ABSTRACT

SMITH, BETHANY VIRGINIA. Use of Online Educational Social Networking in a School Environment. (Under the direction of Dr. Lori B. Holcomb, Dr. Kevin Brady, Dr. Kevin M. Oliver).

The purpose of this mixed-methods research study was to investigate the use of a closed social network, utilizing Ning, in an online educational environment. The research question driving this study was, does a student-centered online tool, such as Ning, foster knowledge construction through discussion boards more than a class-focused online tool, such as a traditional CMS? The participants were students enrolled in one of two online graduate education courses, one in a traditional Course Management System (CMS), and another class that utilized Ning for their discussions. Discussion Board postings from the Ning group were categorized based on the Interaction Analysis Model (IAM) developed by Gunawardena, C. N., Lowe, C., & Anderson, T. (1997), to assess knowledge construction. Survey instruments and interviews were conducted to provide additional insight into the use of a social network in an educational context.
Use of Online Educational Social Networking in a School Environment.

by
Bethany V. Smith

A thesis submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the degree of Master of Science in Instructional Technology

Raleigh, North Carolina

2009

APPROVED BY:

_______________________________
Dr. Lori B. Holcomb
Committee Co-Chair

______________________________
Dr. Kevin P. Brady
Committee Co-Chair

______________________________
Dr. Kevin M. Oliver
DEDICATION

To my son, Evan Brent Smith, who was born during my graduate school program. You have taught me so much about love and enjoying life.

To my husband, C. Brent Smith, who’s unwavering support and understanding has made it possible for me to complete my graduate degree. I could not have done any of this without you beside me.

To my father, Eugene Edward Norris, who instilled a love of technology and encouraged my curiosity at an early age. He always made me feel that I could do anything.

To my mother, Garnetta Virginia Norris, who taught me to hold myself high and to believe in the power of what is possible.

To my brother, Tyler Eugene Norris, who inspired me to become a teacher in the first place.
BIOGRAPHY


Bethany attended North Carolina State University, and graduated with a Degree in Technology Education, with a minor in Graphic Communication in the Spring of 1999. She married C. Brent Smith in the June following graduation. Her first teaching job was at Green Hope High School in Morrisville, NC where she taught Printing and Graphics, as well as Newspaper and Yearbook.

In 2001, The Smith’s moved to Baltimore, MD, where Bethany took a job in the private sector as a technology trainer for Absolute Quality, Inc.

Upon returning to Raleigh in 2004, Bethany began working at NC State for Dr. Eric Wiebe on the Glaxo Smith Kline funded VISE project. It was while working on this research project that Bethany decided to pursue her master’s degree.

Bethany is currently the Assistant Director for Learning Technologies at the College of Education at NC State University.
ACKNOWLEDGMENTS

I would not be in graduate school if it were not for the encouragement of Dr. Eric Wiebe and Dr. Glenda Carter during my work on their research project. They helped plant the seed that began this journey. I would also like to acknowledge Dr. Lisa Grable who has inspired and encouraged me to pursue my passion.

I would like to thank my advisor Dr. Lori Holcomb who has been my champion since she began working at this university. She has always encouraged me and pushed me to do the best of my ability. I am grateful for the time and effort she has put into my graduate program and thesis.

I would also like to thank the rest of my committee, Dr. Kevin Oliver and Dr. Kevin Brady. Your advice and council have been invaluable during this process. Thank you for always having my best interest at heart.

The College of Education at NC State University has supported and encouraged me ever since I entered their doors in 1997. In particular, my supervisor Andy Raynor, has been supportive and understanding of my graduate school process. I will forever be grateful for the opportunities I have been given by studying and working at this institution.
# TABLE OF CONTENTS

List of Tables.................................................................................................................................................... viii

List of Figures..................................................................................................................................................... ix

CHAPTER 1: INTRODUCTION.............................................................................................................................. 1

1.1 Context of the Problem............................................................................................................................ 1
1.2 Research Question........................................................................................................................................ 4
1.3 Significance................................................................................................................................................ 5
1.4 Limitations................................................................................................................................................ 5
1.5 Key Terms................................................................................................................................................ 6

CHAPTER 2: REVIEW OF LITERATURE................................................................................................................ 8

2.1 Introduction................................................................................................................................................ 8
2.2 Social Networking....................................................................................................................................... 9
   2.2.1 Student Use....................................................................................................................................... 11
   2.2.2 Faculty Use....................................................................................................................................... 14
   2.2.3 Ning: The Walled Garden Approach................................................................................................. 16
2.3 Distance Education and Discussion Boards.............................................................................................. 17
2.4 Motivation.................................................................................................................................................. 22
2.5 Creating a Community............................................................................................................................... 23

CHAPTER 3: METHODOLOGY............................................................................................................................ 26

3.1 Introduction............................................................................................................................................... 26
4.5.4 Building a Learning Community ............................................ 61
4.5.5 Future Use of Ning ................................................................. 62
4.5.5 Summary .................................................................................. 62

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 Introduction .................................................................................. 64
5.2 Methodology .................................................................................. 64
5.3 Research Findings .......................................................................... 65
5.3 Limitations ..................................................................................... 70
5.4 Recommendations for Future Research ......................................... 71
5.5 Implications for Practice ................................................................. 72

REFERENCES ..................................................................................... 73

APPENDIX ............................................................................................ 78

Appendix A: IRB Request .................................................................... 79
Appendix B: Participant Informed Consent ........................................... 83
Appendix C: Attitudinal Survey ............................................................. 85
Appendix D: Motivation Survey ............................................................. 89
Appendix E: Interview Questions .......................................................... 90
Appendix F: Results of Mann-Whitney U tests ..................................... 91
## LIST OF TABLES

Table 1.1: Comparison of Tools ................................................................. 2
Table 2.1: Comparison of Ning & Facebook toolset ................................. 13
Table 2.2: Credit Hours and Contact Hours by College, Spring 2008 ........ 18
Table 3.1: Summary of Research .............................................................. 27
Table 3.2: Interaction Analysis Model (IAM) phase definitions ............... 32
Table 4.1: Response Rate per participant group ..................................... 36
Table 4.2: Attitudinal Survey, Internet & Advanced Skill questions ......... 36
Table 4.3: Attitudinal Survey, Communication questions ....................... 37
Table 4.4: Construct 1: Communication Survey Items ............................ 40
Table 4.5: Construct 2: Internet Survey Items ........................................ 41
Table 4.6: Construct 3: Basic Skills Survey items .................................... 42
Table 4.7: Construct 4: Advanced Skills Survey items ............................ 42
Table 4.8: Motivation Results Response Rate ........................................ 43
Table 4.9: Motivation Survey Results from Ning Group ......................... 44
Table 4.10: Motivation Survey Results from Traditional CMS group ....... 45
Table 4.11: T-test of Motivation survey results between Ning and CMS group 46
Table 4.12: Discussion Thread #8 .............................................................. 51
Table 4.13: Interview participants’ info ................................................. 54
Table 4.14: Theme emergence and frequency counts ............................ 57
LIST OF FIGURES

Figure 4.1: Social Networking System Membership................................................................. 38
Figure 4.2: Number of Discussions per week........................................................................... 47
Figure 4.3: Discussions by Participant..................................................................................... 48
Figure 4.4: Postings in IAM Phase.......................................................................................... 49
Figure 4.5: Phase of Discussions by week................................................................................ 50
CHAPTER 1: INTRODUCTION

Context of the Problem

Asynchronous bulletin boards have been around since the emergence of the Internet in the late 1970s (Moschovitis, Poole, Schuyler, & Senft, 1999). On these boards, users discuss topics of interest with one another. They were self-regulated with members of the group ascending to become moderators and facilitators. The earliest Internet based bulletin board systems were hosted by companies such as Compuserve and Prodigy (James, Wotring, & Forrest, 1995). The connections made through these boards laid the groundwork for the Social Networking Systems (SNS) we know today, such as Facebook and MySpace. Asynchronous discussions that used to primarily be topic based are now profile-based and user initiated in a SNS (Selwyn, 2007).

Discussion boards provide an open communal area for discourse. These boards are threaded hierarchical conversations that occur in an asynchronous environment. Asynchronous communication implies that users do not need to be simultaneously online in order for discussion to occur. E-mail, weblogs, and listservers are all examples of asynchronous communication. Synchronous communication implies that users are online at the same time. Internet Relay Chat (IRC), AOL Instant Messenger, Skype and iChat are examples of synchronous communications. Users converse via text, audio, or video while online. The primary focus of this research is on asynchronous communication.
Educators have adopted discussion boards and incorporated them in the advent of Course Management Systems (CMS), such as Blackboard and Moodle, to facilitate online learning. Instructors utilize discussion boards to promote critical thinking and knowledge construction in their classes (Marra, Moore, & Klimczak, 2004). Vygotsky's (1978) research indicates that cognitive development requires social interactivity. Students must discuss and debate areas of study in order for the concept to be comprehended. Although discussion boards are designed with this type of discourse in mind, they are often interpreted as cold and impersonal due to the stilted rhetoric between instructors and students (Tu, 2000).

Stand-alone and CMS discussions tend to be very focused and lack the personal touch and networking capacity that SNS offer. Instructors may pose a question in the board and each student posts a response. These posts are not really interactions at all, but merely question and answer sessions. One might think it is the nature of asynchronous discussions that cause this problem, yet SNS such as Facebook thrive on these postings. Users post on not only their own profile pages, but also their friends' and group pages. A comparison of typical SNS, traditional CMS, and the emergent CMS Moodle is seen in Table 1.1.

Table 1.1.

<table>
<thead>
<tr>
<th>Comparison of Tools</th>
<th>Tools</th>
<th>SNS</th>
<th>Traditional CMS</th>
<th>Moodle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forum</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Blog</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Table 1.1 Continued

<table>
<thead>
<tr>
<th>Feature</th>
<th>Moodle</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Sharing</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messaging</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wiki</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>RSS</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Chat</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Calendar</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Tagging</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own Brand &amp; Visual Design</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Realtime Activity Stream</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Groups</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Friends</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profile Pages</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>File sharing</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Although Moodle is starting to incorporate SNS-like tools, what separates an SNS from a CMS, is the ability for students to create and structure their own learning environment. Users in SNS can generate their own discussions and create their own groups, while in a CMS, these are dictated by the instructor.

Utilizing a tool that is user-centered, rather than class centered has the potential to engage students more than a traditional CMS. If students enjoy using the tool and see the advantages of it, they may be more inclined to use it, and therefore be more engaged in the class. This type of tool can encourage community building that extends outside of the classroom.
Ozkan & McKenzie (2008) argue that we need to engage students with a more 21st Century approach to teaching and social networking can provide such a venue. Today’s students are already immersed in the world of social networking. Instructors need to recognize that this emergent technology when utilized by teachers can create a more positive learning experience, by working with students in familiar territory (Mazer, Murphy, & Simonds, 2007).

Advocating for social networking sites in education is mired with preconceptions of inappropriate content and cyber bullying (Ewbank, Carter, & Foulger, 2008; Griffith & Liyanage, 2008). Given the advantages of SNS, as well as the legitimate concerns for student privacy and safety, how can we leverage social networking in the classroom?

There is a lack of research on the use of closed Social networks, such as those created by using ELGG or Ning in education. These have the potential to combine the best of discussion groups with SNS, by creating a user-centered experience that facilitates interactions in a secure internal site. From this study we endeavor to determine if using social networks in distance education is a viable solution and possible replacement of traditional discussion boards.

Research Question

Does a student-centered online tool, such as Ning, foster knowledge construction through discussion boards more than a class-focused online tool, such as a traditional CMS?
Significance

This is a new area of research for the education community. Although prior research exists for social networking, there is very little available on utilizing this tool in higher education, and almost none on using SNS with pre-service teachers or graduate students in education. The use of Ning as a social networking tool has not previously been researched. This study can provide a baseline of where to begin when researching the use of social networking tools in education, and primarily in courses presented from a distance. It also endeavors to provide information to instructors that plan on incorporating social networking systems, and specifically a closed network such as Ning, and how to utilize it in their teaching. This research can add to the expanding body of work on social networking. It can also provide a new avenue for research in educational social networking utilizing the “walled garden” approach.

Limitations

This research investigates a classroom situation of utilizing a SNS, and therefore is limited by the number of students enrolled in a class. The same instructor taught both classes, and results may be biased by instructor use of the tool rather than the tool itself. The classes used in the sample are Instructional Technology classes, and therefore may find students are biased towards eagerly adopting new online tools. Although both classes are in Instructional Technology, they are not the same course and do not cover comparable material.
Key Terms

Social Networking Systems (SNS)

Social Networking Systems (SNS) by definition are socially based, and encourage users to make connections with one another. The majority of activity on a SNS occurs on individual's profile pages. Users can create and belong to interest groups. Popular SNS include Facebook, MySpace, and Classmates.com. The primary SNS for comparison purposes in this study is Facebook.

