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STUDENT PERCEPTIONS OF THE USE
OF A DISCUSSION-BASED TOOL TO SUPPORT LEARNING

A Thesis in
Instructional Systems
by
Roxanne Toto
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The thesis of Roxanne Toto was reviewed and approved* by the following:

Jill L. Lane  
Affiliate Assistant Professor of Education  
Thesis Advisor  
Co-Chair of Committee

Kyle L Peck  
Professor of Education  
Co-Chair of Committee

Priya Sharma  
Assistant Professor of Education

Renata S. Engel  
Professor of Engineering Science and Mechanics

Edgar I. Farmer  
Professor of Education  
Head of the Department of Learning and Performance Systems

*Signatures are on file in the Graduate School
ABSTRACT

This is a qualitative collective case study involving the perceptions of six undergraduate students on the modified use of a discussion based tool to support student learning. The purpose of this study is to describe and investigate the experience this small set of online learners in order to understand how they perceived the modified use of an online discussion based tool supported their learning.

Current research indicates that effective online discussion requires a high level of maintenance and care on the part of the instructor as well as being fairly time intensive for the students. Little or no research has been conducted on the modified use and application of discussion based tools to support student learning. Through scrutinizing the context of the online environment as well as exploring the formulation and execution of how the discussion forum was modified and applied, it is hoped that the information gleaned from this investigation will provide insight into the modified application and implementation of discussion based tools to support student learning.

Adapting and implementing online discussion tools in courses holds promise and while the perceptions of the students who participated in this study cannot be generalized outside the scope and setting of this study, it did provide some interesting inroads to further explore. I would offer that this investigation suggests that modified use of a discussion based tool offers pedagogical opportunities that can be exploited.
Modified use does not necessarily limit learning potential however several interesting lines of inquiry emerged. The findings of this study suggest further investigation of modified use to support student learning in the areas of motivation, persistence and sustained engagement; community, social presence and climate; supporting convergent vs. divergent thinking; as well as several issues related to gender and learning are warranted. In sum, this investigation and asks us to consider what aspects and benefits of online discussion tools are retained, changed, or lost when a discussion based tool is utilized in different ways. It is hoped that these insights may spur further research into the modified application and practice of discussion based tools use in the classroom.
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Chapter 1

INTRODUCTION

Rapid changes in technology are transforming the face of education. Institutions of learning, being knowledge driven organizations, are feeling the impact of the growth of information and communication technologies. For example, the use of discussion forums has burgeoned in distance education (Mason & Weller, 2000), undergraduate courses (Barnes, 1999; Peat, 2000), online graduate courses (Carey, 1999); and as a medium to connect students and professionals in the field (Friel, 2000). The process of responding to this change is at the forefront of education today.

This issue of growth and it’s impact on education raises issues of concern (Katz, 1999; Morris, 1999). As Palloff and Pratt (1999) note, it is essential to impart the importance of this changing process to faculty in order to maximize the use of the electronic medium in education. For without it we are simply recreating our tried and true educational model and calling it innovative, without fully exploring the potential the medium holds (p. 20). More importantly, according to Harasim (1990), the practical applications of online technology technologies have outpaced the research that supports good pedagogical implementation in the classroom. In essence, the dynamic that currently defines teaching and learning is being challenged by new online environments and the tools that support them. There is a shift in the focus of teaching paradigms from instruction to construction; from teaching to learning and from teacher centeredness to learner centeredness. In some ways, this shift in focus is a result of utilizing and incorporating these new technologies
into the teaching and learning process. This investigation is an example of research attempting to keeping pace with the practical application of technology. Specifically, the questions that this investigation seeks to explore are concerned with how one instructor utilized an online discussion tool. The goal of this investigation is to see how the students perceived that the use of that discussion forum tool supported their learning.

**Background**

Several recent trends are having a significant impact upon our educational system and are worthy of exploration. The first trend concerns the growth of technology and the expansion of the internet. In addition to the growth of technology across the face of academe mentioned in the previous section, it is important to mention the growth of the Internet. Statistics and predictions about the growth of the internet can vary widely, but even conservative estimates show that growth rate to be 80% to 120% per year (Odlyzko, 1999). Given this growth, it is important that we keep abreast of how internet based technology can be used in the educational arena. The second trend considers the introduction and use of these technologies into the classroom.

One technology that has made its way into the classroom is online discussion. Online discussion has wide application from a tool to support online learning to the augmentation of face-to-face learning. The use and the impact of this application needs to be explored. The third trend concerns the changing pedagogical climate. Barker (1999) argues that the integration of technology into education has the potential to produce a paradigm shift. He describes this shift as the result of an increased awareness of the
importance of the use of computer mediation as a way to support learning and knowledge transfer. The widespread use and application of computer-mediated technologies is forcing a shift from an instructive philosophy of teaching and learning to a constructivist philosophy; a shift from teacher centered control to student centered control, and shift from locally available to globally available resources. Hannafin (1999), among others, suggests that the integration of innovative technologies stress skills and activities that are consistent with constructivist approaches to learning.

These trends are significant in that the dynamic currently defining teaching and learning is being challenged by new online environments and the digital communication tools that support them. In essence, technology is challenging and affecting how we teach and learn. The availability of information is at a level heretofore unknown. Consider technology’s presence in education. Lauzon & Moore (1989) observe that computer mediated communication (CMC) is becoming a standard component in instructional delivery in higher education. This rapidity of growth can be seen in the way that technology is beginning to permeate the classroom. The infusion of technology into the classroom is reflected in current literature that includes numerous references to new learning environments affording incredible potential to open new educational approaches and venues for learning and learning outcomes. The impact of these trends is having a ripple effect on teaching and learning, and needs to be explored.

New digital communication tools, such as online discussion, support types of interaction between students and faculty that were never before possible. But critical questions are
also raised by the introduction of these tools. For example, what does online communication reveal about student learning? How effective are these online environments at producing learning? How can they inform how we design for these new environments? Do these digital communication tools intrinsically change the way we need to think about teaching and learning in this new environment? These questions need to be investigated if we want research to keep pace with the technology. These questions need to be investigated if we want to support informed pedagogical application of these technologies in the classroom. At its root then, this inquiry is concerned with understanding student perceptions of how they learn in an online environment, specifically when using online discussion tool. Answering this question will help us understand how online discussion can support the learning process and how designers can bring these issues that come to bear into focus in the educational scenario today.

Online learning has exploded onto the educational marketplace and technology has entered academia to either augment or supplant face to face learning (Smith, 1997). Roles and responsibilities of the educator, learner, and technologies are being redefined. Harasim, Hiltz, Telese, & Turoff (1995) and Abrami (1996) note that given these changing relationships, the instructor becomes more of a facilitator and online learning becomes student centered. As these roles become reconsidered and renegotiated designers have a unique opportunity to allow effective educational practice to drive the development of technology-based learning environments (Jeffries, 1998; Kearsley, 1998; Twigg, 1998; Verduin & Clark, 1991). Current computer technologies bring particular characteristics to the communication process that were previously unavailable (Hiltz,
1993; Romiszowski & Mason, 1996). These characteristics include the ability to support complex interaction processes, to document and have permanent records of those communications, and the ability to expand beyond simple two-way communication. As Dede (1999) believes, emerging technologies “make possible an extraordinary range of cognitive, affective, and social affordances – enhancements of human capabilities potentially of great power for … learning. At the same time they have definite limits for expression and communication”. Research is needed, as Dede (1999) notes, to develop the new kinds of rhetoric necessary to make these emerging media effective for learning. But what is learning? How do we define it?

These questions have a multitude of answers. Is learning a change in behavior? Is learning a change in understanding? Is learning a process? Under what circumstances and within what context does learning occur? There is no one right or simple answer. The answer is really – it depends. It depends on your beliefs and your point of view. The following matrix condenses and puts forth some highlights related to learning as seen across three major schools of thought that have influenced teaching and learning.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Behavioral</th>
<th>Cognitive</th>
<th>Constructivist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of learning</td>
<td>Learning is seen as response strengthening. Learning is a change in behavior</td>
<td>Learning is seen as knowledge acquisition. Learning is the integration of new knowledge to existing knowledge</td>
<td>Learning is knowledge construction. Learning is active. Meaning making occurs through interaction with culture and environment</td>
</tr>
<tr>
<td>Locus of learning</td>
<td>Stimuli in external environment</td>
<td>Internal cognitive structuring</td>
<td>Learning is in relationship between people &amp; environment</td>
</tr>
<tr>
<td>Goal/Purpose of Instruction</td>
<td>Instruction serves to produce behavioral change in desired direction</td>
<td>Instruction serves to develop capacity/skills to learn better by activating prior knowledge</td>
<td>Instruction serves to support knowledge construction that is flexible and personal</td>
</tr>
<tr>
<td>Educator's Role</td>
<td>Provides stimulus to dictate responses, provides rewards, goals, information, structure, reinforcement, and feedback</td>
<td>Structures content of learning activity, presents information and assists learner in organizing information so that information can be readily assimilated</td>
<td>Provides guidance and coaching. Works to establish practice in which conversation and participation can occur. Affords opportunities for knowledge building</td>
</tr>
<tr>
<td>Learner’s Role</td>
<td>Passive in own learning. No control/determination in own learning. Instructor responsible for student learning</td>
<td>Limitedly active in own learning to objective standard. Instructor responsible for student learning</td>
<td>Fully active and responsible in own learning. Instructor and student responsible for learning</td>
</tr>
<tr>
<td>Role of Context</td>
<td>Provides conditions for sequencing of the stimulus, response, etc.</td>
<td>Provides the bridge between existing schemas and new information</td>
<td>Provides the ‘medium’ in which knowledge and meaning making become manifest</td>
</tr>
</tbody>
</table>
In essence we are in the midst of an evolving theory of practice. Through the lens of instructional design it is possible to explore and inform this evolving theory. The diagram below presents an embodiment of this exploration process.

As designers and educators our goal is to ‘learn’ from the ‘Input – Process – Output – Feedback’ model, to critically reflect on that model to improve the experience. How better to investigate and understand this process than to investigate an application of practice, such as online discussion, and to learn directly from the students in that learning situation their perception of how that practice supports their learning.

**Rationale for Study**

The basis of this study is rooted in several points. First, it is important to understand the experience of the online learner. It is from this understanding that it is possible to glean insight into the design of online discussion. For instruction to be effective, we need to understand the learner as well as the technology. Smith (1997) posits that this [online] educational process places emphasis on students as active learners to problem solve and communicate ideas in novel ways.

The experience of the learner as they negotiate this new way of learning, communicating, and sharing information becomes the key to understanding, and the experience of the individual student has not been a large part of educational technology research (Hara & Kling, 1999; Saye, 1997). Hara and King further state that “there are few systematic analytical studies of students who have experienced new technologies in higher
education” and go on to explain how investigating these issues may inform issues surrounding computer-mediated courses.

The learner is central to the learning process and is pivotal to any investigation we make into learning from a student perspective. Since the learner is the focal point of this process, it is imperative to understand that perspective from the learner’s point of view. If, as educators and designers, our goal is to facilitate the understanding of relationships among concepts (e.g. support learning and knowledge construction); then we need to have an understanding of how individuals perceive their world and how they come to understand and make sense of the world in which they live. Learning styles provides a framework that allows us to consider and categorize individuals’ preference for processing, understanding and making sense of the world. Learning styles are “characteristic cognitive, affective and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (Keefe, 1979). As such learning styles represent an appropriate way of interpreting the student experience.

The student experience necessarily impacts the efficacy and viability of online learning. Online learning is here to stay for many reasons. It is imperative that we be responsible and take this opportunity to let learning drive the design and implementation of these technological tools. Research needs to be conducted so that we can consider the various issues related to implementing technology and understanding how the specific tools, such as online discussion, can be utilized to enhance the learning process for students. In order
to understand the utilization of online discussion it is necessary to consider what online discussion affords and implies.

Specifically, it is necessary to explore the artifacts related to communication, through the students’ perspective, to begin to understand how to effectively and efficiently utilize online discussion. Given the noted shifting foci, particularly the shift from a teacher focus to a student focus and from instructivist to constructivist pedagogy, it is crucial to describe this experience in the student’s voice. In order to improve design, feedback is also needed. That feedback too needs to come from the student perspective.

Online discussion provides opportunities for learning, but how do we recognize these opportunities? A primary goal in studying a new medium of communication for educational delivery, as observed by Hiltz (1993), must be the identification of effective and efficient ways of using it. Online discussion has become the tool of choice and default in technology enhanced learning environments. As such, it is also a “pedagogic instrument” as Weizenbaum (1976) describes and is much more than (in this case) a technologic device. It is an agent for change and becomes a way of interacting with instructors, fellow students, and the course content. Through the lens of instructional design it is necessary to investigate the student experience and the patterns of interaction associated with the technology if the process of online learning is to be understood. But as change agents who influence innovation decisions it is important to remember, as data is gathered and evaluated, that, as Rogers (1983) notes, “almost every innovation is evaluated … in terms of … prior experience with something similar” (p. 241). If new
tools present us with possibilities for teaching and learning, then teachers and designers need to understand how students learn with these tools, how technology supports the learning process, and given what is gleaned, inform the design of the learning environment.

**Problem Statement**

**Context**

We have only begun to explore the potential support of online discussion on the learning within online learning environments. Although research has been done on the mechanics of the design and structure of online discussion, it is important to begin to research the specific applications of this tool within the learning environment. This investigation seeks to explore a specific application of a discussion board as an instructional strategy to support student learning.

**Approach of the Study**

This investigation will examine the use of an online discussion tool in the classroom, Psychology 201 – Research Methods and Design. The intent is to probe into the student perceptions of learning relative to the discussion forum tool and to gain insight into the value that is ascribed to engaging in online discussion under specific conditions.

**Purpose and Scope**

It is hoped that by investigating and probing into the use of an online discussion tool in this manner and within the context of this problem, the data collected will provide data
related to the ‘learning’ that may or may not be occurring, and to ascertain the value students perceive the discussion forum holds relative to their learning.

**Importance of the Research**

**Significance of Study**

Several factors have been thus far identified as being important points of anchor for this investigation. If we are to realize the potential of online discussion, then learning in discussion forums, how it occurs, and subsequently how to design for it are important aspects to investigate. Research is needed if we are to understand the pedagogy of online learning. Research is also needed if we are to design effectively for these online learning environments. Further research is needed related to instructional practice online if we are to hone our instructional strategies for effective and efficient use in a new medium. It is these factors that define how this investigation contributes to the importance and significance of this study.

How learning occurs and how to design for learning has been a long studied area. However, as noted earlier, there is lack of research that supports the effective application of these technologies for learning. Currently we are in a transition, moving from research based on a face to face paradigm toward an evolving online paradigm. It is hoped that this investigation will contribute a thread in the emerging tapestry of online pedagogy. This investigation seeks to add to the research by exploring a little-investigated facet of using online discussion as part of a larger instructional strategy. Most of the current research considers online discussion as an autonomous, self contained, and independent
instructional strategy. This investigation seeks to investigate the use of online discussion as a supportive tool dependent within the context of a larger instructional strategy. With this investigation, by exploring a specific application of an online discussion tool as an embedded instructional strategy, it is hoped that the efforts of this research may inform practice in this area. Informing practice always has the potential to improve the teaching and learning process. Representative of this, as noted by DeBard and Guidera (1999-2000) is concern that rapid growth and advancement of technology as a delivery and/or enhancing mechanism is becoming integral to the delivery of teaching and learning process. Technological advancement and integration of technology into the teaching and learning process are happening concurrently. The quality and consideration of integrating technology into the classroom will be reflected in the quality of the teaching learning process in those classrooms.

This investigation will be of interest to those who are concerned with the emergence and impact of online learning. Many challenges are being faced by institutions as well as individuals regarding online learning. Problems ranging from attrition rates in online courses, increasing online enrollments, attitudes of institutions toward online courses as being potential breadwinners for their institutions, and the rigor and worth of online activities are concerns. It is hoped that this investigation may afford a small insight into how an aspect of technology needs to be implemented to be effective for learning. The more informed effective practice is regarding online discussion, the clearer the issues surrounding the effective use and implementation of online discussion will become. The clearer the issues, the better able we are to conduct research that will help refine
theoretical perspective. Again, being able to codify our research around grounded principles of effective teaching and learning is critical. If we consider the pedagogical implications of online discussion and the fundamental shift toward student centered learning, then we need to explore through the students perceptions and experience if we are to provide optimal learning environments (Howland & Moore, 2002).

This investigation will also be of interest to instructional designers who are involved with online learning. Exploring issues of potential impact upon the efficacy and efficiency of learning, considering aspects of motivation and appeal as well as learning styles of the students, and taking the opportunity to explore the negotiation of the learning process online may generate a potentially informative ‘lessons learned’ design resource for the field. The more we know about online discussion and online learning, the better able we are to design for utilizing online discussion and to implement those strategies. It is important to study online discussion as adjunct to the face-to-face classroom in addition to its role as central to learning within online environments. Knowing about issues regarding support, motivation, and learning will help to inform and improve future practice. It has been noted that part of the reason for researching online discussion is to be able to provide optimal learning environments. But it is also important to tease out the various threads related to individual perception and experience so that we understand what strategies and technologies work and under what conditions. It is hoped that this investigation will provide at least some insight into individual perceptions and add to what we already know. As learners are increasingly called upon to be more responsible for their own learning (Brockett & Heimstra, 1991), it is important to investigate, through
the learner’s perspective and experience, online discussion and online learning under various contexts and conditions.

This investigation may also be of value to facilitators and instructors of online learning. By exploring and documenting the flow and process of supporting an online strategy, in this case a discussion forum; other educators may glean insights into their own practice and application related to this technology. Smith (1997) suggests that a single instructional approach will not suffice and that teachers need to be well versed in the current research so that they can develop their own eclectic approach. It falls upon the teachers, she notes, to constantly recreate the instructional process so that learners’ individual needs can be met.

Of course is should be noted that, although this study may afford an opportunity for you, the reader, to gain an insight into the above-described issues, the information gleaned in this study is unique to this study.

**Purpose of the Study**

The purpose of this study is to investigate the experience of a small set of online learners in order to understand how these learners perceive the use of a discussion tool in an online learning environment supports their learning under specific conditions. Through scrutinizing the context of the online environment as well as exploring the formulation and execution of how the discussion forum was applied, it is hoped that the information gleaned from this investigation will provide insight into the perceptions of students
regarding the application and implementation of a discussion forum to support student learning. It is also hoped that these insights may spur further exploration into the effective application and practice of discussion forum use in the classroom.

**Research Question**

The overarching question driving this inquiry is “How do students perceive that the use of an online discussion tool supports their learning? This case study seeks to, in some measure, answer that question by bringing to light the perceptions of students who were directly involved in the learning process. As such, this case study should be of interest to anyone interested in teaching and learning online in higher education. Despite the fact that this investigation is not intended to provide recommendations for changes to existing implementation and practice, it is hoped that the lessons identified and learned during the course of this investigation may provide constructive insights to others involved in the process of online learning. The evolution of an online pedagogy and the art of online practice is an experiential learning curve. This is one small viewpoint along that curve. It is hoped that this small view may serve to inform you the reader and perhaps provide some consideration points as you negotiate your own learning curve.

**Summary**

The issue of online discussion and its use as an instructional strategy presents many challenges for faculty, students, and instructional designers. This chapter has endeavored to lay out background information to place the issue under investigation into perspective regarding technology, its application in the classroom, and the current changing
pedagogical climate. This perspective highlights the need to explore the questions for this investigation through the perspective of the learner. The key, however, is in the purpose of the study. By investigating and probing into the use of an online discussion tool from the students perspective, the data collected will provide valuable information related to ‘learning’ and to ascertain the value students perceive the discussion forum holds relative to that learning. While it is not the intention or the goal of the study to offer solutions or recommendations, it is hoped that any lessons learned or any insights that might be garnered may offer value as others interested in utilizing discussion forums as instructional strategies endeavor to implement them in their own classrooms.
Chapter 2

REVIEW OF THE LITERATURE

Overview

The purpose of this study is to describe the perceptions of students regarding how the use of an online discussion-based tool. Specifically, this involves investigating the modified use of a discussion forum as an augmentation of an instructional strategy in order to understand how students perceived this applied strategy supports their learning in the course. To place the study into context, it necessary to understand the literature that supports this investigation.

It is important to consider the growth of technology and how it supports educational practice. This support is a factor affecting our changing educational paradigm and needs to further study. The specific technology under investigation is online discussion. Online discussion has become the tool of choice and default in online learning environments. As such, its implication for teaching and learning will be explored. The assumptions that correlate with the use of online discussion, and support, interactive and innovative uses, places the learner at the center of the teaching and learning environment. Recall from chapter one this concept of student centeredness is reflective of this paradigm shift. Given the premise of this investigation, it is important to understand learning from the students’ perspective. To appreciate this point of view, it is necessary to understand, from within a manageable framework, how the learner learns and how they perceive learning occurs for them. The concept of learning styles affords an inroad to explore that perspective. Our
goal as educators is to support the learning process. Technological tools can be utilized in many ways. This study is one investigation into a particular modified use of online discussion as an instructional strategy to support learning. Through learning styles it will be possible to investigate this modified use to understand how the participants perceive this use of an online discussion tool supports their learning.

**Technology and a Shifting Learning Paradigm**

The growth of technology, particularly computer-mediated communication, is having an impact on the face of education. Ravitz (1997) indicates that we are moving from an instructional paradigm toward a more conversational or information-based paradigm. Ravitz (1997) posits that educational researchers are encountering opportunities as well as challenges related to new technologies and educational practice. The underlying premise, Ravitz notes, is that educational networks are built on principles of collaboration and social construction of knowledge (p. 362). Ravitz further notes that the goals of these educational networks are different from traditional instruction that focuses on individual performance. The amount of information that is available and generated by online environments and the ability to connect the participants’ needs to be considered. The result, he notes, is a shift that is taking place toward a more conversational paradigm indicating a stronger emphasis on the role of communication among participants. This paradigm is in direct contrast to the traditional instructional paradigm that focuses on teacher delivered instruction. This paradigm shift is further noted by Berge (1995) who discusses how technology has, both in the past and present changed the way we conduct our educational process. Historically, he points out, the printing press influenced the face
of education by changing how we accumulated, stored, and disseminated knowledge. New technologies have the capability to enable shifts at various levels of the educational process. These technologies, he further argues, are causing a change in educational practice. The paradigm shift from a teaching focused environment to a learning focused environment is partially facilitated by the use of technology.

Emerging models of online instruction are moving us toward more learner centric paradigms. The learner centric paradigm is reflective of constructivist philosophy and a constructivist learning paradigm. These paradigms need, as Kirkley & Boling (1995) Norman & Sproher (1996), Siegel (1997) and Siegel & Sousa (September, 1994) contend, to be predicated on problem centered learning. This problem-centeredness moves away from the content-centered focus that is currently in place, and pushes the learning environment closer to a constructivist view. This shift in focus highlights the fact that emerging models of instruction which incorporate these web based technologies need to be consistent with constructivist principles and to focus on problem centered learning.

The literature on constructivism is relevant to the current study because, constructivist pedagogy necessarily redefines the roles of the learner and the teacher and places the responsibility for learning squarely on the shoulders of the learner making them responsible, in large measure, for their own learning. For the current study, it is important that the concepts of learning and knowledge be explored from a constructivist point of view. Constructivists contend that we need to embed learning in real contexts, that learning is a social experience, that learning needs to afford opportunities to engage in
knowledge construction, and that learning needs to afford for and contain multiple perspectives. Simply put, constructivism defines learning as active knowledge construction and assumes the active role of the learner in that process (Duffy & Cunningham, 1996; Kemp, 1998; Bruner, 1990; Driscoll, 2000; Jonassen, 1991; Kemp, Morrison, & Ross, 1998). Problem-centered or problem-based learning is an instructional model that is predicated on constructivist principles and the concept of active learning. Characteristics of this model are that it is student centered, learning opportunities are relevant, students work in small groups collaboratively rather than independently, and teachers become facilitators of learning rather than disseminators of knowledge. These emerging models of learning are consistent and align with constructivist pedagogy (Cunningham, Duffy, & Knuth, 1993; Kaye, 1992; Romiszowski, 1996).

Perkins (1991) states that “constructivism has multiple roots in the psychology and philosophy of this century”. Names that have been associated with constructivism that underpin the constructivist platform and parallel the premises offered in the preceding paragraphs include Dewey (1916, 1929, 1938), who was an advocate of situated learning, learning in real contexts, and learning by doing. Bruner (1966, 1986, 1990) is another, his work on knowing centers on learning being an active process of construction, and instruction (or knowing) is a process supporting knowledge construction. Piaget (1977) is another, his theory of learning emphasizes the constructive activity of meaning making as we struggle to understand the world. Piaget contends that gaps or discrepancies between our expectations and reality create learning experiences. As we work to resolve those discrepancies, learning occurs. Von Glasersfeld, like Piaget, focuses on the aspect of
individual knowledge construction. Vygotsky, whose focus centered on the aspect of mediated action, introduces the idea that knowledge is a socially mediated construction process. This mediated action is embedded in our socio-cultural context and knowledge is derived through a socially negotiated process. Across the contributors of thought to constructivism, four tenets can be found and are generally agreed upon. Three have been premised by von Glasersfeld (1984, 1998) and the fourth has been added given recent writing in the field.

1. Knowledge is not passive, it is an active process of cognizing by an individual
2. Cognition is adaptive meaning the individual’s behavior will adapt to be more in tune with the given environment
3. Cognition is a meaning making process and does not necessarily render an accurate account of reality
4. Knowing is a mind/body interaction rooted in biology, neurology, social and cultural interplay, as well as language interaction

The implications of this philosophy become clearer as we tie them back to the premise for this study. If knowledge is an active process, then the students must be active in their own learning. By asking questions, directing inquiry, becoming reflective about what they are learning, as typified in discussion forum, they become participants in their own learning rather than receptors of information. As participants, they need to be heard and provided a platform from which to question, negotiate and contribute. This platform is exemplified in a discussion forum. The discussion forum provides both for an individual platform, affording a space for the individual student voice to be heard and it provides a collective repository where the student can experience assenting and dissenting
viewpoints. Meaning can be negotiated and consensus from within the learning environment can be derived. Because this meaning does not necessarily render an accurate account of reality, checks need to be built into the environment. The checks, in this case, are mediated by the discussion board. Students have the opportunity to actively question the text material. Students can check with their peers to see if their understanding aligns with others in the class. Discussion provides the format to deny or confirm understanding. Checks are afforded by the instructor, who is there to mentor and guide the knowledge process as the students seek to understand the text for the course. This check is designed as the particular instructional strategy that is being applied in the learning scenario. If we accept that knowing is a multifaceted process rooted in biology, neurology, social and cultural interplay as well as language, then this study reflects that acceptance for several reasons. Online discussion assumes written language; it is the medium of the tool. Online discussion forces reflective thinking. Discussion is not meant to be a one sided diatribe, it is meant to be an interaction among individuals.

Through learning styles it is possible to consider how a learner may prefer to engage in learning, understand through those preferences and gain an insight into how learning may be supported. Artifacts indicative of that learning may reside in the transcripts of the discussion forum as well as being discerned from interviews with participants. Knowledge and/or learning, then is not a static thing, it is an active dynamic process. If online discussion affords a space where learning occurs, by investigating the process as it unfolds, we may have opportunity to gain insight into the learning process. This insight can be gained directly from the participants, through their experience. It is appropriate
then that investigation consider online discussion. It is also appropriate that online discussion be investigated through the student’s perspective.

**Online Discussion and Learning**

The burgeoning use and application of technologies for learning is well known (Larkin-Hein, 2001). She notes that an ever increasing number of technology based education tools exist. This can be seen within the domains of science, mathematics, engineering, and technology education. She further notes that the use of educational technologies is growing both in and out of the classroom. Numerous studies have been done that have investigated the importance and potential of computer-mediated communication in the classroom. Hiltz (1993, 1994) conducted a longitudinal study of 315 undergraduate students across three campuses in the mid 80’s that utilized computer-mediated communication or asynchronous learning networks and traditional courses across various disciplines. Two hypotheses particularly bear on the current study. One hypothesis for this study was that there would be no significant difference in scores regarding mastery of the content material. Another was that the students would report that the technology would improve the quality of their overall learning experience. Using pre and post course questionnaires and grade distribution in matched course sections, she found that students reported that the use of asynchronous learning improved the overall quality of the learning experience for them, that students who engaged in collaborative and/or group work were more likely to judge their online experience as superior to traditional course, and that lower level students were, on average, able to perform to satisfactory levels on the computer-mediated environment. These findings impact on the current study in that if
the use of asynchronous learning network technologies that make a virtual classroom possible, such as online discussion, then it may be inferred that students may feel the use of online discussion may improve the overall quality of their learning experience. The current study seeks to investigate this aspect. If the students in Hiltz’s study reported that engaging in collaborative and group work judged their online experience as superior to traditional courses, then it is reasonable to speculate that engaging in online discussion (remembering that online discussion as noted earlier in this chapter is a group experience as opposed to a singular endeavor) may perceive that augmenting their face to face experience with online discussion will enhance the learning experience for the students. This speculation needs to be explored more deeply in the context of online discussion. Finally, it is implied in Hiltz’s findings that if lower achieving students are able with the help of computer mediation, achieve and perform to satisfactory levels, then it may be reasonable to surmise that online discussion may have the potential as a computer mediated technology to improve the learning of all the students in a course and provide positive support for learning.

Alavi (1994) conducted a comparative field experiment using treatment groups. One group had the use of a Group Decision Support System while the other group was a traditional classroom group. Out of the 127 MBA students in the study, 79 were in the GDSS group and 48 were in the traditional classroom group. Alavi found that GDSS group had a higher perceived skills development than the classroom group. It was also found that, although there was no significant difference in the mid term exam scores, there was a significant difference found between the GDSS group and the classroom
group in the final exam scores. Finally, the group having the computer support (GDSS) scoring significantly higher than their classroom counterparts did. This study highlights the idea that computer supported learning has the potential to support overall learning in a course. It also highlights the notion that students who are in control of their learning feel more secure about their learning. They perceive that they have better skills and are more competent than their face to face counterparts. Relating this back to the current study then it may extrapolated that online discussion as a technology may provide an edge and support learning in the course. In the current study, students will have control over if they choose to use the technology or not. Perhaps this level of control or choice may also play a part in how the student perceives the online discussion supports their learning.

