as they allow students to reflectively analyze and articulate what they have learned in their blog entries. Additionally, the ability to comment on and read each other's blog post in the Blogosphere, I argue, enables members of the class to jointly create/negotiate meaning as a class by interacting with each other. This collective interaction in the class Blogosphere constitutes as a Collaborative Narrative where meaning is constructed through the class' negotiation and sharing of information. In order to make a suitable case for Collaborative Narratives, a number of secondary research questions emerge.

1. *How is learning activated through the use of a class Blogosphere?*

This study seeks to understand the cognitive and social factors that contribute to student learning as they use the Blogosphere. A large part of this understanding will emerge from how cognitive development is activated in the construction of narratives in individual blog entries. Learning and cognitive development is also operationalized through the interaction and information exchange that is found in the use of aggregated Blogs. The argument is made that such interaction results in the development of a "Learning Community" where routines, shared understandings and identity emerge.

2. *To what extent can a class Blogosphere manifest the ideals of Collaborative Narratives?*

I propose that the use of Blogs in learning is one way by which Collaborative Narratives can be operationalized. The Blogosphere provides ample opportunity for the tenets of Collaborative Narratives to be made salient and this study seeks to investigate the extent to which this is so.

By approaching these secondary questions, I hope to make a convincing case for the use of collectively formed narratives to enhance the classroom learning experience.

3.3 Research setting

In order to more strongly show how the use of Blogs may affect students learning in the classroom, I conducted a study of BIT320: Databases and Information taught at the University of Michigan's Ross School of Business in Fall 2004 to juniors and seniors in the undergraduate program. The instructor of this class required that each of the students

enrolled in the class maintain a personal blog which was provided to the class by Typepad,[8] a commercially available hosted blogging service. (See Fig.4 below) Typepad was chosen as the individual blogging tool because the instructor felt that the application had a proven and popular user interface, as well as, support for a variety of XML syndication formats such as RSS 1.0, RSS 2.0, and atom[9].

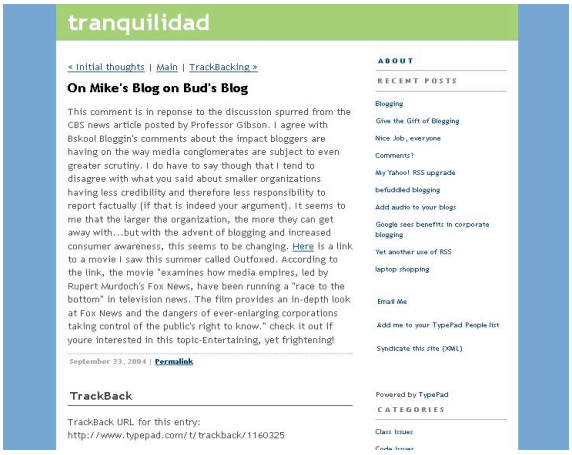

Figure 4: Student blog hosted by Typepad

Additionally, an online space which aggregated the latest blog postings was developed and hosted for the class by Myst Technology Partners, a local Ann Arbor technology company. The aggregation site (see Fig. 5 on the next page) uses a variety of syndication formats, such as RSS, atom and OPML, which allowed all the students' weblog entries to be fed into a central space and organized in a reverse-chronological order. This website also provided the class with a central space where announcements and instructions by the instructor could be posted and also functioned as a means where one could access other classmates' Blogs. A novel use of the aggregation website was the subscription to guest feeds, where the Blogs of prominent professionals and personalities

[8] Typepad is commercially available weblog software that is available as either an application or a hosted service.
[9] RSS and atom are web syndication formats that are based on XML technology.

were syndicated in the site as well. These guest feeds allowed the class to be able to access the latest information, trends and thoughts in the industry. The motivation for doing this is to hopefully provide the members of the class with current information that was relevant to what was being taught in class.