Course Management Systems (CMS)

Course Management Systems (CMS) provide instructors with a webspace that is only available to their students. This webspace can include documents, activities, web links, or discussion areas. CMS have become the primary form of delivering online content in distance education classes, and are used to supplement in-person classes as well. This research will reference traditional CMS, such as Blackboard or WebCT.

Facebook

Facebook is a SNS that enables users to create profile pages, make connections with others, AKA “friending,” and provide status updates.

Ning

Ning is a closed SNS that enables users to create their own mini-social network.

Asynchronous Discussion Boards

Asynchronous Discussion Boards, also known as threaded discussion boards, are boards that allow for users to post and for others to reply to those posts. They are
asynchronous because users do not need to be on simultaneously to interact with one another. The threads are created based on the posts and replies.

*Distance Education*

Distance Education is seen in this instance as any course taken off campus. Online courses are distance education courses taken online and do not require students to meet in person.

*Walled Garden*

The walled garden approach is a term used to describe walling off an area of the Internet for members only. In this research the term walled garden will be used to describe creating a closed social network.

*Community of Practice*

A community of practice is seen as a self-sustaining online group of users with similar interests.
CHAPTER 2: REVIEW OF LITERATURE

Introduction

The following chapter synthesizes the research and provides a background on social networking in general, including implications for faculty and student use, discussion boards in distance education, and establishing a learning community. Social Networking is a fairly recent addition to the research community, with the earliest research in 2003, with the work of Adamic, Buyukkotken, & Adars examining a social network on Stanford Universities’ campus. The main researcher in this field is danah boyd, who has been the first to officially define the makeup of a Social Networking Site. A few researchers, including Saunders and Selwyn, have started to use these tools in higher education, most notably Facebook, as a communication tool with students. The 2008 Society for Information Technology & Teacher Education (SITE) conference produced the first papers to discuss social networking with pre-service or in-service teachers, including the work of Ewbank, Carter, and Foulger as well as Ozkan and McKenzie. Faculty use of social networking has become a controversial issue surrounding the boundaries between student-instructor relations. The research in this area highlights the need for professionalism and understanding in an online environment.

Discussion board and distance education research on the other hand has much more breadth and depth in the educational research community. The use of discussion boards reaches back to the mid to late 1990s with Hilts (1998) and Palloff & Pratt...
In particular, the literature utilized in this review focuses on effective use of discussion boards, and how to encourage interaction between participants.

A review of the Community of Practice literature reveals the ultimate goal of any online networking site, to create and support a self-sustaining group of active participants working towards the same goal of communal understanding. Although a course discussion board attempts to create such a community, it is often short-lived and depends on instructor mediation. However, a few researchers have successfully transcended their class boundaries and have created a community of practice that sustains and supports their students after the semester is over.

This literature review is organized in the previously defined sections, Social Networking, both Student and Faculty use, Discussion Boards, Distance Education, and Communities of Practice.

**Social Networking**

Social Networking Sites (SNS), in a formal tool-based sense, have existed in various forms since 1997. boyd & Ellison (2007) define social network sites as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site. (p. 2)
These sites, such as classmates.com, are socially based and are primarily used to connect individuals. They have high usage rates among the 18-24 age group, and the 23-34 population is doubling every six months. One of the most popular of these sites is Facebook. As of February 2009, there were over 175 million users of Facebook around the world (Musil, 2009). Facebook does have academically-based roots, in that it was developed at Harvard University by undergraduate students to represent an online yearbook of current students. The purpose of its creators was of a social nature and was not intended, nor developed as an instructional tool (Selwyn, 2007). For the purpose of this research, Facebook will be the benchmark of SNS for comparison purposes.

The profile page that users create is vital to a social networking site. The majority of activity takes place on profile pages. All other pages within an SNS have connections back to user pages. Users are encouraged to “friend” others within the network with whom they have a relationship. This network of friends is displayed as a series of connections between users. The use of “friend” by an SNS can be ambiguous, in that it implies an intimacy that may not exist (boyd & Ellison, 2007). This is particularly striking in the educational realm. The notion of teachers and professors “friending” students may be uncomfortable and bordering on inappropriate.

Commenting on one another’s profile pages is the main communication venue in SNS, although other tools exist, including private messaging and chat functions. Groups and discussion boards are based on their associations with users and their networks. The user and their profile is central to a SNS (boyd & Ellison, 2007; Ozkan & McKenzie,
This is a stark contrast to Course Management Systems (CMS) utilized by instructors to deliver classes and facilitate information transfer online. CMS do not by default allow for users to generate their own discussion groups, create profile pages, or provide communication avenues outside of class discussions. However, CMS producers such as BlackBoard and Moodle have taken notice of the importance of these tools. Moodle offers profile pages, and the next generation of BlackBoard, Project NG, incorporates Web 2.0 as well as SNS connection strategies (Blackboard, 2008). They have recognized the importance for connections created outside the classroom.

The Horizon Report 2007, published by EDUCAUSE and the New Media Consortium, places SNS as one of the top technologies to look for in higher education in the next few years. “Social networking may represent a key way to increase student access to and participation in course activities” (Johnson, Levine & Smith, 2007, p. 8).

**Student Use**

Students are using Facebook to maintain relationships online that already exist in person. Of the 286 students that Ellison, Steinfield, & Lampe (2007) surveyed, 94% of them were users of Facebook, with the majority using it to not only converse with “offline” contacts, but also with fellow students.

Selwyn (2007) found that students relied on Facebook for peer communication about classwork, lectures, and exams. It was not only used as a place to vent concerns and issues with classes, but also to gain clarification on assignments and where lecture venues were located. Although Blackboard was available to them (as their discussions
indicated), they were using Facebook as a forum to ask questions, rather than the course tool given to them. As the author noted, given this resource’s functionality,

It is important for teachers to recognize how certain technologies, even those used largely by students, can positively affect student-teacher relationships. Facebook is a contemporary technological tool that can offer teachers and students a unique method to nurture the student-teacher relationships, which can ultimately create a positive learning experience for both parties. (p. 15)

Similarly, Saunders (2008) found that the pre-service teachers used SNS “to communicate with existing real life friends, acquaintances, and siblings through messages, wall posts, and uploaded images” (p. 2224). Yet, these students did not see Facebook as part of their professional selves. Several of the students had intentions of closing their Facebook account when they received a teaching position.

Pre-service teachers are at a particular disadvantage for continuing use of popular SNS. Teachers across the nation are strongly encouraged to remove themselves from these sites. They commonly contain personal details of teacher’s social life that are deemed inappropriate by their administrators. Although privacy settings are available, they are not always utilized. Several teachers have been rendered unemployed based on their personal MySpace or Facebook pages (Ewbank et al., 2008; Saunders, 2008). This disconnect between administration and the use of social networking can be bridged by using the “walled garden” approach to Internet tools.
The “walled garden” is a term coined by former TeleCommunications, Inc. founder, John Malone to describe a closed network that limits subscribers’ choices to a restricted range of content (Van Tassel, 2006). The concept of the “walled garden” is rooted in giving students the best of both worlds, the resources of the Internet, but in a protected area. The main issue most administrators raise with SNS pertains to protecting students’ privacy and preventing unwanted attention. It is not the tool itself they have concerns about, but how they can protect their students from those outside of their pervue. If a smaller version of a “Facebook type” site could be created, one which administrators had control and authority over, students could reap the benefit of a social networking tool, in the safety of their own “walled garden.”

Ning is one such tool. It was created to allow users to create their own mini-social network that met the needs of the community they supported, or wanted to build (Ning, 2008). Although it has many of the same attributes as Facebook, see Table 2.1, such as Comment Walls, Friends, Photo sharing, etc., Ning provides a smaller and more private group setting. The administrator, or creator of the Ning group, has the ability to include or exclude any users. The control over the population of the network is one of the main advantages for instructional use.

Table 2.1.

*Comparison of Ning & Facebook toolset.*

<table>
<thead>
<tr>
<th>Ning</th>
<th>Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment Wall</td>
<td>The Wall</td>
</tr>
</tbody>
</table>
Table 2.1 Continued

<table>
<thead>
<tr>
<th>Blog Post</th>
<th>Status Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latest Activity</td>
<td>News Feed</td>
</tr>
<tr>
<td>Photos</td>
<td>Photos</td>
</tr>
<tr>
<td>“My Page”</td>
<td>Profile</td>
</tr>
<tr>
<td>Friends*</td>
<td>Friends</td>
</tr>
<tr>
<td>Blog Post</td>
<td>Notes</td>
</tr>
</tbody>
</table>

*Nomenclature can be changed within each respective Ning network.

Faculty Use

University faculty are beginning to join the Facebook community as well. They themselves are connecting with friends and acquaintances, but also students in their classes and curriculum. Although there is no conclusive data on the amount of professors in Facebook or other SNS, the following provide a glimpse into its use by faculty.

Mazer, Murphy & Simonds (2007), researched the use of Facebook by professors at a large Midwestern university to determine how their role as instructor changed based on the relationship they developed with their students via Facebook. The Facebook interface facilitated an interaction between students and instructors that is not available in conventional tools used at universities. Typical interactions are constrained either by classroom-related discussions, or by the lack of tool availability.

What is the advantage to college faculty in using Facebook or other social networking resources? Current faculty websites are static, or Web 1.0. They are simply
deliverers of information; there is no room for interaction. Facebook and MySpace pages are built around social interaction. As Mazer et al. (2007) note,

On a teacher’s typical website, interaction may be limited as the webpage can be somewhat static. While teachers typically restrict their university websites to classroom-related discussions and activities, Facebook offers an alternative site to enhance their relational changes with students. (p.3) Instructors and students alike are able to discern more information about one another through exploring their SNS profiles (Griffith & Liyanage, 2008). Mazer et al. (2007) reason that the more students understand and connect with their instructors on a personal level, through the vehicle of a SNS, the more intrinsically motivated they are to participate in their class.

Yet, will students see faculty use of Facebook as an intrusion? Does academia feel that it is appropriate for faculty members to “friend” their students in such an environment? Hewitt & Forte’s (2006) research revealed that the students perceive Facebook to be primarily “owned” by students, and that faculty use is an intrusion. In addition, over one third of students felt that faculty should not be in Facebook at all. Selwyn (2007) agrees with this assessment:

Rather than attempting to appropriate Facebook for educationally ‘appropriate’ or ‘valid’ uses, or else regulate students’ use through coercion or surveillance, university authorities and educators are perhaps best advised to allow these practices to continue unabated and firmly ‘backstage’ (p.21).
Not only would a “walled garden” approach protect students, it would also allow a neutral ground for students and faculty to meet. Many undergraduate students feel that their relationship with instructors should be on a more professional level (Hewitt & Forte, 2006). In this separate area the discourse between instructors and their students could be facilitated by a SNS. Students and faculty alike could more selectively reveal aspects of themselves appropriate to the image they wish to maintain in an educational setting (Mazer et al., 2007).

*Ning: The Walled Garden Approach*

Ning is an alternative to the more public MySpace and Facebook SNS. Created by Marc Andersson, the founder of Netscape, and Gina Bianchini, it was designed to allow users to create their own social networking space (Wikipedia, 2008). As of October 2008, there were over 500,000 social networks on Ning (The Ning Blog, 2008). Several different types and ranges of networks exist on Ning, from cake decorators, to musical interests, to education pursuits. The lure of a product like Ning is the ability to create a unique environment to which users may belong and in some cases exert control. As the administrator of a network, one can make the network be as public or private as needed. This allows for a “walled garden” approach to Internet usage.

The Walled Garden analogy describes the use of the Internet (a large expansive area) in a more secluded fashion, a “walled garden.” Although this phrase is most commonly used to describe the detriment of online sites that do not have interaction with one another, for example having multiple IDs for separate websites and having to
reenter all information in each site, the walled garden approach has been embraced by
the education community as a way to provide students access to the Internet in a safe
environment. Several tools use this approach, including wikis and blogs that allow for
teachers to “wall off” or restrict interactions to only their students.

Ning has also embraced the “walled garden” approach in allowing
administrators to determine membership for their networks. This provides a
granularity of access that enables areas of the site to be secluded, while other sections
are available to the public. This incorporates the benefits of a social network without
any of the detriments that plague other SNS (Educause Connect, 2008).

The College of Education Ning was created in the Summer of 2008 and made
available to the faculty and students in the Fall. The Ning was introduced to the college
via an introductory e-mail from the Education Information Technology group, of which
this research is a part. Several introduction sessions were conducted with faculty by the
researcher during the Fall semester. As of October 2008, there were over 200 users
who had joined the site’s membership. The CED Ning is presently restricted to current
students, faculty, and staff. The principal investigator of this research is the creator and
administrator of the CED Ning.

Distance Education and Discussion Boards

Distance Education (DE) has taken various forms throughout the years, from
correspondence courses, to video, and TV based classes. Yet, these were very insular
studies and provided little interaction among students. In the 1990s, the advent of
interactive DE classes through tools such as Blackboard, sparked a new development in instructional delivery. Through the use of asynchronous discussion boards, students were able to not only interact with their instructors, but their fellow students as well. “Asynchronous communications are interactive, like discussion, but thoughtful, like written discourse” (Grisham & Wolsey, 2006, p.652).