Andriole (1997) did a case study in which he compared three face to face and three asynchronous analysis and design courses taught by the same instructor in order to compare student performance. The implicit hypothesis was that the student performance in the course would be consistently higher in the computer-mediated mode than in the face to face mode. Comparisons were made between the models and prototypes that were generated by the students, as well as other student generated documents. Perceived learning was also measured. Regarding performance measures, it was found that the computer-mediated group did as well and often better than the face to face group. Prototypes in the computer-mediated sections were consistently better than in the face-to-face sections. Additionally, the evaluations of the computer-mediated sections are more positive than the face to face counterpart sections. Regarding students’ perceived learning, 80% of the students felt conventional courses were more boring than courses
that used CMC, 99% of the CMC students thought that seeing other student assignments and ideas were useful to their learning, and 67% percent of the students felt that in the CMC sections they had learned more. Again, this study highlights the idea that technology applied to learning can improve overall performance and that students perceive that the utilization of technology improves their learning. Additionally, technology may motivate students to engage and perhaps persist more. Relating this finding to the current study could mean that utilizing a discussion board may motivate students to persist at engaging with the text for the course. Andriole found that seeing other students work and sharing back individual effort was seen to be advantageous to the learning process. It may also apply then that using a discussion forum, where the work is captured and archived as a saved record of effort, may serve to be advantageous also in the learning process of the students. Underlying Andriole’s study is the premise that an instructional design methodology needs to shape and drive asynchronous learning networks. He also argues that the methodology that is employed must recognize the uniqueness of ALN-based learning. Taking Andriole’s work a step further, and applying to the current study, it can be reasonably be extrapolated that there is a uniqueness to online discussion and to apply this specific technology in an asynchronous learning environment a methodology must also be applied. The methodology in this case is much more finite in that we are discussing the methodology for implementing an instructional strategy. Nevertheless, as Andriole observes, the reason for this is simple because we do not want to develop and deliver courses with elegant pedagogical features with little or no relationship to what the students want or need. The current investigation seeks to explore those wants and needs.
Fallah, How and Ubell (2000) conducted a field experiment with 19 graduate students. Seven were in a web based condition and twelve were in a face to face condition. A blind study procedure was used in which the instructor graded the students’ midterm exams but was unaware of the student identities and conditions when the grading was conducted. What Fallah, How, and Ubell found was that the average scores of the online students were higher than those of their counterparts in the conventional class. These findings seem to indicate that the use of technology may increase student learning. As this applies to our current investigation, it may be that online discussion may enhance the learning for the students in the course. These limited examples noted here, point out that the application of technology to learning situations holds value and implications for teaching and learning. However, Fallah and Ubell observed two items about the students. One was they speculated that online learning places greater pressure for independent learning on the students. Two, Fallah and Ubell talk about student personality characteristics and state that the students who continued in the online class were more mature personally and professionally. Regarding their first speculation in relationship to the current study, this speculation may be addressed through learning style, which may be able to find some differentiation between learners or types of learners to explore this speculation. Regarding the second speculation, again introducing a learning styles perspective into an investigation may uncover pertinent information directly related to personality characteristics.
More specifically, Allen and Thompson (1995) did a field experiment in which they compared collaborative writing in the traditional classroom and in a computer-mediated environment. The hypothesis was that students on the computer-mediated environment would write higher quality and lengthier texts than their face to face counterparts and that the experimental group would gain an improved attitude toward writing and computers. The participants were 93 fifth graders (45 male and 48 female) in a public school in the Midwest. There were four writing assignments. The experimental groups assignments were sent by e-mail to student readers while in the control group, students had their papers commented on by the instructor. Measures included a pre and post questionnaire to obtain demographic data and to ascertain student attitudes towards writing with computers and writing to an audience. Text length was also considered. Writing samples were analyzed using ANCOVA to factor out initial differences and determine if there was a statistically significant difference in the final writing sample. Allen and Thompson found that post test writing was longer for the computer-mediated group. Holistically, the experimental group had higher mean scores than the traditional group. Females, overall, tended to score significantly better on the post test writing sample while males in the experimental group scored significantly higher in the post test writing sample. This study indicates that the value added when using technology may encourage and support reflective thought, improved concept learning, and improved written communication. As our concern for this investigation is a particular form of computer-mediated communication, specifically online discussion, writing is central to the discussion process. It would follow that online discussions hold potential value for concept learning,
reflective thought and improved writing communication skills as well for teaching and learning.

The literature reveals that online discussion can support concept learning, written communication and student reflection. Given the implications of online discussion for learning, the implementation and dissemination of online discussion in both tertiary and distance learning environments is not surprising. Heckman and Anubi (2003) conducted a study at the University of Syracuse involving 120 undergraduate students. The implicit hypothesis was that the discourse process would differ between an online group and a face-to-face group. They also supposed that the online discussions would reveal more complex thinking by the online students and that the online students would demonstrate better critical thinking. A repeated measures design with four groups of students who had each completed a face-to-face case study discussion and one online case study discussion was utilized. Content analysis was done based on Garrison and Aviv’s (2003) methods which codes interactions into four main categories. Those categories are social, teaching, cognitive, and discourse. The observation for the investigation covered one week for each condition. Two judges with an inter-rater reliability that equaled 86% did the coding.

What Heckman and Anubi found was that teacher presence was greater in the face-to-face situation than in the online situation. For example, the ratio of student to teacher comments was 5:1 in the online discussion as compared to 1:1 in the face-to-face discussion. This finding supports the idea that online discussion actively engages the learner more so than in the F2F classroom. It also implies that an online environment may
be more conducive to student engagement. Heckman and Anubi also found that student utterances in the online discussion were lengthier than their F2F counterparts, but instructor comments online were shorter than their comments in the F2F discussion. In addition, F2F discussions were predominantly driven by instructor questions. Finally, instances that demonstrated analysis in the online discussion were almost twice as high as the amount of analysis instances in the F2F discussion. These findings might cause one to consider that online discussion provides a more autonomous opportunity for learner control and learner participation. However, perhaps most interesting and pertinent to Anubi’s study, is the finding that within the online discussion the instances of high level cognitive process were greater than in the F2F situation. Given the current study, it will be interesting to see if students actually engage in discussions at a higher level, that are lengthier than short one sentence responses to questions.

Althaus (1997) conducted a study to consider if supplementing face-to-face discussion with online discussion would improve the academic performance of undergraduate students (n = 142) in a large lecture class. Online discussion was afforded to the students and students were invited to participate. Students who chose to participate in the discussions received credit toward their class participation grade. Instructor participation and interaction was limited to prompting and the instructor did not participate in the discussions. At the end of the study, it was found that six out of every ten students chose to participate in the study and the evaluations from the students were overwhelmingly positive. Further, when queried, two-thirds of the students who participated in the study recommended that online discussion be used in other courses. Overall, Althaus notes,
students overwhelmingly felt that the online discussion provided a better quality learning environment than the traditional classroom alone.

Wu and Hiltz (2003) conducted an investigation at the New Jersey Institute of Technology in which they investigated if requiring students to participate in online discussion improve students’ perceived learning in the course. Both online and F2F courses were investigated. All courses had an online discussion tools available and all sections were mixed-mode delivery. One hypothesis was online discussions that persisted throughout the week should motivate students to be more engaged in their course on a continuous basis, and to think through the concepts and issues more thoroughly, because they need to restate the issues in their own words. A second hypothesis was that active participation in online discussions, which are student dominated as opposed to instructor dominated, should be enjoyable for the students. A research model was developed as follows: Independent variables included the number of distance learning courses taken, gender, and instructor role. Intervening variables were motivation and enjoyment. The dependent variable was perception of learning from online discussion, which was measured using a post course questionnaire. Hypotheses included the following. Students who perceived more motivation and enjoyment from online discussion will report higher perceptions of learning from online discussion and students who have previously taken more distance learning courses will attain higher perceptions of learning from online discussion.
The post course questionnaire was given to 116 students across three courses, one graduate and two undergraduates. Descriptive statistics showed that over half of the students felt they learned a great deal from their peers, sixty-nine percent of the students thought online discussion increased their learning quality, and over seventy-eight percent of the students thought online discussion was a great place to share opinions among peers and the instructor. The study was unable to distinguish student motivation and enjoyment based on the current research instrument. However, a confirmatory factor analysis showed that the four items that were used as motivation factors and the four items used as enjoyment factors actually formed a single construct, not two separate constructs. Overall, the findings support that online discussion improves student perceived learning in classes where face-to-face learning is augmented with online discussion. It should be noted that the number of distance learning courses a student may have taken did not impact their perception of perceived learning in the course. This study serves to re-iterate several threads that have been under review. Students perceive that their learning is bolstered and improved through the use of online discussion, that online discussion can have a positive effect on learning, that positive effect holds true in a distance as well as an augmentation to face to face learning; and that student perception is integral to the investigation of learning related to online discussion.

**Student-Centeredness**

It is important to pause a moment and iterate the current assumptions in light of this investigation. Perhaps the most important premise is the assumption that the learner is at the center of the learning process. The learner then is pivotal to any investigation that
wishes to understand learning. Since the learner is central to the learning process, it is critical to consider learning holistically from the learner’s point of view. How do students perceive online discussion supports their learning? Harasim (1990, 1993, 1997) considered perceived student learning and found that students felt like they learned more from their online interactions than from face to face interactions. Students may also be prone to engaging more readily in online discussion that in face to face discussion (Kubala, 1998; Larkin-Hein, 2001). Kubala notes that there was a measure of anonymity that helped students feel more empowered and daring. Students were asked to evaluate their experience in the course. Snippets from student comments included: “I communicated more with my professor than I usually do in a traditional course” and “among other things, I learned that technology and education can be combined into an effective learning experience”. It was gratifying, Kubala states, to note that in the evaluation of the course, students cited the quality of the course materials, the amount of learning that took place and the academic stimulation as the positive experiences in taking the course. Nevertheless, as Kubala also mentions, online teaching is not for the timid.

Larkin-Hein (2001) conducted a study to investigate the role of online discussion in student understanding of physics. This investigation raised several critical questions. These were: What factors serve to motivate students to participate in online discussion outside of class; can student motivation and performance be linked to students’ individual learning styles; and can student participation in online discussion be linked to enhanced understanding? Participants were 120 undergraduate students all enrolled in an
introductory physics course for non-majors. Formal learning styles assessment data was collected from the students. All students were placed on a discussion listserv. The discussion list was adjunctive to the course and it was not mandatory that students participate. The listserv was considered an additional tool for the students when they needed help on topical issues on the course. Students were given a questionnaire at the end of the course to collect additional data. The questionnaire was designed to assess the effectiveness of the online discussion in terms of their understanding and perceptions about the course content. Data showed students who participated in the online discussion did better overall than those who did not. When students were asked what factors prompted them to use the discussion forum to ask questions, responses typically cited that peer support and response was helpful and appreciated. When asked why they responded to posted questions responses typically cited that answering and/or explaining questions help them review and better understand the content. When asked about the factors that prompted them to read and check the discussion forum students typically cited that reading helped comprehension of the materials, it was a good way to see if their understanding aligned with others, and that it was reassuring to know others had the same or similar sticking points related to understanding. Hein noted that some of the students as seen in the comments above, considered the discussion forum, useful. However, some of the students did not. Hein suggests a possible reason for this may be related to individual learning styles. The data suggests that the students who participated in the discussion have a tendency to prefer to work alone and that on the whole, in instances where learning style was accommodated or matched, the academic achievement of those
learners can be expected to be about three fourths of a standard deviation higher than those students who were not accommodated.

In bridging the gap between distance learning and tertiary learning using an online discussion forum, student perceived more value was added to their learning (Swan et al., 2000). Althaus (1997) found that when adding online discussion to face to face learning it enhanced the overall environment. Althaus notes, in addition to the findings mentioned earlier, that his study showed that student members of online discussion sessions learned more and participated more than their counterparts who took part in the face to face discussions only. Hein and Irvin (1998) found that students felt online discussion was beneficial to their learning and should be available in other classes. They conducted a pilot study at American University during the spring of 1998 to assess understanding when a discussion forum is used to support student learning. Hein and Irvine were exploring how an online discussion can be utilized to assess understanding. Participation in the discussion forum was optional and note required. Students participating in the online discussion group were given a survey (n=54) to assess the effectiveness of the discussions.

Only about 30% participated in the discussion forum. The low participation, they note, should not be surprising as participation was optional. However, 90% of the students who did participate noted that their understanding of the topics was enhanced and found the forum to be valuable in various ways. Comments included: “I became aware of differing
point points of view, reading [the posts] helped me understand the concepts and the homeworks”; and “I found that others had the same questions as I”. Students also felt that that online discussion enhanced their critical thinking (Larkin-Hein, 2001, Thomas, 2002).

Thomas conducted a study to investigate student learning outcomes within an online discussion. Sixty-nine undergraduates participated in this study over the course of a semester. Forty were females and twenty-nine were male. The discussion themes were designed and intended to promote critical thinking and reflection related to course concepts. Discussion themes did not attempt to elicit right or wrong answers. Cognitive Engagement was assessed under SOLO (Structure of Observed Learning Outcomes (Biggs and Collins 1982)). Critical thinking was assessed using the model that Norris and Ennis (1989) developed. Thomas found that students achieved relatively high levels of cognitive engagement. Thomas noted that, over time, students were able to grasp the complexity of the material and were often able to form complex conceptual relationships between elements of the discussion topic. In line with the relatively high levels of critical thinking, Along with high levels of cognitive engagement, Thomas found evidence of high levels of critical thinking within the online discussion forum. Almost half of the threads showed evidence of high critical thinking. The remainder of the threads showed medium levels of critical thinking. There was also evidence of an increased amount of critical thinking across the semester but it was not statistically significant.
Larken-Hein, as previously discussed, found that student learning was improved and that the quality of the posts and depth of interaction with the discussion forum could be tied to student course grades. Students who participated more frequently and at a deeper level tended to have, on average, a higher final grade than the final average grade of those who chose not participate in the forum. It is important however, in relationship to grades and student perceptions of usefulness of discussion, to note that Larken-Hein postulates that there may be a reason why some students saw the discussion forum as useful and others did not. She suggests that this perception may be related to student’s individual learning styles.

**In Support of Modified Use**

Learning is supported through the use of instructional strategies, or teaching methodologies. Seels and Richey (1994) offer that instructional strategies are the specifications for selecting and sequencing events and activities. Regarding instructional strategies, Dick, Carey, and Carey (2005) further explain an instructional strategy includes the sequencing of intermediate objectives and learning activities leading to instructional goals as well as specifications of student groupings, media, and delivery systems. The instructional activities typically include pre-instructional activities, content presentation, learner participation, assessment and follow through activities (p. 365). The importance of instructional strategies, in this case, is that if we are assuming that learning is an active process, we are assuming that the learner is active in that process. The learner actively engages in constructing knowledge. By that, we mean that the learner is creating relationships between what they know and what they are learning. Instructional strategies
then help the learner in the knowledge construction process. Instructional strategies are
the supports that help the learner bridge the gap between what is known and what is to be
learned; tailoring the strategy to the learner will help to improve the learning process.

The literature, as we have seen, does not lack case examples of practical use and
application of discussion forums. However, the literature, for the most part describes
application that utilize discussion forums as the primary strategic engine to support
learning. The discussion, in itself, is a stand alone system, self contained and discreet.
The purpose of these discussion forums is to explore divergent attitudes, opinions and
knowledge. Given the depth, breadth and the scope of the discussions, there are many
assumptions and requisites. Good practice and implementation, as can be seen in the
literature for online discussion, must consider the structure and organization of the
discussion, the question types presented, the need for presenting guidelines and
expectations, facilitation and moderation skills for the discussion, strategies to encourage
participation and support interaction, and time considerations for the students as well as
the faculty. A small sense of the scope of the information related to online discussion can
be seen if one just ‘Google’s’ the term ‘online discussion’. The return on that search is
nearly three million hits! The second ‘hit’ in that search is for the Moderators Home
Page, a site begun by Mauri Collins and Zane Berg. The Moderator’s Homepage focuses
on resources related to the practice and scholarship of moderating various forms of online
discussion. A sampling of the topics on the site, as well as a review of the papers and
articles housed there, iterates the components of good practice if one is to utilize the
technology of online discussion.
Palloff and Pratt (1999) suggest that teaching online takes three times as long as F2F does. Smith (1997) echoes this concern by noting that the addition of technology into teaching practice increases the amount of time on task for faculty. Supporting online discussion is time consuming. Smith also notes that student time on task may also expand with the introduction of technology into the learning environment. The literature recognizes the benefits and drawbacks of online discussion. However, little attention has been given to the utilization of discussion forums as a more focused and embedded instructional strategy. Is it possible to apply the learning benefits associated with discussion forums to formats that would be more focused and manageable for both instructor and student?

The primary focus for this investigation is an online discussion forum. The context of the course under investigation has placed the discussion board in the course as a venue for students to pose questions about the content of the textbook used for the course. The purpose of the discussion forum, according to the instructor is “to encourage the students to interact with the text materials” (Nelson, 2005). The design of the discussion board is to afford the opportunity for students post their questions to the board with the intent that other students in the class respond to and answer their peer’s questions. The instructor is there to guide, re-direct, and take these issues forward into the classroom.

This investigation into online discussion differs from the studies that dominate the literature as I have previously noted. The literature describes applications that utilize
discussion as the primary strategic engine to support learning; a self contained
instructional strategy in its own right. This investigation, however, seeks to investigate
the learning benefits of online discussion, as described in the literature, where online
discussion is applied as an embedded part of an instructional strategy. The role that
online discussion plays, become supportive to an overarching strategy. The methodology
or instructional strategy in this case involves the following steps. The instructor creates a
discussion space that affords students an opportunity to ask questions and negotiate
meaning related to the context of the text used for the course. This step affords for
students to engage with the text materials as well as with their peers.

The particular strategy under review has the content of the discussion serving more akin
to ‘peer questioning’ and providing ‘muddiest point’-like information back to the
instructor. The instructor is able to read the bulletin board before lecture, enabling her to
have a clear idea of the strengths and weakness of student understanding. Thus,
misconceptions or clarification can be addressed ‘live’ in class before the lecture.
Although participation in the discussion forum is optional, students are provided
motivation for engagement. If they post a question to the forum, they get an extra credit
point. If they respond to a peer’s question, they receive two extra credit points. The
discussion is structured and postings timed to occur before the quiz for those readings.
The forum and the quiz afford a concept checkpoint for both the students and the
instructor. Students are able to verify their understanding of the material, and the
instructor is aware of any misconception or problems before the class session on that
topic. Both these checkpoints occur before the chapter being discussed in class. The
result is that the students have better knowledge base before engaging in the class session for that topic.

Students are being asked to become active in their own learning by being challenged to ask questions of each other relative to the course content. Students are also being asked to respond to one another. This reciprocity provides an opportunity for students to wrestle with their own understanding of the text content in order to negotiate meaning and make sense of the material. This structure assumes a constructivist attitude and viewpoint related to learning. The premise of this discussion board is to encourage student interaction and knowledge building. The instructional purpose ‘behind’ this space is to support knowledge construction that is personal and flexible. The role of the participants in their own learning is quite clear. Students are charged with identifying what they do not understand and challenged to negotiate understanding with their peers.

The instructor’s role as a “guide on the side” is quite clear, in that the instructor is available for guidance and coaching, taking a back seat to the learners who are active and responsible in their own learning and understanding of the content. Again, a constructivist premise is espoused. Finally, the discussion board itself is providing the medium in which this knowledge construction and meaning making can occur. In sum, it can be said that this discussion space was crafted according to the tenets of constructivist theory. In sum, then, this study seeks to investigate the application of online discussion where online discussion is not implemented as a stand alone strategy. Rather, this
investigation is considering the application of a discussion forum as a “pedagogic tool” as noted previously in Chapter 1.

Does the modified use considered for this investigation align with the premises of the literature related to instructional strategies? Strategies used to support learning in a constructivist environment are, by definition, learner centered. The shift that makes the student the focal point for learning assumes that educators take on the role of coach and mentor. As such, it becomes the instructor’s responsibility to afford opportunities for interaction and learning. Likewise, the student now becomes responsible for his/her own learning. Technology becomes the medium in which the learning process can take place. Online discussion, given its current design in this course, is a strategy that fits exceptionally well given the premises detailed to this point. The discussion forum is a tool implemented to foster cognitive engagement and provide a learner centered space for discussion. The discussion forum provides an area for discussion and thought that is central to the students learning process.

The modified use that has been outlined in this application of practice requires substantially less time, effort, and experience than the prevalent implementation of online discussions. Is it possible to find or forge bridges between what we know in tertiary educational practice to online practice? This particular application of a discussion forum removes the instructor as a central character to initiate and sustain discussion.
Summary

The exploration of the literature related to the phenomenon under investigation, how students perceive the use of an online discussion tool supports their learning, has considered the attributes of computer-mediated communication, in particular online discussion, and its role in student learning. Given the pedagogical assumptions for this technology and the application that the technology assumes, it has been established that a constructivist viewpoint is being taken. This assumption places the learner squarely in the center of his or her own learning process. As such we have considered learning from the learner’s perspective in order to better understand and interpret the information related to the learner and learning.

The learning styles framework provides a codified frame of reference from which to investigate the central question of this study, how do learners perceive an online discussion tool supports their learning. It was also important to explain the context of the investigation relative to the technology that is the medium for learning for two reasons. First, it is important to understand the potential that a technology such as an online discussion tool affords as an instructional strategy. And second, as modified use, online discussion may also have potential as an embedded instructional strategy. This particular case seeks to explore the modified use of an online discussion forum that is not time burdensome for the instructor.
Chapter 3

METHODOLOGY

Introduction
Qualitative methodology is an alternative approach to quantitative investigation. It provides a venue to explore questions that quantification, random sampling, and other quantitative methods can not. Given the question driving this investigation, how do students perceive an online discussion based tool supports their learning, a qualitative methodology is most appropriate. Specifically, a case study design within a phenomenological approach has been chosen to investigate this research question. This chapter will discuss the rationale for using case study methodology to conduct the research, the specific data collection methods that were used, and the methods used to analyze the data will be explored. Finally, the chapter will disclose to you the reader, the researcher’s identity.

Theoretical Framework

Qualitative Design
A paradigm is essentially a theoretical framework. A qualitative paradigm then is a theoretical framework or worldview consisting of beliefs, values, and methods. Qualitative research, as Cresswell (1998) describes is "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex holistic picture, analyzes words,
Because the goal of this study is to provide insight into the perceptions of students regarding how they perceive the use of an online discussion based tool supports their learning in a particular course, a qualitative research design fits best with the intent of this investigation and provides the outline for the design of this inquiry.

**Phenomenological Approach**

One of the goals of qualitative research is to describe phenomena. In other words, qualitative research reveals through words and descriptions that which does not lend itself to quantification. Succinctly then, if we use Cresswell’s definition as a guide for the outline of the design of this research, the working definition for this investigation becomes an inquiry into how students perceive the use of an online discussion based tool supports their learning. Because this investigation is concerned with the experience of these students as they interact with the discussion based tool, this investigation necessarily needs to take a phenomenological approach, which is by definition an inquiry that focuses on the experience of the participants (Patton, 1990).

The phenomenon under investigation is student perceptions of learning and how the use of an online discussion based tool supports that learning. Through interviews and documents analysis this investigation seeks to uncover the perceptions of students surrounding how they perceive online discussion. The goal in this instance is to have meaning arise from the student participants who are engaged in the learning environment. A phenomenological framework provides the reader with an in-depth description of the
perceptions and experiences of the student participants in order to gain a better understanding of their view of how the use of an online discussion tool supports their learning.

**Case Study**

Phenomenology, as I have noted above, focuses on the experience of the participants. Rossman and Rallis (1998) further explain phenomenology as the study of the lived experience of a small number of people under investigation. But how can we best investigate that experience? Who are the people that will be investigated? How will the investigation be carried out? The question driving this investigation, lends itself naturally to a case study investigation because, as Yin (2003) puts forth, a case study is deliberately interested in the contextual conditions that surround a phenomenon. But case studies are far more than that. Yin purports that case studies are actually a comprehensive research strategy.

A strategy is a plan or method devised to achieve a goal. So far, it has been established that this is a case study, but how does the question under study and its context further define the type of case study that will be implemented? The question posed for this investigation focuses on an issue. Stake (1994), defines an instrumental case as when a particular case is examined to provide insight into an issue – exactly the goal of this investigation. Given the scope of our question – How do students perceive that the use of an online discussion based tool supports their learning – it will be necessary to investigate a number of cases to probe this issue. Hence, more precisely, a collective instrumental
Case study strategy will be implemented. This research design will be detailed later in this chapter.

**Collective Cases**

Stake (1995) asserts that the first criterion of case selection should be to maximize what we can learn. In order to maximize what could be learned in this investigation, the cases chosen were determined by the nature of the investigation and its particular context. The focus for this investigation is centered on individual perceptions of learning. Therefore, to maximize what might be learned, it was important to identify the range of perceptions relative to learning. As a result, a learning styles inventory was utilized to provide the descriptors and framework from which an understanding could be situated. To further enhance what might be learned in this instance, ‘extremes’ in various dimensions of learning styles will be identified as the cases that would bring the most to the study because, as Stake (1995) notes, balance and variety are important.

**Research Design**

The previous pages have put forth a progressive rationale that addresses why a qualitative approach has been adopted for this study. Specifically, why a phenomenological approach has been taken and why a collective instrumental case study approach has been used. To further inform the reader, it is important to explain these choices from within the specific setting of the investigation, the population, and the phenomenon.
The Investigative Setting

The larger setting of the investigation is a small coeducational, liberal arts college with religious affiliation to the Presbyterian Church. Located in a “quaint residential community,” its largest neighboring cities include Pittsburgh and Cleveland. There are approximately 1450 undergraduates and the student faculty ratio is 13:1. The overall student population is approximately 58% female and 42% male. Given the colleges’ mission statement (College, 2005) student ability-based outcomes include the ability to reason logically, evaluate critically, communicate effectively, and demonstrate intellectual curiosity. These characteristics dovetail with the characteristics of discussion boards. The learning power behind discussion boards is that they support critical thinking and encourage students to explain their reasoning. Discussion forums are a written form of communication and as such they support student practice to communicate effectively, and provide a platform for intellectual curiosity. It was felt then that this larger setting afforded for appropriate case selection.

The Population

The specific setting is the course Psychology 201 – Research Methods and Analysis. The class is composed of 26 students – 20 females and 6 males. The course itself is a psychology course whose objectives include acquainting the students with research design and analysis as well as aiding students in the evaluation and appreciation of the role of research. It was in this spirit of appreciation of research and affording the students an opportunity to participate in a research study that course was opened to me and I was allowed access to solicit participation from the class. Potential participants hold the
promise to be stakeholders in the investigation while engaging in an activity that has bearing on their current class and course of study. But what is the object of study for this investigation?

**Phenomenon Under Investigation**

Given the phenomenon under investigation, we are necessarily interested in how students themselves describe how they learn. From this self-description, it will then be possible to understand, from within a specific framework, the ‘voice’ of the students, to better understand and interpret their dialogue. The frame of reference used in this study will be a learning styles inventory. As noted previously, a learning styles inventory is a way of interpreting and codifying how learners take in and process information – affording scales along various dimensions of learning. Being able to identify where learners are placed along these various learning scales can afford better insight into the perceptions of the individual participants. Likewise, in order to achieve diversity in terms of learning preference, final participants for this study will be selected based on their Learning Styles Inventory results.

**The Discussion Based Tool**

It is also important to describe the parameters and/or context of the discussion based tool. The instructor has been teaching this course utilizing a bulletin board format for over ten years. Over the years, the technology for the board has evolved. Previous iterations of the course had forum limitations where the system had to be emptied to accommodate the
number of posts and activity in the forum. The current tool in use is “phpBB” a customizable and scalable open source bulletin board package.

As an instructional strategy, the goal of the discussion based tool was twofold: First, the discussion based tool’s function was to encourage student interaction with the content of the textbook. Second, the goal of the discussion based tool was to alert the instructor to the issues the students may be having regarding the text.

It is also important to understand how the discussion based tool fit into the flow of the course. The progression for the course was: a) readings related to the topic or concept were assigned from the text; b) discussion based tool was available to foster/support student engagement with the text content; c) assess/quiz students on the text content; d) discuss and engage more deeply with the chapter content in class lab/lecture. Additionally, a motivational reward system was in place that awarded students one point for a question asked/posted to the discussion forum, and two points awarded to the student for answering a question posted by a classmate on the board. The instructor accessed the discussion based tool prior to class enabling them to know exactly what questions or misconceptions were present regarding the topic in the text and the content.
Methods

Data Collection

Stake (1995) states, “Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (p. ix). To parallel Stake, it has been previously offered that this study uses case study methodology, specifically collective instrumental case study. It has also been noted that the phenomenon under investigation is how students perceive online discussion based tool supports their learning. This is a complex phenomenon so multiple cases from within the situation were used to form the foundation of this investigation. Case studies, according to Yin (1994), are used because you deliberately want to contextual conditions. Given the premise of this investigation and the hope of this study to understand the conditions of learning in this instance, it is particularly appropriate that this approach be taken. Yin further describes that the evidence garnered from case study research can establish construct validity and reliability if three principles are followed.

The first principle states that multiple sources of information must be used. In this instance, the multiple sources of information included surveys, interviews, and archival evidence from the discussion based tool. In this way, according to Yin, multiple sources of evidence afforded for the development of “converging lines of inquiry” (p. 98). Multiple sources thus, as Yin (2003) maintains, corroborate facts in the phenomenon. Any findings or conclusion in a case study is likely to be much more convincing and accurate when it is based on several different sources of information.
The second principle deals with how to organize and document data collection. Here Yin proposes the creation of case study database arguing that striving to create a formal presentable database increases the reliability of the case study (p. 101-102). For this investigation, the information garnered in interviews from the participants was tape-recorded. These tapes were transcribed and coded in order to facilitate analysis of the data. Appropriate elements from the transcripts were included in the database. Survey data was itemized and collated. These tabular materials were stored and organized as Yin suggests for later retrieval. All case study notes were organized and stored so as to be retrievable later.

Finally, Yin offers to increase the reliability of the data collected in a case study a chain of evidence needs to be maintained. The point is to allow the reader to be able to follow the derivation and logical progression of the collected evidence from research question to the case study conclusion. For this investigation, a chain of evidence was maintained throughout the data collection process and occurred in two primary stages.

**Stage One**

Stage one collected data related to demographics, computer use, learning styles, and student perceptions related to the online discussion based tool. An initial survey was administered to garner potentially important demographic information including: age, gender, and major/area of interest. This tool was a researcher-developed survey (see Appendix A: Section 1). This tool was used was since it was felt that it was important to
know demographic information related to the student participants. Included in the survey, was a section to ascertain characteristics and attitudes related to computer use.

A second researcher developed survey (see Appendix A: Section 2) queried potential participant on how long they had been using computers, how many hours a week they spend using a computer, how much of that time is spent between using the computer for work, school, or personal use. Finally, since this study deals directly with a discussion base tool, questions were included to determine if and how the students interacted with discussion boards in general, and if they had used a discussion board in another class. The reason this tool was used was because it was felt that it was important to know participant familiarity and comfort with the technology and experience regarding the technology as this would provide information related to previous disposition to the technology, color participant expectation and/or experience, and understand better the participant perspective related to the online discussion based tool.

The Index of Learning Styles (ILS) was used to collect data relative to student learning styles and work preferences. The inventory was used to select participants and to provide a framework for understanding student perspectives (see Chapter 2 for a description of this inventory). Each dimension of the inventory is anchored along a scaled continuum by a set of factors that are relative to a specific dimension of learning. They are active/reflective, sensing intuitive, visual/verbal, and sequential/global respectively.
Felder (2005) offers two caveats related to the ILS. First, the tool provides an indication of a learning preference and should not be over interpreted. Second, a learning style profile affords insight into tendencies, strengths, and habits but is not an indicator of suitability or unsuitability. The point is that it can serve as a framework for insight into understanding how an individual prefers to learn.

Several studies have been conducted that address the reliability and validity of this tool. One study, a reliability and validation study by Litzinger, Lee, Wise, and Felder (2005) noted, “The reliability estimates of the scores for the four scales of the ILS based on Cronbach alphas ranged from 0.56 to 0.77”. Additionally, “factor analysis of the ILS identified eight factors associated with the four scales. Analysis of the underlying construct for each of the factors revealed that they are appropriately matched to the intent of the scales, providing evidence of construct validity for the instrument.” These findings support the use of this tool as an integral piece of the research framework.
Many instruments exist that could ascertain information related to learning style, but the Felder and Silverman *Index of Learning Styles* was chosen for the following reasons:

1. It is a straight-forward learning style model predicated upon four basic questions.
2. It is concise, to the point, and written in plain straightforward language.
3. It is predicated on wide research in the field on cognitive style and learning style, this instrument synthesizes the ‘best of’ in the research related to learning
4. It has been used and documented in a number of studies
5. Investigation of the reliability and validity of the instrument show its credibility
6. It has been developed specifically to investigate learning in courses (particularly engineering)

In-depth interviews were also conducted. A set of probative questions were formulated to collect reflective data relative to user experience of the discussion based tool. Participants were also asked questions if they had any comments or concerns they wanted to discuss or mention prior to being asked the specific questions related to the interview. Open ended questions were developed and participants were asked to frame their responses around different aspects of learning relative to the discussion based tool (see Appendix B: Questionnaire Guide For The First Phase of Data Collection).

**Stage Two**

The second stage of inquiry included a review of the archived transcripts of the discussions to get a sense of the content depth and scope. Any other documents generated related to the discussion forum were also collected and reviewed at that time. A review of
any physical artifacts resident in the discussion based tool was also carried out at that point. These artifacts revealed pertinent data related to how students learn when using an online discussion based tool. Previous interview data was also reviewed to supply clarification and threads for follow up in the second in-depth interview.