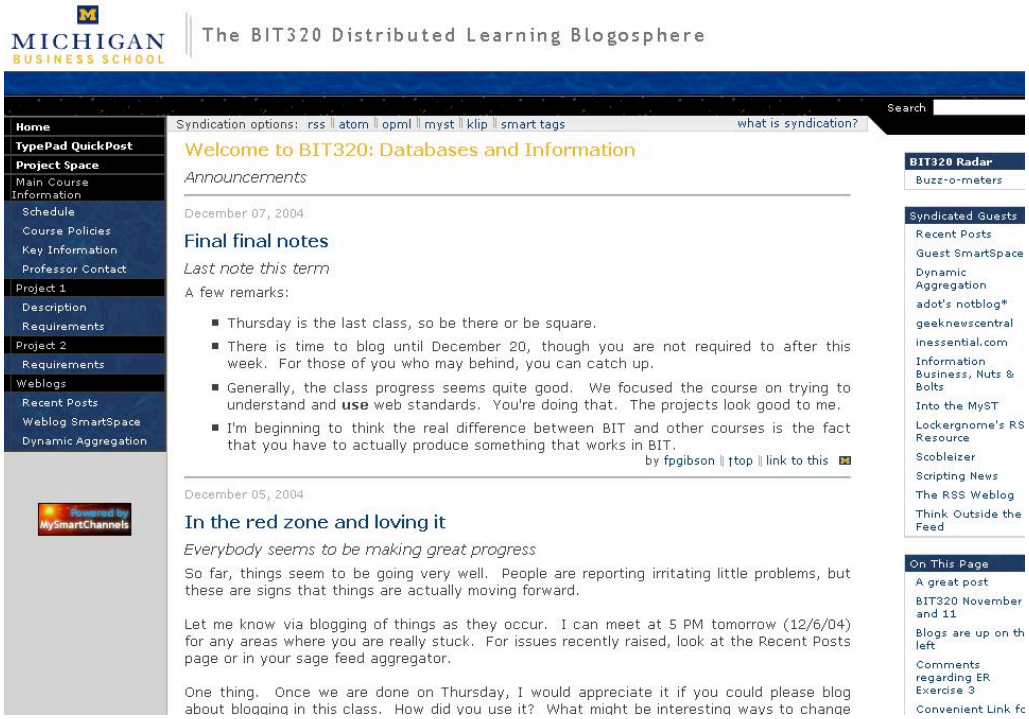

Figure 5: BIT 320 aggreation website

The instructor's initial goal for using Blogs in the class was for him to get a view on what students were learning and where they were encountering problems in a relatively unstructured and technically challenging learning task. In order to achieve this, he instituted a number of class policies surrounding the use of the Blogs which would ensure a minimum level of participation from the students. (See appendix A for policies surrounding participation in the class) To summarize, students were to post a blog entry twice a week and this would constitute as twenty percent of the course grade.

The individual student Blogs and the aggregation website constitute what the instructor of the class named the BIT 320 Distributed Learning Blogosphere. Together, the interconnected student Blogs and the centralized aggregation site, or Blogosphere, form an interconnected learning community that presents a unique opportunity for me to study how Collaborative Narratives are able to enhance learning in a class.

3.4 Methods employed:

This study of BIT 320's Distributed Learning Blogosphere seeks to better understand the technical mechanisms and social processes that contribute to the students' learning experience. The study employs a number of methods of analysis to hopefully arrive at a better understanding of how aggregated Blogs can be applied in the learning domain.

3.4.1 Analysis of the posting patterns of the students

In order to better understand how the Blogs in BIT 320 has been adopted and used by the class' students, an analysis of the Blogosphere's archives was undertaken. This involved examining the total numbers of posts made by the class members and distinguishing the posts by who made them and what the subject of the posts were. This will allow me to capture the patterns which characterize students' participation in the Blogosphere.

3.4.2 Analysis of the narratives within each student's blog to assess the learning.

An argument for the power of narratives to transform mere information into knowledge will not be complete without actually examining the student narratives in their weekly blog posts. This analysis necessarily consists of identifying types of blog posts, in terms of their genres/categories, and comparing them with the posting patterns revealed in the above analysis. Additionally, this analysis seeks to track particular instances of collaborative knowledge formation through the negotiations and debates in the Blogosphere. This involves not just examining the narratives that exist in the blog entries, but also those which are present in the exchange when the students leave comments or trackbacks on each others posts. It is predicted that analyzing the content of the narratives would reveal several things:

- Evidence of *learning/knowledge formation* in blog posts which describe a students' understanding, assimilating and applying information gained from the class.
- Evidence of *sharing and exchange* of knowledge in blog posts that seek or provide assistance to other class members.
- Evidence of the formation of a 'shared understanding' through *debate and negotiations* enabled by interactive tools, such as trackback and comments, made available by the blog tool.

3.4.4 Survey of students' opinions:

This survey was conducted over a period of thirteen days (12/8/2004 – 12/20/2004) at the close of the Fall 2004 Term in the University of Michigan. The population that was studied were the thirty-one students from BIT 320, a Michigan Business School class that utilized student Blogs and RSS aggregation as a means of participating in the course.

The survey was designed and delivered via the web through Survey Monkey (http://www.surveymonkey.com/home.asp). Students in the class were informed about the survey through updates in announcements in the class' aggregated web site and via email. They accessed the survey using a hyperlink sent to their email accounts and they completed the survey in ten to twenty minutes.

Of the thirty-one students in the class, twenty-five students responded to the survey in all. It must be noted however that not all the respondents completed the entire survey. Another caution is that due to the small sample size of this survey, the results cannot be generalized to a larger population.

The students were asked a total of nineteen questions that were divided into the following sections:

I. Prior Experience in Using Blogs
II. Patterns in Reading Other People's Blogs
III. Impact of Blogs on Group Collaboration
IV. Impact of Blogs on Learning
V. Assessment of the Blogging Experience.

3.5 Ethics of the approach:

Ethical considerations for this study were fulfilled by adopting the following measures:

3.5.1 Informed Consent:

This is the most important aspect of the ethical procedures for my study of learning in Blogs. Blogs are most definitely personal spaces for individual thought, commentary and reflection. As such, informed consent of the individuals whose Blogs I will be studying is essential. If members of the class would like to opt out of my study, this is possible by indicating this in the Informed Consent form. Individuals will be informed about their rights as participants in this study. Also, individuals are able to stop their participation at any point in time.

3.5.2 Anonymity and Privacy:

Guarantees of anonymity and privacy will be provided to all individuals participating in my study. The information used in this study will be disassociated from individuals and not made publicly attributable. On occasion, information such as direct quotations was needed for the study. In these instances, particular permission needs to be sought from these individuals.

3.5.3 Institutional Review Board application:

In the event that the decision to submit this study for publication is made, an application for Retroactive IRB approval will be made. The application guidelines and forms for this approval can be found at the following URL:

http://www.irb.research.umich.edu/IRB_HSBS_Shared/irbwebapp.html

Chapter 4

Results of Analysis

4.1 Introduction

This analysis of the BIT 320 Distributed Learning Blogosphere hopes to make a case for the development of Collaborative Narratives as demonstrated through the use of aggregated Blogs in the learning environment. In this section I present the results analyses outlined in the previous chapter.