DE has risen in popularity, in particular at NC State in the College of Education. Currently, at the university there are 29 programs that are delivered entirely online, nine of these programs are in the College of Education (NCSU DELTA, 2008). In the spring of 2008, NC State had 20,935 credit hours of distance education courses. There were a total of 362,247 credit hours for the entire university. 5.78% of all credit hours taught at NCSU are Distance Ed Credits. The College of Education at NC State had 3,459 of their 14,823 credit hours or 23.33% of their credit hours for the spring of 2008 (NCSU UPA, 2008). See Table 2.2. The majority of these courses are in the graduate level.

Table 2.2

*Credit Hours and Contact Hours by College, Spring 2008 (NCSU UPA, 2008)*

<table>
<thead>
<tr>
<th>College owning course</th>
<th>Credit Hour Sections</th>
<th>AGI Lower Level</th>
<th>Upper Level</th>
<th>Masters</th>
<th>Doctoral</th>
<th>Vet Med</th>
<th>Credit Hours Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stu Aff</td>
<td>7</td>
<td>-</td>
<td>447</td>
<td>72</td>
<td>-</td>
<td>-</td>
<td>519</td>
</tr>
<tr>
<td>CALS</td>
<td>77</td>
<td>97</td>
<td>1,081</td>
<td>1,066</td>
<td>561</td>
<td>28</td>
<td>2,833</td>
</tr>
<tr>
<td>Design</td>
<td>10</td>
<td>-</td>
<td>30</td>
<td>162</td>
<td>63</td>
<td>-</td>
<td>255</td>
</tr>
</tbody>
</table>
Table 2.2 Continued

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CED</td>
<td>74</td>
<td>-</td>
<td>8</td>
<td>1,074</td>
<td>1,951</td>
<td>426</td>
</tr>
<tr>
<td>COE</td>
<td>101</td>
<td>-</td>
<td>1,135</td>
<td>233</td>
<td>1,205</td>
<td>333</td>
</tr>
<tr>
<td>CNR</td>
<td>15</td>
<td>-</td>
<td>153</td>
<td>78</td>
<td>83</td>
<td>-</td>
</tr>
<tr>
<td>CHASS</td>
<td>71</td>
<td>-</td>
<td>3,327</td>
<td>2,285</td>
<td>125</td>
<td>-</td>
</tr>
<tr>
<td>PAMS</td>
<td>23</td>
<td>-</td>
<td>1,740</td>
<td>351</td>
<td>96</td>
<td>-</td>
</tr>
<tr>
<td>Textiles</td>
<td>32</td>
<td>-</td>
<td>134</td>
<td>135</td>
<td>78</td>
<td>3</td>
</tr>
<tr>
<td>COM</td>
<td>22</td>
<td>-</td>
<td>513</td>
<td>957</td>
<td>905</td>
<td>-</td>
</tr>
</tbody>
</table>

The central focus of many Distance Education courses, and several in-person courses as well, is online dialogue and communication. The primary vehicle for this computer-mediated communication (CMC) is the discussion board. Discussion boards provide for asynchronous communication between students in a course as well as their instructor. They typically surround a particular topic of the class and are commonly mediated by the instructor (Dennen & Wieland, 2007).

Discussion boards are just one of the tools available to instructors. Several other asynchronous tools can also be used, including wikis, weblogs, and more commonly e-mail. Synchronous tools, including those that are video or text based, as well as online meeting areas, are providing multiple avenues for student/instructor interaction (Tidwell & Walther, 2002). The focus of this study is to compare asynchronous discussion board tools in a distance education environment. However, as LaPointe and Gunawardena (2004, p. 83) note, “the adoption of CMC has far outpaced our understanding of it.”
Discussion board usage varies greatly by instructor, but they are widely recognized as essential tools for an online class. Their usage is also starting to gain favor with in-person classes as well. Asynchronous discussions allow for students to take time and formulate their answer to a question. They also allow for everyone to participate; this may not happen in a traditional class due to either time constraints or shyness on the part of the student (Gerber, Scott, Clements, & Sarama, 2005; Krentler & Willis-Flurry, 2005; Lin & Overbaugh, 2007; Menchaca & Bekele, 2008).

Lim and Cheah (2003, p. 34) discuss the importance of student valuing the process of participating in an online discussion board.

The students have to be convinced of the usefulness of online discussion as a learning tool and be guided to respond and participate in a manner from which they derive optimum benefits. If the students perceive and experience online discussion as a valued process, they will then be more likely to participate actively in it.

It is this student “buy-in” that becomes so difficult to attain, but so important for success.

Gerber et al, (2005) explores the roles of the instructor in an asynchronous discussion environment. They compare the extremes of instructors facilitating online discussion; the instructor that takes a background role vs. the instructor as an active participant in discussions. Their findings indicate how an instructor is much more a facilitator of instruction on a discussion board rather than an originator of discourse.

How effective are discussion boards in engaging students? How can that be measured? Discussion boards can easily fall into the one question, one answer trap:
Teachers ask a question and students write a lengthy reply. In such cases, “the ‘discussion’ is really not a discussion at all but a teacher-centered discourse patter” (Grisham & Wolsey, 2006 p. 650). No discussion actually occurs, and could be handled quite as effectively as a simple assignment. So how can discussion be encouraged? Does it fall on instructors to mediate the discussion and probe students for answers?

Instructor-mediated discussion is considered by some to be ineffective. If the discourse is simply between teacher and a student, the student may not feel comfortable challenging or confronting the teacher’s point of view; it may simply be a polite discourse on regurgitated information (Deenen & Wieland, 2007). Peer-to-peer interactions on the other hand have a tendency to not only be more engaging, but also more effective (Grisham & Wolsey, 2006; Rourke & Anderson, 2002).

La Pointe and Gunawardena (2004) found that students, who reported a higher level of peer interaction, also reported an increase in learning outcomes. The background and personal experiences their peers brought to the discussion boards provided an essential component of their learning experience.

So how do instructors encourage peer-to-peer interaction? A social network can enhance discussion between students. SNS facilitate the sharing of personal information, which in turn can create an intimacy among students. Social networking can increase student interactions and aid in the establishment of a community of learners.
Motivation

Motivating students to be engaged in the learning experience can be one of the obstacles to online learning. Keller (1987) has completed some of the seminal research on motivation in educational settings. His ARCS (Attention, Relevance, Confidence, Satisfaction) model is based on four concepts: attention, relevance, confidence, and satisfaction.

The attention component focuses on sustaining active engagement of the students in course activities. Sustaining attention within this category requires the instructor to vary their instructional strategies throughout the course.

Relevance, or relating to the learner, is the second component of the ARCS model. It implies that the learning, or learning environment must be relevant to the learner’s goals. That students must move from the extrinsic motivation of passing a class to a more intrinsic one of wanting to learn something for its relevance to goals of the learner.

The confidence component relies upon assisting students in making achievements in the learning experience. Students perform tasks successfully that are considered difficult, and therefore have a higher sense of achievement than an easy task.

Satisfaction in a learning environment is the final component of the ARCS model. This focus on positive experiences is derived from students’ accomplishments in the
class, both extrinsically and intrinsically. This is also based on a perceived fairness in instructor attention and grading, as well as the amount of work required by the course.

These four components of the ARCS model are most often used in the design phase of a course, to ensure consistent motivation throughout the course. Song & Keller (1999) utilized the ARCS model for developing computer assisted instructional models and Keller (2008) has recently applied his ARCS model to the field of e-learning and online instructional design.

Motivation and specifically the ARCS model indicators are especially important in distance education settings. Engaging students and the ultimate goal of increasing student productivity online, can be a challenge to instructors (Keller & Suzuki, 2004). Although Keller's model primarily deals with the effectiveness of learning design, this research will utilize ARCS to evaluate an existing structure, and in turn inform the researchers if the use of different tools motivates students to stay engaged.

**Creating a Community**

Johnson, Levine, and Smith (2008, p. 15) suggests that after integrating social networks into higher education that the next step is to “build rich, interactive, robust learning communities.” This research hopes to provide insight towards taking a class, which is a community of interest, and developing it into a community of practice (Correia & Davis, 2008).
Wenger (2008, p. 1) defines communities of practice as “groups of people who share a concern or passion for something they do and learn how to do it better as they interact regularly.” There are three characteristics of a community of practice:

1) **The Domain**: It has an identity defined by a shared domain of interest. Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people.

2) **The Community**: In pursuing their interest in their domain, members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other.

3) **The Practice**: members of a community of practice are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short a shared practice. This takes time and sustained interaction.

When taking a distance education course, students have very little interaction with their fellow students, compared to an in-person class. If knowledge construction as Vygotsky (1978) suggests requires social activity, how can that be encouraged online? Traditional discussion boards or course management systems in general can be interpreted as a sterile atmosphere. The environment surrounding student interactions can have a profound effect on the type of student interaction. Can a different tool, such as a social network, encourage knowledge construction?

Online courses tend to be very teacher-student orientated, rather than encouraging student-to-student participation. A social networked environment can embody the ideals of Kreijns, Kirschner, & Jochems (2001) where learners seek control.
of their environment, in its ability for students to create their own areas for learning. A virtual learning community can create a “comfort zone” that helps establish a “secure and supportive virtual environment” (Allan & Lewis, 2006, p. 842).

Grisham & Wolsey (2006, p. 659) discovered that their online community for students,

Created a sense of home. Where authentic student voices were encouraged; the social setting offered students comfort and context for their learning, the opportunity to demonstrate confidence, and the chance to contribute to the learning of the group member.

Goos & Bennison (2008) were able to create a community of practice for their student teachers that grew out of their classroom. By using Yahoo! Groups as a tool, they created a place students felt comfortable contributing to. Their students enjoyed the process so much, they created their own space on Yahoo! Groups to continue the discussion after classes had ended. Ning can provide such a service to students that allows not only for further exploration for a class, but a college as well.
CHAPTER 3: METHODOLOGY

Introduction

The purpose of this study is to explore the usage of a social networking site, specifically Ning, in an educational setting. This chapter will explain the rationale for a mixed-methods approach to the research question, including attitudinal and motivation surveys, discussion board analysis, and interviews.

Research Question

This study is guided by the following research question:

1. Does a student-centered online tool, such as Ning, foster knowledge construction through discussion boards more than a class-focused online tool, such as Moodle?

Null Hypothesis: The quality of discussion board postings in the Ning group, as measured by the IAM phase system, is typical of other online classes.

This study employed a mixed methods approach, utilizing both quantitative and qualitative methods.

Design of Study

The design of this research employs a mixed-methods approach and encompasses five different data collection sources. An Attitudinal Survey was administered online mid-way through the Fall semester 2008. A Motivational Survey was administered online near the end of the semester. Interviews were conducted in
December of 2008, after the last day of classes, but before winter break. Discussion postings were analyzed after the completion of class.

Two classes were utilized as samples for this research. One class utilized Ning for their asynchronous discussion board postings, while the other class used the built-in traditional CMS discussion board. The Ning group is the focus of this research with their discussions being thoroughly analyzed, while the traditional CMS class will provide more information on conventional discussion board usage and attitude toward technology. Since the classes being compared were not covering the same topic, no direct comparisons of discussions can be made.

Table 3.1

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does a student-centered online tool, such as Ning, foster knowledge construction through discussion boards more than a class-focused tool, such as BlackBoard?</td>
<td>Attitudinal Survey</td>
<td>Mann-Whitney U test</td>
</tr>
<tr>
<td></td>
<td>Motivational Survey</td>
<td>2-tailed t-test comparison</td>
</tr>
<tr>
<td></td>
<td>Discussion Board</td>
<td>between both groups</td>
</tr>
<tr>
<td></td>
<td>Postings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interview questions</td>
<td>Coding of Ning group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>postings using the IAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>schema</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergence of themes</td>
</tr>
</tbody>
</table>

**Sample**

The sample consisted of two graduate classes in Instructional Technology at the College of Education at North Carolina State University. Both graduate classes were taught by the same professor and have been taught in previous semesters. The Ning
class consisted of 21 students, while the traditional CMS had 18 students enrolled. Two students received incompletes for the Ning based course. Their discussion data, which was minimal, was removed from the sample. One of the two students completed the initial attitudinal survey and his survey data was included in the sample. Of the 38 students, only 32 (84%) completed the attitude survey and 21 completed the additional motivation survey. Five (6%) of the 32 respondents are male and 27 (94%) are female and, all students were at the post-baccalaureate level. This is an unbalanced sample relating to gender, but that is not uncommon in education courses.