A second set of in depth participant interviews to collect reflective data was undertaken in this stage. This second interview included probative questions related to: how students define learning, student ability to identify what is to be learned, as well as their perception of the change that had taken place due to engagement with the discussion based tool (see Appendix C). While general questions were formulated prior to the study, other questions that arose from the initial data collection and analysis were included.

**Participant Identification**

Miles and Huberman (1994) note that qualitative samples tend to be purposive rather than random. They also note that in a qualitative study participants may not be wholly pre-specified, but can evolve once the field work begins. Miles and Huberman as reported in Cummings (2003) also suggest that two actions impact qualitative research - setting boundaries for case selection and delineating a framework to define the research process. The first action, setting boundaries, defines the extent to which a case can be studied within the researcher’s time and means. The time and means boundaries for case selection in this instance include:

- the consideration of a course that would be utilizing an online discussion board or forum
- the discussion form would be run by an instructor who had previous experience in utilizing and implementing a discussion forum in their class

- the instructor had previous success with utilizing a discussion based tool in the class

- course length would not extend more than one semester

- the instructor would grant access to the course

- implementation of the discussion based tool needs to have a purpose, structure, and goal

- and the selected case needs to be within reasonable traveling distance

Setting boundaries also impacts the scope of the research question. The second action, the research framework, is crucial in order to define the parameters that will determine how you uncover, confirm, or qualify the basic constructs that underpin the study.

Relative to this first action, an appropriate case was identified. (see previous sections investigative setting and the phenomenon under investigation for details). The course in this instance will have between 25 and 30 students enrolled. Since this will be an unmanageable number a more purposeful approach to participant selection was employed.

The aforementioned purposeful approach is where the second action Miles and Huberman describe comes to bear. A framework was constructed that supported the uncovering, confirmation, and qualification of the processes and constructs that underpin this study. That framework was then used to narrow and select the participants that were interviewed for the investigation. As outlined in stage one of the data collection, a variety
of tools were utilized to create this framework. The intention was to narrow the field by intentionally selecting participants who were an extreme representation of each dimension on the Inventory of Learning Styles. This yielded 8 participants with predispositions toward particular ways to take in and process information – or if you will, it yielded 8 participants with distinct and strong learning preferences. It was felt that this purposeful sampling would provide data across a diverse spectrum of learning proclivities, affording an opportunity and framework from which to understand and interpret student responses at a big picture level. The Inventory of Learning Styles (see Appendix A: Section 2) was administered and selection was made from those scoring highest in each of the learning dimension. Details of this selection are recounted in the following section.

Participant Selection

Twenty-six students were enrolled in the course. The ILS was administered to all 26 students. The goal was to identify ‘extremes’ along the four dimensions of learning styles in order to garner perceptions and feedback from those individuals who were as diametrically opposed as possible along a dimension of learning style. Each of the four dimensions is rated on a continuum along an 11 point scale.

Figure 3.2: Illustration of rating scale
The four dimensions are anchored by the following factors or descriptors: active/reflective, sensing/intuitive, visual/verbal, and sequential/global. Descriptors focus on an aspect of how a learner prefers to engage with information and content relative to learning. The active/reflective dimension considers how students prefer to process information. The sensing/intuitive dimension considers what type of information a student preferentially perceives. The visual/verbal dimension considers through which modality student’s sensory information is best perceived. The sequential/global dimension considers how students progress toward understanding.

Ratings for the descriptors fall into ranges. A 1-3 rating on either side of the scale indicates that you are fairly well balanced along a particular that particular dimension. A 5-7 rating on either side of the side indicates that you have a moderate preference in that dimension for a particular descriptor. A 9-11 rating indicates a very strong preference for that particular descriptor in that dimension.

After the administration of the ILS, the highest scores for each dimension were plotted on a scoring scale.
As you can see, this first plot shows 15 possible participants. Seven of these potential 15 scored VERY HIGH in 6 of the 8 preferences in the scale – active, sensing, intuitive, visual, verbal, and sequential. The remaining 8 participants scored MODERATELY HIGH in the remaining two preferences – reflective and global.

Since only one extreme representative was wanted for each descriptor, from this pool of 15 it was necessary to narrow the sample. The plot was scanned and three singular instances were identified as potential participants because they were the highest scores for a particular characteristic of a dimension. These three extremes were selected for inclusion as participants. They were: 007, 012, and 022. If these participants were also high scorers in other characteristics they were deleted from the participant pool for the remaining dimensions. Participant 017 was identified as a high scorer in two dimensions (sensing and sequential). Given that the sampling technique indicated that one participant should not be interviewed for more than one factor of a dimension, it was decided that
this participant would be dropped from the pools for these factors and the next highest scores would be considered for participation. The plot below captures the subject pool, which depicts final selections for three of the eight descriptors – active, intuitive, and verbal.

Figure 3.4: Plot showing first pass of the selection process

Since participant 017 was dropped from the subject pool, the next highest scores for the sensing and sequential descriptors were imposed on the plot. This added four possible participants to the sensing descriptor and one possible participant to the sequential descriptor. The one possible participant for the sequential descriptor 018 was by default selected as a participant. To narrow the pool for the interviewees from the sensing descriptor the following steps were taken. First all participants that repeated in other factors of dimensions were deleted. This yielded participant 003 for the sensing factor and participant 001 for the reflective factor. See the plot below:
Figure 3.5: Plot showing second pass of the selection process

As can be seen, selections were determined for six of the eight descriptors. The remaining two descriptors – visual and global, each had two potential participants. From the pairs of participants for the remaining descriptors, one participant was randomly chosen to represent that descriptor. Those participants were 014 and 020. The final participant selections for interviews are depicted below.

Figure 3.6: Plot showing final selection
As can be seen in this plot, a purposeful sample has been extracted providing this investigation with eight participants. Five of these eight scored VERY HIGH in an ‘extreme’ of a particular and the remaining three participants that were chosen scored MODERATELY HIGH in a dimension. The gender split for the selected participants was five females and three males.

Data Analysis

Yin (2003) states that every case study should have a general analytic strategy. Earlier it was noted that this investigation was a phenomenological collective case study. Cresswell (1998) offers that phenomenological data analysis proceeds through the methodology of reduction, the analysis of specific statements and themes, and a search for all possible meanings. To achieve this process, pattern coding was used as Miles and Huberman (1994) describe. This process also corresponds to ‘open coding’ as described by Corbin and Strauss (1990). According to Miles and Huberman, “Pattern codes are explanatory or inferential codes, ones that identify an emergent theme, configuration or explanation” (p. 69). They further describe the purpose of pattern coding, which is to reduce large quantities of gathered information into smaller, more analyzable elements; immerse the researcher in data analysis while data collection is occurring so that fieldwork can be more focused; afford the opportunity for the researcher to construct a rich evolving conceptual schema for understanding the data being collected; and, create the foundation for cross analysis by identifying common themes.
Specifically, the interview tapes were listened to and transcribed verbatim. The transcripts were then read, printed and studied in order to detect any emergent themes. The transcripts were highlighted to identify seminal comments and emergent themes. A spreadsheet was then created with the following headings: Emergent Theme/Category, Quote (with corresponding page number from the original transcript); Notes (for relevance/thoughts related to the study); Participant ID (noting the interviewee and session). The interview transcripts were again reviewed and the highlighted segments were copied from the transcript and re-typed under into the spreadsheet under the ‘Quote’ heading. Themes/Categories were then ascribed to each comment. These identified themes/categories were then recorded into a separate column of the spreadsheet in the appropriate row for the comment, creating a specific data byte. In this way quotes were reduced toward identifiable codes. Codes were then refined by searching for recurrent phrases or threads, or differences that had been noted by participants.

Miles and Huberman (1994) note that there at least three ways in which pattern coding can be used in analysis (p. 70). First, they are cautiously listed and added to the list of codes with the intent of applying this list to subsequent data to see if fits. The process used for this study described above adheres to this aspect. This also corresponds to Lincoln and Guba’s notion of discriminant sampling (1985). Second, emergent promising codes will be noted. This facilitates the clarification of themes and/or constructs and the ability of the researcher to summatively consider the data and initiate cross case inquiry. As can be seen in the previous description, this step was included in the study process for data analysis. Third, the pattern codes were verified and further investigated in the second
phase of data collection. This facilitated the analysis of the data. This framework was the process adhered to for this investigation.

**Researcher Identity**

This investigative process was intended to explore a small aspect of the questions that have driven and sustained my interest as an instructional designer, educator, and now researcher. My purpose is rooted in a deep respect and curiosity for the learner, a desire to understand how learning occurs, and a fascination with technology and how it can be harnessed creatively to foster and support the learning process. Situating this background information into the context of this study, my identity is defined in three primary ways. First, my educational training has bearing to inform and provide insight to the reader. I hold a master’s degree from Philadelphia University in Instructional Design and Technology. This colors my perception and outlook relative to learning. The primary assumption that comes into play with this aspect is that as an educator and academic, I believe that most problems can be resolved through knowledge and understanding. I also believe that technology has the potential to enhance the learning process if utilized correctly. The assumptions here are that learning environments need to be student-centered and active and that technology should not be used for technology’s sake, rather to enhance some aspect of the learning process. Second, trained as an instructional designer, I apply what is known about how people learn to most effectively and efficiently design systems that support learning. My belief is that design needs to drive the development of the learning environment and that the learning environment needs to
be student centered. Technology should not drive the design of the learning environment. Currently, I am employed by the Pennsylvania State University as an instructional designer and e-Learning Support Specialist in the College of Engineering with Engineering Instructional Services. This allows me to apply my interdisciplinary training and approach in specific situations utilizing technology. Again, the assumption here is that I believe in student-centered learning. Ultimately, it is my belief that we can design effective learning solutions that use technology to bridge the gap between needs and desired outcomes. Third, to pursue my educational and professional interest further, I am enrolled as a PhD student in Instructional Systems at the Pennsylvania State University. This aspect places me in the role of developing researcher allowing me to undertake this investigation as a professional and personal commitment to the field. The assumption here is that technology adds a different dimension to teaching and learning. While educational research has explored learning in the traditional face to classroom – it is my belief that new technologies demand new pedagogies and research that will empower current designers to capitalize on these new technologies as applied to learning. All of these factors converge as I read, sort, analyze, code, codify, and interpret the data. By providing you with this information on researcher identity I offer you the lens through which I approach and view this study. It is through this viewpoint that I necessarily interpret the data I collect. It is from this viewpoint that I make sense of the study findings.
Limitations of the Study

Qualitative research has the potential for several limitations that need to be discussed. There are limitations relative to the nature of the methodology, limitations relative to the nature of the research, and limitations relative to the researcher. Bringing these limitations to light and open to discussion will, I hope, indicate an awareness of the potential pitfalls related to this research investigation.

Limitations of the Methodology

Perhaps the biggest criticism or limitation of case study research is that case study findings may not be generalizable outside the purview of the case. But, Yin (2003) addresses this concern by noting that “case studies, like experiments, are generalizable to theoretical propositions and not to populations” (p. 10). That is to say that the information garnered from this investigation, although not a prescriptive formula, may still be a resource of merit providing valuable clues to others as they strive to implement discussion based tools into their own classrooms. The lessons learned in this instance may resonate with other faculty and provide insights and caveats as they seek to integrate this technology into their courses. Finally, arguments related to validity and reliability have been previously set forth under Methods/Data Collection.

Limitations of the Nature of the Research

Given the nature of this investigation, it is felt that some of the information touched upon in the interviews and information gathering is very sensitive material. It is likely that the
information revealed in confidence in the interviews or garnered through many of information gathering devices may put the students at risk – or the students may perceive that the information shared may put them at risk. This may result in some loss of context when edited to share back to the reader in this report.

Limitations of the Researcher

The last piece of the limitation puzzle is researcher bias. As an individual, it is impossible to disassociate myself from who I am and what I believe. In other words, it is impossible for any researcher to be totally objective. But it is hoped that through sharing my researcher identity with you, the reader, you can garner enough information to understand how my point of view fits into the context of this study. It is hoped that through this information you will understand my ‘voice’ as I recount the student experience in their voice.

Summary

This chapter has described the theoretical framework of qualitative research. Specifically, it has addressed why a phenomenological approach was utilized and why a case methodology was applied to this investigation. The details related to data collection, participant selection, and data analysis methods have been presented. Further, the limitations of this investigation have been iterated, and I have situated my presentation of information by disclosing to you my researcher identity. The following chapter will
present the findings from this investigation, as well as discuss their potential implications for this study and offer suggestions for future research.
Chapter 4

RESEARCH FINDINGS

Introduction
The implementation of discussion, as noted earlier in Chapter 2, is a complex and time consuming prospect for both instructor and student. As discussed previously, online discussion holds much promise and potential for teaching and learning. In a recent issue of *Distance Education Report* (2001) it was noted that many faculty may feel dissatisfied and overwhelmed given the heavier workload, the feeling of loss of control over the course, and the lack of recognition inherent in using internet based tools, such as online discussion (Anonymous, 2001). The Digital Learning Environment Group at Brigham Young University surveyed faculty regarding barriers to faculty utilization of online course development and management tools, including online communication tools, and found that faculty perceived the largest barrier to use was the lack of time to utilize such tools, a lack of funding to support such tool use, the lack of skills necessary to implement and utilize these tools effectively, and a lack of technical support (Seawright et al., 2000). Students also experience similar difficulty and trepidation related to the use and implementation of online discussion tools. As such, it is important to be able to support faculty and students in the implementation and use of online discussion tools without its implementation being a burden on either the faculty or the students in the course.
This study has explored the modified use of an online discussion tool as an instructional strategy to support student learning. The sections that follow present the findings of this study of student perceptions of how they understand an online discussion tool supported their learning. This chapter presents the individual cases that comprise this collective case study – including the individual participant profiles, and their perceptions of the discussion forum. The first section of each case report will present the data related to the individual’s profile i.e. the major data collected from the initial survey including demographics, comfort with computer use and technology, and individual learning style. The second section of each case report will lay out the individual perceptions of each user given the various emergent themes related to their perception of the discussion forum. The guide questions for each of the probative interviews evoked data around several emergent themes. These were:

1. The Purpose of The Board
2. Learning
   (including defining, applying learning, preferences, and support)
3. Use
   (including comfort, satisfaction, motivation, ease of, interface, rationale for using)
4. Trust in Posts
5. The Online Environment
   (the social impact or aspect)
6. Expectations and Experience
7. Disappointments and Frustrations
8. Changes and Improvements
The order of these themes is followed within each case description. In reporting out the following data, all names have been changed to protect the privacy and identity of the instructor and the students who participated in this study. A summary page of the compiled survey tables for each participant can be found in Appendix D for your convenience. A graph of the participants learning styles on each dimension has been included below to appreciate the order in which the cases have been related.

Figure 4.1: Graph of participants on dimensions of learning styles, participant 003 and 007 voluntarily withdrew from the study

Respondent Profiles

Six cases were considered for this investigation. Originally eight cases were identified. Two participants 003 and 007 never responded to attempts at contact and subsequently dropped out of the study. It is curious that the two who voluntarily dropped out of this study were actually diametrically opposed on one of the continuums – sensing/intuitive. This is interesting in some ways that they are ‘opposites of a continuum and it may be a
‘plus’ in some ways for the study as the other continuums still have their ‘anchors’ or possible opposing mirror viewpoint. In other words, if we are looking at learning styles as a check for broad opinion and inclusiveness, ‘balance’ of viewpoints is still maintained in many ways.

- Of the 6 respondents who participated in the study
  - 1 was 19
  - 3 were 20
  - 2 were 21
  The average age of the respondents was approximately 20 years old.
- There were 4 females and 2 males in the study.
- The average number of years they have been using the computer – 11 years
- Computer Use breaks out at:
  - 2 use the computer on average 1-9 hours a week
  - 3 use it 10-19 hours per week
  - 1 uses 20-39 hours per week
  Averaging out to 10-19 hours a week
- Hours spent using the computer for Work
  - 2 report using a computer for work for only 2% and 5% respectively
- Hours spent using the computer for School
  - all reported using the computer for school the breakout
  - 1 reported 35%
  - 1 reported 40%
  - 1 reported 48%
  - 1 reported 75%
  - 1 reported 85%
  - 1 reported 100%
  Averaging out to 64% overall
- Hours spent using the computer for Personal use
  - 1 reported no personal use
  - 1 reported 5%
  - 1 reported 10%
  - 1 reported 25%
  - 1 reported 60%
  - 1 reported 65%
  Averaging out to 27.5%
- When asked if they ever used an online discussion forum before
  - 1 reported prior experience with a discussion forum
  - 5 reported this was a first time experience
    of which 1 reported one experience limited to several instances in a previous course where use was highly structured.
Case Report: Alexa

Table 4.1: Overview of Alexa’s Survey Responses and Learning Style Preference

<table>
<thead>
<tr>
<th>ILS Inventory Score</th>
<th>Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>9A – 9B – 7A – 1A</td>
<td></td>
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<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>F</td>
<td>10</td>
<td>10 to 19</td>
<td>0% - 75% - 25%</td>
</tr>
</tbody>
</table>

Have you ever used an online discussion tool: Yes, for an inquiry class
How would you describe your experience: Very Beneficial
Have you ever used an online discussion tool in a course?: Yes
Did you find the online discussion activities helpful?: Yes

Total Posts: 2.79% of total / 0.04 posts per day

Alexa described to me how the discussion board was to be used in the class and the points/extra credit that was associated with it. She clearly understood the that forum was voluntary, was there to provide support for learning as well as provide an opportunity to obtain and earn extra credit points, and these points were added to her quiz grades. Her description was consistent with other students and the instructor’s description.

Alexa, in describing her preferences for learning, noted that she likes the lab sessions where she actually gets to do the things that they read about. She also noted that discussion board provided the opportunity to see the questions other students had about the topics they were covering in the course. Basically related to learning, she felt the board forced her to ‘work’ with the course content in a different way that added to her overall understanding. Alexa described that “because of the discussion board I read with more attention” focusing more on the material and being more conscientious. She also
noted that she “paid more attention to the learning than to the people,” focusing more on the details of the chapter content. She also identified several ways in which the discussion forum particularly helped her learn the material. These included: being exposed to more points of view thus broadening her perspective on the topic; the fact that the information was presented in multiple ways by multiple people, providing a potentially deeper learning experience; and the “repetition” of information served to enhance the learning process for her. In her words, she noted, “it helped me learn because there were many questions that I did not think of. Other people [in the course] would have different ideas and that helps you learn. You are learning things/ideas more than once [in more than one way] you read it and then discuss it online, it is like learning it again ... with all those people it is like a learning facility, it brings out different angles and different options of everything, it is also a memory issue [for me], it helps me with recall ... You read it, you talk about it on the discussion board, you read about it again in the board”.

Alexa also identified two issues related to time and learning. These issues included 1) the ability of the board to afford a platform where if she had a question she could ask it right away and not ‘lose’ that question or thought. For example, “I had questions and class was not for two days, I would ask a question and it would get answered. I would not have to wait for class to come. That way I got my questions answered and it wouldn’t give me a chance to forget what my question was”.

Secondly, Alexa observed that the discussion forum served as a reflective tool for her. The discussion board aided and supported her in her learning. She stated “in class I won't
think about a question or I won’t know exactly what I am trying to say correctly in class. You can’t always think of questions while you are learning something. It takes you a while to think about it first. So it gave me the opportunity just to think about everything and then reflect on it in the discussion board”. The essence of this comment highlights the idea that the board provided a platform that allowed this student to process the information at her own rate yet still be supported within the course. She went on to explain that “[the discussion forum] forced me to re-learn the information”. Alexa also explained to me that given the parameters and structure of the discussion board, the act of posting or responding to questions on the forum made them critically assess their own understanding of the material. Part of this critical reflection and questioning included “looking at the readings from different angles you may not have taken when you read the article” and “Reading the other posts (questions and response) gave you insight into other ways, other viewpoints, you would not normally have.” More specifically she added: “it just brings up different angles or pathways” that makes you see things outside of what you were thinking about. Another factor Alexa mentioned dealt with speaking up and asking questions or venturing opinions. She observed that “because some people get nervous in class and [if they ask questions or venture an answer] they are afraid they are going to be wrong and everybody is going to be staring at them. But if you answer a question wrong online somebody corrects you and you are over it. That’s all there is”. This comment serves to highlight that Alexa feels the discussion forum is a ‘safer’ place to venture opinion and speculation as being ‘wrong’ online is a different feeling that being ‘wrong’ in a face to classroom.
When using the discussion board tool, Alexa used it in a fairly pragmatic way. First, she “used it because it was part of the class” in other words the discussion board was there, and the students were expected to use it so she did. She also “used it as a tool, and a resource for the class”. Interestingly, as a tool, she “used the discussion forum like a quiz” using the discussion board to see if she could answer all the questions that were posed on the board and comparing her answers to the posted answers. As a learning resource for the class she came to conclude that “you become aware of what you are reading and if you are reading it with sufficient understanding”. Regarding Alexa’s pattern of use she noted that she “used it [the board] more when [she] had more time. She also noted that “[posting to the board was] hard to fit it into [her] schedule.”

This particular learner did not comment directly on the trust or value she placed in the student postings though she did mention that she would “hope the person [other classmates] would have read the text as attentively as me so that they can give me a correct answer.”

Alexa appreciated the ‘immediacy’ of the online environment especially if others were online at the same time. She stated “it's nice because it is immediate - if somebody is on the discussion board they can answer right back. When you are on a discussion board it is not like an oral conversation where you have to worry about asking stupid questions - it's not like a classroom setting.” This comment highlights Alexa’s belief again that the ‘distance’ the online environment provides, in this case, is interpreted as advantageous in that it creates enough distance to encourage risk taking – e.g. “asking stupid questions”,
thus breaking down specific face to face classroom barriers. It is interesting to note that this distance or lack of connection in the online environment is exemplified in her statement, noting that she “paid more attention to the learning than to the people.”

Alexa’s experience with a discussion board in an inquiry class left her with a positive attitude toward the use of discussion boards as she saw past use as “very beneficial’ to me and my learning. Describing this experience Alexa explained that the immediate nature of the board was something that she particularly derived satisfaction from related to the online discussion based tool. As depicted in her earlier comments, this student iterates that the nature of the discussion forum is different from that of a face to face classroom setting. For Alexa, the discussion forum is a space where risks are easier to take as opposed to the face to face environment of the classroom.

Alexa did have some problems and frustrations and noted “I had problems with my account and could not get access to the discussion board for a while.” Despite encountering technical issues with being able to access the discussion board – the technical difficulties did not seem to have an overall negative impact on the impression or interaction with the board. Even though she was “out of the loop” for a period of time – she felt that this was not an insurmountable handicap as she “did not miss anything because she could always go back and read the previous posts on the board.”

When discussing changes that could be made to the discussion board or improvements that could be made, Alexa spoke about changes and improvements relative to why she
used the discussion forum. Alexa used the board to ask questions to clarify her own knowledge and understanding of the readings. This stated assumption presumes that the other users [her classmates] have read the material with the same care and attentiveness as she. Alexa notes “when I go to the discussion board … it’s because I have a question, so I don’t want to sound stupid, if I didn’t read the chapter clear enough [sic]. I try to put myself in the other person’s place, I hope the person would have read the text as attentively as I so that they can give me a correct answer.” Changes and improvements, for Alexa, are ones that would impact student attentiveness and care in posting to the discussion board. This point can be tied into the concept of student trust in postings addressed a little later on.

**Case Report: Reuben**

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<tr>
<th>ILS Inventory Score</th>
<th>Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global</th>
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<tbody>
<tr>
<td>7B – 3B – 3A – 1A</td>
<td></td>
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<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
<th>Days to 9</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Male</td>
<td>8 Years</td>
<td>1 to 9</td>
<td>2% - 48% - 50%</td>
</tr>
</tbody>
</table>

Have you ever used an online discussion tool: Yes (this class)
How would you describe your experience: Neutral
Have you ever used an online discussion tool in a course?: Yes (this class)
Did you find the online discussion activities helpful?: No, I do not feel confident with student answers

Total Posts: 6.15% of total / 0.08 posts per day

Reuben was also well aware of the purpose and potential support of the discussion forum in the course. Reuben summed it up his assessment quite succinctly: “Quizzes are 25% of
the final grade … discussion can award points for extra credit toward the quiz portion of
the grade … if you bring your quiz scores up you can get a 'perfect' for that 25% of your
grade - so it becomes a significant thing”. Reuben also iterated what all the participants
noted regarding the structure and the purpose of the board. Particularly for Reuben bonus
points were definitely important in the grading scheme. “The best thing is the bonus
points for me”.

When asked to define learning, Reuben stated that learning is when “something new is
brought to you or something you are not used to and how your mind or whatever can
process that information and then afterwards you can take from that experience whether it
be a class or here's how you cut a watermelon properly or things like that and how much
of that information you can use later and apply to other things - that is what I think
learning is”. Reuben is describing learning as the ability to take what is taught or what
you know and being able to apply or transfer that knowledge to new and different
situations.

When asked how he could tell if he learned something Reuben noted that “I think a true
judgment for my learning, I think [for me] personally is like when I can look back and
say this concept in my psych 201 class; I can apply this to what I am learning now or this
religion I learned here - this is sort of similar here to this - you know you can apply the
same logical steps. It's basically when after a lengthy period of time you can come back
to that information and apply it to other tasks at hand”.
Regarding Reuben’s preferences for learning he states “I take to lecture more than I do the bulletin board thing”. “The lecture did it pretty well for me.” Although this student made the previous statement, he did say that the discussion forum had helped him understand/learn some concepts for the midterm and he did note that “it seemed worthwhile to read [the discussion board] because our teacher [Professor Nelson] would use a posted question from the bulletin board on some of the quizzes”.

Reuben’s overall perception regarding the support of the discussion board on his learning was summed up in the follow statement: “Some parts of the discussion board helped [me] just because it would force me to think about things in the text that confused me.”

In describing his use of the discussion based tool, Reuben felt that the layout and interface of the discussion board was “easy to navigate through” and found that he would be doing other things while using the discussion forum such as IM’ing (instant messaging).

This particular interview with Reuben was interesting as it initially seemed to contain some conflicting statements. For example when the conversation turned to use of the discussion board, Reuben stated. “The points were a motivation for me to use the board” giving the impression that the points were the only motivating factor for using the board. This thought was reinforced when he went on to explain that he “posted for the points because it was a grade booster”. However, Reuben went on to add that he felt the benefit of the board was such “that I would use the discussion board even if no bonus points
were awarded – maybe not as much, but I would still use it”. These comments initially seemed in conflict, especially when Reuben stated the points alone were “not enough motivation for me” [to use the discussion forum]. “I’m the type of person who would ask questions in class if I didn’t understand [the material].” When questioned further on the matter, he stated that if he had a question and were in class at the time, he would not wait to post the question on the discussion board; rather he would ask the question then and there in class.

Reuben noted that for him “there were two ways to use the discussion board: ask a straightforward question and get a straightforward answer … or to post a question that made you apply information” given these two types of use Reuben felt “the application questions and answers were the ones that helped me learn better.”

It was also interesting to note that when asked in the survey if they had ever used a discussion board, Reuben responded no they had not. When questioned if he had ever used a discussion board in a class, Reuben also responded no, only this current psychology class. However, in subsequent interviews, Reuben noted that he had used a discussion board on a previous occasion as an extended assignment for another class. He explained that he forgot all about it until just then when he was talking to me. This being noted, when asked about use, he went on to describe that “maybe I was more familiar with the discussion board because of that other class and I felt comfortable with it and familiarized with it … I don’t know it might be some correlation just because I had experience with the discussion board I would be more active in it - so maybe for a future
class I would be more active in a discussion board than I would have if I never had this experience with them”.

Regarding persistence, it was interesting that Reuben noted that instructor feedback in class regarding their posts was encouraging. “Once or twice the professor in class would say [I] asked a good question – so that boosted my confidence a little bit”.

Reuben was overtly concerned with the quality and correctness of student based responses. He expressed his concern in this area through several comments. First, Reuben expressed the desire that it would have been nice if the instructor had posted the correct answers to the discussion forum to verify in his mind the veracity of the student posted answers. Second, Reuben also noted that would have appreciated more instructor interaction on the board to overtly indicate correct/incorrect postings. These comments were not unique to this participant – other participants hinted around this idea but none were as direct as Reuben.

I questioned Reuben about it and he said “[there is a difference in the ‘value’ he placed on student responses] the teacher is valued more, students are not trusted as much.” While it is important to note that Reuben valued instructor input more than student input it should also be noted that he also stated that he “found the board to be helpful. A lot of students asked good questions and [many] gave good answers.”
Reuben felt the tone of the online discussion was more formal than he had thought it would be – “… not that it wasn’t friendly, but it was more a more formal space.” He went on to describe that his impression of the ‘feeling’ of the discussion space was “all business” and that “it feels impersonal”. When questioned further about the tenor of the forum he noted, “there was no real back and forth” which Reuben had anticipated (see later comments under expectations and experience). All in all, Reuben did not see any ‘social’ relationship gains being derived for him from the board.

As noted earlier that Reuben stated “none of my other classes have used a discussion board.” While this statement was true in that no other courses used the discussion forum consistently or as an integral part of the class, this user did have one instructor who was going to be away for two classes and used an online chat to ‘cover’ those class sessions for which he, the instructor, would be at a distance attending a conference. Familiarity with the technology and online communication tools – even if that familiarity is not with the specific discussion tool may have supported Reuben’s experience. Reuben, not having a familiarity with using a discussion forum as part of a class and even though he may not have used an online chat stated … “I don’t know how the technology [the discussion board] works, but I do know how to click a button … and seeing it as a positive experience I would be more likely to use it in another class.” There is the indication, as noted earlier, that familiarity with technology in general and general computer use may add to Reuben’s experience.
Reuben noted that expectations of the discussion board and the reality of the discussion board were at odds for him. Where Reuben expected more of a back and forth to occur among the students, Reuben said “I was kind of surprised [that the discussion board was not used more broadly] I thought it might have gone in a different direction.” Reuben thought that the board would also be used as a social platform – or at least a more informal space than it actually ended up being as re-enforced by their later comment that he thought his classmates might use it [the board] for other things outside of class. So Reuben saw the discussion forum as tool for both social and educational purposes – purposes that can cross and integrate within one setting. Reuben went on to provide an example and quote to illustrate: “like I posted once (off topic) but it was like met with dead silence … it was a more formal space and I was trying to loosen it up a little bit. I did that once and got no replies and I was like OK not going there again.”

Disappointments and frustrations were three-fold for Reuben. The previously mentioned disappointment with the discussion not being a more social integrative tool for the class was one, but there were the issues related to the structure of the discussion board [detailed in the following section], and there were recurrent comments about the ‘trust’ in student posts. Specifically, Reuben said, “Probably the worst thing [for me] is not knowing if the student who answered your question is telling you the right answer.” Although, Reuben noted that if a student did answer incorrectly, the instructor would correct that student and that ‘wrong’ answers were not awarded points. This feeling is consistent with the weight/value this student placed on instructor vs. student information.
Several themes surfaced related to changes and improvements, including changes related to the design of the board, how to improve interactivity and participation, the desire for more instructor involvement, and improving the online environment. Regarding the design of the board, Reuben drew on an experience in another course where “in another class we were forced to make a certain number of posts and you didn’t get credit if you didn’t do all the posts. I found that a lot more useful than [the way it] in this class.” The forced use, Reuben goes on to explain made students interact. The instructor in this example, Reuben noted, created criteria for the posts that the students needed to follow. If the criteria for the post were not met, even if they did post, the post was not credited as the content of the post did not meet the required standard. Reuben noted that no standard was really set for the postings in the course other than posed questions got one extra credit point and correct answers received two extra credit points.