4.2 Patterns of Use in the class Blogosphere

Over the course of the Fall 2004 term, there were 1,078 posts in the Blogosphere. According to the instructor of the course, Student posts accounted for 78% of this volume and determined the content of the discussion. The graph on the next page (Fig. 6) shows the levels of contribution by the 31 student and 1 instructor. Participants are ordered from left to right by decreasing order of contribution. As can be read in the graph, the instructor made 233 posts, 22% of total. The graph illustrates a phenomenon typically found in online communities where a few highly interested and highly resourceful people are willing and able to contribute to the community while the majority contributes little or nothing. (Oliver, Marwell & Teixeira in Markus, 1987). This will result in a graph such as the one illustrated here (Fig. 6 on the next page). Given the name “the long tail” by the instructor of the class because the individually lower volume contributors in the tail of the distribution actually made most of the aggregate contribution.

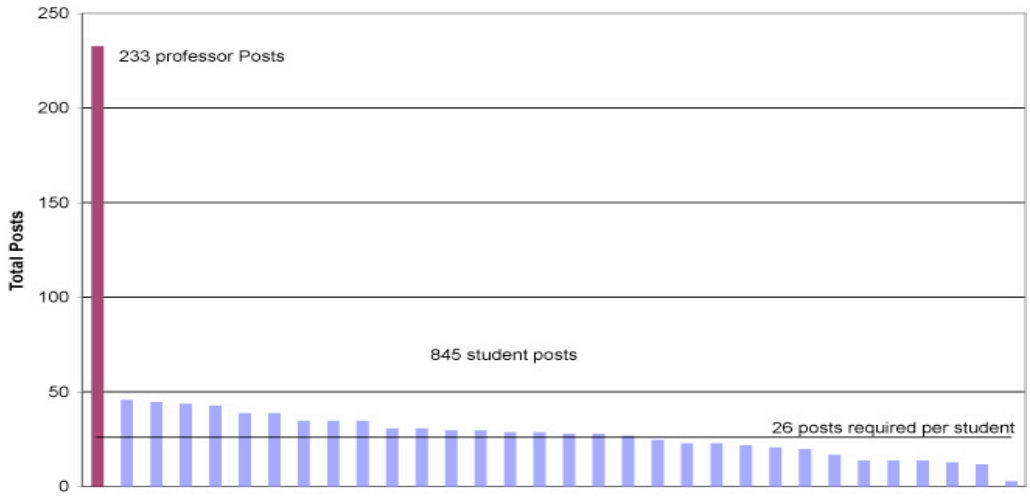

Figure 6: The Long tail diagram

Based on the weekly requirement of 2 blog posts a week, had students only been responding to the course blogging requirement, we would have expected the majority of the students to meet the 26 one-paragraph blog post requirement and then stop. Figure 6 also shows that 17 of the 31 students exceeded the minimum requirement with only 6 failing to come near the requirement.[10] In other words, more than half the students went beyond the minimum frequency and students tended to write more than the minimum length. What can be concluded from this is that the minimum posting requirement was merely the first step in the students' learning experience. It created a critical mass of information from which students could draw information which then motivated them to continue blogging and posting in order to learn more. Students' appreciated the value of this interactive learning process and engaged in it beyond what was necessary as they saw it as contributing towards their learning. This sentiment was expressed in one of the student's blog post where the she says, "I would speculate that after an initial familiarization period, in classes where students would truly benefit from sharing

[10] Furthermore, 60% of posts exceeded the one paragraph minimum length, 25% were greater than two paragraphs, and 15% greater than three paragraphs. For detailed results, see Appendix B.

knowledge, they would realize the benefits and take to blogging on their own." (See Appendix B)

This finding is further strengthened when we consider the nature and frequency of the posts. Given the disproportionate figures of contributions between the students and the instructor, a conclusion that might be made is that the instructor dominated the Blogosphere with his posts. However, a closer examination of the content of the posts reveals that all but 14 (six percent) of the instructor's blog posts were direct comments on the 845 entries by students. If anything these figures shows that the students in the class were actively participating in the Blogosphere and that the sheer amount of posts made by the instructor were almost entirely made *in response to* and generally shorter than the students' posts.

4.3 Content of blog posts:

The numbers of blog posts, while indicative of the *amount* of blogging activity, does not specifically indicate the *quality* of the posts made and the value it will have on the students. In order to illustrate this, a content analysis of the blog narratives is in order. What has been revealed in this exercise is that the majority of the posts made throughout the term were short in length, and only 25% of posts (i.e., around 270), were over two paragraphs in length. It is in these longer blog entries that students tended to reflectively analyze and inject new ideas through their narratives. A sample of the 50 longest posts in length were further analyzed and classified according to the following categories[11]. (See Fig. 7 for results of classification)

[11] It should be noted that students were able to classify their blog entries according to categories that they create However, the instructor of the course stipulated that the following 5 categories be adhered to at the

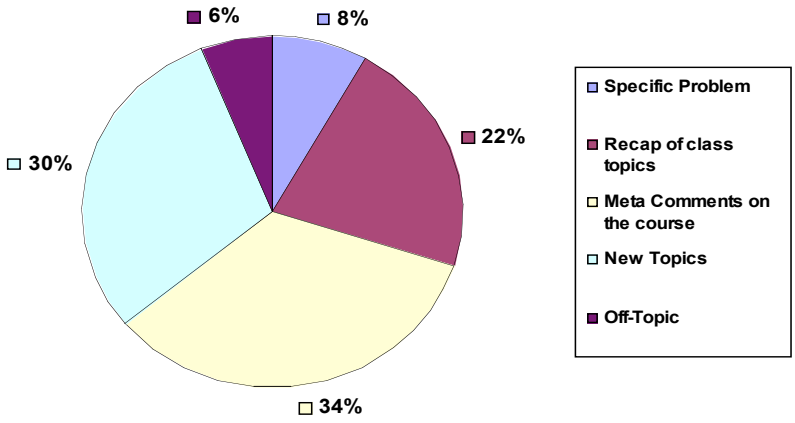

Figure 7: Classification of the 50 longest blog posts by Category

This classification reveals that 11 (or 22%) of the 50 lengthy blog entries consisted of narratives that attempted to reflect and review what was learnt from a particular class topic (e.g., "Here's what the last couple of weeks of learning about this technology have led me to conclude."). 17 (34%) were meta-comments about the course (e.g., a paean to blogging, or a reflection on the extremely tough nature of the mid-term). And 15 (30%) were new topics the student introduced about outside goings-on in the realm of information business. Only a minority of the 50 posts were about specific topical problems that the student was facing with the project or the technology. (4 entries, 8%) 3 (6%) of the entries were off-topic (e.g., complaints about the national election results).