These courses are only offered online through distance education and utilized the Moodle Course Management System (CMS) for delivery purposes. The main communication mechanism for both courses was online discussion boards. The CMS group utilized the built-in discussion board, while the Ning group, conducted their discussions outside of Moodle in the College Ning SNS. The Ning group was not given any additional instruction on the use of the Ning tools outside of the discussion board. The courses followed the traditional semester schedule for Fall 2008, consisting of 15 weeks.

All students were required to lead one discussion during the class. Students were able to select the topic/week to be discussion leader. The instructor posted new discussion topics each week. As discussion leader, students were required to provide the instructor with the discussion question as well as facilitate the discussion. Students
were required to post their reflection on each week’s discussion question as well as respond to their fellow students’ responses.

Participation in discussions was worth 5% of their overall grade. Even though students were strongly encouraged to frequently participate, there was no minimum number of required postings.

**Data Collection**

Internal Review Board approval was sought and granted in October of 2008, (See Appendix A). Students were asked to participate in the study via e-mail from the researchers or via an internal message on the Ning site. Consent for the research (See Appendix B) was achieved prior to the administration of the survey via an online form.

An Attitudinal Survey, comprised of 35 items, was administered online to all participants in both courses at the midpoint of the fall semester (Appendix C). Students were provided with a two-week window to complete the survey. Twenty-seven questions from the survey focus on current technology usage, including frequency and familiarity using a 4-point Likert-like scale. Eight questions from the survey provided background information on the participants’ prior experience with Ning and/or social networking in general. The attitudinal portion of this instrument has previously been used by Holcomb (2008), and provided a technological composition of the participants.

A short motivation survey was administered online near the end of the semester to assess the four components of Keller’s ARCS model (Appendix D). This five-question likert-type survey included a question that focused on each of the ARCS components,
and an overall motivation one for the course. Students were provided with a one-week
time frame to complete the survey.

Participants from both groups, Ning and the CMS were asked via e-mail to
participate in a short interview or focus group. Using the Sequential Sampling Method
(Krathwohl, 1993) interviews were conducted until “saturation” was reached, and no
new themes emerged. Three students responded from each group, and one individual
not associated with the classes, but a member of the Ning community, participated in
the interview process. Interviewees were given the option of being interviewed in-
person, online, via telephone, or as part of a focus group. All interviewees opted for
being interviewed via telephone.

Interviews followed the question structure outlined in Appendix E. Members of
the Ning group were asked additional questions about using the Ning and how it
differed from other discussion board tools. Participants were encouraged to explain
either in further detail, or give particulars of how discussion boards were used in their
course. They were also given the opportunity to ask questions of the interviewer about
the research process, or discussion boards in general.

Discussion Board postings from the Ning site were downloaded into the
spreadsheet program Excel to be unitized and categorized by the researcher. The
discussion prompt or generic announcements from the moderator were excluded from
the data file. User names were removed and replaced with pseudonyms. Each posting
was individual analyzed and assessed based on the theoretical framework of the Interaction Analysis Model (IAM).

**Data Analysis**

*Attitudinal Survey*

The attitudinal survey was administered online and downloaded into MS Excel. User names were removed and replaced with pseudonyms. Descriptive statistics were made utilizing basic MS Excel tools. The data was then imported into SPSS. Normality of the data was tested and the distribution was determined to be outside of the +/- 2 limit for skewness and kurtosis. Therefore a non-parametric measure, the Mann Whitney $U$ test, was used instead of a t-test comparison. Although a t-test is more powerful, it is based on the assumptions of a normal distribution. With the violation of this assumption a non-parametric measure must be used. The Mann Whitney $U$ test analyzes the difference in medians between the two groups. The raw data was converted to ranks and grouped before being analyzed.

*Motivation Survey*

The motivation survey was administered online and downloaded into MS Excel. User names were removed and replaced with pseudonyms. Descriptive statistics were made utilizing basic MS Excel tools. The data was then imported into SPSS. Normality of the data was tested and the distribution was determined to be within limits. The raw
data was grouped before being analyzed. A t-test was run on a comparison between the two participant groups (Ning vs CMS) based on each factor.

Discussion board postings

The discussion board postings were coded by the researcher using the Interaction Analysis Model (IAM) developed by Gunawardena, Lowe & Anderson (1997). This model uses a five-phase approach to understanding knowledge construction in a collaborative online environment, see Table 3.2.

Table 3.2

<table>
<thead>
<tr>
<th>Phase I.</th>
<th>Sharing and comparing of information: statement of observation or opinion; statement of agreement between participants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase II.</td>
<td>Discovery and exploration of dissonance or inconsistency among participants: identifying areas of disagreement; asking and answering questions to clarify disagreement.</td>
</tr>
<tr>
<td>Phase III.</td>
<td>Negotiation of meaning or knowledge co-construction: negotiating meaning of terms and negotiation of relative weight to be used for various arguments.</td>
</tr>
<tr>
<td>Phase IV.</td>
<td>Testing and modification: testing the proposed new knowledge against existing cognitive schema, personal experience or other sources.</td>
</tr>
<tr>
<td>Phase V.</td>
<td>Phrasing of agreement and applications of newly constructed meaning: summarizing agreement and metacognitive statements that show new knowledge construction.</td>
</tr>
</tbody>
</table>

The IAM schema identifies the stages or phases of a learners’ progress towards knowledge construction. The Ning group’s discussions were coded to aid in the
understanding of the use and productivity of the tool. The larger the number or percentage of posts in the higher phases will indicate more understanding and construction of meaning than those posts in the lower phases of the scale (Gunawardena et al, 1997).

This model has previously been used in prior research (see Aviv et al., 2003; Kanuka & Anderson, 1998; Schellens & Valke, 2003; & Schellens & Valke, 2005) to assess the knowledge construction process in online discussion boards. Marra, Moore, & Klimczak’s (2004, p. 39) analysis of discussion forum coding protocols found that IAM “provided a more holistic view of discussion flow and knowledge construction.”

Kanuka & Anderson (1998) utilized the IAM model to assess the knowledge construction of an online professional development learning space. Their results indicated that participant interactions were at the lower stage of the phase range. Schellens & Valcke (2005) also found this to be true, with over 50% of the discussions they analyzed in Phase I.

Schellens, Van Keer, Valcke, and De Wever (2007) used the IAM coding scheme and correlated it with final grades. Their research indicates that the IAM model is an accurate predictor of knowledge construction and success in a classroom environment.

Interviews

Interviewees were given the option of being interviewed in person, as part of a focus group, online, or via telephone. All participants elected to be interviewed via phone. The interviews took approximately 10-20 minutes of each student’s time, and
followed the line of questioning outlined in Appendix E. Interviews were recorded onto a solid-state data recorder and transcribed by the researcher. Interviews were conducted until theme emergence had reached saturation.

**Validity & Reliability**

Multiple sources of data were triangulated to illustrate the usage of Ning and its influence on discussion board postings. The self-reported survey data was used to provide a basic background of students in both classes, as well their previous usage of social networking systems. The interviews were used to corroborate the discussion board and survey data, as well as provide additional insight into the composition of the Ning and CMS groups.
CHAPTER 4: RESULTS

Introduction

The purpose of this study was to determine if the use of a closed Social Networking System would aid in the knowledge construction of students through discussion board postings. This chapter summarizes the findings of the researcher as well as the responses from the participants. These findings shed light on the use of social networking in an educational environment and its implications for learning.

Two surveys were administered, discussion board postings were analyzed, and interviews were conducted to provide multiple sources of data. Surveys were administered online and data was downloaded into MS Excel for basic statistical analysis. Data was then imported into SPSS for more advanced statistical analysis. Discussion board postings were downloaded from the Ning Site into MS Excel to be hand coded. Interviews were recorded using a digital media recorder in native .mp3 format and were transcribed by the researcher into MS Word.

Attitudinal Survey

Participants from both classes were asked to complete the Technology Behavior Survey online. There were a total of 32 respondents, 18 of which were in the Ning class, and 14 in the traditional CMS. The survey had an overall response rate of 82%. See Table 4.1 for response rates across the two groups.
Table 4.1

*Response Rate per participant group*

<table>
<thead>
<tr>
<th></th>
<th>Ning</th>
<th>CMS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>20*</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>Number of Survey Respondents</td>
<td>18</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Response Rate</td>
<td>90%</td>
<td>77%</td>
<td>84%</td>
</tr>
</tbody>
</table>

*One of the students that did not complete the survey received an incomplete for the class. Therefore his data is not included in the response.*

The survey answers indicate a basic understanding and usage of technology. These included frequent use of e-mail (30) and web searches (33) as well as editing in a word processing program (30). However, they did not expand their use of technology beyond these basic skills. Although participants indicate they create classroom assignments occasionally (24%) or frequently (50%), their responses to other items about specific activities are contradictory to that assertion. Utilizing computers outside of basic use, for activities such as collaborative web projects or educational computer games, were rarely or never used as indicated by Table 4.2.

Table 4.2

*Attitudinal Survey, Internet & Advanced Skill questions*

<table>
<thead>
<tr>
<th>Participate in Internet (web) collaborative projects</th>
<th>Utilize educational computer games to reinforce key concepts and skills</th>
<th>Establish a safe on-line environment for students to use the Internet for learning purposes</th>
<th>Create classroom assignments requiring students to use educational technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>13</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Rarely</td>
<td>10</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Occasionally</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Frequently</td>
<td>5</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>
When it came to their own online professional development, participants actively searched the web (all 32) and communicated online with others (30). The exception to this frequent computer-based communication usage is Instant Message (IM). The lack of IM use is not surprising considering its use is banned or discouraged in school systems.

Table 4.3

*Attitudinal Survey, Communication questions*

<table>
<thead>
<tr>
<th></th>
<th>Communicate with colleagues via electronic communications, such as e-mail and listservs</th>
<th>Participate in on-line professional development activities</th>
<th>Participate in an online network (social or educational)</th>
<th>Create or respond to blog postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rarely</td>
<td>0</td>
<td>13</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Occasionally</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Frequently</td>
<td>32</td>
<td>12</td>
<td>25</td>
<td>11</td>
</tr>
</tbody>
</table>

Based on Table 4.3, the student responses indicate that the majority of participants were comfortable with electronic communication, even to the level of blog post response.

In terms of social networking, the participants belonged to some of the most popular networks, (see Figure 4.1) with Facebook (54%) as the dominant network. The participants that selected "Other," indicated they belonged to the class Ning. Since this research question was more aimed at social network usage outside the college Ning, this response was disregarded. Nevertheless, the fact that students felt they "belonged"
to the college’s Ning site is an important indicator of this tool to be more personal than a traditional CMS. This is also inferred by the response of 24 participants (71%) indicating they belonged to a social network, when only 16 individuals belonged to any networks outside of Ning. Although several students in the Ning class (14) belong to a social network, none of the users substantially used any of the Ning tools outside of the discussion board.

![Figure 4.1](image)

*Figure 4.1*

*Social Networking System membership*

The open-ended responses from the survey indicate that the majority of participants use social networking to connect with friends and former classmates. As indicated by one participant, one reason for belonging to a SNS is it allows for “keeping up with old friends and seeing updated pictures about what is happening in their life.” A
few indicated that they had started to use social networking on a professional level, as one participant indicates,

Ability to interact with friends, colleagues, and even students. Giving proper access to different groups – students cannot see all information or personal data about me, but I can still contact them/ create school related groups. My personal friends can see all information about me, including pictures, and have fun with the social aspect without fear of prying eyes.

Some of the detractions to social networking as specified by the survey answers included privacy issues, or its bad connotation. “I don’t like thing [sic] MySpace because it is not used properly. Many things appear on those sights that are not appropriate.”

The survey results also illustrates that 26 participants were familiar with collaboration online through more traditional online communities such as listservs, or Yahoo! groups. Approximately half (14) of the participants belonged to a Professional Learning Community (PLC) for their school or district. The next step in both listserv based communication, and creating a community is the utilization of a social networking system..

Group Comparisons

In comparing the Attitudinal survey between the two groups, four constructs were created. These constructs were generated by the researcher and created based on instrument design and theory. The constructs for analysis are as follows: communication skills (Table 4.7), Internet skills (Table 4.8), basic technology skills (Table 4.9), and advanced technology skills (Table 4.10). A Mann-Whitney U test was
performed on each of these constructs and yielded no significant difference between groups. Results are available in Appendix F.

Construct Reliabilities

Based on design and theory, four constructs were created by the researcher with an overall reliability for the instrument of $\alpha = .90$. The first construct, Communication had a total of 5 items and an alpha reliability $\alpha = .55$. One item was removed from Communication (Construct 1) due to the lack of variance in the responses. In comparison to the overall reliability as well as the other factors, this reliability was relatively quite low. The questions addressing communication may have very high variability due to the range of typical e-mail usage to other online forms of communication. Construct 2, Internet Usage, had 7 items and an alpha reliability of $\alpha = .80$. The third construct, Basic Technical Skills, composed of 5 items had an alpha reliability of $\alpha = .75$ and the last construct, Advanced Technical Skills, composed of 9 items, had an alpha reliability of $\alpha = .70$. See Tables 4.7, 4.8, 4.9, & 4.0 for means and standard deviations, as well as the items for each factor.