Regarding interactivity and participation Reuben noted three factors. It was suggested that more activity might occur if at the outset users were ‘forced’ in some way to be active at the very beginning with the discussion forum. This forced use Reuben explained would get people used to accessing the discussion forum so they could get used to how it [the board] worked and be more aware that the board was there. Second, Reuben felt that if the instructor had been more active in the forum, he [and others in the class] might have been more active too. Reuben observed that leadership in this area from the instructor would have made an impact on the students and that the instructor’s presence on the board would have enticed students to be more active on the board. And third, restructuring the timeframe for the discussion board might help with participation as
things often came down to last minute postings. Students tended to let things come down to the wire or deadline, posting shortly before the due deadline, leaving a short turn around time for ‘answers’ prior to the quiz. Not posting sooner, for Reuben, was due mainly to time/pressure factors – mostly related to doing the readings the night before they were due. Reuben did recognize that part of the purpose of the discussion forum was “forcing you to read the chapter”, so restructuring the board’s time frame would either impose on the students or the instructor adversely – “so either way there is trade-off I guess.” In other words, adjusting the timeframe and structure of the board was a complex problem, were several inter-related factors were coming together. Changing one facet of the board, would impact the entire chain of events regarding turn around and processing time for both students and the instructor.

Reuben not only commented on changes and improvements that could be noted with the tool as described above, but interestingly enough, he also noted that he had observed changes within himself and the way he used the discussion forum. He observed, “the thing that has changed is that I am answering questions [not just asking questions] … and that makes me feel better.” Reuben described a shift from just posting questions because he wanted the extra points, to posting questions later on because “if I asked good questions, then maybe those questions would help somebody else”. Additionally Reuben noted that answering questions would also help out fellow students
Case Report: Vicki

Table 4.3: Overview of Vicki's Survey Responses and Learning Styles Preference

<table>
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<th>ILS Inventory Score</th>
<th>Active/Reflective – Sensing/Intuitive – <strong>Visual/Verbal</strong> – Sequential/Global</th>
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<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
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<tr>
<td>20</td>
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</table>

<table>
<thead>
<tr>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 9</td>
<td>5% - 85% - 10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever used an online discussion tool</th>
<th>Only this class</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you describe your experience</td>
<td>I have not posted yet</td>
</tr>
<tr>
<td>Have you ever used an online discussion tool in a course?</td>
<td>No, just this course</td>
</tr>
<tr>
<td>Did you find the online discussion activities helpful?</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Total Post: 0.00% of total / 0.00 posts per day</th>
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</table>

Vicki was well aware that the discussion forum was an optional part of the course. That its purpose and goal was to be a support for students who may have questions or problems with the text and that the discussion forum could serve to provide extra credit points for users who chose to take advantage of the opportunity. One extra credit point was awarded for questions posted to the board and two extra credits were awarded for responding with a correct answer to the question.

Regarding learning, Vicki was very focused on what she needed to do and the basics related to getting it done. Vicki was aware that there is process and a set of steps for learning but implied too that learning is not just something that happens in the classroom. Vicki viewed learning as more than something that occurs ‘in’ the classroom. She posits “I still think it is a good thing to have something outside of the class. So if you have a question about an exam or something you can post your question and get class feedback.”
This outside class feedback and interaction broadens or adds to the learning that is occurring in the classroom. “And it is helpful given the experiments we have to run.”

As noted later under frustrations Vicki had a particularly difficult time with navigating the interface – which I am fairly confident impacted her participation. She observed “with the bulletin board you have to click on a lot of things, it is confusing for me.” This confusion affected Vicki’s ability to access and physically use the board. Vicki was more in tune with e-mail system and the way e-mail worked on a shared file server than the discussion forum. Vicki saw the discussion forum as difficult to access to use. Vicki stated “… it was just so hard to access” if it were right in our e-mail and we opened it up there … it would be easier because I think more people check their e-mail than they do the bulletin board - it would just make it easier.” This comment is reminiscent of debates within the field as to the pros and cons of using a discussion forum or e-mail as electronic communication. Arguments for e-mail posit that the medium itself, because of its ease of use and the familiarity that most people have with it, scores points for e-mail as the preferred medium of communication. E-mail is a ‘push technology’ however – meaning that internet content gets delivered from a server to a client, alleviating the need for the user/client to ‘go’ to/locate the source of the information – the information goes from the source and gets delivered to the user. On the other hand, a discussion board is (usually) a pull technology, where the user/client needs to go to the source (server) to access the discussion board. The advantage of a discussion forum over e-mail, the argument suggests is that if there is high traffic or if you want to be able to organize, sort, and locate/find ideas within the communications – a discussion forum lends itself better to
those sorts of applications. The discussion board by its nature and structure organizes postings by topic or thread and ‘conversations’ and are easily followed. E-mail does not have the hierarchical codifying capabilities that are innate to a discussion forum.

Use of the discussion board was optional in the course. However, several respondents, including Vicki, in the course of the interviews mentioned that participation should be forced (to some degree). As this idea kept surfacing in various interviews, I posed this question to Vicki and asked how she would react if the use of the discussion forum was required or forced. Vicki responded by saying “I wouldn’t be upset or stressed about it - it would be like another homework assignment to me - if we had to do it all the time … (with everything else) I would just think it was a challenging class - it is something I need to do … you really can’t get mad about curriculum.” This matter of fact-ness is interesting and reflects Vicki’s pragmatic approach.

Regarding trust in posts, Vicki did not question the veracity of the content of the discussion forum. In fact the concept of trusting the posts never even entered into Vicki’s conversation with me.

As for the social aspect, Vicki noted to me that she felt pulled in many directions. She felt pulled by coursework and other course obligations, as well as feeling pulled by outside responsibilities such as work. Vicki also conveyed the idea that she felt somewhat like an outsider – as she was a sociology major with a minor in psychology whereas the majority of the other students in the class were psychology majors. Vicki noted “I feel like Dr.
Nelson is really into the bulletin board so I almost kind of wish that I did take more time to look at it. … I always feel a little bit distant in that I don’t always feel I am in on the full class discussion.” Vicki’s comment appears to reflect the idea that 1) because the instructor is excited about the board and feels it is important, she should be too and 2) the feelings of being an outsider may impact Vicki’s attitude toward ‘conforming’ or meeting the expectations of the instructor. This observation is borne out later when Vicki declares “I feel like if psych was my major I would be more inclined to use the board to impress Dr. Nelson and to get her approval - but since I am a senior and this is my last psych class that I have to take to complete my minor - I don’t ultimately care.” Social aspects of the board continue to play out for Vicki as reflected in an interesting comment. It was interesting that Vicki saw a distinct social difference between e-mail and the discussion forum. She notes that the discussion board “differs from e-mail. The discussion board is not as personal [as e-mail], with e-mail you have to know who you want to contact.”

Vicki’s experience was deeply colored by her frustration with the technology, and the inability to access the board with consistency. Repeatedly throughout the interviews Vicki kept referring to the fact that she would have used the discussion forum more if it had been accessible through e-mail or if the discussion space could be access through the shared file server she was already conversant with. It should be noted however that Vicki was unaware that what she was accessing was shared server space. She just knew that when she went to access her e-mail, she could also access various files and folders that had other school and course information. It was through this interface that Vicki wanted
access to the discussion board. The discussion board access did not share this common portal entry, rather it resided on a separate server under different administration.

As noted earlier, Vicki had frustrations related to the actual technology and navigation of the discussion tool. For example, she said “it seems with the bulletin board you have to click on a lot of things, it is confusing for me.” Vicki, as noted earlier, was savvy in the use of e-mail and shared folders. Since she was familiar, the use of these tools was ‘easy’ and the use of the discussion board was different which was construed by her as hard.

Atypical of Vicki was the fact that she worked eight hours a day and was more pragmatic about school and learning, and accomplishing ends. So needing to learn a new tool and new interfaced through which to access and use that tool was burdensome. Adding to Vicki’s frustration was the fact that since she did not have the opportunity to hang out on campus and use the college’s resources, she was dependent on the quality of her home connection to the internet which she described as “the computer and internet in my house are always iffy.” Connectivity issues were not cited by other users in the course as they were either using the school’s equipment and services or they had high speed or cable modem access from their home systems. Vicki was using a dial up modem with a lower speed connection.

Time was an important factor to Vicki who noted that “it is so hard to make time for everything – I work eight hours a day just to pay for school”. Throughout the interviews, comments were made that reinforced the impression that Vicki was an individual who
happened to work toward deadlines and prioritizes things given the time she has to allocate toward getting that thing done. It should be noted that our interviews were sandwiched between coming from a class and going to work off campus. She felt that if the discussion forum were more structured and less open ended she “would have made time in her schedule for it.” As it was the discussion forum was optional and low on Vicki’s priority list.

Summarily, given the preceding descriptions, Vicki felt that “it would be easier and more people would use it [the discussion board] if the discussion was done in e-mail, it would just make it easier.” Again, Vicki feels that being able to access the discussion forum from the central shared file space would have been advantageous.

She also felt that being ‘forced’ in a sense to look at the board (hence the want for an e-mail link) would help support interactivity and use of the forum. She also noted that if this were the case she would also be more prone to remember the discussion forum and use it more often.

When asked about forcing students to use the discussion forum she noted “forced use would make it easier for me to be interactive with what was happening in the course.” Again, this concept of forced use is not really wanted but the participants do recognize that forced use would have multiple positive ‘side effects’.
Case Report: Vera

Table 4.4: Overview of Vera's Survey Responses and Learning Styles Preference

<table>
<thead>
<tr>
<th>ILS Inventory Score</th>
<th>Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>20</td>
<td>Female</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours Used Per Week</th>
<th>% On work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 19</td>
<td>10% - 50% - 40%</td>
</tr>
<tr>
<td>Have you ever used an online discussion tool</td>
<td>Not before this class</td>
</tr>
<tr>
<td>How would you describe your experience</td>
<td>n/a</td>
</tr>
<tr>
<td>Have you ever used an online discussion tool in a course?</td>
<td>Am using it now</td>
</tr>
<tr>
<td>Did you find the online discussion activities helpful?</td>
<td>Not sure yet</td>
</tr>
<tr>
<td>Total Post: 0.28% of total / 0.00 posts per day</td>
<td></td>
</tr>
</tbody>
</table>

Of interest for this and subsequent interviews with Vera is the LENGTH of the interview and the amount of unsolicited dialogue and comments Vera contributed. It may be a peculiarity of Vera’s learning style – as she rated highly verbal

Vera unlike the others when asked about the purpose of the discussion board remarked that “because students don’t all learn the same way, I think it [the discussion board] was used as an option to support students who learn more by interacting with one another outside of class instead of just during class. So I think it is another option for us - an opportunity for us to learn in a different way.” It was only after this statement and further questioning that Vera laid out her feeling that the board was an extra credit option and went on to describe the point system associated with the board.
Vera defined learning as “being able to understand the information that knowledge is being able to use that information in other ways and being able to apply it to everyday life.” Vera further postulated that she “knows when [she’s] learned when [she] can explain it to somebody else” and then when [she] can apply it to something else - that’s how I know I’ve learned something.”

When asked how she learned best she recounted “I learn very well by writing down notes and understanding what is going in the class – but that’s not what helps me in this class. I have to read, I have to draw things” “I learn best - I like structure. I learn best when I have a lecture, I know what the topic is, plus there’s the talking about it. … I don’t know if I could say I learn best in one way or another it depends a lot on the subject.” Vera has described several interacting issues for her. First, Vera indicates that she is aware of how she prefers to learn but is cognizant that for this class, her preferred method of learning will not be sufficient. Second, Vera needs to approach learning differently for this course and its content. Third, she is also capable of identifying her learning needs related to the content.

When questioned about learning directly related to the discussion forum she offered “it really didn’t help me learn anything I wasn’t sure of. [If I wasn’t sure of something] I would most likely go to her [Professor Nelson] and talk to her or send [the instructor] an e-mail and ask her what's up instead of going to the bulletin board.” Vera observes that the discussion board was not the way she would approach asking questions to clarify understanding for this course. While Vera (and others) did not view the discussion board
as an optimal way for them to clarify issues related to content, there was an acknowledgment that the discussion board was effective in specific ways.

Vera, at several points during interviews was aware that use of the discussion board could be beneficial, however translating that realization and awareness to active participation did not happen. For example, Vera states “if I had gotten more involved [on the discussion board] maybe it would have made more of a difference but I haven’t used it a lot participating may make a big difference.” Vera viewed the discussion forum as a positive aspect to the course and acknowledged that more participation would likely lead to better understanding. Further she recognized that “I think if I went ahead and read the chapters, and looked at what I didn't understand and asked something I think I could get the answer that I am looking for without having to wait for lecture - and I think I could understand it better before the quiz.” In other words, it would be more work, but she would not have to wait for someone to tell her what the answer was – she would be able to work toward that understanding herself.

Vera was cognizant of the value of the board and was disposed positively towards it. “I liked having the opportunity [to use the discussion board]. I think it is nice to have because it is no way hurting anybody. If you don’t use it - you don’t use it - I wish I had personally taken more time in the beginning of the semester [to familiarize myself with it] but I think it is good thing - it just didn’t help me personally because I didn’t utilize it as much as I could have.” Of possible interest here is the idea that Vera and others thought that using the board earlier (through force) would have benefited them in the long
run. For Vera, early use would have given her more familiarity with the tool and more confidence when using the tool.

Vera’s perception regarding the use of the discussion in the class was fairly magnanimous – her view that the discussion board was not seen as anything that could ‘hurt’ – and that it could only do nothing at worst and help at best. Vera states “I can't see it [the discussion board] hindering any kind of learning I can see it helping but I think it depends a lot on whether you use it.”

Regarding Vera’s preferred way of interacting, Vera notes “I like talking to someone … it is not going to help me to get a couple of sentences on the bulletin board. That isn’t going to help me understand, I usually need someone standing there talking to me.” It is interesting then that Vera did not carry this preference over to the use of the board and subsequently the board was not used by her or others more conversationally.

As a replacement for conversation the discussion board was a distant second to Vera but she did realize that the forum could serve as a conversational replacement. “I would rather do face to face but you can’t do that all the time … it [the discussion board] provides time where you can engage more in interactions than when you are just by yourself in your room studying.” Again there is the realization or belief that the board holds potential for learning and that this potential can be tapped if one uses the resource. And again Vera brings up the theme that more use would benefit her (and others) in the long run: “I don’t use it as much as I want or should to get the full benefit from it.”
Conversation with Vera revealed three issues related to how the discussion board supported her learning. The first issue was related to when Vera accessed the board. She noted “I am doing a lot of my reading the night before, so by the time I am looking at this [the discussion board] and trying to figure out questions - it's actually easier for me to talk to somebody so I don’t often [use the board]. However, as stated before she was well aware that there may be an educational advantage in using the board. “You know I have the feeling that it would probably be a lot more useful if I actually used it more.” The discussion board “is one of those things that if you use it, it makes a difference and if you don’t then it doesn't.” It is clear that Vera believes that using the board holds value.

This value is both substantive (immediately tangible) in that the value of support for Vera for using the discussion forum has provided her with the experience and the confidence to speak up now in class. “I even see it now, in other classes, I’ll speak up” given the experience in this course. Additionally, the support of the discussion board for learning was unique for Vera who stated: “I think most of it is now I am seeing this as my education and I WANT to ask questions that I NEED to ask to understand this stuff but I think it was part of it - as much a part of it as speaking up in class itself now you know - but it did make a difference.”

Support and value also held future potential in that “(it would help by) opening up your mind and providing opportunities that you would have missed.” This potential is further described when Vera observed “if I put more effort into it - it would help. More extra
credit was [the] main incentive first. I used it [the discussion forum] as a way to get my extra points, then I was looking for questions to ask. But for anything that I did not really understand I would wait for lecture to ask instead of posting to the discussion board and waiting for students to answer.” However, benefit regarding the discussion board was perceived by this individual as can be seen when she offered that the “overall value of the connection that could be made you are talking with people outside of your class - the overall value I think is that we had the opportunity to look at a different way of learning and try that out”

As a new user, Vera felt motivated to engage in the discussion space primarily because of the personal and social aspect of the board. “I would have been motivated at first by the whole idea of being able to create a profile and get to know the students and everybody else in the class a little bit more - I could see myself trying it anyway.”

As Vera engaged with the board it seemed that she experienced a shift in motivation. Vera’s motivation became rooted in the points that were awarded for extra credit as opposed to concentrating on the topics or subject matter of the readings. “I was focused and did it mainly for the points … I wasn’t focused on the topics.”

This locus of motivation however, was not able to sustain Vera’s persistent use of the discussion board. “I would have kept going with it [the discussion board] if the points were a big deal - but if it is something like one extra point - it is not worth figuring out what question to ask or how to ask it or looking at somebody else's question to answer
it.” Vera as well as others have noted that while the points were a motivator and a factor in getting them to use the board; the small amount of points became ‘not worth it’ to individuals who were either stressed from lack of time to do the work for class, or had other things competing for their attention and time. The perceived return on investment of time/energy to the ‘reward’ they got out of engaging with the board was not enough. Vera in particular seemed rather pragmatic about it. Additionally, when Vera was asked if she were less stressed or had more time to utilize board, would she – Vera noted that "I've learned that if I have X amount of time for something that is how long it will take me … I would have just procrastinated more - I think more of an incentive needed to be provided.”

It appeared that not only were the points not incentive enough to engage Vera more, but the learning benefits from the board were not a very strong draw for her either. Vera stated “the points were the motivation for posting … it was a way to get points and to possibly understand more … I don’t think I understood more by what I asked but my initial thing was yeah, I want to get the extra points”. It seems though that Vera did believe that discussion forum could be of potential value to her but through this particular experience ‘learned’ otherwise.

Philosophically Vera observed “I think it (helps some people) like if something is not helping you I don’t think you keep going back over and over again - maybe it was just the points to keep them [the other students] going but I have a feeling they [the students] decided to use it because they got used to it and that is what works for them.”
Again, like others, Vera noted that technical issues such as navigation and the layout of the interface became barriers to use. Vera described her observations. “I thought it [the discussion board] was an interesting idea … it can be a very positive thing … right when I first looked at it I did some exploring - but it was not easy to use, even once you knew what you were doing … the format wasn’t simple.” As exemplified in the previous remark, this was a definite barrier to Vera’s use of the board. Furthermore, she expressed that “I don’t want to take the time to figure out how the tool works.” Vera further noted that “I had said it was hard for me to figure out what's going on … I don’t know how to do that [use the discussion board] and I never spent enough time to figure it out and I think that is why partly I didn’t keep going with it.” Interestingly, Vera noted that “If I had used a board before for another class it would have been easier” and she did feel that she “thought that she may have been missing information because of the lack of dexterity with the technology.”

Given these technological frustrations, I asked why Vera felt students used the discussion forum: “I think because they benefited from it. They very well could be doing it for the points too but I think when you get to a certain point - they obviously are getting more from talking to somebody else or having somebody respond to their questions or asking the class and Dr. Nelson is on every night and she responds to everything and she'll talk you thru it. I think they get a certain benefit from that, more than listening and taking notes.” But as for Vera, “I just used the tool for what I needed to do to prepare for the quizzes”.
Looking across things like PowerPoint, e-mail, discussions, and other strategies utilized by the instructor for this course, Vera was asked to place the discussion board along a continuum from good to bad. Vera noted “as opposed to lectures or using PowerPoint … stuff like that … I would rate it [the discussion board] good but I wouldn’t put it as strong as in with lectures or coming to talk to her, or with PowerPoint or anything … I would even put e-mail ahead because it's a more personal thing and going to talk with her. I don’t think its a bad thing but I guess when I thought of the bulletin board I would use it more as a way of communicating with the other students than a way of a teacher using it for students learning the material.”

Vera did not comment directly on trust in posts and began her observation of the social aspect of the discussion board by noting “at the beginning it was more question answer, question answer … people are trying to get their points they are just getting used to how to use it …. When I looked at it at the middle of the semester it was people would respond like I'm talking to you.” Here Vera indicates that there is an evolutionary process related to the discussion board. “From the beginning … I just posted a question, very simple, very concise … by the last question I posted - I was kind of talking. You are a little bit more open, a little bit more comfortable so it is easier. It's closer to a face to face discussion.” Vera is not the only participant who noted a change in use over time with the board. It seems as though the users who posted more frequently, also became more relaxed in the way the used the tool to ‘speak’ to other class mates.
Vera continuing to discuss the social impact/potential of the board commented “this [the social aspect] was part of my initial interest in the discussion board because I love the idea that I can get to know other students. I like getting close to other students and getting to know them better and I think it [the discussion board] helps. I think it [the discussion board] gets to help us know each other better, and I think that is my main interest in it [the discussion board] - so I feel something when I go to use it.” Vera also spoke about the use of the icons for personalities that were used. “I love the idea of [user] profiles ‘cause I think it creates this warm online environment kind of thing”, which Vera in turn felt added to the whole discussion experience.

Vera further explained the “use of icons, gets you excited and intrigued. What I enjoyed about the icons was trying to figure out a little bit about the personality based on the character of who they chose.” Vera points out the draw that the icons had for her. She describes how the use of an icon for her implies something to be learned about the person who chose that icon. It prompted interest and curiosity as to why the student chose the icon they did and if the choice of that particular icon ‘said’ something about the student who chose it. Vera goes on to explain, “icons were a trigger for me to ask questions … you start to talk to people and I start to understand and I know I'm not the only one who doesn’t understand.” For Vera, the icons become a symbol of the user and evoke and prompt feelings of recognition and commiseration.

This social aspect however does not happen quickly, rather it appears to evolve and build over time. Like any other social interaction it is an unfolding process. Using the
discussion forum Vera describes that now it “is more like AIM and just talking to each other.” Over time using the discussion forum has ‘loosened’ thing up for Vera. The tone of the board has changed for her. This is in contrast to other participants who mentioned that the discussion space was always ‘more formal’. “It made me more comfortable when I did ask a question. … It transfers when you get to class. We are all getting to know each other.” “Over time it was more like I was talking to the person … it didn’t seem as formal.”

Overall Vera felt that the discussion board did take on a social aspect. “I think it did [became a social space] for the people who used it regularly - I can kind of feel it in a way but not totally for me.” Vera did note that “forced use would help because it would be related to feeling comfortable with the tool, it would help with fellow students, remaining open to things.”

Vera had no expectations for the discussion board because she had not used a discussion board before. But upon being introduced to the discussion board, Vera explained that she wanted to utilize the discussion board because she felt that it would help farther along the road in understanding the course materials. “One of my goals was to use the discussion board more because I really wanted to - and not even for the points - I did want to get a lot more out of it because the quizzes are going to get harder.” The ‘newness’ of the board was not initially daunting as she felt “it's easier to try new things at the beginning of the semester when you have a bit more time and I like setting goals for myself and that is why it made me feel not so good later on because I let it slide later in the semester.”
This change in attitude was explained further when Vera noted “my [attitude] has changed toward it [the board] - not that I lost interest but that I have so many other things going on … so I've lost interest in putting the time into it now than I did in the beginning.” It may be interesting to note that Vera did not have dexterity with the tool. This lack of ability may have colored Vera’s outlook and may also have added to her lack of interest.

The ‘time’ factor for Vera was exemplified by their statement “I am doing a lot of my reading the night before, so by the time I am looking at this and trying to figure out questions - it's actually easier for me to talk to somebody so I don’t [use the board] … you know I have the feeling that it would probably be a lot more useful if I actually used it.” Again, Vera iterates almost the same statement made by several other students – that the board would probably be more helpful to me if I used it more.

The concept of time and student perception of return on investment was addressed when Vera was asked if the discussion forum supported how she valued her own opinion as well as the opinions of others. She responded by saying “I think it did because it was probably the first time where I could actually - where I was speaking out. And I've always been more of the type who sits aback and listens to everything in class. … But for the first time it allowed me - people knew it was my opinion and me talking. It made it a little bit easier because it wasn’t in class - a little bit different at least for me” – “I was more aware maybe that this was my opinion, that that is what I am saying, so it did even
the few times that I used it” the brings to light another possible support that the discussion board provides – and that is for an overt awareness of self and opinion as a learner and participant in your own learning.

It is interesting that this student makes comments that reveal that this tool supported her learning (or at least on factors that I believe support learning) and yet at a later point in the interview can say: “I think they [other students] got a certain benefit from the interaction [on the board] and that made a difference for them. Whereas for me, using the board didn’t. I did it [used the board] just to get the points.” From within this snippet of conversation this comment is contradictory. Isolated it reflects non-support. It is sort of interesting if you think about it – learning is occurring (or at least the underpinnings that are necessary to support higher learning (awareness for example) but yet students don’t see it as learning or as contributing to it.

Vera did not have a lot to say regarding disappointments and frustrations related to the discussion board but she did note “The only 'failure' I can think of is what we were talking about - how it [the discussion board] is formatted - that made a difference for me.” This returns back to Vera’s comments that the interface as not easily navigated and that she felt sort of lost when it came to traversing the layout of the discussion forum.

Vera came back to iterate that “my [attitude] has changed toward it [the board] - not that I lost interest but that I have some many other things going on … so I've lost interest in putting the time into it than in the beginning.”. Difficulties she experienced related to the
interface and layout of the board did have a cost for Vera as seen by the following comment “I hate to sound like a broken record, but the format was difficult to use. From where I'm sitting right now, and how many times I've looked at it, it seems like there are so many options that I don’t know what they are.” So, clearly a more navigable interface and clearer layout would have been an improvement – at least for Vera. She also noted that “It would have been helpful if the answers to the questions were longer because I think that would help to clarify things.” So, Vera also felt that longer posts by the students would have been helpful.

On the whole, Vera did not see the board as an extremely helpful activity. But it is interesting to note that she cites her motivation and focus as being responsible in a way for the lack of learning that occurred for her. However, the discussion board was not without its positive outcomes. “I don’t think it helped my learning just because my motivation was to ask questions to get extra points. What it did do was this whole class has opened up a comfort level with asking questions in front of other classmates and I think that can do a lot of good. When I did ask a question I didn’t feel scared to ask because everybody else would be reading it. When I first heard about this, I was like man, I don’t want to do that.” It is interesting to see then that Vera was reticent at first to use the board, but then as time passed they became more comfortable with the environment and hence better able to communicate with fellow classmates.

Vera perceived this as a positive experience on the whole, for example, when asked what she might change about the discussion board. She replied “I guess I don’t know what I
would change. I was more satisfied with the board than with what I did.” This is an interesting comment – at least to me because it implies that she perceived positive outcomes related to the board and its use; however she sees her own utilization of the board lacking in comparison.

When pressed further the idea of forced used surfaced again as with other participants. Vera prefaced her comment by saying “I don’t know if I would like this if somebody told me to do this - but if I were to do it I would say like for the first couple times you would have to post something, like have it as a requirement because then you are forced to get to know it and I think a lot of times you miss things because you don’t have as much incentive by yourself on your own.” Probing further, Vera was reminded of an earlier statement that seemed to conflict with this current one. Regarding conflicting earlier statements no time vs. force use to contribute, I offered: If I am hearing you correctly you are saying I am not going to like being forced to use the board but it is going to help in the long run. “Yes, that's it exactly” Vera replied. “If she said that in this class I would be like great (the tone being sarcastic) another thing to do on top of everything else ... the ones [assignments] you are not required to do are the ones [assignments] that you let slip ... but then I think you miss out. I think you get a lot out of situations like that and I know I have before and I think it would really help.”
Seth summed up his perception of the purpose of the discussion board. He noted that they were given “verbal directions on how to use the board – no written directions for use of the discussion board was provided”. When asked what he felt the purpose of the board was he replied “to get questions answered quickly and for extra credit.” Seth felt “the whole idea of her giving us credit for asking questions and credit for answering questions … makes it very useful … we have the answers going into a quiz.” More specifically he described the grading system associated with the board as follows: “you got one extra credit point for posting questions and two extra credit points for answering questions - it was incentive either way.” Seth further explained that “if we do bad on something in class - using the discussion board gets us extra credit points … it helps us move along and at the same time you are actually learning something in the process.” For Seth then “extra credit … it's a big bonus. It gets your questions answered … it might not get answered right away but you will definitely get and answer before the quiz rolls around
or whatever.” Seth acknowledges that the extra credit points were a motivator, the discussion forum itself was useful because it was a way that made users sure they were prepared for quizzes, and it was a way to boost your overall course grade.

Turnaround time related to the board for Seth was not a problem as he noted that “questions were answered in a good time period … any question that had not been answered prior to the quiz would answered by Dr. Nelson so we would be prepared for the quiz.”

However Seth stated that “I would not want to do an entire course using a discussion board … it would be a lot of information coming at you at once - right now the way it is it is an extra resource for the class, … this is just one more way to get to know the information better.” It is interesting that Seth points out that the potential for information overload and sheer manageability of a more intense use of the board would have been overwhelming for him.

When Seth was informally asked to define learning he said “I guess the best non-technical definition is the acquisition of information that can later be applied to either recall recognition or to apply to the real world.” Specifically, Seth went on to describe it from his personal experience. “I mean I can read something – if is between visual and auditory it is minor difference in my mind. If I don’t understand the theory [or idea], then reading about it isn’t going to help me understand the theory any better if that's all that its about - if I get an example with it, then I can get it”.
Looking at this definition I asked how he prepared to learn and he responded “personally, I go thru, read and highlight, and go back through and study - that's just my method of doing it (learning). I learn best when I teach other people - it is just hard sometimes to get together with people to learn. You have to do the best with the resources you have.”

Following up on these thoughts, I asked how do you know when you’ve learned something? Seth noted that he knew they had learned “when I can explain it easily to someone else … so the definition of learning and knowing if you have learned is if you can teach somebody else. If you can then you learn more.”

The discussion board would have presented a format for Seth to ‘teach others’ through answering questions that were posted on the board. When asked how the discussion helped him he observed that the discussion forum was a “more reflective process that AIM” – which was an interesting comment. Seth made the leap to compare and contrast this form of communication to other forms of online communication.

When pressed further about the learning potential of the discussion forum, Seth went on to explain that while not all the concepts dealt with in the class appeared on the discussion board – the more important and complex concepts did. “The more difficult concepts surfaced on the discussion board. But not all the concepts in the course came out in the discussion forum.”
Each participant was also asked if the discussion board supported how they valued their own opinion. Users were also queried if the discussion board supported how they valued the opinions of others. Seth responded by saying: “to an extent but not really. ‘Cause a lot of things that were put on the board were not based on your opinion but based on the text or the facts. There just wasn’t a whole lot of opinion.” This observation was unlike many of the other participants.

Seth ventured the observation that learning in college was markedly different than previous learning in school. Seth observed that learning was different on several levels – there was less material (smaller chunks of information), more time to process information, and an easier pace. This observation was made when he reflected on how his past study habits and routine were supported by the larger volume, less time, and quicker pace of college. “That's how I've done it thru high school and I did well that way - it's not been as easy in college because in high school you would read a section, have a quiz … repeat, have an exam. Now it’s like read these chapters by tomorrow and we are having a quiz on it the next day and oh you are going to have an exam on five chapters…” The discussion board supplied a forum that provided a bit of control for Seth – or at least a space where he could mange the speed and absorption of materials.

Seth in placing the use of the discussion in order of preference related to other forms of communication for the class, he noted that he preferred face to face conversation overall. However, he preferred the discussion board over e-mail or telephone conversations. Specifically Seth noted that the discussion forum was especially helpful and supportive of
his learning and saw it as “something for when we only see others in the lab for like three hours once a week then three hours of class once a week.” So the discussion board could be used for augmenting contact with fellow students.

Regarding the discussion board and how it supported his learning, Seth said, “I read somewhere you remember fifteen percent of the things you read, thirty percent of the things you see, and you remember ninety percent of the stuff you teach other people. When you have to answer something that somebody else says [on the discussion board] whether you had to look it up or not, you are going to remember it because you had to explain it. I'll remember it much more vividly because I had to explain it. If I can explain it to someone else and they understand it, it means that I understand it. Just telling another [that way] person makes it more vivid in your mind.” It should also be noted that the physical act of using the discussion board requires an individual to access and read the material/question, think about an answer, then write/type out an answer. Additionally a user probably re-reads the questions and answer to make sure it makes sense. The repetition of this process by its nature would help re-enforce learning.

Interestingly, Seth on reflecting that learning in college involved larger chunks of information that “it’s better to get together with someone and that’s where I thought the discussion board was going to come in a lot more.” Seth saw the discussion board as being a relatively non-intrusive way to collaborate with fellow students without it being taxing for the people involved. Elaborating on the previous statement Seth thought the
Regarding motivation for learning, Seth had an interesting viewpoint. He felt that “it is as much incentive to get the extra credit points as it is incentive to learn something new about the materials.” Clearly motivation for Seth was both intrinsic (interest in wanting to learn new material) and extrinsic (interest in wanting to get the extra credit points). Both these factors then contributed to Seth’s engagement with the board.