This analysis of the content of a sampling of the students' blog entries demonstrates that the value in the use of blog entries does not merely arise out of personal sense-making of the topics of the class. The narratives in the blog were also used to cater to the social/emotional aspects of learning, where students are able to make meta-

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very minimum: class issues, project issues, code issues, information business & Blogs. These categories were not uniformly implemented across the students' Blogs.

comments of their personal state and of their use of Blogs. Additionally, these narratives were also used to introduce the other members of the learning community to new information and resources which serves to expand the "knowledge horizon[12]" of the class as a whole.

The implication of this on the notion of Collaborative Narratives is that the content of these blog posts clearly represent the interactive nature of the learning process. Students were able to make meaning together, allowing their narratives to inform those of their classmates and vice-versa. Most importantly, this ongoing co-authoring of narratives has a demonstrably significant effect on enhancing learning. Looking at the survey results (more on which I will elaborate later), students were more likely than not to comment that the experience in the Blogosphere has contributed positively to their understanding of the course by allowing them an insight into the multiple perspectives of their classmates.

4.4 Interaction in the Blogosphere:

An essential part of the argument that I am making in this study is the collaborative learning that arises as a result of group-formed narratives. This requires that attention be paid to the interaction and information exchange that place through the Blogosphere. Such interaction primarily occurs in the Blogosphere in the following ways:

1. Through the use of Trackbacks

[12] By using the term "knowledge horizon", I am aware that a learning community that pays attention only to the topics taught in class would be one that has bounds placed on the knowledge that can be formed by its members. If members of the community also paid attention to "boundary objects" and information which would not normally fall in the sphere of the community's interest, the knowledge collectively formed in the learning community would move beyond what is raised by the instructor. This I feel is a very important benefit that arises from the use of a Blogosphere to form a learning community.

2. Responding to a blog entry through the use of the comment feature

I will illustrate the learning that takes place through Collaborative Narratives via these two examples of narrative interactions:

1.5.1 The use of Trackback:

The Blogosphere affords social interaction through the ability for students in the class to leave each other comments and the ability for students to trace how their ideas are used by other members of the class through "Trackback". These functionalities allow individuals to pose questions to each other and to link particular ideas that are being developed across different Blogs. For instance, student A posed a number of technical questions on his blog to which student B answers via a post on her blog. Student B, then links student A's questions to her blog via a "Trackback". When this is done, student A receives a 'ping' that he is being referenced by student B and even finds out that his questions have been answered by student B on her blog. (See Fig. 8 below)

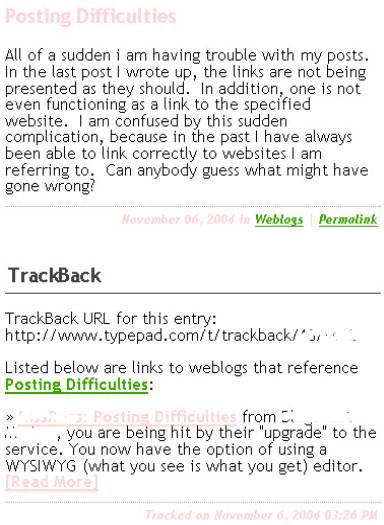


Figure 8: Use of Trackback example

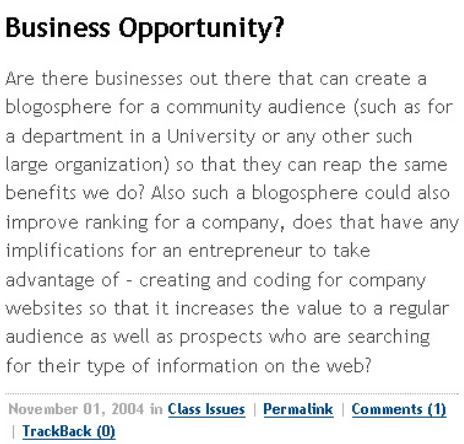
He then leaves her a thank you comment on her blog. (See Fig. 9 on the next page)

Figure 9: Use of TrackBack example (Student's response)

This exchange between the 2 students highlights perfectly the type of social interaction that benefits individual learning highlighted by Olivera and Straus. (2004) According to them, verbal elaboration takes place through such exchanges will contribute to the learning of both the help seeker and giver.

4.4.2 The use of Comments:

Almost all blog applications support a measure of interactivity through allowing others to comment on the blog entry. This comment function allows for a quick and easy response from the audience of one's blog. In the learning environment, the ability to leave comments based on a blog entry allows students in the class to be able to receive immediate feedback and responses to their ideas and questions. To illustrate, Student C in Figure 10 contributes his weekly blog post in the guise of several questions that request for more information about the business viability of the use of a Blogosphere.