Table 4.4

Construct 1: Communication Survey Items

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>Never (0)</th>
<th>Rarely (1)</th>
<th>Occasionally (2)</th>
<th>Frequently (3)</th>
<th>Mean</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail</td>
<td>Ning</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>17</td>
<td>2.94</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>14</td>
<td>2.93</td>
<td>0.26</td>
</tr>
</tbody>
</table>
### Table 4.4 Continued

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>Never (0)</th>
<th>Rarely (1)</th>
<th>Occasionally (2)</th>
<th>Frequently (3)</th>
<th>Mean</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail attachments</td>
<td>Ning</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>16</td>
<td>2.89</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>13</td>
<td>2.87</td>
<td>0.35</td>
</tr>
<tr>
<td>Participate in online PD</td>
<td>Ning</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>1.72</td>
<td>1.02</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2.00</td>
<td>0.85</td>
</tr>
<tr>
<td>Participate in an online network</td>
<td>Ning</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>14</td>
<td>2.67</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>2.07</td>
<td>1.28</td>
</tr>
<tr>
<td>Create or respond to blog postings</td>
<td>Ning</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>8</td>
<td>2.44</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1.47</td>
<td>1.06</td>
</tr>
</tbody>
</table>

### Table 4.5

**Construct 2: Internet Survey Items**

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>Never (0)</th>
<th>Rarely (1)</th>
<th>Occasionally (2)</th>
<th>Frequently (3)</th>
<th>Mean</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Resources for teaching</td>
<td>Ning</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>7</td>
<td>2.17</td>
<td>0.92</td>
</tr>
<tr>
<td>Conduct online searches</td>
<td>CMS</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>10</td>
<td>2.47</td>
<td>0.92</td>
</tr>
<tr>
<td>Access Online Journals</td>
<td>Ning</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>3.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Online Journals</td>
<td>CMS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>3.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Access Internet</td>
<td>Ning</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>2.06</td>
<td>0.87</td>
</tr>
<tr>
<td>Access Online Journals</td>
<td>CMS</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>2.20</td>
<td>0.86</td>
</tr>
<tr>
<td>Collaborative Projects</td>
<td>Ning</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0.94</td>
<td>1.06</td>
</tr>
<tr>
<td>Ethical Online practices</td>
<td>CMS</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1.20</td>
<td>1.21</td>
</tr>
<tr>
<td>Safe Online Environment</td>
<td>Ning</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>1.00</td>
<td>0.84</td>
</tr>
<tr>
<td>Online practices</td>
<td>CMS</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1.27</td>
<td>1.16</td>
</tr>
<tr>
<td>Environment</td>
<td>Ning</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1.11</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>1.87</td>
<td>1.25</td>
</tr>
</tbody>
</table>
Table 4.6

**Construct 3: Basic Skills Survey items**

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>Never (0)</th>
<th>Rarely (1)</th>
<th>Occasionally (2)</th>
<th>Frequently (3)</th>
<th>Mean</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Processing to create CMS</td>
<td>Ning</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>1.89</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>2.33</td>
<td>1.05</td>
</tr>
<tr>
<td>Word Processing to edit CMS</td>
<td>Ning</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>16</td>
<td>2.83</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>14</td>
<td>2.87</td>
<td>0.52</td>
</tr>
<tr>
<td>Database or Spreadsheet for Student Data</td>
<td>Ning</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>1.56</td>
<td>1.29</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>2.20</td>
<td>1.08</td>
</tr>
<tr>
<td>Presentation Software CMS</td>
<td>Ning</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>2.22</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>2.07</td>
<td>0.70</td>
</tr>
<tr>
<td>Classroom assignments requiring students to use technology CMS</td>
<td>Ning</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>1.89</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>10</td>
<td>2.27</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Table 4.7

**Construct 4: Advanced Skills Survey items**

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>Never (0)</th>
<th>Rarely (1)</th>
<th>Occasionally (2)</th>
<th>Frequently (3)</th>
<th>Mean</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network CMS</td>
<td>Ning</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>14</td>
<td>2.72</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>2.67</td>
<td>0.57</td>
</tr>
<tr>
<td>Back-ups CMS</td>
<td>Ning</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>2.17</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>11</td>
<td>2.73</td>
<td>0.46</td>
</tr>
<tr>
<td>Digital Photography CMS</td>
<td>Ning</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>1.94</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>2.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Educational Computer Games CMS</td>
<td>Ning</td>
<td>6</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>0.89</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>CMS</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>1.33</td>
<td>1.23</td>
</tr>
<tr>
<td>Technology to aid LD students</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
<td>CMS</td>
<td>Total</td>
<td>Ning</td>
<td>CMS</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Real time data collection</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>0.89</td>
<td>0.96</td>
</tr>
<tr>
<td>Create Charts or Graphs</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
</tr>
<tr>
<td>Presentation Software to Introduce Topic</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
<td>CMS</td>
<td>Ning</td>
</tr>
<tr>
<td>Homework assignments requiring students to use technology</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>1.44</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1.93</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>1.11</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1.07</td>
<td>1.16</td>
</tr>
</tbody>
</table>

**Motivation Survey**

Participants from both classes were asked to respond to an additional online survey about motivation towards the end of the semester. Each question was based on Kellers ARCS model of motivation; attention, relevance, confidence, and satisfaction. There were a total of 21 respondents, 12 from the Ning class and 9 from the traditional CMS. See Table 4.8 for the response rate of the survey.

**Table 4.8**

<table>
<thead>
<tr>
<th>Motivation Results Response Rate</th>
<th>Ning</th>
<th>CMS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>20</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>Number of Survey Respondents</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Response Rate</td>
<td>60%</td>
<td>50%</td>
<td>55%</td>
</tr>
</tbody>
</table>
Overall these results indicate that students agree that they had a positive and motivational experience using their respective discussion boards, see Tables 4.8 & 4.9. Based on the interview responses this is not surprising. Students participated based on their requirement to do so in both classes.

Table 4.9

*Motivation Survey Results from Ning Group*

<table>
<thead>
<tr>
<th></th>
<th>The online discussions in my class retained my attention</th>
<th>The online discussions were relevant to my job, or future job.</th>
<th>I felt confident responding to discussions and engaging in dialogue with my fellow students</th>
<th>I had a positive experience using the discussion board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>50% 6 42% 5</td>
<td>58% 7</td>
<td>50% 6</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>33% 4 50% 6</td>
<td>33% 4</td>
<td>33% 4</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td>8% 1 8% 1</td>
<td>8% 1</td>
<td>17% 2</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>0% 0 0% 0</td>
<td>0% 0</td>
<td>0% 0</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>8% 1 0% 0</td>
<td>0% 0</td>
<td>0% 0</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.10

Motivation Survey Results from Traditional CMS group.

<table>
<thead>
<tr>
<th></th>
<th>The online discussions in my class retained my attention</th>
<th>The online discussions were relevant to my job, or future job.</th>
<th>I felt confident responding to discussions and engaging in dialogue with my fellow students</th>
<th>I had a positive experience using the discussion board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>22%</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Agree</td>
<td>56%</td>
<td>56%</td>
<td>67%</td>
<td>44%</td>
</tr>
<tr>
<td>Neutral</td>
<td>11%</td>
<td>0%</td>
<td>0%</td>
<td>22%</td>
</tr>
<tr>
<td>Disagree</td>
<td>11%</td>
<td>11%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

An independent-samples t test was conducted to evaluate the hypothesis that students in the Ning group would be more motivated to utilize the discussion board than the traditional CMS group. The test was not statistically significant, $t(19) = .241$, $p=.812$. Participants in the Ning group ($M = 17.09$, $SD = 2.7$) indicated they were just as motivated as the participants in the CMS group ($M = 16.8$, $SD = 2.82$) to participate in the discussion board. The 95% confidence interval for the difference in the means was quite close, ranging from -2.24 to 2.28. Table 4.11 shows the distributions between the two groups.
Table 4.11

*T*-test of Motivation survey results between Ning and CMS group.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ning</td>
<td>12</td>
<td>17.09</td>
<td>2.7</td>
<td>.81413</td>
</tr>
<tr>
<td>CMS</td>
<td>9</td>
<td>16.8</td>
<td>2.82</td>
<td>.89194</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Levene’s test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.169</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>.241</td>
</tr>
</tbody>
</table>

Discussion Board Postings

There were 400 postings over the course of the semester in the Ning group. Posting rates were at their highest in Weeks 1 & 7 as indicated by Figure 4.2. The trend line in Figure 4.2 indicates that postings were less frequent towards the end of the semester. Two of the discussions, Weeks 8 & 14b, were student generated on the Ning site. Week 1 was a general introduction thread where students were encouraged to share information and photos about themselves.
The average number of postings per participant was 18.62 postings over the course of the semester. Three participants stand out from their fellow students for being the most active on the Ning Discussion board, as indicated in Figure 4.3. Participants 3, 7, and 17 posted significantly over their fellow students with 33, 39 and 44 posts respectively. It is also noted that Participant 15, is the instructor of the class. The low number of postings by the instructor indicates that the discussion board was more student utilized, and fits within the research stimulating peer-to-peer discussions by Rourke and Anderson (2002).
Discussions by Participant

Postings were categorized as being in one of the five phases of knowledge acquisition using the IAM coding scheme (Gunawardena, 1997). The phases progress from statements of information to discussing and negotiating meaning, to applying new meaning in a similar context. Discussion postings do not need to progress from one phase to another. Typical discussion board postings are in Phase I, and are simply sharing information. Of the 400 discussion board postings, not including discussion prompts, 85.75% of the discussions were categorized as Phase I: Sharing and comparing of information (see Figure 4.4).
This lack of diversity is not uncommon in typical discussion boards, as Kanuka & Anderson (1998) found. Nonetheless, the goal of this research was to investigate how using a tool such as Ning would impact knowledge construction, and encourage
authentic discussion. As indicated by the graph in Figure 4.5, Week 8 illustrates a range of the IAM phases.

Figure 4.5

*Phase of Discussions by Week*

One of the differences between the Ning discussion board and a typical CMS one is the ability for students to create their own threads. Traditional CMS require instructors to start all discussion threads. This reinforces the idea that discussion postings are simply responses to an instructor and not a discourse between students. Grisham and Wolsey’s (2006) found that most discussions fall into a teacher and student conversation, but that true discourse between peers can transform the discussion process. The one discussion thread that stands out, and illustrates the most
diversity in IAM Phase percentage is a discussion thread that was created by a student, discussion thread #8.

Table 4.12

Discussion Thread #8

<table>
<thead>
<tr>
<th>Phase</th>
<th>Number of postings in phase</th>
<th>Percentage of Discussion Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>4</td>
<td>28%</td>
</tr>
<tr>
<td>Phase II</td>
<td>7</td>
<td>50%</td>
</tr>
<tr>
<td>Phase III</td>
<td>2</td>
<td>14%</td>
</tr>
<tr>
<td>Phase IV</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Phase V</td>
<td>1</td>
<td>.06%</td>
</tr>
</tbody>
</table>

Discussion thread #8 was one of the smaller discussion threads of the semester with only 16 postings in total, 4% of the total postings, but it is the variances in phases that is intriguing, (see Table 4.12).

Discussion #8, started by Participant 001, stands apart from the others, not only because it was started by a student rather than the instructor, but also because of the quality of discussion. This thread was primarily focused on the book, “The World is Flat,” by Thomas Friedman and contained a debate between students about the ideas of the book and how these ideas related to education. It was a perfect opportunity for students from diverse backgrounds to share their own experiences in both teaching and the private sector.
The later phases of the IAM scheme (III, IV, & V) are focused on the negotiation, testing and application of knowledge construction. The discussion goes beyond Phase I and Phase II, when the participants bring different points of view to the board, and broaden the perceptions of the class. Participant 9 begins to discuss how her point of view has been changed by the discussion,

As I read the book I naturally just followed the direction of Friedman, and just assumed that the world was really flat simply because he made several valid arguments. I know that as I read the book I did not think outside the box, but rather I just accepted his argument and that was it. After reading your post it was clear that I did not analyze the material in an in-depth manner because I did not realize the educational factor. I never realized that these countries hand selected their top students and allowed them to achieve the higher level of education and top jobs. Therefore, I really enjoyed your different perspective on how education really plays a key role.

She is showing signs of negotiating new knowledge, as well as beginning to adapt this new knowledge to her own ideas. The board starts to evolve into a discussion about how lateral entry teachers fit into 21st Century skills. Participant 14, begins to bring the discussion to a head with

I have to disagree with you on one point...lateral entry teachers. No you can't be a lateral entry doctor, but in order to be a lateral entry teacher you have to have a degree in the subject area and take education classes in order to be fully licensed. I myself am a lateral entry teacher and believe that I am just as strong as a teacher who had all the education classes before entering the classroom. I also believe that because of my previous experience, I bring more "real world" activities and teaching to my classroom. I also believe that lateral entry teachers have more creativity, think more "outside-the-box" and are more willing to take the challenges that come in teaching and the educational environment.