Seth described how for him the board supported his learning. “To a certain extent it did help me on the quizzes. Posting questions so you know what’s going on helped my understanding [of the content]. However, true to his earlier statement that he needed examples, Seth did offer that regarding actually doing/running and experiment and “understanding the concrete evidence and material it is just easier to go and collect it.”

Delving further into how the discussion board supported Seth’s learning, it came out that that Seth definitely saw that the discussion forum was more appropriate in certain circumstances. When asked what if all your courses were using discussion boards, Seth was quick to reply that “for this class great, for my learning class that I have, super; but I have a couple of theatre courses where it [the discussion forum] would not work.”

Consistent with several other students, Seth felt that using the discussion board was helpful but not extensively so. “I don’t think the discussion board - unless I would have used it extensively larger amount would have made a difference.” But where it did
support Seth’s learning was “it helped more for me to understand after I had already read about it [the materials]. The chances that I would not have read or gone to the discussion board without reading the material first anyway or going and looking something up first was small.” So the board in a sense kept the student current and up to date with the content of the course.

There was an interesting anomaly in Seth’s observations. Of all the individual’s interviewed Seth was the only student to mention gender as they described facets related to the discussion board. First, he indicated that he felt there was a difference between how males and females used the discussion board. “In a totally different aspect but I think there are definite differences between male and female tendencies [in using the board]”. Second Seth stated “I think males are much more inclined to look at one thing and learn it that way and if they don’t learn it that way they don’t learn it at all. Females are more persistent in a lot of things and they will try many different things, where a guy will look at the text or an example and look at one thing just do this and go back there and if they don’t get it, something else is at fault.” I found this comment quite unique to the transcripts – and this was not just a passing comment – it was referred to several times at various points. The gist of what he was describing when he explained that “men are lazy” and women aren’t – had to be teased out. In short, Seth, in describing what he meant, seemed to be saying that men when unable to understand (as in this case) men perceive this lack of ability to understand as something wrong with the system, the example, or tool – something external to them. Women on the other hand, he describes as persistent, having the attitude that if they don’t understand it is internal to them and will try various
ways to understand (in this case). This became clearer to me as he later described that when he didn’t understand something when he read it, he would read it again – and then if he didn’t understand he figured “I’m not going to bother anymore, I’ll just ask and have someone explain it to me”. However, he continued and observed, if it was a female, they would have read, it, read it again, tried other things until they get it – because I’ve seen them do it. Men, me, I’m just lazy, I don’t know why”.

Regarding satisfaction Seth noted “I neither thought it was worthless nor did I think it was great” This lukewarm feeling was premised in the belief that “if more people would have used it then maybe I would have thought about it differently it, but as it was only about half the class really used it.” Remember Seth’s earlier statement where he indicated that if he had used the board more extensively, it would have provided him with more support. Seth tended to be more social and inclusive. The underlying thought here was that the discussion board would have been more effective had it been used more by the entire class.

The lack of use Seth felt was in his words partly to be attributed to the fact that “everything happens at the end” and he felt sort of rushed. Later Seth would go on to suggest a different timeline structure for the board as well as mandating students to use the discussion board. Seth did see a potential for positive gain in the discussion board as an instructional strategy. Seth qualified his comments but remarked that the discussion forum “was definitely useful for people” but that he was “not going to sit here and tell you everybody in the class uses the discussion board, but there are people who use it and
check the board two or three times a day.’’ Value for Seth was two dimensional. As described above, Seth observes that that value for others was indicated through persistent use since the board was optional. And personally he felt the discussion forum was a space where it was “easier to communicate with fellow students and professors, in an easy format.” Additionally it supported Seth’s learning because it covered the immediately relevant material for the course. “Every week there would be a discussion thread for that chapter and questions were asked and response showed down the line. And most of the questions were about the concepts we were covering.”

Seth further explained his use of the board was primarily motivated by the extra credit points. When questioned directly on this point and asked if he would have been motivated to respond to the board if extra credit had not been a factor he iterated “probably not, had I had more interaction with things like that possibly but that [the extra credit] was the obvious incentive for everybody.”

Seth also described an interaction of issues that supported discussion board use for him. This was that the discussion forum, for him, was not a burdensome or time consuming and it had relevance and value to the course per se. Regarding time Seth explained “when I interact with the board I won’t sit there for a half hour and look over the board. It will be like for five minutes max if I can answer a question, maybe like seven minutes max but I'll look for a few minutes check on anything that wasn't there since the last time I was there and OK - I'm done and move on to something else.” Seth also noted that his use of the board was bolstered by the practice of the instructor. Specifically he stated: “don't
tell me something or give me articles and not do anything with them - I'm going to be less inclined to read it … if there is never anything from the discussion based in the quizzes and exams then I am not going to use it.” It should be noted that the professor for this course did use questions from this discussion board in the quizzes.

Seth did have trouble getting access to the board due to a technical issue. This however, did not seem to derail him regarding use, nor did it predispose him negatively toward the discussion board. Seth explained that the board “was easy to use once I got access – seeing all the messages was pretty easy – I’m pretty computer literate”. Despite this though, the discussion forum was not something Seth found easy to remember. Seth expressed it as “Just not being on my radar and I forgot about it”. Seth did offer a solution as he also noted that others in the class also ‘forgot’ about the board.

Seth did make two interesting comments. One related to that age of the students in the course and one related to the gender of the users in the course and subsequent use. I offer the following observations from Seth regarding age and use – Seth noted that he was surprised that “the people who use it [the discussion board] more are the younger people. The sophomores use it more than the juniors do. When I pushed and asked why he held this opinion he responded that “I just figured that they (the sophomores) would be more lackadaisical about it [using the board].” I found this observation interesting as it implied an expectation of less maturity for the younger students. In speaking further about some of Seth’s impressions regarding use and who would be more prone to utilize this sort of forum Seth began to filter his perception of use of the board through gender. This gender
aspect has been referred to earlier. Seth’s perspective was that women were more prone to engage in the discussion board. Seth stated, “I think there are definite differences between male and female tendencies (use of the board). I think males are much more inclined to look at one thing and learn it that way and if they don’t learn it that way they don’t learn it at all. Females are more persistent in a lot of things and they will try many different things, where a guy will look at the text or an example and look at one thing just do this and go back there.” This was an interesting remark because it implied that this user perceived females to approach a problem or problem solving from a broader aspect whereas Seth perceived males to be narrowly focused and would pursue only one way to problem solve. Perhaps most interesting in this perception is that the speaker was a male. Seth further remarked when asked if a discussion forum would disadvantage males he noted that “we [males] are lazy like I said and if we don’t get it by doing it one way we give up … women are more participatory and will try different ways to get something done if the first way does not work.”

Seth directly remarked about the fact that the answers were coming from students and not the instructor for the course. It should be noted that while quality of posts was not an issue there was a definite reservation about trusting the answers that were provided by the students despite the fact that the instructor would jump in and correct incorrect information. However that trust that the instructor would let them know if an answer was ‘wrong’ did not really carry over to believing that uncommented responses by the students without instructor feedback were correct. I found this curious as on one hand Seth ‘knew’ the instructor was monitoring the board and knew from past experience that
if incorrect information was posted to the board – Professor Nelson was quick to correct misinformation; but if there no comment from the instructor there was an air of uncertainty pertaining to the veracity of the student post. Seth states “I mean the questions were good, the answers were good, and if the answers weren't right then Dr. Nelson would come in and provide the correct answer. Further questioning and other participant remarks revealed that this belief may have been fostered by the fact that the text book being used for the course was written by the instructor for the class. “But Professor Nelson wrote the textbook after all.”

Questioned further about the quality/veracity of the posts to see if students were also concerned if classmates didn’t just copy/paste from the text to answer questions, Seth was quick to explain the usefulness of the board and the nature of the posts “some of them [the students] took pieces of things out of the book, but when you are talking about something like research design where it has a million different ways it can go and everything in the book is statistical jargon, somebody has to be able to pull the idea out of the book and write it up in a way that somebody who doesn’t get it - needs to get. The only reason you would quote something is if the author write it so eloquently that you can't reproduce the same effect without using the author's words.”

When Seth was asked about the social aspects of the board he said “the class is pretty big and there are a lot of people in there that I didn’t even know were majors and now I know who they are”. So in this regard, the board afforded the opportunity for Seth to branch out and get to know more people in the class. For example Seth noted “yeah, it [the
discussion board] did help me to learn who more people were in that way definitely.” The discussion board afforded the opportunity for students to create profiles for themselves, allowing them to create/present an online persona. While this opportunity was welcomed and seen as positive (see participant comments regarding the motivational factor inherent in this), there were some drawbacks. For example, you could pick/insert a caricature to represent you. While others saw this as motivating, interesting, or as a way to gain insight into fellow classmates, Seth came at it from a more practical point of view stating that “[actual student] pictures would have helped. There were caricatures used but that didn’t help a lot.”

This practical viewpoint is extended to the nature of the discussion forum itself and Seth goes on to place each form of communication used for the course in a hierarchy as mentioned in a previous section. Seth noted face to face conversation is better, better than discussion boards. But discussion boards are better than e-mail or phone conversations. It is obvious that Seth thinks “one on one interaction is better than online communication. However, he does realize that face to face communication “is not always practical.” Hence, the aforementioned hierarchy in Seth's comments.

When asked if Seth felt that using discussion board more would have changed anything for him he described a different facet of what he expressed earlier and that was “I would need the support of everyone else in the class to use it [the discussion board] more too for it to be effective for me. Because I could ask forty questions a week but if I don’t get any answers…” Seth acknowledges then that the discussion board is not a strategy that works
as an individual effort. The discussion board’s efficacy is partially predicated on everyone using it and interacting with one another. The upside of the discussion board was that “it keeps you in constant contact with everybody” and that was felt to be very positive.

Regarding expectations and experience, this participant began with a qualification noting as previously mentioned that the discussion board was “not as good as face to face. Interpersonal relationships are not there – you don’t have that thru a computer submission”. Seth goes on to describe that he “thinks that things over the internet or the phone are just so static. You know you meet somebody it's more dynamic and easier to relate.” While this comment can be seen as a descriptor or indicator of Seth’s perception of this discussion board as a social medium, this social component is directly tied to Seth’s experience as a learner.

Seth clearly sees tension between several issues related to the possibilities that a discussion forum affords. Beginning by stating that “I haven’t seen it [the discussion board] used in any classes, so I would say use it more in classes and use it in the way that it was used in this class.” Clearly Seth felt favorably to the way the discussion was utilized in the course. But there was recognition that “There would be things it [the discussion board] would be applicable for and things it would not.” And Seth also observed that the online nature of the discussion board worked against itself. “I thought not too many [people] were going to use it, and that's with a lot of things that are online for any class. If it's online people don’t give it a second thought, which in some ways
doesn’t make a whole lot of sense given the way technology is these days.” Despite this comment Seth did admit that “the discussion board got used more than I thought it would”. He fully expected and “thought the discussion board would be used a whole lot to talk about our proposals and projects - but it really didn’t happen that way.”

The discussion board did have a “fun factor” and using the board was an engaging experience for Seth “I mean I had a lot of fun just searching for our little avatar pictures - so there was a fun aspect to it … and we did a joke lab to see how people responded to jokes and there were a couple of interesting posts on the board.”

As previously noted, Seth observed some pitfalls related to using technology. He observed that new technology because it is new, is not in common use. “Because it is a new technology, it is in so little use [in the classrooms] right now … she's [Professor Nelson] the first person I've seen use it.” Students know this technology is available, but it has not really caught on in the classroom yet.

Seth did overcome initial access problems but noted additionally that access issues plus the lack of prevalence of use in classes made it difficult to ‘remember’ to use the discussion board. “I did not have access and forgot it was there. I don't use the media a lot. It is my first time using it and it is not on my radar.” Complicating things further added frustrations to use included the theme of competing obligations for time and attention. “I have so many different things going on here … it is hard to remember (to use the board) … I am more focused on what I need to do to pass the course, what I need to
do well, as opposed to something that isn’t quite as important [as the optional discussion board] in a single class when you look at the big picture.”

Time however, was noted by Seth as well as several other individuals as a definite factor in participation and depth of involvement relative to the importance the instructor placed on the activity (time) “If I didn’t have like four other classes that I had to deal with I would definitely remember that it (the discussion board) is there, but like I say, it's just not that high on my priority list. Confirming with Seth that time was a barrier, less competing factors would have increased use, q/a was helpful and meaningful (quizzes) board may have fallen short due to the nature of the media.

Regarding changes and improvement, Seth began by situating his current experience. “On a scale of one to ten I would rate my current experience as a six or seven. With a little bit of tweaking it might move up to a nine or a ten but right now since it is not a priority for a lot of people the value is not as great overall.” Given this preface, Seth goes on to describe three observations that would improve the experience for him. These include forced use, more integration of the discussion forum into the actual course format, and more direct instructor involvement. Regarding forced use Seth suggests that the instructor should “make it like the quizzes or at least have to access the quizzes thru the discussion forum”. Notification of and access to quizzes were provided through an e-mail link that was sent to students from the instructor. It was felt that if this medium [e-mail] of making students aware of the discussion board were utilized “that there would be more incentive to use the discussion board so that you remember it is there. The fact was,
we only used it [the discussion board] as something optional for the class and to use it is beneficial to you, but it is still optional.” The mailed link and reminded would compel students to look at and use the board.

Seth continues to describe how compelled use might support activity on the board exponentially. “There’s like twenty-five people in the class. Say like one week thirteen people asked a question, there would have been more activity - as in better interactivity, better questions and answers … more discussion … and then the next week you flip flopped it and rotated it around everybody would have gotten like a ton of bonus points but I think everybody would have gotten involved and everybody would have been on the same page.” Regarding better integration of the board into the flow of the course Seth described that quiz questions were being asked and taken from the content of the discussion however, he offered that “if more of our quizzes [and questions] were based off of the discussion board, like if professor Nelson asked a question and there were a few responses to it and she put it on a test, then those students that answered or looked at it would be able to respond.” One can infer two possible things from this statement. First, integrating the discussion board and its discussion content directly into the quizzes/tests for the course would be more of an incentive for the students to become interactive with the board. And second, it would also demonstrate to the students as alluded to earlier by Seth, that the instructor puts more value into the content and purpose of the board. Regarding the last point and instructor participation Seth suggested to “have the professor initiate some of the discussions and use those discussions as part of exams and quizzes. I think that will encourage people to use it more. If they don’t; have that one question on a
test they are going to use it really.” “Have a question that included what was on the
discussion board - that would be one thing that I think would improve usage.”

**Case Report: Gloria**

Table 4.6: Overview of Gloria's Survey Responses and Learning Styles Preference

<table>
<thead>
<tr>
<th>ILS Inventory Score</th>
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<tbody>
<tr>
<td>Active/Reflective –</td>
<td>Sensing/Intuitive –</td>
<td>Visual/Verbal –</td>
<td>Sequential/Global</td>
</tr>
<tr>
<td>5A – 5A – 9A – 5B</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
<th>Have you ever used an online discussion tool</th>
<th>How would you describe your experience</th>
<th>Have you ever used an online discussion tool in a course?</th>
<th>Did you find the online discussion activities helpful?</th>
<th>Total Posts: 3.63% of total / 0.05 posts per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Female</td>
<td>10</td>
<td>20 to 39</td>
<td>0% - 35% - 65%</td>
<td>Yes (in this class)</td>
<td>Not a huge help but they helped a little</td>
<td>Yes (this course)</td>
<td>No, I think it causes more work</td>
<td></td>
</tr>
</tbody>
</table>

Conversation exacted that Gloria also has a very clear idea of how the discussion board
could contribute to enhancing her grade. In fact Gloria commented that “even the people
who don’t use the board always talk about just using it to get the extra credit points.” The
bonus points for Gloria did not seem to compensate for the frustration level she
experience over the course of the class (see comments on frustration). Gloria noted that
the discussion board “is inconvenient really and there is no need for it, I am doing fine in
my grades.” This comment indicates that for Gloria the board is only a mechanism to
improve grade standing and since her grade standing is perceived as fine, interaction with
the board is not necessary.
Gloria noted from the outset “that I don’t think the discussion board was effective compared to the other instructional strategies Professor Nelson used”. Gloria contextualized this comment by explaining how she learned or preferred to learn and interact with course materials. “I don’t learn by just reading stuff, I need interaction.” “I don’t see how it helps me.” … “It is not how I learn.” “I learn best by examples, I have to be able to hear it and visualize it … I like to look it up and figure it out for myself.”

Gloria noted that ‘if this was a course where you have a text that isn’t clear and you ask questions – then it [the discussion board] might be more effective”. This comment is seminal in that it can be tied directly to information garnered from the instructor where she stated that the original purpose of instituting the discussion board was to help with the understanding of the text used for class which was instructor written. I was to later find out through further discussions with the instructor that in the past the instructor used the discussion to find out what parts of the texts were unclear to students. The information garnered and exhibited by the discussion board posts, provided feedback for improving the text. It should be noted here that this is the first semester where the instructor has employed the new and revised text in the course predicated on the previous feedback from past discussion forum. In essence then, Gloria indirectly affirms that successfulness of Professor Nelson’s discussion board feedback strategy – as Gloria indicates that if the text was unclear, the board would be more relevant. The board basically has accomplished one of it’s main goals and has been deemed unnecessary by Gloria’s observations.
Gloria was truly frustrated with her experience related to the discussion forum. Repeatedly Gloria sniped at the board citing that she would “check it [the discussion board] to get extra points, but sometimes it’s not worth it”. This perceived lack of worth coupled with the difficulties Gloria encountered accessing and using the board truly impacted her satisfaction level. “At the beginning I tried to use it [the discussion board] and tried to be consistent, now I haven’t used it as much.” This can possibly be tied back to the fact that Gloria found accessing, using, and navigating the discussion particularly frustrating. She did interact minimally because it was part and parcel of the course, but this was just a routine activity for her. “I interacted with it for short periods of time.” “I don’t see how it helps me.”

However, when noting actual use of the board Gloria noted that the time lag between question and answer was fairly small “As soon as someone posted a question – someone would post and answer.” However, there is the time/turn around fact that several participants noted where most of the posting and answers came down to the last day.

Obviously Gloria was not invested in the discussion board at all although they were a moderate user of the forum. Gloria, however, did not allude to any feelings regarding trust in posted responses.

When asked about her views regarding social interaction opportunities that the board afforded, Gloria was quick to state “I don’t know if you call it social interaction. It did not support my relationship with other members in the class if that is what you mean.”
When pressed to consider if the discussion board was different in any way from the classroom, Gloria observed that “it’s basically the same thing except for Professor Nelson answers it personally in class.” This speaks to the idea that Gloria, like Reuben, felt the online environment to be more detached or less personal than the classroom.

Having had no prior experience with discussion boards or discussion forums, Gloria had no expectations regarding this medium for the course. Limited familiarity also made her reticent to speculate. Gloria’s experience was marginal as can be seen in her assessment of the disappointments and frustrations she experienced. These negatives and the inability to see the value of the discussion board for her left Gloria feeling rather ‘flat’ as a whole.

Frustrations, as noted earlier, were a large factor for Gloria. Her bleak view was attributed to three factors. First, Gloria had trouble finding value in the activity itself. Second she had technical issues to surmount. And third the return on their investment in the activity was not enough to motivate Gloria. These feelings are captured in the following snippets: “it’s inconvenient really and there is no need for it, I am doing fine in my grades.” “[The discussion board] it was not easy to use.” “It is almost a pain” In essence the point value for using the board did not outweigh the negatives “it wasn’t worth what I put into it – which was more of hassle – it was just one or two points.

Generally regarding changes and improvements for the discussion board, Gloria observed “if it is a course and the text isn’t very clear and you ask questions, then it [the discussion board] might be more effective but our text is very clear and like our quizzes come
straight from the text if you read it”. This comment highlights several points. First it reflects back to the fact that part of the reason the instructor originally had instituted the use of a discussion board in the class was to support student learning of the text. Second, there was acknowledgement on the part of the instructor that the text needed clarification. And third, Gloria inadvertently, by describing a circumstance that needed change and improvement, identifies a facet of the instructor’s motivation to initiate use of the discussion board in the course.

Regarding Gloria’s experience, when considering changes and improvements that could be made to board in general, describes a viewpoint that believes that learning is not just a personal experience, but is dependent on the individuals and their interactions with each other. “It depends on the cognition of the class – like I know for years she [Professor Nelson] has had a discussion board in her class and they used it a lot in our class and I think it just depends on the class and the people … but you never know how the class is going to be with each individual”.

However, Gloria did suggest, as did others that instructor participation would be an improvement that would be welcome. Direct input and interactivity on the part of the instructor was suggested by Gloria. It was felt that the discussion board could be enhanced if the instructor “were to post questions on the discussion board”. This might challenge the students to interact more. It was also suggested that the instructor post answers to the board to provide certainty.
Finally, Gloria hints at adjusting or expanding the motivational reasons to engage with the board. As she describe how the board was used for extra credit and how you could on return of quiz, improve your grade, she noted “so like you have no need of it [the discussion board] if you have done or are doing well in the quizzes and tests”.

**Personal Findings**

Dr. Nelson has used a discussion board in this class for over ten years. As such she is skilled and well versed in the use of this tool. Over time she has used various software to host the class the discussion using “more primitive systems before that would often need to be emptied because the number of postings exceeded the capacity” of the tool. However, she noted a dramatic difference between past classes and the current class regarding the activity on the discussion board. She stated “my impression is that participation is way down this semester” compared to previous semesters. She continued by describing the factors she felt contributed to the drop in use. “There are three things that have changed that may account for the decline in [discussion board] usage. 1) the class is different. I’ve learned to expect variation and ‘personalities’ in classes, 2) I added a practice quiz that may give students another way to study for the chapters and feel confident in the understanding of the concepts, and 3) they know that the bulletin board is part of your research, and that may make them hesitant to use it.” I would offer that there is another consideration that has impacted discussion board use which is evidenced in the following remark from the instructor. That is, “This term it takes almost no time to read their questions. I was interested in understanding student issues with the text, but in this
form of the 2nd edition, there are fewer ambiguities left”. It should be noted here that the text book in use for the course was written by Professor Nelson. This comment reveals that an additional purpose of the discussion board was to use student comments to discern passages and content in the text that were confusing. Over the years, these student comments were noted and now the instructor edited the original text which was in use for the first time in the course.

The research findings in the preceding pages have focused solely on the individual student perceptions of how the use of a discussion board supported student learning. In each case I found students had a definite awareness of not only how they learn, but how for them particular personal and instructor imposed instructional methodologies supported that learning. It was also apparent that each individual was aware of what they needed to do to be successful and juxtapose that to what they were willing to do relative to a bigger school picture. While part of this awareness was anticipated, as they are adult learners, I did not expect the consistency of belief across all participants that using the board more would have better supported their learning given that the application and use of the board was modified in this course. However, over the course of the investigation I was to discover that use of a discussion board, even in a modified way, does not necessarily limit the educational advantages and pedagogical enhancements that are afforded by a full scale implementation of a discussion board.

It was also interesting to note that in each individual description of ‘learning’ the personal descriptions provided could be said to parallel the four components of an instructional
objective. Consider the four components as audience, behavior, condition, and degree. Seen in these terms individuals described learning for themselves (the audience), as what they needed to do (acts/behavior the needed to engage in), describing the conditions for those activities to be successful, and identified the extent (degree) to which learning would/would not occur given the circumstances.

It was also interesting to note, that as adult learners, all of the individuals could identify what they could have done to improve their learning in the course, but were reticent to be externally ‘forced’ to do so. As adult learners they also indicated that motivation to engage more with discussion forum was not resident ‘in the board’. However, all alluded to the fact that the motivation needed come from themselves (they did recognize that they needed to use the board but were not motivated for whatever reasons to use it more) and not from external factors. Given this however, all of the students were unable to overtly identify that the motivation to needed to come from within themselves and did not possess the self-regulation skills to accomplish this.

All of the participants were open and candid and at no time did I feel students were withholding information. Some students were more prone to being conversant by nature, but at no point over the course of the interviews did it seem that information was being withheld.
Chapter 5

DISCUSSION OF FINDINGS

Introduction

The intentional modified of a discussion board in this course as an instructional strategy has been the phenomenon of study in this investigation. Specifically, student reflections related to how this particular use of a discussion board is perceived as affecting their learning has been the central thrust of this study. The faculty member implementing the modified use of the discussion board has stated the following goals: 1) “To encourage the students to interact about the text material before they take the quiz which is scheduled to occur before we take the chapter up in class” and 2) “alert me to the issues that this specific class is having with the text as I prepare for class so I can be sure to know what this class is thinking about” (just in time teaching). The student focus is to successfully complete course requirements. Central to all these concerns is learning – student learning. So, what can be derived from this study? I would offer that the essence of this investigation suggests that a discussion board has pedagogical contributions that can be tapped into even through modified use of a discussion board as a tool. Many of the valuable outcomes and affordances that have been identified in the literature as intrinsic to online discussion, held true in this instance.

In the forthcoming sections, I will discuss the findings and implications of this study as well as discuss the need for further research in the area of adapting and implementing
online discussion tools as an instructional strategy in courses. While the perceptions of
the students who participated in this study cannot be generalized outside the scope and
setting of this study, it is hoped that the implications that are relative to this study may
spur additional research in the area and serve to aid you, the reader, in your own
understanding and appreciation of how online discussion can help support student
learning.

**Changes From Previous Semesters**

It should be noted that while the instructor has implemented the same overall strategy
year to year in this course, Professor Nelson did observe “three things that have changed
with this iteration of the discussion board that may account for the changes in overall
[discussion board] usage. In past semesters there was a lot of traffic and conversation on
the discussion board and students used the board frequently.

1) “The class is different. I've learned to expect variation and "personalities" in classes”. Each group of students and their subsequent interactions are different however, certain trends occur from semester to semester.
2) “I added a practice online quiz that may give students another way to study for
the chapters and feel confident in their understanding of the concepts”. The
discussion board then was not the only venue through which they could test their
knowledge. Some of the students may have felt the practice quiz was ‘closer’ to
the format of the actual quizzes in the course and opted for this alternative.
3) “They know that the bulletin board is part of your research, and that may make
them hesitant to use it.”

I would offer a fourth possibility, and that is that this is the first semester where the
revised edited text was implemented. Recall that the revised edited text is the result of
years of feedback from previous classes garnered through the discussion board in the
class and Professor Nelson is the author of that text. If the intent of the board was to
allow a space for students to clarify their understanding of the text, and the text was edited according to previous student comments, it would stand to reason that use of the discussion board would diminish related to clarity of the text when the new edition was implemented in the class. Additionally, Professor Nelson was kind enough to share her records related to the average number of extra credit points earned by students in this course as compared to the average number of extra points earned by students in previous classes (see Appendix E). These data from the past 5 years indicated that, in Professor Nelson’s words, “my analysis shows that your study didn’t necessarily influence how often nor how many students used the bulletin board.” As Professor Nelson later notes, “there is a lot of variation. Some classes don’t gel in person or in cyberspace. Others seem to develop working cliques that produce a flurry of bulletin board posting.”

**Defining Modified Use**

Online discussion is a huge and complex topic. Googling the term will yield almost eight and a half million hits. It is important then to recap what is being considered as online discussion in this case and contextualize it. First, remember that this case example deals with *asynchronous* discussion, meaning the participants can interact and converse with each other at their own convenience and students do not have to be online all at the same time. The asynchronous use is important to note as this form of discussion is usually more convenient for the students, provides time for reflection, creates a safe environment for student communication, and encourages more active participation, deeper responses and interactions with the materials as well as promoting ownership of learning. This format usually supports lengthy posts that can occur over a period of time. Second, many
tools support asynchronous discussions. In this case a forum or bulletin board was used. This type of tool is web-based; it automatically ‘includes’ all the users of the group, and ‘formats’ the posts so they can be easily navigated/explored. As a whole, discussion boards are considered easy to use, as well as an effective and efficient mode of communicating. Many discussion tools exist and this course used phpBB; a scalable, and customizable Open Source bulletin board package. Third, the most common uses for asynchronous discussion boards include: group projects or assignments, forums for posting questions and answers, a medium to post/share assignments, a medium for log/journal entries, or anytime collaboration among students is necessary. Fourth, even though the goals of online discussion are diverse, the main objective of online discussion is to promote interactivity among the participants. The point of this interactivity is to enhance learning. Many of the advantages for learning regarding online discussion have been iterated in Chapter 2. However, in this case the goal of the discussion board was to afford an opportunity for students to ask each other questions regarding the content of the text for the course in order to clarify their knowledge/understanding of the concepts. The board was not intended to promote lengthy or deep discussions, but it did allow an opportunity for longer discussions if they were wanted or needed. The discussion board in this course was designed to be a student space without instructor moderation; however, the instructor did monitor the board and posts and did intervene to correct misconceptions or misinformation when necessary. It was also used as touchstone for the instructor to deem student understanding of the various course topics covered by the text.
In summary, the discussion board was intended to be a short question answer space. It was not meant to foster lengthy in-depth critical thinking. It was purposefully designed and implemented to be as maintenance free as possible, where little or no instructor involvement was needed, no moderation was intended, and student use was optional and free form. In other words, even though online discussion is used as a tool to augment and support *divergent* thinking, the discussion board in this case was used as a tool to foster *convergent* thinking.

**Discussion of Emergent Themes Across The Cases**

This study considered how an online discussion-based tool could be used in a ‘minimal way’ to capitalize on the benefits afforded by online discussion – without being burdensome to the instructor who was utilizing it in the course and without it being burdensome and time consuming for the student in the course. I feel that overall, this study indicates that it is possible to implement a discussion tool in a modified way and still be able to capitalize on the pedagogical benefits that online discussion affords – and it does not need to weigh heavily on either instructor or student. However, as demonstrated by the observations and reflections of the students in this study, it is quite possible that certain expected negative feedback will be encountered.

**Regarding the Purpose of the Board**

Sherry (1998) offers that discussion boards provide “a place where students can post … and provide … feedback”. In essence discussion boards are forums for feedback. The discussion board in this case was used primarily as a forum for feedback – specifically in
relationship to the text being used for the course. Students noted that their understanding of the purpose of the board was to support diverse student learning. However, several learners identified the potential pitfall of ‘information overload’ related to the online discussion-based tool. The instructor in this case, aware of the offsetting nature of discussion boards (the innate good and subsequent bad), intended to steer clear of this complication by streamlining the use and focus of the discussion board. The instructor’s goal was to utilize the board in the class to take advantage of the learning potential of the tool and yet engineer the interactions related to the tool to be minimal or least low maintenance and be as least burdensome as possible for all involved.

Generally, the purpose of a discussion board is to encourage collaboration, share information and ideas, promote interactivity and engagement, build collective knowledge and establish a sense of identity with the subject matter and other individuals in the group. Conveying the particular purpose of a discussion board to students provides a clear picture of what is expected of the student, how they are expected to engage in the activity, as well as understand how participation in that activity supports their learning and grade. All the participants in this study were aware of how the discussion board was set up and its potential for extra credit/extra points. Question posts were awarded one point and answers to questions were awarded 2 points (provided the answers were correct). No credit was awarded for incorrect answers. All of the participants were aware that the Professor Nelson was particularly conscientious about monitoring the board for questions and checking the veracity of answers posted.
Commonalities across participants, related to their understanding of the purpose of the board included:

- Verbal directions by the instructor of the course were provided regularly throughout the duration of the course.
- In class prompts were supplied by the instructor to keep students aware of the ‘presence’ of the board.
- Content of the board was woven into the flow of the “face to face classes”.
- Good questions were acknowledged and pointed out to students as were good posts/answers.
- Professor Nelson made it a point to single out and name users who had particularly savvy or on point questions.

Professor Nelson’s practice in the course reflects many of the ‘good practice’ guidelines found in the literature when it comes to implementing and supporting a discussion board in a course. Although ‘directions’ for the discussion board were not written or posted for the class, verbal directions were iterated with constancy throughout the course.