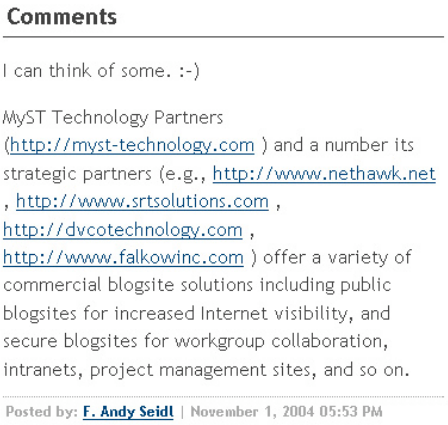
Business Opportunity?

Are there businesses out there that can create a blogosphere for a community audience (such as for a department in a University or any other such large organization) so that they can reap the same benefits we do? Also such a blogosphere could also improve ranking for a company, does that have any implifications for an entrepreneur to take advantage of - creating and coding for company websites so that it increases the value to a regular audience as well as prospects who are searching for their type of information on the web?

November 01, 2004 in Class Issues | Permalink | Comments (1) | TrackBack (0)

Figure 10: Use of Comments example

Student C's questions receive a response from Andy Siedl, the developer of the class' blogging software, through the comment feature of the blog. (See Fig. 11). Andy responded by highlighting several examples of companies that offer commercial blogging solutions for organizations and companies.



Comments

I can think of some. :-)

MyST Technology Partners (http://myst-technology.com) and a number its strategic partners (e.g., http://www.nethawk.net , http://www.srtsolutions.com , http://dvcotechnology.com , http://www.falkowinc.com) offer a variety of commercial blogsite solutions including public blogsites for increased Internet visibility, and secure blogsites for workgroup collaboration, intranets, project management sites, and so on.

Posted by: F. Andy Seidl | November 1, 2004 05:53 PM

Figure 11: Use of Comments example (Student's response)

This sort of exchange exemplifies the process of collective knowledge formation that takes place through Collaborative Narratives. Here, gaps in Student C's knowledge was articulated and made apparent in his Blog narrative. Andy reads this post and contributes

new information for Student C. This new information can either be confirmed Student C's prior knowledge or he/she must adjust his/her mental model to incorporate this new information. Narratives play a significant part in the collaborative formation of knowledge here.

4.5 Student Opinions[13]:

A survey to assess students' opinions of whether the use of Blogs has enhanced their learning experience in the class was conducted at the end of the Fall 2004 term. This survey seeks to understand if the experience of using Blogs for the class has enhanced the students' learning experience. Analysis of the survey data results will be able to reveal empirical evidence of students' opinions about their experience using Blogs in the classroom.

The survey was conducted via the web through Survey Monkey on the thirty-one students in the class. Students were notified of the survey through emails and updates from their instructor. The survey was open for a period of thirteen days (12/8/2004 – 12/20/2004) and a total of twenty-five students responded to the survey.

In this section, I will detail the results of the survey with specific focus on how students felt that participation in the Blogosphere enhanced their learning.[14] The survey questions can be divided into the following categories:

I. Prior Experience in Using Blogs

II. Patterns in Reading Other People's Blogs

III. Impact of Blogs on Group Collaboration

[13] See Appendix B for a detailed breakdown of the survey results.
[14] Ibid.

IV. Impact of Blogs on Learning

V. Assessment of the Blogging Experience

For the purposes of this discussion, I will only concentrate on *the impact of Blogs on group collaboration, the impact of Blogs on learning* and *students' assessment of the blogging experience.*

4.5.1 Impact of Blogs on Group Collaboration

The rationale behind asking the questions in this section was because one of the assumptions made by how narratives impact learning is that they enable individuals to share information and knowledge efficiently. We asked the students to indicate the extent to which they felt that Blogs enabled them to work more effectively with your classmates. 79.2% of the students felt that the use of Blogs enables more effective collaboration. The reasons for this were that the use of Blogs "allows you to see what other people are thinking" and that the students have been able to "share knowledge about difficult topics" or to "get help on problems" that they were facing in class. (See questions 13, Appendix B). Of the 20.8% who felt that Blogs did not facilitate collaboration, the main reasons consisted of the lack of acceptance and use of Blogs as a medium of communication and an avenue for knowledge sharing.

4.5.2 Impact of Blogs on Learning

The questions in this section of the survey constitute the most important aspect of the survey for the purposes of our study. They were designed to specifically ask students for their opinions on blogging as a learning tool. There was first an open-ended question

that required respondents to comment on whether the use of Blogs improved the learning that took place in the class. 86.3% of the students believed that the form of collaboration engendered by blogging enhanced learning. Comments include the fact that Blogs are "very useful when you have a large project" as they are "a great interactive, real time trouble shooting tool". Additionally, students also felt that their "understanding of the material improved" as "it allows more knowledgeable students to help clarify the topics the professor discusses". (See question 13, Appendix B).

The students also responded affirmatively to the question on whether the use of Blogs enabled them to better understand the material taught in the class (95.5%). This vast majority indicates that the students' opinions of the use of Blogs and its contribution to their learning are extremely positive. Students were then asked to elaborate on this response and indicate specifically how the Blogs contributed to their learning experience.

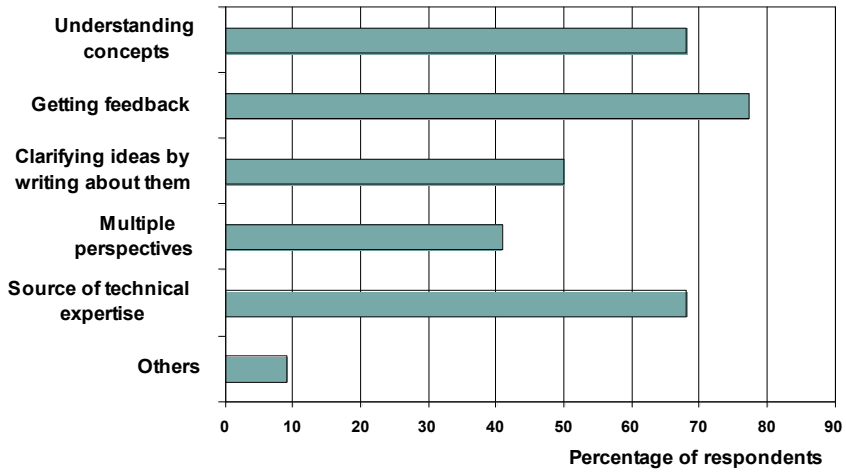


Figure 12: How Blogs Enhance Learning (n=22)

From the results, we can see that the vast majority of the students see Blogs as tools that enable them to get feedback, consult the technical expertise of others and

understand concepts more clearly. These choices highlight the importance of the interactive and collaborative nature of Blogs in the learning process.