This discussion continues with Participant 18,
I agree there is always good with the bad. And I applaud those that want to help educate students whether they went to college to be an educator or have come from the outside. However, I wouldn’t say that since I haven’t experienced the business world or another profession that I lack the creativity or the willingness to take on challenges. Nor would I say that for you as a lateral entry teacher that you are not able to teach and be good at it. But according to the Wake County’ Public Schools’ website, "Lateral entry allows qualified individuals to obtain a teaching position and begin teaching right away, while obtaining a license as they teach." It’s just interesting to me that the license is obtained while teaching as apposed to prior to stepping foot in the classroom.

Students are moving past Phases I and II, by stating their individual opinions and assimilating this new perspective with their previous knowledge. The IAM model is based on the concept that knowledge construction surrounding a topic is attained when students can, “summarize agreement and metacognitive statements that show new knowledge construction” (Marra et al, 2004, p. 26).

The discussion during week eight indicates that in-depth conversation can occur in a discussion board forum and enhance the knowledge construction process. Having a student create that conversation and assert control over their learning makes the point even more poignant.

**Interviews**

The Ning and CMS groups were solicited for interviews via e-mail from their instructor. After contacting the researcher, they were given the option of being interviewed in person, online, via phone, or as part of a focus group. All of the students preferred to be interviewed via telephone. Three of the interviewees were from the
Ning group, three were from the CMS group, and one interviewee was not part of the class, but had joined the group on Ning. Participant information is available in Table 4.13.

Table 4.13

*Interview participants’ info*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Group</th>
<th>Gender</th>
<th>Current Position</th>
<th>Prior SNS Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 04</td>
<td>Ning</td>
<td>Female</td>
<td>Doctoral Student</td>
<td>Y</td>
</tr>
<tr>
<td>Participant 22</td>
<td>CMS</td>
<td>Female</td>
<td>Technology Teacher</td>
<td>Y</td>
</tr>
<tr>
<td>Participant 23</td>
<td>Neither</td>
<td>Female</td>
<td>Doctoral Student</td>
<td>Y</td>
</tr>
<tr>
<td>Participant 24</td>
<td>CMS</td>
<td>Male</td>
<td>Middle School Technology Teacher</td>
<td>Y</td>
</tr>
<tr>
<td>Participant 03</td>
<td>Ning</td>
<td>Female</td>
<td>Middle School Computer &amp; Keyboarding Teacher</td>
<td>N</td>
</tr>
<tr>
<td>Participant 14</td>
<td>Ning</td>
<td>Female</td>
<td>CTE Teacher</td>
<td>N</td>
</tr>
<tr>
<td>Participant 25</td>
<td>CMS</td>
<td>Female</td>
<td>Doctoral Student</td>
<td>Y</td>
</tr>
</tbody>
</table>

The profiles of the participants that were interviewed are:

*Participant 04*

Participant 04 is a female full-time doctoral student in Instructional Technology. She was a part of the Ning group and is an avid user of Facebook. This is the second course she has taken online, with the first being in Moodle. She is excited about using technology and enjoyed using Ning as a tool.
Participant 22

Participant 22 is a female in-service educator and graduate student. She was part of the CMS group, but is a current user of Ning for her college alumni and sorority. She is a technology teacher. She felt that discussions were an important part of her class, but that they were not very engaging in the CMS class.

Participant 23

Participant 23 is a female full-time doctoral student. This participant is unique in that she was not apart of the class, but as Ning is open she had joined the group. She is interested in exploring new technology and the group name intrigued her. Participant 23 provides an interesting perspective of an outsider viewing the group.

Participant 24

Participant 24 is a male graduate student. He was a part of the CMS group and is a full time middle school computer teacher. He was comfortable with technology and a user of SNS. He has taken several online courses in his graduate program, and was very comfortable with the discussions in this class. He felt that these discussions were superior to some of the other classes he has had in the past.

Participant 03

Participant 03 is a female graduate student. She is a middle school keyboarding and computer teacher and was in the Ning group. This was actually the last class in her program, and she has taken the majority of these online. She has used every CMS available at the university including Web CT, BlackBoard Vista, and Moodle. She
disliked having to leave the CMS that her class documents and assignments were posted in to use the Ning for discussions. She is also one of the top poster’s in the discussion board.

*Participant 14*

Participant 14 is a female graduate student and Career and Technical Education (CTE) Teacher. She was a part of the Ning group, but has never participated in any Social Networking Sites Prior to using Ning. She has taken several online courses at the university.

*Participant 25*

Participant 25 is a female doctoral student and took her entire Master’s program online. She was apart of the CMS group and teaches some classes online for another college. She has no prior experience with Social Networking. She has very specific ideas about requirements for discussion and students participation in an online class.

Several themes emerged from the interview process, with many supporting the evidence found in the surveys and discussion board analysis. These themes include references to the use of social networking in and outside of the classroom, the importance of discussion boards in an online class, and getting to know your fellow students online, (see Table 4.14).
Table 4.14

Theme emergence and frequency counts

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Participants mentioning item (N=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ning’s ease of use</td>
<td>2</td>
</tr>
<tr>
<td>Similarity of Ning to other discussion boards</td>
<td>2</td>
</tr>
<tr>
<td>Need to collaborate with other students</td>
<td>3</td>
</tr>
<tr>
<td>Value knowing more about other students in class</td>
<td>4</td>
</tr>
<tr>
<td>Recognize a need for professional social networking</td>
<td>5</td>
</tr>
<tr>
<td>Importance of teacher facilitation/interaction on discussion boards</td>
<td>4</td>
</tr>
<tr>
<td>Enjoy discussions online</td>
<td>3</td>
</tr>
<tr>
<td>Privacy concerns with SNS</td>
<td>3</td>
</tr>
<tr>
<td>Interest in creating their own Ning</td>
<td>3</td>
</tr>
</tbody>
</table>

Social Networking

The majority of students had used social networking tools prior to this research (Table 4.14). Participant 04 was a self-professed “Facebookaholic” and used it to constantly keep up with friends and share pictures. This was a common use of SNS for those interviewed, only Participant 25 had used a social networking tool, in this case a Yahoo! group, for educational or work purposes. Yahoo! groups are another example of
a “walled garden” approach where only members can share and post information. It is similar to the asynchronous discussion boards discussed by Goos & Bennison (2008).

Participant 22 brings an interesting perspective to these interviews. Even though she was apart of the CMS group, she had prior experience of using Ning. In fact, she preferred Ning to other SNS tools.

I like the ability to be apart of a group where you have to be invited to be. So you have members that are actually part of your group, so not everybody can join like on Facebook. So the privacy it brings. And of course I like all the social networking aspects that allow me to share pictures and music, videos, personal information, post to your wall, all those typical social networking things.

Her privacy concern, especially as an educator is one of the main advantages of using Ning without losing the benefits of a SNS.

Participant 14, a student who had never utilized social networking before, had a positive experience using Ning whereas other SNS tools had “turned her off” in the past.

Yeah, I’ve looked at Facebook and Myspace. And MySpace I just, ugh, I don’t like the whole concept of MySpace and how it’s used. Facebook I’ve been approached by an undergrad friend of mine and she’s actually reconnected with some other classmates through Facebook and I’ve looked at it, but I haven’t quite joined it yet. That’s probably something I’m going to look at this summer when I’ve got time. But I like the Ning site, it’s more contained, and not as public.

Having no prior experience with social networking, Participant 14 provides an interesting perspective of the deterrents to the tool, and what it would take for her to accept and use it as a teacher.
Discussion boards

With the exception of Participant 4, the majority of interviewees had taken several online courses; some had even taken their entire degree programs online. Participant 25 had even taught online and has hosted her own discussion boards. In general, they enjoyed the discussion boards associated with their respective class. Participant 24 felt that they were an integral part of the learning experience and depended on that contact from his instructor and fellow students.

I’m the type that I need it. I mean how do we know if we’re in the right direction. I mean we can’t see you. We can’t read your body language. We have no way to interact with you except over a computer, and you need to give us that direction. And really in [the instructor’s] class she gave us that.

Discussion boards provide an area to connect with their fellow students so that they were not trying to learn material in a vacuum. They could use the boards for feedback and approval that their knowledge construction was on the correct trajectory.

In particular, Participant 24 went on to elaborate how discussion boards add a dynamic to the class that is important, and enriched online.

You can be more opinionated. You can disagree. The instructors can say they want you to disagree or they want you to debate back and forth and I think being able to do it online provides some sort of comfort ability that you’re not going to piss somebody off so bad that you know its just that face-to-face that takes somewhat of the awkwardness away from it.

In some cases discussion boards actually can give an advantage over traditional classroom interactions and that online discourse can enhance the learning experience.
A few students, such as Participant 14 and Participant 4, enjoyed the layout of the discussion more on Ning, and found it improved communication between them and their fellow students. Participant 4 found this to be true,

It did improve my ability to communicate, because I could go on there and the layout of it was really nice. I could respond to say one particular person and then sometimes she would even instead of responding on Ning, e-mail me or message me. So it just stimulated a lot of conversation within and outside of Ning.

One of the benefits of Ning is the ability for students to create their own discussions and groups. Ning empowers students to take control over their own learning environment. However, Participant 3 did not think this was an advantage,

The one thing I did not like about it, that I know is not available in other stuff, um with this one we had one student that liked to post. And he would just create his own thing and start posting you know, like if he wanted to say something he would just create his own link and you know that kind of bothered me because I didn’t know OK were we supposed to respond to his. It wasn’t anything that the instructor started. And so I’m not sure that maybe students should be allowed to start discussions, as far as class goes. If it was just a regular discussion tool that we just used for general stuff, but you know I never knew for sure whether we were supposed to respond to his, if it was apart of our assignment and apart of the grade. That kind of thing. So that was about the only drawback that I saw. He was allowed to post within our class stuff.

Her comment presents a need to address student’s perceptions of what a discussion board should be when using a new tool such as Ning. Since this new tool did not fit the previous convention or expectations of online discussions, a paradigm shift of student expectations is needed to use Ning.
Motivation

Student responses to the motivation prompts were similar across both groups. Participants tended to be extrinsically motivated by the discussion board, and only updated when required to by class. Although they felt that the discussions retained their attention and were relevant to their employment, the impetus to log into the system was still based on a requirement to do so. Participant 3 would login based on keeping up with the discussion,

I usually checked everyday to see if I needed to post something or if somebody had posted something that I need to respond to. Because I always hate to get behind.

Placing these responses within Keller’s ARCS model, the discussions achieved self-described acceptable levels of attention, relevance, confidence, and satisfaction. Overall, students felt that the discussions were typical, if not better than the average class with this instructor.

Building a Learning Community

One of the advantages to utilizing Ning is that members can get to know one another outside of a classroom context. By utilizing the Profile Pages users can provide information about themselves and comment on one another’s pages. Participant 14 found this to be one of the substantial benefits of using the Ning in her class,

So it was kind of neat to see the diversity that were on the site, how other classes were using the site and how other people were using the site to their individual needs, be it professional or school oriented....Right and
put a face. That’s the biggest thing, putting a face with a name. Because when you’re online it’s hard to think about who you are talking to.

Putting a “face to a name” is one of the challenges to teaching online. Utilizing the social aspects of Ning brought the class together and took the steps towards creating a community.

**Future use of Ning**

Several interviewees mentioned a desire to utilize the Ning product in their future teaching or research practices. Participant 3 in particular saw the advantage of utilizing a “walled garden” SNS tool to teach about Internet etiquette in a safe and closed environment.

Possibly, and I am actually considering that because I teach keyboarding and computers and I have a webquest, that is what I did my final project on. And in that webquest I did state that I was going to create one. And I’m really considering it for my kids, for them to use to use it more as a learning tool. Teach them what is proper and not proper to post online, that type thing.

Participant 03 was able to move beyond the usage of the tool in class and see the possibilities of utilizing it for herself. Although tool acquisition was not a primary goal of utilizing the Ning SNS, having a participant enjoy using a tool enough to replicate its use in her own classroom is a powerful statement.

**Summary**

The results of this study were presented in this chapter. Four different data sets were analyzed to answer the research question. An attitudinal survey was
administered to gain insights into the demographics of the population, as well as compare with a control group via a t-test to ensure it was representative of a typical graduate course in Instructional Technology at the college. There were no significant differences between the two groups.

Discussion board postings for the Ning group were coded using the IAM model for predicting knowledge construction. The majority of postings (86%) were in the first phase of the model and did not demonstrate a diversity in phases. However, one thread had a number of posts in varying phases. One discussion does not provide conclusive evidence, but it does illustrate indicators of what is possible.

A motivational survey was administered online near the end of the semester to both groups. It was developed using Keller’s ARCS model, which specifies areas of motivational learning. There was no statistical significance between the two groups in regards to their motivation with discussion board usage.