The awarding of points for using the discussion board had a huge impact on the students in the course. Three items of note related to this issue should be mentioned. First, students commented that classmates who didn’t use the discussion board always spoke about using the discussion board to get points. Second, the discussion opportunities were designed to support students in preparation for quizzes students. Finally, awareness that interaction with the tool could boost your overall grades was a positive support. Frazee (2003) recently found that linking online discussions to graded course assignments can theoretically increase student participation and learning. This case example bears out this finding. Overall, across users the bonus and extra credit points served as a motivator in gradations depending on related factors. For some the point motivation held its’ allure for the duration of the course. For others, especially for those who also encountered technical
problems, the motivation had a sporadic effect and the ‘value’ associated with the points was diminished. The importance of the one or two points for other users did not compensate for the frustration level, rationalizing that the points would not make a difference. For others, who were focusing more on the board because it was part of the class as opposed to the points, the locus of motivation was different. Motivation for participation was not rooted in the points but in their own sense of what they felt needed to be done for the course. Overall points served as motivator – either as short term incentive to engage until the users had developed their own intrinsic reasons for engaging or as a long term motivator toward improving one’s overall grade. All participants noted this and consciously chose to persist or not in the use of the board predicated on this perception. Choice was based upon how each individual perceived the importance of those “one or two points”. This issue of ‘points’ will appear again related to use of the discussion-based tool.

While points figured into the purpose of the board, it was not the sole dimension or goal of the board. Participants, on the whole, acknowledged and recognized the broader potential and purpose of the discussion based tool. Specifically, active and reflective learners alike saw the discussion board more as an option to support diverse student learning. Motivation to utilize the board was rooted in the discussion board’s ability to provide for each learner a way to interact with that information in different forms. Other studies, such as Parker and Gemino (2001) and Picciano (2002) have noted that the use of discussion boards support divergent thinking; however, a discussion based tool was used in this case to support convergent thinking. These previous studies also found that the use
of a discussion-based tool can also support complex understanding, reflection, and learning multiple perspectives better than face-to-face environments. These same issues were introduced by participants in this investigation and should be explored more deeply.

**Regarding Learning**

It has been noted in earlier chapters that constructivism views learning as an active process. The instructor’s role in the learning process is to act as a mediator or facilitator to entice or motivate learners to discover and construct information for themselves’, usually by tackling real world issues or problems in conjunction with other students. Learning goals include being able to crystallize the ideas for yourself, to explain those ideas to others, to elaborate on the originally learned concept, to broaden their personal perspective through exposure to other viewpoints, and to review the presented information to critically identify flaws and inconsistency in thinking. The match between affordances and the reasons discussion boards are implemented as they support constructivism can be seen in that the premise of constructivism is a set of assumptions and beliefs that maintain that learning should be initiated and directed by the student while being guided and supported by the instructor.

Relative to student beliefs and the way this activity was designed and executed, Professor Nelson is in alignment with constructivist practice given her example. However, it is also important to understand learning as defined by the students in this study and how these students operationalize that understanding to see if student beliefs and assumptions are in alignment with constructivist principles.
The concept of learning is extremely important and it is important to understand what ‘learning’ means to each of these participants if we are interested in improving learning. There also needs to be a parallel between the instructor’s perception and articulation of ‘learning’ and students’ perception and articulation of learning if learning is to actually occur. Professor Nelson’s definition of learning is apparent in the course and its’ activities as are the student views of learning. Students, in voicing their opinion of what constituted learning for them, described learning to include the importance of broader points of view, the ability to be open and aware of multiple perspectives, to actively engage in activities that foster learning, and to be able to access information in a myriad of ways. This is consistent with findings by Picciano (2002) and Parker and Gemino (2003) in that online discussion may be supportive of the ability to play with ideas, explore multiple perspectives, reflect on presented information, and understand better complex information.

Students further noted that this particular use of a discussion-based tool allowed for: the content information to be presented in multiple ways; the repetition of important content information; the reinforcement of memory [through] reading [material], posting [to the discussion board], discussing [it on the board], [and] reading it [the board] again. This perception of learning directly corresponds to many of the affordances and reasons discussion boards are used. It may be said then that in this instance that active and reflective learners, visual and verbal learners, and sequential and global learners have similar definitions of learning and can find instances when using this tool that their learning needs are being met. Students in this case were aware of what learning was to
them, and what they need to do to be effective learners. This awareness exceeded the limits of the classroom – meaning that these students understood that learning occurred both inside and outside the classroom – a point we will address in a moment. Learning was understood by the participants an active endeavor that encompassed being able to use information outside of the original learning experience, being able to apply that knowledge to another situation and setting, as well as being able to explain it someone else. However, this awareness did not guarantee engagement with board.

Not only is it important to understand how each learner describes/defines learning, but it is also important to understand how each actualizes that definition in relationship to the discussion board. The learning benefits of online discussion include: 1) the ability to situate learning in a social context, 2) elicit participation, 3) evoke thoughtful and reflective responses, 4) support peer learning, and 5) can also support aspects related to ‘time’ for the students. This investigation has found evidence to support these claims in the literature. As far as situating learning in a social aspect, even modified use of this discussion-based tool promoted feelings of community. Several students noted that the online environment became friendlier and warmer as the course progressed. Students also noted that familiarity and camaraderie evolved over time.

Still, several participants voiced that they felt distant or felt they were an outsider and one student indicated his disappointment that the discussion space was not more social and inviting. This is in contrast to findings across several studies that indicate that the verbal interactions that occur online can lessen the psychological distance learners feel in these
environments and that learning is enhanced when there is an overall sense of social presence fostered in the online environment (Richardson and Swan, 2003; Gunawardena and Zittle, 1997; Swan, 2003).

If the social propensity for a discussion is to foster a sense of community, one has to consider where this case falls short. First, I would offer that this discussion space did in fact promote community as detailed by earlier quotes from participants. However, it is hard not to wonder if the formality of the space was a result of Professor’s Nelson’s design and implementation of the discussion board. The discussion board was intended to be a question and answer forum to support learning for the quizzes in the course. Could this have fostered the ‘sterility’ of the board and prompted the formality found there? Did the students truly consider this board to ‘be their own’ or did the knowledge that the instructor was monitoring the board and would insert herself to correct information act as a deterrent to the creation of social rapport?

Chism (1998) offers that “a social environment can help motivate the learner and create a forum within which ideas can be tested and applied”. In other words, the discussion board becomes a space where learners can interact. During the interviews, several participants noted that when speaking about learning and how it occurred for them, learning was an interaction. The use of the discussion based tool in this instance afforded that opportunity for interaction. The discussion board was also a space that was independent of the classroom, as noted when students commented that learning is something that occurs also outside of the classroom – bigger than just what happens in the classroom.
The ability to elicit participation is an important benefit of online discussion. The focus is on active as opposed to passive learning. Recall that some of the complaints raised by students in the course included being disgruntled because the instructor was not providing them with answers. Several factors come in to play as exemplified in the student findings. Cummings (1998) notes, “being present in class is demonstrated by participating in the discussion.” An advantage that online discussion provides in contrast to the face-to-face classroom is that it evens the playing field for shy or withdrawn students, providing a sense of freedom and “liberation” for shy students (Bullen, 1998). Several of the participants observed that the ‘distance’ that discussion board provided allowed them more freedom to express themselves without fear of appearing “stupid” or being “wrong. Several also noted that the discussion board made it easier for them to participate on the course.

However, it should be pointed out that “participation is easily monitored in computer conferencing and thus creates pressure for students to participate. It is more difficult to hide yourself behind the medium as soon people will notice who has and who hasn’t contributed to the conference” (Lai, 1996). The discussion space then is fairly transparent, those who participate and those who do not participate are equally likely to be “seen”. However, the pressure to participate was not found in this case study. This is probably attributable to the fact the discussion board was not actually being utilized as a conferencing system but rather as a question and answer format. Although it should be noted that students did comment on the fact they knew who was using the discussion
space and who was not. It is just that the instructor for the course did not make participation obligatory – hence pressure would not be an extrinsic factor.

In this same vein, online discussion can foster and promote the ability to provide the students with a ‘voice’. Building on the previous idea that participating in online discussion is an opportunity to level the playing field so to speak for the shy or quiet student, online discussion has the potential to provide a voice for these students. Berge (1997) offers that some students may be reticent to talk in class or come from backgrounds “where answers and responses are considered and carefully framed before presentation”. Several student comments reflect this idea and noted that this experience with a discussion-based tool has helped instill in them a sense of trust in self and the confidence to speak up in an online classroom setting. One learner even went so far as to note that participation in this online environment has impacted their self perception and now they feel more confident to speak up in face-to-face situations.

Given these self reported comments, it is curious that while trust in self and the subsequent value placed upon their own voice/opinions on one hand has increased, their perceptions of fellow student voice/opinions still falls short when compared to the voice/opinion of the instructor. This concept of trust also surfaced related to peer learning and was a distinct theme that emerged in the course of the study.

Online discussion can promote more reflective thinking or as Cumming (1998) describes, online discussion can become “the product of more deliberate reflection”. Students “can
take the time to reflect and consider their response” (Berge, 1997). Typical of student reaction in this course, was the observation that in class you don’t always think of the right question to ask or even know you have a question. Many students noted that it takes you a while to think first. The discussion tool then afforded these students the opportunity to think and reflect on information prior to asking a question. Students also acknowledged that the discussion board was an opportunity to open up to broader points of view and interact with various perspectives – things they said they would not have thought of on their own. They concurred the board was a reflective tool for learning. This reflective property afforded by an online discussion tool emerged as one of the sub-themes related to use in the study. The discussion tool was seen as a resource for reflection and learning.

Students held the overall belief that the board could be instrumental in enhancing student learning; but it should also be noted that these students observed in case after case that they would have derived more benefit from the online discussion tool had they used it more. This comment was very interesting and one that would be very interesting to pursue in a follow up study. It is also possible that the reflective nature of the tool has a down side. Over the course of the interviews, many students commented about various aspects of the ‘time factor’. On one hand, students had the sense that ‘time’ could be controlled – they [the students] were in control of the pace of their learning, responding at convenient times, having the time to think about questions and answers, and being able to sift through the information at a pace commensurate with their own comfort level. On the other hand, students voiced the opinion that “if I had more time, I would have used it
more”. This dichotomy would be an interesting thread to pursue in an additional study. I would suggest that the ‘default’ student understanding is innately that discussion forums are reflective tools.

The ‘down’ side, I believe, of this ‘reflective facet’ of discussion boards is exemplified in the following question: Have you ever put off writing an e-mail or responding to a discussion thread because you felt you wanted more time to sit and think and write, rather than reply off the top of your head. How often did that opportunity to reply for you get lost until you just never did reply? The same logic may hold here.

Online discussion also supports peer learning as it provides students with a space of their own where they can learn from each other. They can share their thinking with each other and comment on each other's ideas. Students appreciate having a window into the thinking processes of their peers. It is validating to know their peers are experiencing similar doubts, questions, and understandings. Students noted that they begin to gain a confidence in their own knowledge and opinions as well. Peer learning takes the focus from the instructor and transfers it to the students. However, students can become extremely uncomfortable with this concept and experience concern, needing instructor verification to ally the ‘grayness’ that Professor Nelson ‘allowed’ to occur on the board. This idea of trust in posts and its relation or indication of discussion boards promoting peer learning needs to be more deeply investigated.
The asynchronous format also allows students to work through difficult texts and concepts more slowly, and to help each other understand the material” (Funaro, 1999). These ideas surfaced rather frequently over the course of the interviews, e.g., the ability to control pacing was seen as positive by the students. The board was seen as an entity that was partly under student control – at least their own pacing with the board could be controlled and they could speed up or slow down the learning process according to their own individual needs, supporting the flow of the course without disrupting it. In essence, the board supported student interaction without being a burden on the instructor or the students. The over-riding sense from the students was that the discussion-based tool served to be worthwhile and facilitated understanding even though the board’s implementation could have contributed to limited understanding. However, the opportunity to describe the concepts in the chapters to fellow learners was acknowledged as a way to ensure self-understanding of the topics.

In sum, regarding learning, I have noted how the instructor’s philosophy of learning and how the instructor actualized that belief in the course via the discussion board has intersected with the selected participants’ perceptions of learning and how that understanding manifested itself in relationship to their use of the discussion board. Many users recognized that using the board and/or participating in these exercises have the potential to support learning and understanding in the course – however, depending on other factors in their experience, the amount to which they interact and participate varies. While they may not be satisfied with the board for clarification and understanding of concepts, they do acknowledge its use and benefits. This awareness however, was not
enough of a motivator to kick start more activity or participation. I would suggest here that perhaps the lack of more activity may not reflect failure in the board or its implementation – rather it may be a result stemming from its modified use/implementation. It should be noted that while student preferences may have leaned toward other forms of communication such as face-to-face conversation, they did acknowledge that the discussion board did provide a convenient and accessible format. Even though this awareness did not spur more activity or engagement with the board, it should be noted that the physical act of using the discussion board requires an individual to access and read the material/question, think about an answer, then write/type out an answer, and probably re-reads the questions and answer to make sure it makes sense. The repetition of this process by its nature would help re-enforce learning.

An interesting finding that surfaced that was completely unique to one participant, dealt with gender and learning. There is a body literature relating to "gender and learning". For example (Garland & Martin, 2005) consider how gender and learning style may play a role in how online courses should be designed. Garland and Martin compared students in an online course and student in the same face to face course. Data was reviewed by gender to see if there was a difference caused by gender. What Garland and Martin found was that there was a difference in the learning style of the students on the online course compared to the students in the face to face course and that gender was indeed a factor in the relationship between learning style and student engagement. The theme suggested by one of the students in this study indicated that there was a difference in this course between males and females when it came to learning and using the discussion board. In
this case the student noted that males were apt to be less persistent than females and that females were more prone in this course to utilizing multiple methods to problem solve, trying various ways to resolve an issue. Males, this participant observed, will try one way and if it fails they will give up. It was also interesting that the participant also noted that males if they are unsuccessful in learning tend to cite external reasons while females if unsuccessful at learning cite internal reasons. This would be a fascinating series of studies to explore.

**Regarding Use**

Many factors impact the use of a discussion board including comfort with the technology, satisfaction, technical issues such as, access, ease and navigation of interface, and motivation/rationale for using them. In this study, five sub-themes regarding use appeared as comments in all the participant transcripts - bonus points, the discussion board as a tool and resource for learning, time, navigation, and forced use. Interestingly enough, forced use was not a topic directly investigated. This concept surfaced on it’s own during the interviews – both in this theme and also under Changes and Improvements.

**Bonus Points**

Across all cases, participants noted that the bonus points worked as an incentive and a motivator – although one student noted that sometimes the difficulty of accessing the board deterred using the board even though points were awarded. The structure of the
bonus points allowed students to receive one bonus point for posting a question related to the readings and two bonus points for answering a posted question to the board (presuming the answer was correct). Students were very clear on the impact of the bonus points on their overall scores - incentive to engage with the board was not solely a result of the bonus points. Motivation to engage with the tool was also brought about by intrinsic factors and innate curiosity. It was an opportunity to learn something new about the material and/or concept, to see what classmates were thinking, and provide an insight into how classmates were interpreting the course material.

The reality was that the bonus points served to initiate engagement. For some students who were super grade conscious, the points remained a motivator even when interest or time constraints pressured them. For others, over time, the points did not maintain student engagement with the board. Effort juxtaposed to perceived value and return did not cut it for many. Individuals who either were stressed from lack of time to do the work for class or had other things competing for their attention and time, did not see the value factor and impact on their grade as significant enough for them to continue to invest their time. A typical case of return on investment of time/energy to what they get out of it. These students tended to be pragmatic about their learning. It is also interesting that across the all of the interviews, students voiced the belief that they felt the discussion board held the potential and presented the opportunity for learning to occur – but they cited this belief in terms of “If I had used it more it would have helped me learn more. However I did not”. In sum, regarding points and use, some of the students were motivated by the extra credit, where if extra credit had not been a factor they probably would not have used the board
as much. Whereas others were saying that they were frustrated due to technical issues, and felt that the return was not worth it – the technical glitches they encountered became a barrier to use for them. Interestingly the point motivated students noted that if they had more experience with discussion-based tools, they would probably have been more engaged with the board. Whereas the others felt compelled to interact with the board just because it was part of the course and expected.

**Resource/Tool For Learning**

As a resource or tool, discussion boards offer a myriad of potential learning opportunities. These opportunities challenge designers and instructors to develop learning options that capitalize on constructivist guiding principles. As noted previously, these principles include investigating authentic contexts, ‘growing’ student responsibility, fostering interaction and collaboration, and promoting higher order thinking, critical evaluation and reflection. Part of this investigation sought to discover if modified use of a discussion board could meet or foster these principles.

Several indicators of note became apparent when analyzing the data. Several students commented that as a tool and a resource they used the discussion board as a self-testing mechanism, using the questions on the board as a self-quiz and comparing their answers to those posted on the forum. The board was also used to check reading comprehension and understanding of chapter content. In other words as a learning tool and resource it forced students to consider if they were reading the material and truly understanding what
they were reading. The discussion board was also observed to support deeper learning. Overall, it seemed as if the students were aware of gradations in learning and how and where the discussion tool fit and supported those gradations. Whether using the discussion board as a review for the course quizzes or as a comprehension check, many users noted that they would only continue to use the board for what worked for them. So the continued use of the board, even by part of the class, indicates that the discussion board did add positive value and experience to the course.

Students did perceive a positive gain and value related to the discussion forum. First, value was evident because students persisted to use the discussion board even though its use was optional. Second, the discussion board held value, at least for several students, because it was a space where communicating with classmates was easier. In broader terms, the board was a timely and convenient tool in that it supported student learning. The board was also relevant and of value to the course. It was observed that student use of the board was bolstered by the practice of the instructor.

Specifically, students mentioned that they resent when an instructor places something in the course and then does nothing with it. The student response is to ignore that information as it is not seen as integral or important to the course. The instructor in this case, did use questions and posts to the discussion board in class and in quizzes. This activity not only supported student engagement with the board, but also served to attach value to the posts and activity on the board. Thus, the board was seen by students as important andvaluably only because they believed that the instructor felt this way. That
is, if the instructor perceives value in the item or activity, so do the students. This is an interesting concept to explore as it bears directly upon the impact of the shift of teaching and learning to a more student centered paradigm. How is this shift supporting student interpretation of importance and value to course content? How do we balance guiding student learning and directing student learning given their place on the novice/expert continuum? How do we wean students from directed learning so prevalent in the educational system to more constructivist based learning scenarios? How do we tap into student feelings and perceptions to capitalize on the factures that will engage them in learning situations?

**Time**

Time, and time consideration, was a recurrent issue addressed by students. Two facets emerged under this aspect of ‘time’. First, was the aspect regarding the immediacy of the tool and the convenience of being able to pose a question at any moment – a question could be posed before it was forgotten or you could ask your question and not have to wait until class to get an answer. The other aspect related to time was the repeated quote by almost all the students, “I would have used the discussion board more if I had more time”. Various comments surrounded this factor. They ranged from it being hard to fit the board into their schedules to issues related to being able to connect to the board when off campus.

**Navigation**
Navigation became a fairly important issue to the students in this investigation (recall that five out of six of the users were new to discussion boards and none of the six had ever used this particular discussion board interface). However, computer experience did not seem to support the ‘comfort level’ of individuals working with the actual tool. Practice and review may have benefited students in this instance. As the literature indicates, when implementing a discussion board one of the primary guidelines is to provide practice and introductory activities that introduce the user to the discussion tool. This accomplishes two things. First, the user becomes conversant in the interface and discovers the intricacies of how to navigate the interface. Second, it affords an opportunity to make sure the technology is working correctly, connectivity and access are established, and equipment compatibility is assured. Based on the comments from the students, I believe that some of the ‘disconnect’ they experienced could have been alleviated if an introductory hands-on session had been held to walk students through the tool and perhaps engage them in one or two simple mandatory assignments to ensure proficient use with the tool/interface.

Since the student participants were new bulletin board users, I would infer that the overall positive experience in this course might carry over to future courses this could translate to a positive support of learning. Of course the inverse needs to be considered – would a dissatisfactory first-time experience turn a user off to future use of discussion formats. One student in particular did have a rough time and noted having trouble navigating the interface. The student in question wanted the discussion board to be accessible through the shared server interface of the college as they were familiar and secure with how to
access and navigate that space. This user was resistant to change and complained repeatedly about not being access the discussion space through e-mail in the same way they were able to access other information and files online. Understandably, this user had a rough start with technical issues related to being able to even access the board. This learner was faced with trying to surmount several barriers. These included: unlearning learned behavior, not understanding how they were accessing information, learning a new technology, and learning to navigate a totally different interface. Unfortunately, all things ‘technology’ for this learner in this course had some sort of ‘hitch’ and things did not flow smoothly for them. The interface and the role it plays in the learners ability to navigate and be successful in the learning environment is of major importance. Several learners did mention that they were not always sure if they had seen or accessed everything on the discussion space. Several students did wonder at times that if the instructor had made practice available or if some run through had been conducted at the very beginning of the course, if some of these nagging doubts could have been alleviated. Again, the literature bears out this thought that good practice when utilizing a discussion board (or any technology for that matter) practice should be provided to promote familiarity with the tool and so that users do not struggle unduly while learning the technology. Several users also speculated and wondered if previous exposure to a discussion board would have made them more familiar with this board? This comment brings us to the last sub-theme, and that is forced use.
Forced Use

Several students brought up the topic of ‘forced use’ and this topic continued to surface across interviews. Although not part of the original set of interview questions or topics of this investigation, it was evident that this notion should be pursued. Interestingly, it should be noted that while several students mentioned ‘forced use’, when asked how they themselves would respond to being forced to use the discussion board – they all reacted negatively. But perhaps even more interesting was the almost unanimous response that while conceding that they would not like being forced to use the discussion board, it probably should have been required of them. Reasons varied, but as a designer I do have to ask myself, in this situation would ‘forced use’ be appropriate given the objectives of the board and its ultimate purpose. Was the purpose of the discussion board to get ‘deep discussion/reflection’ or was it supposed to be a more superficial thing? If deeper more reflective interactivity were anticipated, other criteria would have had to be placed on the board and more instructor involvement would have been necessary. This would have trickled down to the student level and required more and deeper student involvement. However, this was not the central focus of the board. Implementation of this board was intended to be a ‘less intrusive’ instructional strategy. Another interesting point brought out by several members of the class was that they found it difficult to remember to use the board – often forgetting it was there. It was suggested that being forced to look at the discussion board would have made us remember to use it more. Building on this thought it was suggested that the instructor send out an e-mail with a link to the board asking students to post questions – similar to the professor’s strategy to get students to engage with and take the quizzes for the class.
The idea of forced use coincides with the literature on several levels. Sherry (1998) indicates that the sheer fact that discussion boards are recorded holds students accountable for their participation. Students do NOT want to be forced but feel they should be, as indicated numerous times in conversations with me. Forced use and requiring learners to engage with the tool fosters familiarity with the tool. It provides an opportunity for the instructor to gauge the learning occurring in the course (L. Harasim, Hiltz, R., Teles, L., and Turoff, M., 1995) – a primary object of this discussion board. And forced use can bring to light any connectivity or posting issues that may be lurking. “The presentation of online ideas enables the instructor to see how material is being intellectually interpreted and integrated by each student” (L. Harasim, Hiltz, R., Teles, L., and Turoff, M., 1995) Also, the sooner learners engage with a tool and the more they use, the more comfortable they become with it. Cummings (1993) states, “Despite the cost to the instructor in terms of time … as a tool for promoting interaction among students [discussion boards] provide a wealth of opportunities”. Many of these opportunities became apparent during of this investigation.

The idea of forced use, as I mentioned, was not directly a topic of interest or investigation in this study, but emerged to take on a place of importance. The concept of forced use, even in a modified application bears further investigation, especially given the number of times that the issue surfaced during the interviews. Perhaps most significant is that the students who were involved in this study were discussing their experience with a non-obligatory activity. Points were awarded for participation – but there was no obligation
for the students to engage in the board. Several students observed that forced use would
1) support student interaction with the board, 2) ensure timely/trouble free access, and 3) serve as reminder to utilize the board. Students also suggested that they should be required to post to the board under specific criteria. This was an interesting suggestion as this comment coincides with what the literature suggests for how to ensure successful online discussion. However, this notion needs to be explored further as the intent of the discussion board in this modified capacity differs from the intent of use usually employed for online discussion.

The idea of forced use is a topic that interlaced itself through the various thematic categories presented in this study and bears mention here regarding learning. While students noted the obvious reasons for forced use – such as making navigation of the board easier; the discussion board was also seen as a tool whose use could not be seen as hurting anything. There was the over-riding feeling from all participants that that the discussion board was not hindering any kind of learning and could be seen helping learning. The realization or belief that the board holds potential for learning and that this potential can be tapped if one uses the resource was a sentiment voiced by several of the users. Many even suggested that using the discussion board more extensively might have made a difference. Further, there was also an awareness that ‘forced use’ was instrumental to that learning. The board, it was noted, ensured students read the material first before interacting with the board – and if that was one of the goals of the board – it was achieved. Professor Nelson’s attention to process is the focus for this implementation of the discussion board. Ensuring that the small steps in learning make the bigger steps
(or leaps in learning) happen. The board in a sense kept the students current and up to date with the content of the course.

Other Factors

There were several other strands of thought regarding use that surfaced during the interviews. While these strands were not echoed by other participants, and were individual observations, it is worth noting and documenting for this study.

I found it curious that one individual commented on gender differences regarding use of the board. The perception was that women use the discussion board differently than men. Two thoughts can be extrapolated from the comments. These are persistence related to gender and locus of responsibility for learning success or failure. Questions that arise from these two thoughts include: Do men approach information differently from women, do women and men differ in how they engage information, does gender impact persistence in problem solving, and to what do men and women attribute learning success or failure to? While this topic does not fall under the specific purview of this investigation, it does bear noting for possible future investigations.

One student directly addressed the idea that they felt the discussion board was a safe medium from within which you can speculate and offer ideas/thoughts that you might not readily offer in class. This indicates a safety or comfort zone related to the discussion board. This issue of a safe medium is identified in the literature in that the online space. Students do not have the fear of being wrong. It was even noted that the “sting” of being wrong is removed because of the distance the board provides. This feeling is different
from the feeling experienced in a face to face setting. As the student further described, it became apparent to me that what they were saying was the shame and embarrassment of being wrong face to face is greater and more embarrassing than in an online environment. Online you are wrong and it is over, while face to face the embarrassment lingers.

One student indicated that while he was online doing the discussion board, he was also doing other things, other online activities. It was noted that while they were online for the board, they was also surfing the net, and ‘AIM-ing’ friends. Of all the participants interviewed, this user seemed at ease and confident with technology and even wondered why technology was not used more in all his classes. He was also the only student to highlight the specific ways that the Professor Nelson integrated the board into the flow of the course under investigation. While several students noted that professor Nelson would use questions posted to the discussion and integrate them into the regular quizzes, this user added that the instructor would also mention what was posted on the board and bring various comments back into the classroom. This strategy on the part of the professor had an impact. The result of the instructor’s behavior was that the in class reference boosted student confidence in the discussion board. It made several of the students feel good. It became apparent that for him it fostered his persistence and interactivity with the board – despite the fact that the “discussion board was not my thing”. Again, this is another instance where guidelines for good practice adhered to were born out in this investigation.
There were shifts in motivation for students regarding use and engagement with the discussion board. While there was a participant who tended to be pragmatic about the discussion board—taking the approach that the discussion board was part of the class and this is what needs to be done to be done for the class; the other students were motivated in various ways. For example, several students confided that their original motivation for using the discussion board (and being excited about it) was the personal and social draw of it all. These students were anticipating the board to be a space where they could get to know something ‘more’ about the students in the class; connect with them in ways that would be different from the usual classroom interaction. As the course progressed and they became exposed to the culture and tone of the board, these students noted that a shift in motivation from that social space, get to know folks, to focusing on the practical, getting the extra credit points. This shift was due in part to the fact that the board did not turn out to be that social opportunity the students anticipated so, making the best of it, they focused on other rewards that were obtainable. It should be noted here that the ‘social’ side of the discussion board was not stressed or highlighted by Professor Nelson. The intent of the board was for it to be a question/answer space. It may have been that this over-riding expectation quashed the potential for the social side to flourish. One of the participants even went so far as to comment that when they tried to bring in a social aspect, it was quickly ‘shot down’.

Another factor may have been the ‘time’ constraint that was noted by almost everyone. In reviewing the transcripts for the interviews and re-reading them, one can see a trend where at the beginning each student’s individual view of the value and opportunity to
gain extra credit points is high. As time progresses and the semester lengthens, the workload gets tougher, you can see how their perception of the value/worth of the extra credit points diminishes over time. Several participants, who expressed interest and chased the extra credit points routinely, found that later on the ‘value’ of those extra points diminished. Overall there was a general consensus, perhaps fueled in some part by frustration with the technology (for example Gloria), that previous exposure to or experience with a discussion board would have made them more familiar with the tool and perhaps more interactive with tool. It would be interesting to explore if encouraging a more social tone to the board would support the interactions on the board. Does modified use imply limited social interaction? Does limited interaction preclude depth of social engagement? And does fostering a deeper social climate impact how students view the voice and veracity of posts in similar situations? This last question brings us to the next theme.

### Regarding Trusts in Post

When questioned on the value students placed in other student responses juxtaposed to the value the students placed in instructor responses, the replies were interesting. These replies were felt to be a seminal point as two key aspects related to this would surface in this interviews. These two aspects were: 1) students were quick to point out that the student text was written by Professor Nelson for this course and 2) inherent in students perceptions and descriptions is the idea that that the teacher’s comments holds more weight (sway) with students than do comments from fellow student.
This concept of trust was particularly interesting. Consider the more active learners. Active learners tend to learn better when they actively ‘do something’ and engage with the materials – like discussing the information or explaining it to other students. These students tended to identify the discussion board as a reflective tool. They did not observe or indicate an issue with ‘trusting’ the posts of other students. In fact the assumption, as stated by one participant, was predicated on the fact that since she took her time and posted to the board with care and attention, naturally other students would too. So the thought of doubting or not trusting the content of the posts does not cross their mind. It is only when I question them further on the issue that they explain that they would expect others to be just as thorough in posting intelligent questions and answers to the board. In contrast, the more reflective learners appeared overtly concerned with the quality of student posts and were the first ones to comment on this aspect of the postings. They seem to want/need instructor interaction to verify student postings and to be more authoritative on the board. It is almost as if these students searching for that voice of authority and that the lack of Professor Nelson’s presence was uncomfortable for them.

Given the variety of students who felt comfortable with trusting and ascribing worth to student opinion, it would be interesting to probe more deeply into the possible reasons for this as I do not feel this is a result of difference specifically related to being an active or reflective learner. I would suspect that individuals who also rated high on sensing on the sensing-intuitive dimension might as several students did, prefer it when the instructor guided or responded to discussions on the board. These students definitely experienced
discomfort with grayness and uncertainty that the instructor let occur on the board – leaving the discussion to the students.

It was interesting to observe the discrepancy between the value a high intuitive ascribed to student posts and the lack of value that a high reflective ascribed to student posts. The high reflective student definitely saw Professor Nelson as the voice of knowledge for the course. Add to that the fact that Professor Nelson wrote the book and was using the book placed her voice above others. It would be interesting to pursue as a follow up to this investigation one that looked at student perceptions of postings. How do students ascribe value or worth to posts? How does the learning gained from student based knowledge compare to knowledge gained from instructor based knowledge? Given that we are dealing with a shifting teaching paradigm and placing more responsibility on students to direct their own learning, answers to questions like these should be explored. It would be important to discern the factors associated with how students judge the worth and value of information.

Regarding trust, neither learner on the visual verbal dimension made any direct comment on this issue. However, the sequential learner directly addressed this issue when asked and was quick to say that he felt “student posts were one thing and the instructor posts were another”. It should be noted that while quality of posts was not an issue for this sequential learner there was a definite reservation about trusting the answers that were provided despite ‘knowing’ that Professor Nelson would jump in an correct incorrect information. His reservations about student correctness did not carry over to believing
that uncommented responses by the students without instructor feedback may have been incorrect. Although it was noted “Dr. Nelson wrote the textbook after all”, by this student, the quality of posts were trusted. The representative who scored highly on the global end was not really invested in the discussion board. Although a moderate user, she made no direct comments related to trust in the posts and saw little value overall in the board.