The next set of questions considered the role that composing one's blog post has with individual learning. The narratives being written in Blogs have the unique characteristic of catering to both the individual who wrote it as well as for an audience at large. It is assumed that writing for different audiences would have a very different impact on the students learning. If the students felt that the blog posts were composed mainly for themselves, then their motivations for writing would be very different than if the blog posts had an audience. The survey sought to gather from the respondents who the primary audience for their blog posts was. (Appendix B, questions 17 & 18). For these questions, there were 22 respondents with 3 respondents skipping the questions. 77.3% of the respondents agreed or strongly agreed that their audience were members of the class, while 13.6% were neutral and 9.1% disagreed that this was the case. There were no respondents who strongly disagreed. Thus, it can be seen that students were cogniscent of the fact that their narratives had an audience of the learning community. It is ventured that such awareness would motivate individuals to explain more and make more coherent their thoughts in a particular blog post. This has the effective of causing the students in the class to make their narratives clearer and in the process refining their existing knowledge.

4.5.3 Assessment of the Blogging Experience

Finally, we asked students if they would still continue blogging even if it were not a requirement for the course. Of the 22 respondents, only 59.1% responded positively. This

is curious despite the highly positive responses to the use of blogging in the course. It can only be assumed that the students saw the blogging as a course requirement and that there would be little reason to maintain one after the class has ended. I would even venture to speculate that the value of blog use comes from the fact that one is interlinked and able to interact with others. If the Blogs were to be maintained solely for the reason of personal journaling, there would be little incentive to keep up with posting regular entries.

Chapter 5

Conclusion

5.1 The efficacy of Collaborative Narratives in enhancing learning

The purpose of this research has been to make a case for the potential of collaboratively formed narratives to enhance learning in the Blogosphere. In this study, blogs are put forward as a source of information, an avenue to articulate knowledge and also as a mode of online interaction for the class. Through the features that enable interaction between the students and syndication technology that aggregate the latest content into a unified view, the Blogosphere shows immense potential as a transformational technology for teaching and learning. When operationalized with the notion of narratives, we can see that the Blogosphere is structured to engage the students in an ever-unfolding process of reflection, knowledge sharing, and debate. It is these narrative processes in the Blogosphere that allow learning to transcend the constraints of the curriculum and enable students to direct their own learning.

Through the study of the BIT 320 Blogosphere, it is evident that the use of aggregated weblogs has proven to be effective in aiding student learning especially in the following areas:

5.1.1 The promotion of reflective analysis

One of the reasons that explain why blogs have proven to be so popular recently is the sense of ownership that accompanies having a personal space on the web. Essentially, blogs function as a personal ‘soapbox’ where the ability to articulate the

knowledge that the student has gained is both empowering and fosters the development of critical thought. Composing a weblog entry induces students to assess their own knowledge and be aware of how their views might be interpreted and reflected on by others. (Mortensen & Walker, in, Williams & Jacobs, 2004)

In particular, I think that the use of blogs enables individual students in the class to organize and make coherent new information/ideas that they have received in the class, write them down and allow those thoughts to be read by other members of the class. Thus, we can see that each blog post a student constructs can constitute as a sort of learning narrative where he/she makes sense of new information. In Olivera and Straus' study (2004), they emphasize the role of *verbal elaboration* as important to the development of cognitive structures. In the case of the Blogosphere, it is the act of posting one's weekly blog entry that functions as a corollary to verbal elaboration. Composing a blog entry allows the student to reflect on the concepts being taught, and then enables him/her to articulate that information in a coherent narrative. This process of reflective analysis allows the student to adjust his/her prior knowledge to accommodate new experiences/information.

5.1.2 Enabling a unified view how everyone in the class is comprehending and digesting the materials

This is an essential aspect of the Blogosphere that transforms the use of blogs as a tool for personal reflection into a tool which enables collaborative learning to take place. The use of syndication technology and the aggregation website enabled students to be made aware of and to read the latest developments and thoughts of fellow classmates.

This aggregation of the individual blogs onto one web site allowed individuals in the class to view conversations and exchanges that take place without having to follow any one student's blog.

Additionally, the use of syndication feed technology made it very easy to aggregate all of the individual contributions in one place while still maintaining individual attribution. This is an important consideration to the motivations for students to participate and contribute to the pool of knowledge being formed by the class. Social learning theory suggests that members, especially new ones, learn behavior that is visible and socially reinforced. Further, visible peer recognition of help and contribution reinforces learning. (Sproull et al, in press)

5.1.3 Getting feedback from instructors and other members of the class

The use of blogs can be justified through the educational theories of Lev Vygotsky (1978) which state that knowledge tends to be discursively formed. This form of learning is best addressed by the immediacy and commentary provided by blogs. Blogs have been successful in promoting interactivity that's conversational and discursive. Learning that takes place through such interaction has been shown to be conducive to improving student-teacher interactions, active learning and higher-order thinking. (Ferdig & Trammel, in Williams & Jacobs, 2004)

5.1.4 Archiving and publishing knowledge being formed individually and collectively

The findings of several experiments conducted by Olivera & Straus (2004) indicate that the ability to observe the processes involved in group interaction will benefit

new members of the group. This is because, in the experiment they conducted, observations of the group solving of puzzles in the study served as a mechanism for the transfer of learning to individuals who were not part of the group. This has great implications for building systems that store the experience of a 'learning community'. Hence, capturing the processes by which the community develops solutions is likely to be more effective in allowing students who are not part of the class or who are unable to be physically present in the class is beneficial. In addition, the archiving of the interactions and group processes of the class will enable students to revisit the knowledge that they helped form as a group.