Interviews were conducted via phone with seven participants in the study after the class was completed. These interviews provided essential information in expanding upon the ideas brought forth by the other data sources. Although there is no conclusive evidence that supports the use of Ning in distance education context, it does provide indicators of how to do so successfully.
CHAPTER 5:
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Introduction

Social networking is a growing topic in the field of academic research. There is very little literature available referencing social networking in an education context. This study attempts to bridge that gap by providing an introduction to using a social network in a distance education course. Using the walled garden approach and creating a protected environment in Ning, this study aims to provide insights into using a student-centered tool that is similar to what students are already using in their social lives, and in turn that this will encourage more dialogue in an online discussion board. The researcher also endeavors to discover future implications of turning the CED Ning into a Community of Practice that can be utilized outside of the classroom.

Chapter 2 synthesizes the existing research on social networking and the use of discussion boards in education. Chapter 4 presents the findings from surveys, interviews, and discussion board postings. This chapter will discuss the research findings and its implications for the existing body of literature. It will also present the key findings and implications of using a closed Social Network in an educational environment.

Methodology

Two participant groups were utilized in the research; both classes were at the graduate level at the College of Education at North Carolina State University in
Instructional Technology. Both classes were taught by the same instructor and utilized discussion boards as their primary mode of communication. One group utilized a traditional CMS for discussion boards, and the other the College of Education’s SNS Ning. Attitudinal and motivation surveys were administered online to all participants. The discussion postings from the Ning group were analyzed using the IAM model developed by Gunawardena et al (1997). Seven participants, three from each group and one outsider, were interviewed via phone by the researcher.

**Research Findings**

Based on the previous research of peer-to-peer interactions on discussion boards (Grisham & Wolsey, 2006; Rourke & Anderson, 2002) it was expected that by utilizing a tool that encouraged student control and interaction there would be a significant increase in the depth and breadth of student discussions. Conversely, this is not substantially supported by the findings from this study. The discussions in the Ning group, although heavy on peer-to-peer interaction, did not illustrate any meaningful discussion as defined by the IAM Model. However, there were indicators that in-depth discussion can be possible, and even student-directed.

The lack of diversity in the phases of the IAM model may be due to several factors. The IAM schema is based on the concept that knowledge needs to be constructed online through a reflective discourse that involves assimilating others ideas into ones own schema. The discussion questions may not have been designed to inspire the debate that the IAM model has indicators for. The one discussion thread that did
foster debate, Week #8, surrounded the topic of lateral entry teachers, and students had differing opinions. This implies that it is the discussion question that sets the stage for advanced knowledge construction.

Although all students were required to be discussion leader, it was the posting of Participant 01, when not on his assigned topic that inspired so much debate. The advantage of utilizing Ning as a tool for discussions is that students can create their own threads. Goos & Bennison (2008) found this to be integral to student contributions, and eventually creating a community of practice. This highlights not only the need for students to create their own learning space, but that in doing so when questions arise, real knowledge construction can happen.

Another hypothesis as to why there were so few discussions in the higher phases of the IAM model is discussed in Kanuka & Anderson (2005). They theorize that participants may be internalizing their knowledge construction, and that it is not an observable process. They point out that knowledge construction, as a process, may take longer than a discussion board is open. Rourke & Anderson (2002, p. 15) also indicate that some types of content “do not lend themselves to exchanges of perspectives or experiences, and that comparing interpretations is not the most efficient method of achieving knowledge objectives.”

The discussion forum in both classes was sited as an important tool in the interview process. Despite this lack of knowledge construction through the discussion
board process the participants enjoyed the boards and felt that they were an integral part of learning online.

There were also no significant differences between the two groups in terms of motivation as defined by Keller (1984). Students viewed discussions as a necessary component of the course. The survey data indicates that students felt the discussions to be motivational in both classes; Lim & Cheah (2003) cite this as an essential part of utilizing a discussion board in an online environment.

The discussion board analysis illustrates a high proportion of peer-to-peer discussion. The instructor treated the discussion boards as a student “owned” space and encouraged the discussion leader of the week to be the facilitator of the board. Grisham and Wolsey (2006) as well as Rourke and Anderson (2002) stress the importance of instructors facilitating this peer-to-peer interaction. The reason for no difference in motivation results may be because the instructor utilized the student-led discussion board in both classes.

It is interesting to note that none of the participants directly stated, nor implied, that they did not like the use of Ning in their classroom. Their main concern in utilizing the tool was navigating between the tool with all their content information and another for their discussion postings. Many compared Ning to traditional discussion boards and did not perceive any substantial difference. This is actually an advantage of Ning usage in that it will integrate well with current expectations of students and be accepted as an available substitute.
This research intended to compare existing discussion boards in a CMS with Ning. It was important that the directions and instructions stay the same for both classes. Yet, this may have put the Ning group at a disadvantage for the advantages of the tool were not directly pointed out, nor was it encouraged to be used. Effective tool usage may take a substantial paradigm shift of student expectations. LaPointe and Guawardena (2004) note that the creation of a discussion board provides no guarantee of student interaction. The stage needs to be set by the instructor to encourage the various aspects of the tool, instead of keeping them to the discussion board.

This is not to say that some students did not discover the benefits of the tool on their own, quite the contrary. In fact, it was the one discussion that was completely student originated that produced the most thoughtful and beneficial discussions. But this intimidated others in the class. They were unsure if they were “required” to answer. “Would this count towards their grade?” they wondered. It is these expectations of what a discussion board should be that held the class back from more profitable discussions.

One of the goals of utilizing Ning was increasing awareness of the participants with their fellow students to create more of a sense of community. Ning can provide students with the tools, such as profile pages and blogs, to share more of themselves. However, the instructor did not overtly encourage these tools. Although Ning’s tools were not utilized as much as they could be, they provided enough information to aid in the discussion boards. Participant 14 says it best with,
Our class was pretty diverse with Career and Technical Ed teachers, which I am myself and then we also had some grad, professional students that have no education background yet, they’ve just been all the way through school and we also had some professionals out there, we had a girl that worked with 4H. It was nice to know how to approach them to discuss some things.

This awareness of their fellow students can aid in the peer-to-peer discussions that (Grisham & Wolsey, 2006; Rourke & Anderson, 2002) found so beneficial.

It is interesting to note that 14 of the 18 responders, in the Ning group, to the survey indicated they had prior experience with social networking. The majority of them used SNS for keeping up with friends and acquaintances. Selwyn (2007) discusses how popular SNS are with his students and how they have traversed using sites for purely social reasons for more academic reasons. None of participants in the current study indicated any substantial use of SNS in their teaching. The survey data indicates that participant felt SNS were not “secure” or “private,” in addition to the lack of professionalism or the appropriateness of the site. Saunders (2008) found the same issue of privacy concerns with their pre-service teacher population.

However, the use of the Ning, brought to light the possible use of a SNS in the classroom. The participants felt that the reluctance they have with using an SNS can be overcome with the walled garden approach. The interviews conducted at the end of the semester reveal that the use of Ning can transcend these issues.

Participant 3 plans on using Ning as a way to expose her students to SNS in a more controlled fashion. “I’m really considering it for my kids, for them to use to use it
more as a learning tool. Teach them what is proper and not proper to post online, that type thing.”

Having participants shift their paradigm of seeing SNS as a purely social tool, and see the educational possibilities is an encouraging step in the use of Ning. For students to enjoy and use a tool enough to replicate it in their own classes is the highest of compliments. Although, Ning adoption was not necessarily a goal of this research it shows a willingness to accept the tool as well as increase the possibilities of SNS in education.

**Limitations**

The largest limitation for this study is the small number of participants. Although there is an overall of 33 participants, which in itself is small, on the Attitude Survey instrument, the sample is broken down further into two groups. The Motivation Survey has an even lower rate of return and has only 21 respondents. The Discussion Board posting data only looked at one group, and therefore had an n=20.

The participants in this study were not selected at random, they were students currently enrolled in a class that is part of the Instructional Technology program at NC State. This convenience-sample therefore is only generalizable to those with the same traits. The students utilized in this sample were graduate students in the college of education and the results may not be indicative of what could occur with undergraduate students or students at other colleges/institutions. However, it can be considered as an indicator to be used for future research endeavors.
Another limitation of the study is having one instructor for both classes. Although having one instructor provides a control for the study, it does have reproduction implications. The classes utilized in this study were from two separate and distinct courses, although they were in the same curricular area, they may attract different participant types. Another class, assignment, or instructor may produce different results.

**Recommendations for Future Research**

Further research on this topic should be done on a larger scale, across a variety of courses. It would be valuable to discover how this study would fare in a non-technical graduate class as well as an undergraduate class. The students may have adapted well to a new product like Ning because they pre-disposed to accept cutting edge technology, illustrated by the fact that they enrolled in an Instructional Technology course. Students in a more traditional class that does not emphasize technology may attract a different demographic and therefore reflect different results.

The makeup of this study’s participants are not the main demographic of most social networking sites. Although the 25-34 demographic in Facebook has seen significant growth, its percentage of users on the site (26.7%) is nowhere near the level of the 18-24 demographic is with 17,192,360 (40%) of the Facebook population. (Corbett, 2009). It would be interesting to see if participants, particularly undergraduates, already heavily invested in a social network could transfer those skills effectively into another network such as Ning. Further research may even take
advantage of the users already in Facebook and use that as a teaching tool instead of Ning.

Future research needs to look more closely at utilizing the profile creation tools in an SNS and how that effects student interactions. Although these tools existed in this study, they need to be emphasized as a way for students to get to know their fellow classmates. Familiarity and utilization of the toolset may be the key to successful use.

A longitudinal survey of students past a course-based interaction would provide insight into creating a learning community with a tool like Ning. It would be interesting to see when and if a tool once associated with a class could become a self-sustaining community without extrinsic motivation.

**Implications for Practice**

Utilizing a SNS, no matter which tool is used, in an educational context requires a paradigm shift of current teaching practices. In order for the tool to be effectively integrated into the class, students need to understand the advantages and limitations as well as shift their pre-conceptions of what an online class should be.

Instructors need to provide an overview of the tool as well as set parameters and expectations for its use. This research also supports the theory that peer-to-peer interaction is more beneficial and consequential to instructor-led discussion boards. Providing a space where students can structure their own environment can only help the learning process.


## Appendix A

**North Carolina State University**

**Institutional Review Board for the Use of Human Subjects in Research**

**REQUEST FOR EXEMPTION (Administrative Review)**

### GENERAL INFORMATION

1. **Date Submitted:**
2. **Title of Project:** *Use of online educational social networking in a school environment*
3. **Principal Investigator:** Bethany Smith
4. **Department:** Curriculum & Instruction
5. **Campus Box Number:** 7801
6. **Email:** Bethany.smith@ncsu.edu
7. **Phone Number:** 513-0545
8. **Fax Number:**
9. **Faculty Sponsor Name and Email Address if Student Submission:** Lori B. Holcomb; lori_holcomb@ncsu.edu
10. **Source of Funding?** *(required information): NA*
11. **Is this research receiving federal funding?** *NO*
12. **If Externally funded, include sponsor name and university account number:** *NA*
13. **RANK:**
   - [ ] Faculty
   - [x] Student: [ ] Undergraduate; X Masters; or [ ] PhD
   - [ ] Other (specify): _____

As the principal investigator, my signature testifies that I have read and understood the University Policy and Procedures for the Use of Human Subjects in Research. I assure the Committee that all procedures performed under this project will be conducted exactly as outlined in the Proposal Narrative and that any modification to this protocol will be submitted to the Committee in the form of an amendment for its approval prior to implementation.

**Principal Investigator:**

Bethany Smith  
______________________________ * 08/27/08

(typed/printed name)  (signature)  (date)

As the faculty sponsor, my signature testifies that I have reviewed this application thoroughly and will oversee the research in its entirety. I hereby acknowledge my role as the principal investigator of record.

**Faculty Sponsor:**

Lori B. Holcomb  
______________________________ * 08/27/08

(typed/printed name)  (signature)  (date)
Electronic submissions to the IRB are considered signed via an electronic signature.

PLEASE COMPLETE AND DELIVER TO:

joe_rabiega@ncsu.edu or Institutional Review Board, Box 7514, NCSU Campus (Administrative Services III, Room 245)

Project Description: (Describe your project by providing a brief summary and answering the requests for information below).

1. Project Summary. Please make sure to describe all study activities:

   The purpose of this study is to investigate the use of a closed social network (Ning) in the College of Education. Ning (http://www.ning.com/) is an online tool that allows for users to create their own social network. The College of Education has created their own social network using Ning (http://cedncsu.ning.com/) that is open to all students, faculty, & staff of the college. Ning allows users to share, communicate, and collaborate through the social network. The College of Education’s Ning is restricted to faculty, staff, and students within the college.

   Participants will be asked to complete a survey on attitudes and dispositions towards technology. Discussion groups and site usage statistics will be analyzed to determine the range and scope of different learning environments. Blackboard Vista discussion boards will be used to compare against Ning forums. Selected participants will be randomly interviewed about their experiences on the Ning site.