As a curiosity, given the format of the discussion board and this issue of trust in posts, I asked students about the potential for copy/pasting and how that might (or might not) support the board. Perhaps the sequential learner put it most succinctly when he noted that his belief in the student postings “had nothing to do with maybe if students copy/pasted [information to the board] as the type of questions and the purpose of the board did not support that type of behavior” This student, as all of the others, were well aware of plagiarism and plagiarism issues, but felt that for this board the reason or need to copy/paste was rendered moot because “the only time you would copy/paste would be if you could not explain it better or cleared than the original author”, and if there was a question, then the explanation was not clear. Given that the point of the board was to clarify the text (better understand the author) this student may have a point.

**Regarding the Social Aspect of Online Learning**

The active learner liked the potential immediacy of the online discussion. She became particularly engaged especially if others were present on the board too. She explained that the board could tell you if and who was online at the same time you were. Again, this
learner keyed in to the distance factor related to the discussion board in relationship to the social aspect of the board and saw the ‘distance’ as an advantage, a sort of buffer or protection. She again described a scenario where you might ask a ‘stupid’ question. In a face to face environment, the repercussions of the misstep are greater (more of a social embarrassment) than if the same question were asked online. It is interesting to note that this active learner was also more keyed in to the ‘learning’ dimension of the board than in to the ‘social’ dimension of the board. She did note that due to these above mentioned factors there was a breaking down of specific face to face barriers in the classroom that the discussion board provided.

The discussion board could encourage more risk taking online, as borne out by the literature. This facet of online discussion was seen as insulation. The reflective learner however identified these barriers as being resident in the board and had a different sense of the social climate of the board. He saw the board as a fairly formal space. In fact he had voiced his disappointment with formality anticipating that the online space would be ‘looser’ and could be a place where ‘more social type things’ would occur. The board felt impersonal to him. It was not a space where he (or others) could warm up to a speculative discussion. Perhaps the question/answer format did not leave room for that sort of speculation or reflection. In essence he felt that this formal tone detracted from the board and that there was no ‘real back and forth’ dialogue. Social gains for him were non-existent and he did not feel like friendliness or warmth could be found in the board.
It is hard not to wonder if the formality of the space was a result of Professor’s Nelson’s design and implementation of the discussion board. The discussion board was intended to be a question and answer forum to support learning for the quizzes in the course. Could this have fostered the ‘sterility’ of the board and prompted the formality found there? Did the students truly consider this board to ‘be their own’ or did the knowledge that the instructor was monitoring the board and would insert herself to correct information act as a deterrent to the creation of social rapport? The visual learner in this case is an interesting non-example of a discussion board being able to foster community and social rapport. Over time, she explained that she was pulled in varying directions regarding use of the board. She indicted that felt pressured by time commitments (as mentioned earlier). These time commitments broke out into three distinct areas: her responsibility and time commitment to work (which pays for her education), her time commitment and assignment responsibilities to this course, and her time and assignment responsibilities related to her other courses. She further explained that she felt like an outsider in the course. I do wonder if this outsider feeling was exacerbated because she was the only one interviewed who was working her way through school. The other students had financial support from their parents. It also occurred to me that this may have also had a possible impact on her attitude/view toward school in that she exhibited a more mature mindset toward her schooling and assignments. However, the visual case representative and the sequential representative were in the minority in the class. By that I mean neither student were psychology majors and this may have contributed to the feelings of being an outsider or different from the rest of the students in the course. Of the twenty-six students
in the course only six were not psychology majors. Of those six, three were psychology minors, which leaves three students who might understandably feel out of place.

The visual learner did indicate that the instructor, Professor Nelson, was gung-ho about the discussion board and was always very excited about having it for the course. Understandably, she and other students felt that they too should share this exuberance. This may have been a factor that influenced use and persistence related to the discussion board. Given the instructor’s predisposition, they too might feel that they should be excited too. I can not help but wonder if this expectation and wanting to perform is tied to wanting to conform to instructor perceived expectations. The visual learner did note that she “still felt out of it when she do not participate [in discussions] and felt she was missing something”. Her comment appears to reflect the idea that 1) because the instructor is excited about the board and feels it is important, she should be too and 2) the feelings of being an outsider may impact her attitude toward ‘conforming’ or meeting the expectations of the instructor. It would seem then that social aspects for this learner are ‘painted’ by feelings of being an outsider. Not being one of the ‘insiders’ perhaps her ‘outsider’ viewpoint made it understandable and easier for her to highlight a major difference she saw between e-mail and the discussion forum. “E-mail makes you single out who you are targeting to ask a question. The discussion board is a blanket shot”. Furthermore, she notes that the discussion board “differs from e-mail. The discussion board is not as personal [as e-mail], with e-mail you have to know who you want to contact”. Given this comment and feeling like an outsider, discussion for this visual learner is more distant and less personal. The verbal learner for this case provides a
counter point when she notes that “comfort” and social levels ‘grow’ as you get exposure to the board “by the end I was kind of just talking.”

While this verbal learner is the only participant who noted a change in use over time with the board, it seems as though the users who posted more frequently, also became more relaxed in the way the used the tool to ‘speak’ to other classmates. She noted that her style of talking on the board became more like “just talking” or “like AIM”. This manifestation may also be a contributing factor to the users who expressed dissatisfaction with the tool in that they expected it to be a more conversational/social place/space. The literature does point to the idea that community and the social aspects related to discussion board occur over time. In contrast, there is the experience of the reflective learner who did not go through any social bond building. Rather he complained that the space was too formal and stilted and that he got “gigged” for trying to loosen things up. As noted previously, he felt forced use would make folks more comfortable with the discussion board and perhaps this forced use would help build/support the social aspect of the board (community).

The sequential learner too, like the verbal learner, noted the social aspects of the discussion board. He created an online persona in an attempt to better get to know the students in the course who were majors. In describing the creation of this online personal he noted that you could pick a caricature or avatar, but while he found this capability interesting and engaging it was frustrating to him in some ways. The sequential learner felt that a real picture would have been better appreciated as it would have really let him
get to recognize his fellow ‘majors’. He explained by saying in essence it was interesting
to know they are some character, but that does not tell me who they are, There is no
tangible indicator as to the true identity of the user. Like the others, this sequential learner
mentioned his preference for the discussion board in relationship to other forms of
communication. His preferences did not have the discussion board at the top of the list.
To change this perception he noted that it still would have needed the support of
everyone else in the class for it to be effective.

In other words, it did not matter what he as an individual did, there still needed to be
interaction between the students. The up side of the discussion board for this sequential
learner was that “it keeps you in constant contact with everybody” and that was felt to be
very positive. The efficacy of the discussion board, at least in his view is partially
predicated on everyone using it and interacting with one another. In short, he found
online communication in this instance to be very “static”. The global learner had similar
feelings that further highlight this sense of detachment. She offers that she is dubious
about calling the interactivity on the discussion board social interaction and viewed the
interaction on the board “as necessary” and experienced a lack of investment that was
both personal and social. She stated that the interaction on the discussion board did not
support her relationships with others in the class and found it hard to note a difference
between the in class interactions and the online interactions The reflective learner in this
case also picked up on this same theme and felt that the online environment was seen to
be more detached or less personal than the classroom.
Regarding Expectations/Experience

Regarding the expectations and experience of the users in this study, remember that they are all neophytes regarding online discussion. Only one participant had even used a discussion forum before. So there were no real expectations harbored by these users. To the contrary many stated that their experience in this course would serve to color their perception of using discussion boards in other courses. Most all comments regarding their particular expectations and experience with the board were ultimately positive. No true negative comments were offered. As seen in other comments, practice, forced exposure, and mandated assignments could have prevented much of the anti-comments.

The literature does suggest that these activities be engaged in to promote a positive discussion experience and to avoid technical flare ups. This too has been mentioned but can easily be resolved through a few simple warm-up or preparatory exercises. Some users wanted the discussion space to be a more social space and wanted to chat, but the formality of the space was not really a deterrent to participation. In fact is has been noted that the formality may be a result of the intention and use of the board. The purpose again was not to indulge in long rambling discussion or debate; rather the point of the discussion board was to be a format to ask and questions related to the text for the course. Alexa, the active learner, was the only individual who had previous experience with a discussion board in a class. She described her previous experience as good and expected same from this course. She liked the immediacy of the online discussion and particularly liked it when others were online at the same time she was even though the board was synchronous and noted that she liked the security that the online discussion provided for
her. When probed about what she meant by security, she explained that she liked the way that the online discussion removed much of the worry about saying something ‘stupid’ or asking a ‘dumb’ question. That making a mistake online in the discussion space was less traumatic than being in front of the class and asking a stupid or dumb question or saying something wrong. She further noted that there was a difference in the online environment – that in the online environment it was easier to take risks and she saw this as being beneficial to her learning because it encouraged her to explore more.

Given the comments by this student and other participants, who noted that perhaps, if they had more experience or were more familiar with the tool, they would have used it more. It may be that this active learner, given her previous positive experience with online discussion may have been previously pre-disposed to this online discussion positively given her past use. The reflective learner in this case also had one past limited experience with a discussion board although it should be noted that when he filled out the initial survey described that he had not had any previous experience with a discussion board. It was only through subsequent interviews that he ‘remembered’ that he had used a discussion board in a previous class for an assignment when the instructor was out of town. It should be noted however, that this past experience was actually with a synchronous chat tool – and not a discussion board. Interactions happened in real time unlike the discussion board used for this course. Perhaps familiarity with a similar tool did support his dexterity and confidence with board. While he did experience a discrepancy between expectations and actual use of the board, this reflective learner expected that there would be more chattiness on the board and was disappointed when
actual use of the board was, what he described as stilted and formal as noted before. He further thought students would make broader use of the board, using the board for the intended questions and answers, but anticipating that the board was also going to have more uses in the class, that students would use it to ‘just talk’ to one another and be a place to connect with each other. He was definitely disappointed when he tried to establish this sort of contact with his peers and was rebuffed. Given this reflective learner’s past exposure to a chat space, usually less formal and more relaxed partly due to its real time nature, his anticipation and disappoint may be understandable.

The visual learner in this study was one of the students who experienced great frustration with the technology. This frustration with the technology led to overall frustration with the discussion board and became a barrier to her interaction and participation. Heaped on top of the frustration with the actual technology and the glitches she encountered in the discussion board system, she had a lot of difficulty with the interface. It is interesting that this learner was highly visual. She repeatedly complained about the interface of the discussion board, that she found it hard to understand and was never really sure how it worked or “if she had seen everything”. While other users did mention various points some trouble with navigation, or forgetting to access the board because they had no overt cues when they were at the computer, this visual learner was almost adamant in wanting to be able to access the discussion board through the shared server of the college. Although she kept referring to being able to access the discussion board through e-mail, she was describing accessing her mail through a web based portal that allowed her to access shared file folders and her e-mail program. It seemed that her main stumbling
block was not only the technical issues related to being able to locate and access the board, but that because she knew the web based portal and how to access and navigate that interface, the new and different interface (given her frustration) was ‘foreign’ to her and difficult to understand. She had to unlearn old knowledge in order to re-learn the new tool. Her focus on knowing how to use the one interface (the web portal) was disruptive to her being able to adapt to the new and different interface.

In comparison, our verbal learner who had no real expectations for the discussion board and no previous experience with a discussion board saw the discussion as a tool and a support for later in the course. At first it was the points, but she felt that she knew the course was going to get harder the further in to the semester they went. She felt that the discussion board would be a help and support to her later on in the course. She further noted that the newness (and challenge) of board was not daunting at first; she was willing to try it and persisted. But as things progress as with several other students, if the students didn’t catch on and ‘get it’ in a relatively short period of time, interest waned and frustration set in. This has also been reflected in the literature.

The verbal learner in particular never grew to be ‘secure’ in the technology related to the discussion board. She always felt a bit at a loss. However, her perception and description of the frustrations impact was channeled to herself rather than externally as was the case with our visual learner. It was interesting that the verbal learner expressed her frustration/disappointment with the experience (her lack of interest may have been
colored by lack of dexterity with the tool) echoing what several others noted and that was
that the board would probably have been more helpful to her had she used it more.

As a side note, I found it interesting that many of the students recognized or voiced the
opinion that the discussion board held potential for learning, that the discussion board’s
potential could be tapped through regular use, but did not engage regularly in use that
would elicit that benefit for them. One has cause to wonder if this potential benefit that is
noted is because they actually view the board as helpful and could be more so or if it is
more that the discussion board is something that is being used for a course and they are
told that it will be helpful to them and their learning. In the case of our verbal learner, I
might be prone to offering that it is the former reason as she notes “that for the first time
it allowed me - people knew it was my opinion and me talking. It [the discussion board]
made it a little bit easier because it wasn’t in class - a little bit different at least for me”.
This student has an overt awareness of her self and opinion as a learner and participant in
her own learning. She is definitely mindful of her learning, but yet did not see the board
as particularly helpful to her.

The study’s sequential learner framed much of his expectations and experience in social
terms. For him the social aspects of the medium while an indicator of social aspect
(previously discussed) also denote and define this user’s online experience. While the
medium has its shortcomings compared to other venues, there is a definite social
component innate in the tool and this social aspect colors the users experience. Clearly he
sees tension between several issues related to the possibilities that a discussion forum
affords. Evidently this sequential learner felt favorably to the way the discussion was utilized in the course, but did feel that a discussion board had its limitations. He indicated that he felt there would be specific scenarios where the discussion would be more appropriate. In fact, he went on to list courses where he felt that a discussion board would be most appropriate in. It was interesting that he noted “I thought not too many [people] were going to use it [the discussion board], and that's with a lot of things that are online for any class. If it's online people don’t give it a second thought, which in some ways doesn’t make a whole lot of sense given the way technology is these days.” This comment highlights the awareness of the state of technology and possibly the idea that possibly students (and faculty) dismiss technology as an integral part of learning. This may be due to one of several factors: technology as ‘new’ is not truly seen as a natural component to a course (commonplace/mainstream), the integration of technology is not yet seamless into the design and flow of coursework, or the importance and weight of technology as an aid and support to learning is not obvious.

Despite this comment he did admit that “the discussion board got used more than I thought it would”, however, he fully expected and “thought the discussion board would be used a whole lot to talk about our proposals and projects - but it really didn’t happen that way.” He did note that he also saw a ‘fun factor’ in the board; this too made him wonder why others didn’t engage more because of the factor.

Our global learner had no prior experience whatsoever with discussion boards. This modified experience made her reticent to speculate about her experience as a whole as
she did not have any to compare it to. This, I thought, was interesting given her
categorization. It may be that her lack of experience didn’t give her enough big picture
information or that for her the discussion board was a marginal experience and as such
she had marginal expectations for it. Basically when questioned about it her description
was rather ‘flat’ and she did not particularly like interacting with the board.

**Regarding Disappointments and Frustrations**

Complaints that were voiced by the students on several levels echoed ideas found in the
literature regarding the implementation of online discussion. However, Professor Nelson
did embody many of the ‘best practice’ guidelines in implementing this ‘shortened’
utilization of a discussion too. As noted in earlier passages Professor Nelson did supply
directions for use of the board (albeit verbal), provided in class prompts and reminders
regarding posting to the board, wove the discussion board content into the class and lab
sessions, acknowledged ‘good posts’, identified and praised contributors, pointed out
good questions, and awarded varying points for varying participation. An interesting
aside regarding the point system is that the points were introduced as a motivator for the
students – an incentive to get them to engage with the board and the chapter content. The
overall impact of the points was good given the student testimony. However, it should be
noted that the bonus points in some cases served to transition the locus of motivation
from extrinsic to intrinsic. Students began engaging with the discussion board because
the points were an incentive. Their focus was on gaining the points. Over time, several
students indicated that while the points initially served as a ‘hook’ to engage them, after
being engaged they began to be motivated for the interaction, ideas and potential resident
in the discussion board. In other words, in the end – there was a value shift from just attaining the points to wanting to engage with the board. The value that the students attributed to the interaction occurring in the board is what made the motivation to engage or not engage short or long term.

Issues that spurred disappointment and/or frustration included frustrations related to the use and implementation of the technology proper, the pedagogical shift and associated expectations and its impact on the students, and the previously referred to issues associated with time. Frustration with the technology, (which could be abated by practice with the board), related to the fact that the technology was new, so users did not have a familiarity with it. Many experienced trouble accessing the board. Remember that the board technology wasn’t integrated into or accessible through the college portal. Again, forced use was a topic that cropped up. Students, on the whole, purported that they wanted to be forced to use and post to the board; they did recognize that had they been forced to use it even at the beginning of the course, it would have made interacting with the board much easier. This too can be rectified through employing a few forced interactions. Perhaps the most interesting issue to surface under this theme of expectation and experience is the impact of the pedagogical approach of this use of the discussion board. This board places the onus of responsibility squarely on the shoulders of the users in the course. This shift in pedagogy caused discomfort across many of the participants in this study. This discomfort has manifested itself in comments related to lack of trust in students posts, wanting the instructor to be more active and directive on the discussion board, wanting to heart what the professor has to say about the correctness of posts.
All of these comments serve to highlight the discomfort that this shift causes students – especially if they are not used to this approach. Student responsibility for learning experiences a shift in the transition from high school to college. This transition is exacerbated further and heightened when added to that change in responsibility, when more constructivist methodologies are utilized in the classroom. And of course we have already mentioned the various issue related to ‘time’, and competing interests vying for student attention. However, I still feel that the benefits outweigh the described disadvantages. Complaints, however, do not necessarily mean that learning is not occurring. While deficits can be seen in the current practice, it must be remembered to come back to the goals and purpose of the board and in its current state see if it has achieved those goals. And as I’ve stated, I do believe those goals were achieved.

Several issues surfaced under this topic – several of which were mentioned under other themes. However, it is important to iterate them here as their importance is perceived to be high given this particular set of participants. The following issues all appeared previously under various themes and repeated again as each individual tagged the issue as something that needed to be addressed under the theme of changes and improvements. These were:

- Technical difficulties related to use
- The social aspect of the discussion board
- The design of the board and instructor intervention
- and the issue of time

All of these topics were cited by participants as causes of frustration or disappointment related to the discussion board and its implementation in this course.
The active learner, as has been mentioned earlier, had technical difficulties accessing the board, as did the visual learner, the verbal learner, and the sequential learner. But for the verbal learner, these technical difficulties made her feel like when she was not connected, she was missing something. In her words it caused her to feel “out of the loop”. While this negative experience did not seem to impact her overall experience with the discussion forum which was, in general, a positive experience; it is important to note.

Comparatively the reflective learner expressed three areas of disappointment. First, he focused in again on the social aspects of the board repeating that he had wished that the discussion area had been more social and would have liked it to be integrated more into the class. Second, he suggested that the structure of the discussion board should have been different. While this will be discussed further under changes and improvements, it is important to note that one of his frustrations and disappointments was that the instructor was not more proactive on the discussion board. It was also his feeling that had the instructor interacted more on the board, it would have encouraged more student participation and interaction. Third, the reflective learner was the only student to directly bring up the issue of trust and student posts. Despite knowing that the instructor was monitoring the board, and knowing that on past occasions when a student had posted misinformation, Professor Nelson corrected the post, he still harbored uncertainty.

This uncertainty may be a result that has several interpretations. It could be an intentional design maneuver on the instructor’s part – an intentional constructivist approach to learning. In a sense the discomfort and uncertainty speaks to the idea that students need to
know how to critically assess information. Being forced to make these assessments yourself when you are used to the educational system ‘telling’ you what you need to know is an uncomfortable spot for a learner. Inherent in the trust issue then is the going against the grain of his training so to speak. Historically teachers had answers, knew what you needed to know and dispensed that knowledge in the classroom. This is the traditional milieu through which our students are raised. New pedagogies, such as constructivism challenge these traditional notions, in a sense we asking today’s students to work more collaboratively and cooperatively, to trust one another cautiously and in turn think for more for themselves.

The visual learner’s technical troubles were linked to interface navigation issues. It was very hard for her to adjust to using the discussion board as she was used to the e-mail set up and accessing her information through the college’s portal. It is important however to note an impacting factor on her frustration and disappointment. She had a markedly different view of school and school assignments in comparison to the other students in the course – or at least the other participants in this study. She worked full time in order to attend school. I wonder if this did not, as mentioned earlier, cause her to have a different, perhaps more mature attitude toward her studies and obligations.

In some ways, Vicki expressed that she felt she had three things working against her that impacted on this frustration issue regarding the board. First she noted that she had to work just to go to school, so school would naturally take on a different importance and be prioritized differently. Second, Vicki stated that her access to technology was limited.
These limitations Vicki noted included the fact that she was not on campus a lot, because she had to work so could not access the labs easily and she noted that when she tried to access the discussion board from home, she only had dial up service and her connections were ‘iffy’ at best. Couple this with the difficulty with the interface and navigation and her frustration is evident. Third, however was the aspect of time yet again. The difficulty she encountered in making choices to do or not do activities given her time limitations, low connections speed, and the fact that the discussion board was optional and that she was doing fairly well in the course; made the discussion board a low priority in scheme of things that needed to get done. Almost juxtaposed to the visual learner’s scenario is the verbal learner who felt “the only 'failure' I can think of [with the discussion board] is what we were talking about. How it [the discussion board] is formatted. [The interface] really made a difference for me.” This statement speaks to the fact that the interface for this discussion forum is not easily navigated and that as a verbal learner felt sort of lost when it came to traversing the layout of the discussion forum, obviously a frustration with damaging results.

Our sequential learner as previously noted, observed some of the application and educational pitfalls related to using technology “because it is a new technology – it's in so little use [in the classrooms] right now … she's [Professor Nelson] the first person I've seen use it” (4). The idea of discussion being ‘new’ and not in prevalent use in the classroom may have bled over to student perception and subsequent adoption of this technology into the flow of the course. Also there is the broader issue that perhaps the reason online discussion has not caught on in the classroom is because of the upfront and
continuous support discussion boards need. This possibility is fairly strong as part of the reason for this current investigation is to explore a modified use and application of a discussion board to better understand what learning benefits can be garnered from modified use. Discussion boards have been around for a while but their use in face to face classrooms has not impacted greatly on or transferred to the classroom level extensively – at least not in blended learning scenarios as relatively commonplace. However, this sequential learner overcame his initial access issues – but as cited earlier – had trouble remembering to access the board. This comment regarding remembering has given me pause as this learner was not the only student to mention this in these words. Despite the instructor reminder, students never truly integrated this technology into the practice of the course.

Our sequential learner reiterates that the lack of force to use the board may have played a part in his sense of frustration with the board. Remember that he wanted to be more social and interactive with the class members. It also made this user think out loud about the importance the instructor placed on the discussion board. A student perhaps would wonder why a faculty member would have discussion board in a course and they themselves not use it, especially knowing that the professor was monitoring the board.

Time was noted by the sequential learner as well as several others as a definite factor in supporting his participation and depth of his involvement relative to the importance the instructor placed on the activity. Confirming with students several issues became apparent:
• time was a barrier to use, even though the time necessary for this modified use of the tool
• students felt that less competing factors would have increased use
• the question and answer format of the board was helpful and not perceived to be hugely time consuming

**Regarding Changes and Improvements**

It is important to consider what the voices of the participants in this study have suggested as changes and improvements that can be made. Perhaps most interesting was that in reacting to these cues and prompts regarding change and improvements, there was some commonality in the solutions that were offered. To some extent, the solutions proposed do match the emerging criteria in the literature regarding use and implementation of online discussion. However, there were instances where the ‘complaint’ and suggested change are not aligned with the instructional intentions/application of this particular use of a discussion board. For example, consider the suggestions that the instructor be more proactive on the board and/or guide the discussion activity more. While these suggestions would be valid for a true discussion where moderation would be needed, it may not be appropriate for a modified use of the board.

The point of this particular board was to be a space for students to clarify their thinking regarding the chapter text. Additionally, students suggested a redesign of the discussion board to promote more student interactivity and participation. It was suggested repetitively that forcing students to use the board at the very beginning of the course. This
comment is consistent with best practice guidelines found in the literature and mentioned earlier. The literature also notes that it is important for the instructor to set the tone for the discussion space, however, that may not be practical given the use and purpose of this board. Changes were also suggested that would help alleviate or avoid last minute postings – i.e. pacing the instruction of the board. Given the parameters of the board and the other requisites for the course, this may not be feasible.

Overall it was interesting to note that each of the participants for this study cued in to different aspects of the board, however, perhaps more interesting was that in reacting to these cues there was some commonality in the solutions that were offered. To some extent, the solutions proposed do match the emerging criteria in the literature regarding use and implementation of online discussion.

The active learner, who did experience technical glitches over the course of the semester, did not address these technical matters when directly asked about changed and improvements that could be made to the discussion. Rather, when asked, focused and spoke to changes regarding student attentiveness to thought and care in postings. While no specific changes were suggested regarding the board, this area of attentiveness and care to posts was seen to be something that if changes were made, change should address this issue. Recall that this active learner was the one who when asked about trust in student post was somewhat surprised when asked as she just took for granted that all of the other student would be just as thoughtful as herself when posting and asking questions.
While she had no strategies to ensure this, her observation did point out different students react differently to student input. Implied in her observation is an innate trust (as described earlier) in student postings. This active learner respects and has value in other student contributions because she values her own. It could be said that she trusts in her own and others students capability to discover and build their own knowledge. In a constructivist learning environment, students are encouraged to build knowledge and test it out. In contrast to the active learner’s willingness to learn from herself and from other students, the reflective learner provides an interesting counterpoint. His suggested changes include changes to the design of the board and how to improve interactivity and participation. His suggestion is to have the instructor more involved and have a greater presence on the board. He also suggests that ‘criteria’ be set for student postings as well as require mandatory postings from the students. Unlike the active learner who was comfortable with student input, the reflective learner did not feel comfortable with student responses. He wanted the ‘answers’ from Professor Nelson who after all did write the book.

To improve interactivity the reflective learner had three suggestions. First he suggested that students be ‘forced’ at the beginning of the course to use the discussion board. In his estimation this would make the students become conversant with the tool and its interface. This suggestion has been born out in the literature as a way to make sure that everyone knows how to use and interact with the discussion medium. Simple assignments where students execute an understanding and facility with the basic commands for interacting using the technology makes sure that everyone is on the same page and has
the potential to engage and it is a way to determine if there are any technical 
glitches/hitches with each user’s connectivity. Second, he felt it was important for the 
instructor to set the tone for the discussion board related to instructor activity and 
leadership on the board. He felt it was the Professor’s job to entice students to be more 
participatory. While the literature does indicate that the instructor is instrumental in 
setting the tone for a discussion, and there are strategies to encourage and enhance 
student participation in a discussion board; we must remember the intent of this board 
and we must remember that the point of a discussion board is not so the teacher can tell 
students information. One of the overarching goals, for this particular type of discussion, 
is to force students to think about the ideas presented in a discussion board, and come to 
consensus. It is possible that this reflective learner is looking for the answer from the 
student rather than looking for the answer through the instructional content. In this case it 
may be that he is looking for the instructor to indicate what is/is not important – the 
traditional role of student/teacher – breaking that mold is uncomfortable for students and 
it takes adjustment for this to occur. Third, assignments came down to the wire. He noted 
that he did not do the readings all that far in advance in class. This was not a situation that 
was unique to this student – almost everyone at some point said that they waited to the 
last minute to do the readings and post questions.

The reflective learner and the sequential learner would be the only participants to suggest 
changing the time frame for the board. They noted however, that changing the timeframe 
of the discussion board would impact many facets of the board. Not only would the 
students have to produce work sooner in the week, but the instructor would have to do
things earlier/sooner also. Either way the adjustment would end up being major. It was felt that a change like that would probably not be feasible. Of course this raises the questions: was the current structure of the discussion board optimal for the objectives that the instructor was after? It is also interesting to note that students experienced a shift in reasons for posting to the discussion board. Several explained that in the beginning their focus was on posting to the board to get points, then found that as the course progressed and they used the discussion board more.

The reflective learner found himself thinking that maybe his posts were helping other students in the class. In other words he was describing that he felt that perhaps he was supporting other students learning. A curious statement given that this reflective learner was the individuals who did not trust student posts. Perhaps it is a result of the involvement in the process of the discussion board that has seemingly changed his opinion. It is also interesting to consider if this learner is even aware of this opinion as an indicator of opinion shift regarding student posts. It may also be seen as a positive effect/result of the discussion board on student learning.

The visual learner’s opinion on changes and improvements went right back to her issue with access. When asked about changes and improvements could be made, her first comment was to have the board available through e-mail. Actually she meant to have the board available through the shared file server for the college but her understanding of the web portal was limited and since she identified the web portal with ‘e-mail’ she verbalized being able to access to the web portal as accessing her e-mail. This visual
learner seconded the reflective learner’s opinion that forced use probably would not be a bad idea as it would enhance interactivity and participation in the course and the discussion. If they were forced to use it, the visual learner offered that she would probably use it more outside of the forced use too. This is an interesting comment on her part as an element of frustration regarding the discussion board was linked to not being able to easily access the board and navigate the board’s interface. This visual learner’s comment seems to imply that she might have been able to overcome the interface issues had she been forced to use the board more.

It should also be noted that forced use definitely would have served to increase awareness of the board, get students used to the tool, and dispel some of the new user butterflies related to using this technology. While Both the verbal and visual learners agreed that forced use might provide a level of comfort to the students. The visual learner further stated that if you are not forced to use it [the discussion board] you don’t bother, and that is your loss. The verbal learner’s attitude toward the board changed over time. She lost interest in putting in the time to post questions and answers to the board. This verbal learner further noted that with all the other things going on (and the subsequent value she had placed in the board) her overall technical frustrations left her somewhat disillusioned. As mentioned earlier this learner was a high verbal, an individual to whom a discussion board would appeal. It may be that her technical frustrations had a cost. This verbal learner did observe that she would have liked it had the students posted longer responses – to better explain the idea and concepts presented on the board. As it was, the short nature of the posts and the lack of extrapolation “was not overly helpful” for her.
However, it was interesting to note that across learning preferences, many cited their own motivation and focus as being responsible in a way for the lack of learning that occurred.

That being said, the verbal learner did note that what the discussion board did do, was open up a comfort level with asking question in front of other classmates. This result was perceived as extremely beneficial and is exemplified in the following statement. “When I did ask a question I didn’t feel scared to ask because everybody else would be reading it. When I first heard about this, I was like man, I don’t want to do that.” Clearly students observed a change in the overall student comfort level interacting on a collegial level. Given these benefits and juxtaposing them to the criticism related to the technology used for the course, I can’t help but wonder if a ‘class’ given on how the board works and how you use it would have made a difference for these students. As it was, no overt training or direction was provided to the students in the workings of the discussion board. The literature points to training and forced used (at least in the beginning) of implementing a discussion board technology as a good rule of thumb for general practice. Given the student statements, I wonder if much of the technical frustrations experience by the students would have been avoided had the professor used perhaps even one lab session to access and use the discussion board technology.

The sequential learner rated his experience with the discussion as a six on a scale of one to ten. He stated that the discussion board was really not a priority fort him – and felt that the discussion board was not really a priority with his fellow classmates. Similar to the reflective learner, this sequential learner had three suggestions, two of which ‘match’ the
reflective learner’s suggestions. The sequential learner’s three suggestions are as follows: First, he notes that the idea of forced use might serve to integrate the discussion forum more into the flow/format of the class. Second, feels that more direct instructor involvement would necessitate more student involvement and explains that in some ways this might put more pressure on the students to interact with the board because the instructor is interacting with the board. Third, he felt that forcing students to access the discussion boards like they are forced to access the quizzes would generate more use and interactivity with board. Understanding this sequential learner’s idea of forced access is important.