5.1.5 Expanding the knowledge and "information horizon" of the community through linking resources

One aspect of the BIT 320 Blogosphere that has not been fully explored is the use of 'guest feeds" where the XML-based feeds in blogs allowed the instructor to join people and resources to the class aggregated website. For instance, the blogs of prominent personalities in the field were fed into the class Blogosphere as well. This enabled members of the class to be made aware of news or information that they would otherwise have to go out of their way to retrieve. Additionally, having feeds and hyperlinks that highlights contemporary issues and events helps to contextualize the material that's being taught in the class. This encourages the revisiting and revision of learned concepts as well as enriches the learning experience.

5.1.6 Supporting the emergence of a "learning community"

In Etienne Wenger's terms, a “community of practice” emerges when people, who have a common interest, come together to collaborate, share ideas, find solutions, and innovate. (1998) Through the use of the class Blogosphere described above, I believe that Wenger’s notion of a "Community of Practice" (1998) will result. According to him, learning is inherently intertwined with the concept of “practice” in a community. In the class Blogosphere, this "practice" is found in the posting of individual blog entries, as well as commenting on the entries of others. Through this “practice”, students are "mutually engaged" on the blogs through the "shared repertoire" of interacting with each other and collectively making sense of the information that they receive in class. This form of interaction and participation will lead to the collaborative formation of a "shared understanding" in the class. (Wenger, 1998) This “shared understanding” or knowledge formed by the class is therefore firmly embedded within the context of the community that is formed. In other words, the knowledge and understanding that emerges from a community is more often than not situated in the interactions between the members. These interactions are made possible in an online community, such as the Blogosphere, through "mechanisms that support posting and responding to questions, sharing stories of personal experience, and discussing and debating issues relevant to the community."(Wasko *et al*, 2000) It is thus essential to include functionalities which encourage open discussion, collaboration, and forums, that in turn will support the dynamic exchange of ideas.

5.2 The broader impact of this research

This project fits into the broader enquiry of how human learning takes place. Taken in its widest sense, learning occurs on a daily basis and in many ways. Understanding how humans are able to share information, make sense of that information and form knowledge, especially in the context of information systems, is something that this study seeks to investigate and also provides the foundations for further research to be done. It is predicted that the findings generated by this study will be especially relevant to the following fields/domains:

- Education Technology
- Social Software Development
- Cognitive Psychology
- Linguistics
- Organizational Studies
- Online Communities

Additionally, I feel that not enough attention has been paid to the use of narratives to create applications which provide opportunities to engage interactively with information and collaboratively with each other. As mentioned in an earlier section of this paper, narratives help people form schemas which in turn help to reduce cognitive load when encountering new information or experiences. Further, Collaborative Narratives enables the formation of collective schemata for groups of people. This puts forward the importance of the social aspect of knowledge formation where sharing and negotiating through narratives enlarges the knowledge pool. This idea is very much against the grain of present Information System design which

situates of knowledge in the individual and not in the interactions of the collective. Being able to support narratives in the design of future Information Systems allows users to intuitively share and exchange information on a collective level.

5.3 Future steps:

A future line of research could potentially look at non-classroom settings where individuals are not required to participate in the Blogosphere. This will undoubtedly produce a different dynamic in terms of how members of the community will contribute and interact in the Blogosphere. This line of study will be more broadly applicable to non-classroom settings and will address issues of knowledge dissemination and management.

Additionally, little work has been done on the use of narratives in learning/knowledge formation through information systems before. This research would hopefully encourage further investigation into the following areas:

- design recommendations for learning system software and curriculum design
- role of narratives in formation of mental models
- collaborative learning models (not just interactive individual level)
- experimental testing of the cognitive aspect of collaborative narratives

Appendix A: Requirements for participation

Instructor's note on the requirements for participating in the BIT 320 distributed learning Blogosphere found on the course website:

BIT 320 Participating in the Blogosphere

If you're reading this, you're wondering how to best participate in the class so that you can maximize points allocated on the basis of class participation. **Only class participation that takes place in the form of a blog posting counts.** A key element of this class is that we have created our own Blogosphere to understand an emerging, important phenomenon in information management for large and small organizations. To really understand, we gotta do.

My goal in assigning **20 out of 100 possible total course points for class participation** is to motivate you to get on-line and do it, nothing more. Here are some things that, if you do them twice a week along with some additional steps I outline below, will get you good class participation credit:

- Post a question or statement about something that happened in class under the category **"Class Issues"**. Make sure you write something that someone else who was there will be able to understand and respond intelligently to.
- Track back to someone else's blog post (basically reference it on your own blog; we'll do this in class). Be sure to assign an appropriate category to your post.
- Post a reference to a web article with some commentary of your own. Use a category like **"Information Business"**, but you are free to make up your own.
- Post a question about the class project under the category **"Project Issues"**. When we get to Project 2 (or even Project 1 for that matter), post code that is not working under the category **"Code Issues"**. Be sure to state what you think should be happening and why you think there is a problem. In particular, it would be good to post:
    - What software you think is the source of your difficulties.
    - What exactly you were trying to do. Include any relevant copies of SQL, XML, XSLT, or whatever you were trying to get to work.
    - What the unexpected results were. If you can, a copy of these would be helpful.
- Post an answer to a question about the class project using the *appropriate category*.
- Make sure that your posts are not trivial one-liners. My general rule of thumb would be that you should write at least one thoughtful paragraph of four or five sentences. If you are going to write less, then you need to make more than just two posts per week.