2. Description of participant population, including age range, inclusion/exclusion criteria, and any vulnerable populations that will be targeted for enrollment.

   The participant population will encompass any member, student, faculty, or staff of the college of education who is participating in the Ning social networking site. Students enrolled in one of six instructional technology courses offered in Fall ’08 and/or Spring ’09 (ECI 509, ECI 513, ECI 514, ECI 515, ECI 517, ECI 716) will be recruited for the BB Vista sample.

3. Description of how potential participants will be approached about the research, and how informed consent will be obtained. Alternatively, provide an explanation of why informed consent will not be obtained.

   Participants will be contacted and asked to participate in the study upon registering for an account on Ning. They will also be contacted by a Ning wide message as a call to participate. Informed consent will be obtained prior to the completion of the online survey.

   The Welcome Message is as follows:
Welcome to NCSU College of Ed Ning! Thank you for joining! The College of Education is researching the use of social networking using Ning in an educational context. You may be asked to complete an online survey that will take approximately 15 minutes to complete. All responses will be kept confidential. You may also be asked to participate in a focus group. We expect the interview or focus group to take approximately 30 minutes and all responses will be kept confidential. Participation in the focus group is strictly voluntary. If you are interested in participating in a focus group with researchers, please respond to this e-mail or contact bethany_smith@ncsu.edu

Students in the BB Vista portion of the study will be approached about the research via an email describing the study and its requirements. Within the email, a link will be included to the online survey. Informed consent will be obtained online at the beginning of the survey (e.g. If you agree to participate in the study, please click “next” to begin).

Email Message to BB Vista students:

You are invited to participate in a study examining the use of social networking in an educational context. The focus of this study is to identify and examine the educational uses, benefits, and drawbacks of tools that facilitate online networking. As part of this study, you will complete an online survey that will take approximately 15 minutes to complete. All responses will be kept confidential. If you have any questions about the study, please contact either Bethany Smith (Bethany_smith@ncsu.edu) or Dr. Lori Holcomb (lori_holcomb@ncsu.edu).

4. Description of how identifying information will be recorded and associated with data (e.g. code numbers used that are linked via a master list to subjects' names). Alternatively, provide details on how study data will be collected and stored anonymously (“anonymously” means that there is no link whatsoever between participant identities and data).
   Participant names will be replaced with code numbers. A master list of participant names will be kept on file by the principle investigator.

   The discussion groups will be analyzed based on interaction counts and by word choice indicators. Discussion groups will be transcribed and the data examined for themes. Any private conversations (such as through a direct message to a single user) will not be used. Only conversations that can be viewed by sub-groups or the entire site will be used. All data will be kept confidential.

   The focus groups will be audio recorded and immediately download to the principal investigator’s computer. Audio recordings will be kept for the duration of the study, the 08-09 academic year. The digital recorder will be erased. The PI’s computer is secure with a password. The recordings will be transcribed, and a fictitious name (e.g., participant A) will be used. The transcriptions will be kept in a secure location at all times. The fictitious name will be aligned with the code number for the participant.

5. Description of all study procedures, including topics that will be discussed in interviews and/or survey instruments.

   1. Analyze discussions on Ning and other classroom management systems (BlackBoard Vista)
   2. Pre-post attitudinal and dispositions technology survey
   3. Interview/focus group of selected participants

6. Will minors (participants under the age of 18) be recruited for this study:
   No
7. Is this study funded? No If yes, please provide the grant proposal or any other supporting documents.

8. Is this study receiving federal funding? No

9. Do you have a significant financial interest or other conflict of interest in the sponsor of this project? No

10. Does your current conflicts of interest management plan include this relationship and is it being properly followed? No

11. **HUMAN SUBJECT ETHICS TRAINING**
*Please consider taking the [Collaborative Institutional Training Initiative](https://www.citz.org) (CITI), a free, comprehensive ethics training program for researchers conducting research with human subjects. Just click on the underlined link.*

12. **ADDITIONAL INFORMATION:**
   a) If a questionnaire, survey or interview instrument is to be used, attach a copy to this proposal.
      **Survey attached**

      **Focus Group questions attached**

   b) Attach a copy of the informed consent form to this proposal.
      **Consent Form Attached**

   c) Please provide any additional materials that may aid the IRB in making its decision.
Appendix B

Participant Informed Consent

Please read the following consent form, then indicate whether or not you agree to participate in the described study. If you agree to participate, you will be given a URL to fill out a brief online survey.

North Carolina State University

INFORMED CONSENT FORM for RESEARCH

Title of Study: Use of online educational social networking in a school environment

Principal Investigators: Lori Holcomb, Bethany Smith

We are asking you to participate in a research study. The purpose of this study is to examine the impact an online educational social network has on student learning.

INFORMATION. If you agree to participate in this study, you will be asked to: complete an online survey. You will need approximately 15 minutes to complete the online surveys. Your interaction and communication data inside BlackBoard Vista will be analyzed. No direct messages from user to user will be analyzed.

RISKS. No foreseeable risks or discomforts are expected from your participation in this study. Survey and observation data will be summarized and no data will be identifiable by your name in oral or written reports which could link you to the study.

BENEFITS. Findings from this will be to identify the potential benefits and advantages of technology in the classroom. Also by identifying best practices, supportive materials, professional development activities, and tools can be developed to further support teaching and learning via the use of technology.

CONFIDENTIALITY. The information in the study records will be kept strictly confidential. Survey and observation data will be stored securely in password-protected Web forms. Your name will be replaced with a code for research purposes, a master list that links your data to your name will be maintained. Data will be stored securely in secure computers and/or in a locked office. No reference will be made in oral or written reports which could link you to the study.

CONTACT. If you have questions at any time about the study or the procedures, you may contact the researchers, Lori Holcomb or Bethany Smith, at 414a Poe Hall, North Carolina State University, Raleigh, 27695, or (919-513-0545). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514), or Joe Rabiega, IRB Coordinator, Box 7514, NCSU Campus (919/515-7515)."

PARTICIPATION. Your participation in this study is voluntary; you may decline to participate without
penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

1) **CONSENT**: "I have read and understand the above information. My decision to participate is as follows:"

   m Yes, I agree to participate with the understanding that I may withdraw at any time.
   m No, I decline to participate.
**Appendix C**

*Behavior Scale*

Please enter the code you were given:

Please select your gender:
- Male
- Female

Please select your position:
- Pre-service educator (i.e. NC State student)
- In-service educator (i.e. classroom teacher)
- Graduate student

Directions: Mark the frequency that you expect to perform each of the behaviors 6-8 weeks into the future by marking the appropriate buttons using the following key:

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>R</th>
<th>O</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>0 times/month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3times/month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-6 times/month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7+ times/month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You can click on the text that is hyperlinked to see examples and/or gain more information about the topic.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>R</th>
<th>O</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate with colleagues via electronic communications, such as e-mail and listservs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Use Instant Messenger to communicate with colleagues.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use the network to share and access resources, student work, and files.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Create back-up copies of files using CDs, zip drives, thumb drives, and/or networks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use a word processing program to create lesson plan templates.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use word processing program to edit and revise documents.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use database or spreadsheet programs (e.g. Excel or Access) to manage and analyze student data (electronic grade books).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use spreadsheet or database software to create charts and/or graphs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use presentation software to create a slideshow.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use presentation software to introduce a topic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Take and edit digital photographs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send files as e-mail attachments.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use online resources for teaching.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Conduct on-line searches for information using a search engine, such as Google, or others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access online journals and/or databases to stay current with research.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Participate in on-line professional development activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Review web sites for NC standards and curriculum.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Participate in Internet (web) collaborative projects (e.g. The Stock Market Game; Flat Stanley).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Utilize educational computer games (e.g. Sim City) to reinforce key concepts and skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Utilize technology to aid students with learning disabilities (e.g. Screen readers for students with visual</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
imperfections.)

Create *classroom* assignments requiring students to use educational technology.  1 2 3 4

Create *homework* assignments requiring students to use educational technology.  1 2 3 4

Use data collected from real time data (e.g. water temperature, salinity, Ph level...) to graph and analyze.  1 2 3 4

Consult on-line site containing information related to ethical practices (e.g. plagiarism & copyright).  1 2 3 4

Establish a safe on-line environment for students to use the Internet for learning purposes.  1 2 3 4

Participate in an online network (social or educational).  1 2 3 4

Create or respond to blog postings  1 2 3 4

1)  Do you currently belong to an online social network?  Yes  No

If you answered yes, please answer the following questions.  If you answered no, please jump to question 6

2)  Which online social network do you belong to: (Circle all that apply)

   a. Facebook
   b. MySpace
   c. Friendster
   d. Classmates.com
   e. Other:
3) How long have you belonged to an online social network?
   a. Less than 6 months
   b. Between 6 months and one year
   c. Between 1 year and 3 years
   d. Between 3 years and 5 years
   e. Over 5 years

4) What do you like about online social networking?

5) What do you dislike about online social networking?

6) Have you ever belonged to a Ning community? Yes No
   If so, please list ones you have belonged to:

7) Do you belong to an online educational community? (email listserv, etc.) Yes No
   If so, please list the ones you belong to:

8) Do you belong to a Professional Learning Community (PLC) at your school or district? Yes No
Appendix D

Motivation Survey

Please indicate your agreement with the following statements: (SD, D, N, A, SA)

1) The online discussions in my class retained my attention
2) The online discussions were relevant to my job, or future job.
3) You felt confident responding to discussions and engaging in dialogue with your fellow students
4) You had a positive experience using the discussion board
Appendix E

Interview Questions

1) Why did you join the Ning? Was it required?
2) How did you use the Ning?
3) What do you see as the strengths of Ning? What added benefits did it have over other online tools you have used in the past?
4) What were some of the drawbacks of Ning? Would you continue to be active on the site?
5) How has the use of Ning enhanced or improved your ability to communicate or collaborate with your colleagues?
6) Would you ever create your own Ning for a classroom or group?
7) Did you ever interact with anyone on Ning that was not associated with your class?
8) Did you join any groups? If so which ones? Were you asked to join those groups or did you decide on your own?
9) How did the Ning community compare to other online social networking tools you have used in the past?
10) Did the discussions in your class retain your attention?
11) Did you find that the discussions in your class were relevant to your work, or future work life?
12) Did you feel confident responding to discussions?
13) Did you have an overall positive experience using the discussions?

Just for Ning users:

14) Did you feel more motivated to log-in to a Ning based discussion board, or a BlackBoard one?
Appendix F

Results of Mann-Whitney U tests

Construct 1: Communication Mean Ranks

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ning</td>
<td>19</td>
<td>17.53</td>
<td>333.00</td>
</tr>
<tr>
<td>CMS</td>
<td>14</td>
<td>16.29</td>
<td>228.00</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Construct 1: Communication Mann Whitney U test results

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>123.00</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>228.00</td>
</tr>
<tr>
<td>Z</td>
<td>-.366</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.715</td>
</tr>
<tr>
<td>Exact Sig. [2*(1-tailed Sig.)]</td>
<td>.733(^a)</td>
</tr>
</tbody>
</table>

\(^a\) Not corrected for ties.

Construct 2: Internet mean ranks

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ning</td>
<td>19</td>
<td>15.50</td>
<td>294.50</td>
</tr>
<tr>
<td>CMS</td>
<td>14</td>
<td>19.04</td>
<td>266.50</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Construct 2: Internet Mann-Whitney U results

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>104.500</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>294.500</td>
</tr>
<tr>
<td>( Z )</td>
<td>-1.038</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>( .299 )</td>
</tr>
<tr>
<td>Exact Sig. ([2^* (1-tailed Sig.)])</td>
<td>( .304^a )</td>
</tr>
</tbody>
</table>

\( a. \) Not corrected for ties.

### Construct 3: Basic Skills mean rank

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ning</td>
<td>19</td>
<td>14.37</td>
<td>273.00</td>
</tr>
<tr>
<td>CMS</td>
<td>14</td>
<td>20.57</td>
<td>288.00</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Construct 3: Basic Skills Mann-Whitney U results

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>83.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>273.000</td>
</tr>
<tr>
<td>( Z )</td>
<td>-1.822</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>( .068 )</td>
</tr>
<tr>
<td>Exact Sig. ([2^* (1-tailed Sig.)])</td>
<td>( .071^a )</td>
</tr>
</tbody>
</table>

\( a. \) Not corrected for ties.
Construct 4: Advanced Skills comparison

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19</td>
<td>15.11</td>
<td>287.00</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>19.57</td>
<td>274.00</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Construct 4: Advanced Skills t-test results

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>97.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>287.000</td>
</tr>
<tr>
<td>Z</td>
<td>-1.312</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.190</td>
</tr>
<tr>
<td>Exact Sig. [2*(1-tailed Sig.)]</td>
<td>.199a</td>
</tr>
</tbody>
</table>

a. Not corrected for ties.