Currently the quizzes that are used in the course are delivered from a secure server. Since students at the college do not have the benefit of a course management system, access to secured items such as quizzes for courses have restricted access. To provide access for the students in the course to the quizzes, they are mailed a ‘link’ to access the appropriate quiz. Comments related to this procedure and comparing this to the current way students access the discussion board from a portal area highlighted the idea that this sort of forced access would 1) support interaction with the board, 2) ensure access, and 3) serve as reminder to utilize the board. Further he suggests that students be required (as he was for the chat assignment he described) to post to the board under specific criteria. This was an interesting suggestion from this participant as it too matches what the literature suggests for how to ensure successful online discussion. However, this needs to be further explored as the intent of the discussion board in this modified capacity differs from the intent of use usually employed for online discussion.
As for supporting the integration and flow of the course this sequential learner also suggested that the instructor have questions from quizzes reflect more of the content of the discussion board. Currently he noted that Professor Nelson does pull questions from the discussion board and has inserted these questions into the class quizzes and suggested upping the amount of materials that would be taken form the discussion board and incorporating more of the discussion content into the board. The result might make students more invested in the board. It was also suggested that participation on the board be mandatory. Regarding more instructor involvement, the sequential learner suggested that Professor Nelson actually participate in the discussion on the board and offer her opinion. This he felt would also make the students feel like the discussion board was more important. Finally he offered that perhaps a change in the timeline for the discussions might “make things seem less rushed”.

Both the global and sequential learners suggested having the instructor ask questions and have the instructor answer questions would be beneficial. The global learner felt that the discussion board “could be enhanced” if the instructor “were to post questions on the discussion board.” The further noted that this might challenge the students to interact more. The global learner also suggested that the instructor post answers to the board to provide certainty. This harkens back to what the reflective learner was describing regarding his trust in posts. During this conversation it did occur to me that that those students who rated positive on the sensing factor, seemed to be more attuned to directed learning. In other words they seemed more concerned with knowing what do I need to know and how do I need to know it – in this case they seemed to be asking what do I
need to say on the bulletin board. Perhaps it was this more practical view expressed by
the global learner who when asked about changes and improvements questioned the
actual purpose and goal of the board. I phrase my comment this way because from this
global learner’s point of view the board would be more effective and useful if the text
was unclear. This she notes would benefit the students (see earlier notes on this topic) as
well as the instructor. Basically she was restating that using the discussion board would
help make sense of the text book where it was hard to understand and the discussion
board could then help to clarify student understanding.

Again, it is important to note that one of the reasons the discussion board was initially
introduced in this course was to alert the instructor to trouble spots in the text and to
provide feedback for revision in a subsequent release of that text. Inadvertently, this
global learner hits on the over-riding reason the instructor started the board – to clarify
the text. Questioning this global learner further on how to improve the discussion board,
she noted earlier that “it just depends on the class and the people and I think that people
will learn more if they use it a lot but you never know how the class is going to be with
each individual.” It is interesting to note here that this comment is very similar in
wording and content to the observation that the instructor made to me regarding the use
of the discussion based tool overall. So, when considering changes and improvements
that could be made to board in general, this global learner describes a viewpoint that
indicates that learning is not just a personal experience, but is dependent on the
individuals and their interactions with each other. Changes are difficult to make at a
global level as the interactions of the individuals is what makes the experience. She
further implies that the design of the board is one thing; it is the interactions of the students that bring the design to life in the course – the actors who bring life to the script so to speak. To help breadth life into the design, this global learner hints at adjusting or expanding the motivational reasons to engage with the board. When describing earlier how the board was used for extra credit and how you could on return of quiz, improve your grade, the global learner noted that “you have no need of it [the discussion board] if you have done or are doing well in the quizzes and tests”. This comment while negative in one sense implies the need to structure more meaningful incentives to students so they engage more with the board for more meaningful reasons.

Conclusions and Need for Further Research

First and foremost, it should be noted that over the course of the investigation I was to discover that use of a discussion board, even in a modified way, does not necessarily limit many of the educational advantages and pedagogical enhancements that are afforded by a full scale implementation of a discussion board. The pedagogical contribution of discussion boards can be tapped into even when the tool is used in a modified fashion – but perhaps neither all of the pedagogical benefits are able to tapped into nor can they be tapped to the extent that full use of a discussion board activity might. However, further research should be conducted to tease out and investigate those benefits and examine them under varying conditions and circumstances.
Consider the goals and objectives of the board, which were “to encourage the students to interact about the text material before they take the quiz” and “to alert [the instructor] to the issues that this specific class is having with the text as [she] prepares for class”. I believe that this investigation supports that the goals and objectives for use of the board in the course have been achieved. While the conversation on the board does not compare to past use – and may not even be considered extensive; I believe that this is a direct result of the board being successful – if not in the current course – then at least in the past courses. Consider that since Dr. Nelson has been utilizing a discussion board in her course for about ten years and the text in use for previous courses is one she authored in 1994. Historically, students had used the discussion board quite extensively. The first indication of this are references to past discussion board tools that could not ‘hold’ all the posts and discussion that the board elicited from the students. And the second indication of this is inherent in the reason for Dr. Nelson implementing a discussion board in the course – “I was interested in understanding student issues with the text”. Over the past ten years, the discussion board has provided Dr. Nelson with valuable information regarding student understanding of the text and how to better present that information. I offer proof in that 2006 saw the release of the 2\textsuperscript{nd} edition of the text used for the course. The success is exemplified in Dr. Nelson’s statement “there are fewer ambiguities left” in the text and I would attribute this to be part of the reason students are not using the board as much. “But in this form of the 2\textsuperscript{nd} edition, this term it takes almost no time to read their questions”.
I believe Harasim et al. argue correctly when they state “high quality interaction and sharing … is at the heart of education” (1995) Discussion boards can provide that interaction and sharing, but stumbling blocks exist. From the student side Sherry (1998) observes that students “remark on the increased work necessary to keep up … [and] they often complain of information overload, increased responsibility … and difficulty in following threads…”. From the instructor side time these same pressures evidence themselves. Cummings (2003) notes “I tried to design assignments to force students to interact with each other without a great deal of intervention on the part of the instructor”. It may be said this modified use of a discussion based tool successfully mediated this information overload problem.

This study noted that related to the purpose of the board, motivation to get the students to engage and participate is critical. In this case, bonus points were awarded for posting and responding to posts on the board. This particular investigation found that while points encourage student participation student must feel that the value of the reward (the points) needs to align with the effort expended to gain the reward. Further research should be conducted that can contribute to understanding this interaction between effort, motivation and learning. It would also be interesting to explore why some of the students were not motivated at all by the awarding of points. My supposition would be that there is as inter-relationship among the locus of motivation in the learner and the type/kind of motivation utilized to support student engagement and learning. Interaction and how it occurs is an important issue that needs to be explored in this area. Riccomini (2002) and Kashy (2003) have found that student learning can be supported if students get timely
feedback/assessment relative their performance. The active and integrated learning design in this course reflects this finding in that opportunities for active learning are embedded in the flow of the course and the feedback relative to activity in the course is shared as artifacts on the course and can be accessed by students for review and enrichment. It would also seem that exploration into the facets and implications of motivation related to persistence in use, engagement with the content, and support of learning need to be further explored. What would motivate and sustain engagement with this type of modified use of an online discussion based tool?

While I noted earlier that the literature indicates the appropriateness of discussion-based tools to support divergent thinking (this board supported convergent thinking), there are several other aspects related to student learning that are supported in this modified use of a discussion based tool. These included the testing out of ideas, getting to know other perspectives and viewpoints, complex understanding and the opportunity for reflection. It is important however, to balance these pluses with the negatives identified by students. This is the potential to be over-run with information. Further research should included exploring the parameters and balance related to the extent and depth to which a discussion-based tool can be utilized to capitalize on learning while not overburdening the learner or the instructor needs to be kept at the forefront of thought when considering the purpose for implementing a discussion based tool.

Discussion-based tools as discussed earlier hold much promise related to learning. Five pedagogical sub-themes have been identified in this study. They are the discussion-based
tools ability to situate learning in a social context, elicit participation, evoke thoughtful and reflective responses, support peer learning, and support aspects related to ‘time’ for students. As noted earlier, there was a discrepancy between the literature and the findings in this case instance related to learners feeling distant in this online community. This may be a direct result of the design as alluded to earlier. It may be that the ‘depth’ of the utilization of the tool is proportional to the ‘depth’ of social presence that is felt by the learners. Exploring this facet of modified use juxtaposed to limited social presence would indeed be interesting to explore and should be pursued. Perhaps the initiation of activities at the outset of the course to promote and support rapid trust building might abate some of these distant feelings. It may also go a long way to promote student trust in posts and change student perceptions of the value of student posts.

Despite the correspondence of student definitions of learning and the understanding that learning is an active process and occurred in places other than the classroom – it did not ensure engagement with the board in this study. Further research may be needed into investigating what promotes sustained engagement for various learners with regards to a discussion-based tool.

Aspects of the impact of time on learning – the discussion based tool became a constant that students could speed up or slow down according to individual needs supporting the flow of the course without disrupting it. In this case, the discussion board provided a venue where the students have control over the pace and speed and of materials being covered. It becomes a space where the student can “stop time” and manage the speed and
absorption of materials. Further research into this area of ownership of materials and control of pacing may be enlightening.

Issues related to motivation and engagement in using the discussion based tool and the motivation to persist in using the board need to be re-iterated here. It has been noted that both short term and long term reasons surfaced during the course of this investigation. Short term interest and engagement was stirred by the opportunity for bonus points. Novelty supported initial engagement. Social factors such as peer feedback and support, social presence, the opportunity to obtain voice, and ownership of the content material supported long term engagement. There was an interaction among these factors that played short term reasons and long term terms reason off one another. In conjunction with this was the interplay between individual student motivators – both intrinsic and extrinsic. These motivational factors also shifted and morphed over the duration of the course. As previously noted, it would be interesting to investigate the concept of social presence in the modified use of a discussion based tool. Does the curtailment of the depth of the tool support the depth of social presence or interaction? Does the brevity of use limit the depth of social interaction or connectedness that students feel? Does this limited aspect of social presence limit the learning that can occur? Indeed the questions that can be elicited from this aspect of this investigation are numerous and should be explored further. In the same vein, issues related to student voice surfaced. Online discussion as has been noted promotes and helps students develop a voice. Can student develop a similar voice when using a discussion-based tool in this fashion? Issues of community and discussion fostering community need to be explored. Does some sort of commonality
need to exist prior to community being established? How do you create a base line for community experience – those who felt like outsiders were not of the major though they were part of the online community? Regarding ‘voice’ and trusts on posts I found it incredibly interesting that while students grew to trust self and opinions through using the discussion based tool – they did not grow to trust the postings of each other. Investigating the root of this might be enlightening.

Certainly an aspect of this investigation that goes against the literature related to online discussion and constructivist thinking is that this discussion based tool was used to promote convergent thinking. The literature espouses that online discussion is tool that can and does promote divergent thinking. I would offer that while the tool can and does support divergent thinking – the premise for this capability is that online discussion also promotes and supports the underpinning fundamentals. Those are that online discussion supports deeper and more reflective thinking, and provides opportunities and potential for deeper understanding. I should also point out that at the heart of constructivism is the idea that learners need to construct their own knowledge and understanding of the world – to make sense of the world. It may appear that at first glance that this idea of fostering convergent thinking is antithetical to constructivist principles, and again against the purpose of discussion based tools. However, it should be noted that there also needs to be a starting point from which learners begin. Before a learner can construct information, they need to have an understanding of the building blocks they need to use. Perhaps this use of a discussion based tool is an example of how we can support and lay the
foundation for constructivist exploration in a more timely fashion than even in a guided discovery environment.

Various aspects related to time became apparent over the course of this investigation. A discussion based tools affords the opportunity for students to control aspects related to time and their interactions with content materials. It may be a of value to consider this aspect of time related to information overload and control, ownership, and learning as well as time on task.

A curious finding of this study is the repetitive comment across all learning preferences that “I should have used it more”, ‘it would have helped me more had I used it more.” These comments are interesting in that it makes me ask – what is needed to overcome this ‘use’ barrier? What is at the root of this belief? What are the factors that lead to this belief? Is it possible to motivate and scaffold learners over this barrier? As we have noted earlier there were various facets related to persistence. Some of these aspects of persistence were attributed to motivation, and some were attributed to community and peer learning. Peer learning has the potential to shift the focus and onus of learning onto the learner. As documented in this study, learners not comfortable with looking to themselves to direct their own learning. How do we begin to foster and support this shift of focus and scaffold learners to be able to keep pace with this shifting paradigm in education? Research that keys into this question may provide valuable information related to learning in these environments.
Also curious is the individual case comment related to gender and learning. I bring this issue forward for several reasons. First, it is already a topic of research and investigation. And second, the factors surrounding this issue of gender and learning, in this case, do introduce several pertinent questions that may enhance the literature. Specifically, it would be interesting to investigate the ideas of persistence in various learning environments. Under what conditions do learners persist in learning? Are there gender differences regarding persistence on the whole? Is there a true difference of perception in the locus of responsibility for learning? Is there a gender difference in where students place the responsibility to success and failure in learning or is that a result of learning preference? These issues are ripe for exploration and may add interesting data to the information base we already possess.

In sum I would offer that this investigation supports the modified use of an online discussion based tool as its use can support student learning. There are ways to utilize the tool without its use being overly burdensome to both instructors and students. However, to effectively design and orchestrate this use in these environments, more research and study need to be conducted in the areas touched on by this investigation. I believe it may be that modified use does not translate to limited learning as seen in some of the findings discussed in this chapter. However, further exploration is necessary to begin to build a literature base that addressed this modified use issue more directly in order to help inform how faculty may utilize and exploit these discussion based tools to further support and enhance student learning.
References


Anonymous. (2001). Identifying Faculty Satisfaction in Distance Education. *Distance Education Report, 5*(22), 1-2.


Hara, N., & Kling, R. (1999). Student's Frustration with a Web-Based Distance Education Course. *First Monday, 4*(Number 12).


Howland, J. L., & Moore, J. L. (2002). Student Perceptions as Distance Learners in Internet-Based Courses. Distance Education, 23(2).


the American Society for Engineering Education Annual conference and Exposition.


Appendix A

Section 1: Demographics and Computer Use

In an effort to understand and interpret the data that will be collected, I would ask you to provide me with the following information. It will not be shared with anyone. Please be as candid as possible.

Age:      Gender:      Area of Interest/Major:

How long have you been using computers?

Please indicate how many hours a week (hr/wk) you spend using a computer

> 40      20-39      10-19      1-9      <1

Please indicate for each category what percentage of your time is spent using the computer for:

Work      School/Studying      Personal

Have you ever used an online threaded discussion or bulletin board? If so, please explain and describe.

How would you describe your online discussion experience?

Have you ever taken a course where you used an online threaded discussion or bulletin board?

Did you find the discussion activities helpful? Why or why not.
Section 2: Index of Learning Styles

DIRECTIONS
Enter your answers to every question on the ILS scoring sheet. Please choose only one answer for each question. If both "a" and "b" seem to apply to you, choose the one that applies more frequently.

1. I understand something better after I
   a) try it out.
   b) think it through.

2. I would rather be considered
   a) realistic.
   b) innovative.

3. When I think about what I did yesterday, I am most likely to get
   a) a picture.
   b) words.

4. I tend to
   a) understand details of a subject but may be fuzzy about its overall structure.
   b) understand the overall structure but may be fuzzy about details.

5. When I am learning something new, it helps me to
   a) talk about it.
   b) think about it.

6. If I were a teacher, I would rather teach a course
   a) that deals with facts and real life situations.
   b) that deals with ideas and theories.

7. I prefer to get new information in
   a) pictures, diagrams, graphs, or maps.
   b) written directions or verbal information.

8. Once I understand
   a) all the parts, I understand the whole thing.
   b) the whole thing, I see how the parts fit.

9. In a study group working on difficult material, I am more likely to
   a) jump in and contribute ideas.
   b) sit back and listen.

10. I find it easier
    a) to learn facts.
    b) to learn concepts.

11. In a book with lots of pictures and charts, I am likely to
    a) look over the pictures and charts carefully.
    b) focus on the written text.

12. When I solve math problems
    a) I usually work my way to the solutions one step at a time.
    b) I often just see the solutions but then have to struggle to figure out the steps to get to them.

13. In classes I have taken
    a) I have usually gotten to know many of the students.
    b) I have rarely gotten to know many of the students.

14. In reading nonfiction, I prefer
    a) something that teaches me new facts or tells me how to do something.
    b) something that gives me new ideas to think about.
15. I like teachers
   a) who put a lot of diagrams on the board.
   b) who spend a lot of time explaining.

16. When I’m analyzing a story or a novel
   a) I think of the incidents and try to put them together to figure out the themes.
   b) I just know what the themes are when I finish reading and then I have to go back and
      find the incidents that demonstrate them.

17. When I start a homework problem, I am more likely to
   a) start working on the solution immediately.
   b) try to fully understand the problem first.

18. I prefer the idea of
   a) certainty.
   b) theory.

19. I remember best
   a) what I see.
   b) what I hear.

20. It is more important to me that an instructor
    a) lay out the material in clear sequential steps.
    b) give me an overall picture and relate the material to other subjects.

21. I prefer to study
    a) in a study group.
    b) alone.

22. I am more likely to be considered
    a) careful about the details of my work.
    b) creative about how to do my work.

23. When I get directions to a new place, I prefer
    a) a map.
    b) written instructions.

24. I learn
    a) at a fairly regular pace. If I study hard, I’ll “get it.”
    b) in fits and starts. I’ll be totally confused and then suddenly it all “clicks.”

25. I would rather first
    a) try things out.
    b) think about how I’m going to do it.

26. When I am reading for enjoyment, I like writers to
    a) clearly say what they mean.
    b) say things in creative, interesting ways.

27. When I see a diagram or sketch in class, I am most likely to remember
    a) the picture.
    b) what the instructor said about it.

28. When considering a body of information, I am more likely to
    a) focus on details and miss the big picture.
    b) try to understand the big picture before getting into the details.

29. I more easily remember
    a) something I have done.
    b) something I have thought a lot about.

30. When I have to perform a task, I prefer to
    a) master one way of doing it.
    b) come up with new ways of doing it.
31. When someone is showing me data, I prefer
   a) charts or graphs.
   b) text summarizing the results.
32. When writing a paper, I am more likely to
   a) work on (think about or write) the beginning of the paper and progress forward.
   b) work on (think about or write) different parts of the paper and then order them.
33. When I have to work on a group project, I first want to
   a) have “group brainstorming” where everyone contributes ideas.
   b) brainstorm individually and then come together as a group to compare ideas.
34. I consider it higher praise to call someone
   a) sensible.
   b) imaginative.
35. When I meet people at a party, I am more likely to remember
   a) what they looked like.
   b) what they said about themselves.
36. When I am learning a new subject, I prefer to
   a) stay focused on that subject, learning as much about it as I can.
   b) try to make connections between that subject and related subjects.
37. I am more likely to be considered
   a) outgoing.
   b) reserved.
38. I prefer courses that emphasize
   a) concrete material (facts, data).
   b) abstract material (concepts, theories).
39. For entertainment, I would rather
   a) watch television.
   b) read a book.
40. Some teachers start their lectures with an outline of what they will cover. Such outlines are
   a) somewhat helpful to me.
   b) very helpful to me.
41. The idea of doing homework in groups, with one grade for the entire group,
   a) appeals to me.
   b) does not appeal to me.
42. When I am doing long calculations,
   a) I tend to repeat all my steps and check my work carefully.
   b) I find checking my work tiresome and have to force myself to do it.
43. I tend to picture places I have been
   a) easily and fairly accurately.
   b) with difficulty and without much detail.
44. When solving problems in a group, I would be more likely to
   a) think of the steps in the solution process.
   b) think of possible consequences or applications of the solution in a wide range of areas.

Appendix B

Questionnaire Guide For The First Phase of Data Collection

1. While engaged in the discussion forum, were you: doing other things, using support books, resources, internet, other?

2. Compare/contrast your perceptions and feelings related to the other activities and tools (instructional strategies) this course employed.
   a. Fun/Burdensome
   b. Effective use of time/Waste of time
   c. Time use
      i. On task, composing messages, using support resources on/off line, who they responded to/why
      ii. Task related: using support resources on/off line
      iii. Off task: surfing, listening to music
   d. How was this experience perceived to be different from face to face class interaction

3. What is/was the context and extent of the social engagement in which you were involved
   a. Were ‘relationships/rapports’ built with others online?
   b. Do you feel these relationships impacted your learning?

4. Describe your interactions with the discussion forum. How motivated were you to interact with your classmates questions/comments? Which interactions were most motivating and why? What compelled you to interact with the discussion forum and why? What made interacting with the discussion forum different than face to face?

5. Tell me and explain how you think interacting with the discussion forum did/did not impact your learning process in this course. Consider why this might/might not have occurred.
   a. Was this an effective strategy? Why/Why not
   b. Can you relate the strategies effectiveness to how you learn and how this tool did/did not impact the way you learn
   c. How do you feel the discussion forum met/fell short of the way you learn and process information

6. Did your interaction with the forum change or evolve over time during the course of the semester? How so? Please provide as much detail as possible.

7. What did you like best about interacting with the discussion forum/What did you like least about interacting with the discussion forum

8. How do you feel the discussion forum could best be improved for you?
Appendix C

Questionnaire Guide For The Second Phase of Data Collection

- REPEAT what is learning, how do you define learning

1. Do you have any general comments/statement about the discussion board at this time?
2. What were your expectations of the discussion forum? Where those expectations met? Why? or Why not?
3. Were you satisfied with the performance of the discussion forum? Why? Or Why not?
4. How would you define learning?
5. How do you know if you have learned?
6. Do you think the discussion forum helped you learn the content better? Why? Or Why Not?
7. Was it easy to use the discussion forum? Why? or why Not?
8. What was your understanding of why the discussion board was used in this class?
9. Did the discussion forum improve your understanding of the basic concepts in the course? How so?
10. Did the discussion board help you in learning new concepts? Why? or Why Not?
11. Did the discussion forum have any impact on how you value your own opinion? How/Why/Not
12. Did the discussion forum have any impact on how you value the opinion of others? How/Why/Not
13. What major concepts did you learn or were clarified through the discussion forum?
14. Overall what value did the discussion forum hold for you? Why/Describe
15. Did the discussion forum help you identify the major concepts that were to be learned for the course? Describe.
16. Do you feel any changes have taken place for you due to you engagement with the discussion forum?
# Appendix D

## Compiled Survey Tables

### ALEXA - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

**Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>F</td>
<td>10</td>
<td>10 to 19</td>
<td>0% - 75% - 25%</td>
</tr>
</tbody>
</table>

Have you ever used an online discussion tool? Yes, for an inquiry class
How would you describe your experience? Very Beneficial
Have you ever used an online discussion tool in a course? Yes
Did you find the online discussion activities helpful? Yes

Total Posts: 2.79% of total / 0.04 posts per day

### REUBEN - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

**Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Male</td>
<td>8 Years</td>
<td>1 to 9</td>
<td>2% - 48% - 50%</td>
</tr>
</tbody>
</table>

Have you ever used an online discussion tool? Yes (this class)
How would you describe your experience? Neutral
Have you ever used an online discussion tool in a course? Yes (this class)
Did you find the online discussion activities helpful? No, I do not feel confident with student answers

Total Posts: 6.15% of total / 0.08 posts per day
### VICKI - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

**Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Female</td>
<td>14</td>
</tr>
</tbody>
</table>

**Hours Used Per Week**

<table>
<thead>
<tr>
<th>1 to 9</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5% - 85% - 10%</td>
</tr>
</tbody>
</table>

How you ever used an online discussion tool

<table>
<thead>
<tr>
<th>Only this class</th>
</tr>
</thead>
</table>

How would you describe your experience

<table>
<thead>
<tr>
<th>I have not posted yet</th>
</tr>
</thead>
</table>

Have you ever used an online discussion tool in a course?

<table>
<thead>
<tr>
<th>No, just this course</th>
</tr>
</thead>
</table>

Did you find the online discussion activities helpful?

<table>
<thead>
<tr>
<th>n/a</th>
</tr>
</thead>
</table>

Total Post: 0.00% of total / 0.00 posts per day

### VERA - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

**Active/Reflective – Sensing/Intuitive – Visual/Verbal – Sequential/Global**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Female</td>
<td>12</td>
</tr>
</tbody>
</table>

**Hours Used Per Week**

<table>
<thead>
<tr>
<th>10 to 19</th>
<th>% On work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10% - 50% - 40%</td>
</tr>
</tbody>
</table>

Have you ever used an online discussion tool

<table>
<thead>
<tr>
<th>Not before this class</th>
</tr>
</thead>
</table>

How would you describe your experience

<table>
<thead>
<tr>
<th>n/a</th>
</tr>
</thead>
</table>

Have you ever used an online discussion tool in a course?

<table>
<thead>
<tr>
<th>Am using it now</th>
</tr>
</thead>
</table>

Did you find the online discussion activities helpful?

<table>
<thead>
<tr>
<th>Not sure yet</th>
</tr>
</thead>
</table>

Total Post: 0.28% of total / 0.00 posts per day
### Seth - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

| Active/Reflective – Sensing/Intuitive – Visual/Verbal – **Sequential/Global** |
|---|---|---|
| 1B – 1A – 3A – 9A |

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Male</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours Used Per Week</th>
<th>% On work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 19</td>
<td>0% - 100% - 0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever used an online discussion tool</th>
<th>Only for this class</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you describe your experience</td>
<td>Okay</td>
</tr>
<tr>
<td>Have you ever used an online discussion tool in a course?</td>
<td>Yes, this class</td>
</tr>
<tr>
<td>Did you find the online discussion activities helpful?</td>
<td>Somewhat … but it was sometimes a hassle</td>
</tr>
</tbody>
</table>

Total Posts: 0.28% of total / 0.00 posts per day

### Gloria - ILS Inventory Score

(pairs options are noted as A/B in each – bolded data indicates participants dimension preferences)

| Active/Reflective – Sensing/Intuitive – Visual/Verbal – **Sequential/Global** |
|---|---|---|
| 5A – 5A – 9A – 5B |

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Years of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Female</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours Used Per Week</th>
<th>% On Work – School – Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 to 39</td>
<td>0% - 35% - 65%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever used an online discussion tool</th>
<th>Yes (in this class)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you describe your experience</td>
<td>Not a huge help but they helped a little</td>
</tr>
<tr>
<td>Have you ever used an online discussion tool in a course?</td>
<td>Yes (this course)</td>
</tr>
<tr>
<td>Did you find the online discussion activities helpful?</td>
<td>No, I think it causes more work</td>
</tr>
</tbody>
</table>

Total Posts: 3.63% of total / 0.05 posts per day
Appendix E

Extra Credit Points Awarded for Using Course Bulletin Board
Psychology 201

1 Point to post a question (unique)
2 Points to post an answer

Fall 2005
24 Students
7 no posts
17 posted an average of 8.5 EC, SD=7.15, Min = 2, Max =20

Fall 2004
24 Students
6 no posts
18 posted an average of 13.55 EC, SD=12.97, Min = 1, Max = 50
  (With outlier of 50 removed, mean EC= 11.41, SD=9.53, Max=32)

Fall 2003
11 Students
7 no posts (this was a weird class)
4 posted and average of 13.35 EC, SD =15.37, Min=1, Max=35

Before Fall of 2003 there was a maximum of 3 points per quiz: One question and
one answer.
Spring 2003
8 Students
8 posted an average of 4.25 EC, SD=2.91, Min=1, Max = 9

Fall 2002
15 students
6 no posts
9 posted an average of 4.33 EC, SD=4.66, Min=1, Max=13

Spring 2002
23 students
7 no posts
16 posted and average of 5.06 EC, SD=3.13, Min=1, Max 10

Fall 2001
21 students
12 no posts
9 posted and average of 9.00 EC, SD=7.58, Min=1, Max = 19
Appendix F

INFORMED CONSENT FORM FOR SOCIAL SCIENCE RESEARCH
The Pennsylvania State University

Title of Project: How Students Perceive Online Discussion Impacts Their Learning

Principal Investigator: Roxanne Toto
201 Hammond Building
University Park, PA 16802
(814) 865-4017; rtoto@psu.edu

Advisor: Dr. Jill L. Lane
301 Rider II
University Park, PA 16802
(814) 865-9785; jll191@psu.edu

1. Purpose of the Study: The purpose of this study is to gain a better understanding of how online discussion impacts student learning in higher education.

2. Procedures to be followed: In addition to normal course work and interaction with a discussion board, you will be asked to:
   - Complete a survey in the beginning of the course that will ask questions to gather information related to demographics, technology use, background course knowledge, and learning styles, this will take approximately 15 to 30 minutes
   - Participate in an interview and/or focus group conducted face to face, and/or by e-mail, and/or by phone that will be conducted at mid-semester to gather detailed and elaborated information; this will take approximately 15 to 30 minutes
   - Complete a survey at the end of the course to gather information related to students perception and experience using the discussion board, how this experience may have impacted their learning, and how the students understanding of overall course concepts may/or may not have changed, this will take approximately 15 to 30 minutes
   - Participate in an interview and/or focus group conducted face to face, and/or by e-mail, and/or by phone that will be conducted at the end of the semester to gather more detailed and elaborated information, this will take approximately 15 to 30 minutes
   - These interviews, with your consent, will be recorded on audiotape for the purpose of making a transcript. This transcript will be used to report common themes regarding how online discussion impacted your learning.
   - If you agree to take part in this research, you are allowing me, the Principal Investigator, access to your assignments in this course.

3. Discomforts and Risks: There are no risks in participating in this research beyond those experienced in everyday life. Some of the questions may be personal and might cause slight discomfort.

4. Benefits: You may learn more about yourself by participating in this study. You might gain a better understanding of how you learn and how you might take advantage of learning
opportunities presented to you in online discussion. You might also realize that others have had similar experiences as you have had.

The results of this research will lead to a better understanding of how students perceive online discussion impacts their learning. It is hoped that this information may provide insight into how to better design and develop online discussion to promote learning.

5. **Duration:** This study will last the entire semester.

**Statement of Confidentiality:** Only the principal researcher, Roxanne Toto, will know your identity.
- If participants speak about the contents of a focus group outside the group, it is expected that they will not reveal to other people what individual participants said.
- Because some procedures may involve email, we have implemented all available technologies to protect your confidentiality; however, Internet and email security have their limitations and no absolute guarantees can be made that a third party cannot gain access to the data.
- Data and transcripts, both paper and electronic versions, will be stored and secured in a locked file cabinet and/or on a password protected computer and will be erased no later than five years from the end date of this study. No one but the researcher will have access to this data.
- The Office for Research Protections and the Social Science Institutional Review Board may review records related to this project.
- In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

6. **Right to Ask Questions:** You can ask questions about this research. Contact Roxanne Toto at 865-4017, or e-mail me at rtoto@psu.edu with questions. If you have questions about your rights as a research participant, contact The Pennsylvania State University’s Office for Research Protections at (814) 865-1775.

7. **Compensation:** There is no compensation for participating in this research study.

8. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

You must be 18 years of age or older to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this signed and dated consent for your records.

______________________________________________
Participant Signature       Date

______________________________________________
Person Obtaining Consent      Date
VITA

Roxanne Toto

EDUCATION

2006  Ph. D.  The Pennsylvania State University
       Instructional Systems

1996  M. S.  Philadelphia University
       (Philadelphia College of Textiles and Science)
       Instructional Design and Technology

1977  B. A.  Temple University
       American Studies

HIGHER EDUCATION EXPERIENCE

2003-Present  Instructional Designer/eLearning Support Specialist
              Engineering Instructional Services
              The Pennsylvania State University

1999-2003  Graduate Assistant/Instructional Designer
              Education Technology Services
              The Pennsylvania State University

1997-1999  Graduate Assistant
              Instructional Systems Department
              The Pennsylvania State University

1997-2001  Instructional Designer/Distance Learning Consultant
              International Online Seminar
              Saarland University
              Institute for Computer Science & Law, Germany
              Centre for Future Studies/Stockholm University
              and Royal Institute of Technology, Sweden
              Foundation for Research and Technology - Hella
              Institute of Applied & Computational Mathematics, Greece
              Florida Education Centre
              University of Valencia and
              the Polytechnic University of Valencia, Valencia

1995-2001  Distance Learning Support Specialist
              The Philadelphia College of Textiles and Science