In addition, you must fulfill all requirements in the September 9, 2004 lab document by the dates assigned or **incur a loss of 5 of your total possible class points**.

Appendix B: Survey of BIT 320

References:

Abbott, H. P. (2002). *The cambridge introduction to narrative*. Cambridge: Cambridge University Press.

Anderson, J. (2000). *Cognitive psychology and its implications* (5th ed). New York: Worth Publishers.

Barkley, E. F., Cross, K. P. & Major, C. H. (2005). *Collaborative learning techniques: A handbook for college faculty*. San Francisco, CA: Jossey-Bass.

Bransford, J. D., Brown, A. L. & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academy Press.

Brehm, S., Kassin, S. M., Fein, S. (2002). *Social psychology* (5th ed.). Boston, MA: Houghton Mifflin.

Dewey, J. (1966). *Democracy and education, an introduction to the philosophy of education.* New York: Free Press.

Downes, S. (2004). Educational blogging, *Educause Review*, 39(5), 14–26.

duToit, A. (2003). Knowledge: A sense making process shared through narrative, *Journal of Knowledge Management*, 7(3), 27–37.

Feldman, M. S., Skoldberg, K., Brown, R. N. & Horner, D. (2004). Making sense of stories: A rhetorical approach to narrative analysis, *Journal of Public Administration Research and Theory*, 14(2), 147-170.

Godwin-Jones, R. (2003). Emerging technologies: Blogs and Wikis - Environments for on-line collaboration, *Language, Learning & Technology,* 7(2), 12–16.

Green, M. C., Strange, J. J. & Brock, T. C. (Eds.). (2003). *Narrative impact: Social and cognitive foundations*, Mahwah, NJ: L. Erlbaum Associates.

Jeong, H. & Chi, M. T. H. (1997). Construction of shared knowledge during collaborative learning. In *Proceedings of CSCL '97 Conference on Computer Supported Cooperative Learning* (Toronto, December 10 - 14). Retrieved April 12, 2005, from http://www.oise.utoronto.ca/cscl/papers/jeong.pdf.

Jonassen, D. (1991). Objectivism vs constructivism: Do we need a new philosophical paradigm? *Educational Technology, Research and Development,* 39(3), 5-13.

Knowledge Socialization Project at IBM Research. (n.d.). Retrieved October 5, 2004, from http://www.research.ibm.com/knowsoc/.

Laurel, B. (1991). *Computers as theater*. Reading, MA: Addison-Wesley Publishing Company.

Markus, L. (1987). Towards a 'critical mass' theory of interactive media: Universal access, independence, and diffusion. *Communication Research*, 14, 491-511.

McQuillan, M. (Ed.). (2000). *The narrative reader*. London: Routeledge.

Nardi, B. A., Schiano, D. J., Gumbrecht, M. & Swartz, L. (2004). Why we Blog, *Communications of the ACM*, 47(12), 41–46.

Newman, D. (1990). Opportunities for research on the organizational impact of school computers, *Educational Researcher,* 19(3), 8–13.

Olivera, F. & Straus, S. G. (2004). Group-to-individual transfer of learning: Cognitive and social factors, *Small Group Research*, 35 (4), 440–465.

Oravec, J. A. (2002). Bookmarking the world: Weblog applications in education, *Journal of Adolescent & Adult Literacy*, 45(7), 616–621.

Polkinghorne, D. E. (1988). *Narrative knowing and the human sciences*. Albany, NY: State University of New York Press.

Rainie, L. (2005). The state of Blogging. (The Pew Internet and American Life Project Report: Data Memo, January 2005). Retrieved January 2, 2005, from http://www.pewinternet.org/PPF/r/144/report_display.asp.

Schank, R. & Berman, T. R. (2003). The pervasive role of stories in knowledge and action. In, Green, M. C., Strange, J. J. & Brock, T. C. (Eds.) (2003) *Narrative impact: Social and cognitive foundations*, Mahwah, NJ: Lawrence Erlbaum Associates.

Smith, M. K. (2003). Communities of practice. In *The encyclopedia of informal education.* Retrieved September 18, 2004, from http://www.infed.org/biblio/communities_of_practice.htm.

Sproull, L., Conley, C., & Moon, J. Y. (in press). Pro-social behavior on the net. In Y. Amichai-Hamburger (Ed.), *The social net: The social psychology of the Internet*. New York: Oxford University Press.

Tepper, Michelle (2003). The rise of Social Software, *NetWorker,* 7(13), 19–23.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Walker, K. (2004). Learning on location with cinematic narratives. In *Proceedings of the 1st ACM workshop on Story representation, Mechanism and Context* (New York, October 15). ACM Press, 55-58.

Wasko, M. M. & Faraj, S. (2000) "It is what one does": Why people participate and help others in electronic communities of practice, *Journal of Strategic Information Systems,* 9, 155–173.

Wenger, Etienne (1998). *Communities of practice*. Cambridge: Cambridge University Press.

White, H. (1981). The value of narrativity in the representation of reality. In W. J. T. Mitchell (Ed.), *On narrative*. Chicago: The University of Chicago Press.

Williams, J. B. & Jacobs, J. (2004) Exploring the use of blogs as learning spaces in the higher education sector, *Australasian Journal of Educational Technology*, 20(2), 232 – 247.