Technology-enhanced blended language learning in an ESL class: A description of a model and an application of the Diffusion of Innovations theory

by

Maja Grgurović

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Major: Applied Linguistics and Technology

Program of Study Committee:
Carol Chapelle, Major Professor
Dan Douglas
Volker Hegelheimer
Geoff Sauer
Mack Shelley

Iowa State University

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To my dear husband Zoran, mother Slobodanka, and brother Ivan for their love, support, understanding, and encouragement

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ABSTRACT

Blended learning, a combination of face-to-face and online instruction, is seen as one of the most important advancements of this century and a natural evolution of the learning agenda (Thorne, 2003). Blended learning studies that compared traditional and blended foreign language classes showed no significant differences in learner outcomes and indicated student satisfaction with their learning experience. However, these studies did not allow for a sufficient description of what actually happens in an environment of a blended learning class because they lacked information about a number of characteristics such as teaching materials and methods, patterns of interaction, and participant roles. Moreover, some of the studies did not contain a theoretical base necessary to unify information about blended language learning.

In view of these needs, this dissertation investigated a technology-enhanced blended learning in an ESL program. The study described the blended learning model using the framework for blended learning design proposed by Neumeier (2005). It also approached the investigation of blended learning as an innovation from two theoretical perspectives: Diffusion of Innovations theory (Rogers, 2003) and Curricular Innovation Model (Markee, 1997) by examining the innovation, its attributes, and stages of the innovation-decision process.

Case study methodology was used to describe a hypothetical blended learning ESL class situated within the context of an Intensive English Program. The description of the case, the hypothetical lower-intermediate listening/speaking class, was based on the analysis of two actual listening/speaking classes which constituted two embedded units of analysis. Main participants in two classes included two teachers and their thirty-one students in addition to five other teachers and two administrators. Two classes used a commercially-available learning management system (LMS), MyNorthStarLab, to combine face-to-face classroom teaching and online learning in the computer lab and for homework. Both qualitative data (in-depth teacher interviews, class and lab observations, and student and teacher focus groups) and quantitative data (student surveys and student LMS records) were analyzed.

The main findings indicate that participants could observe integration of face-to-face and CALL modes and that students could practice all language skills in both modes. A number of interactional patterns among the teacher, students, and computer were observed while teachers exhibited a variety of roles. It was also found that the use of MyNorthStarLab in blended learning classes represented an innovation according to Rogers' definition and that both positive and negative innovation attributes were present. Overall, teachers and most students had positive attitudes towards the innovation and teachers passed through the first four stages of the innovation-decision process.

The results of the study showed that innovations theory can have applications in applied linguistics and computer-assisted language learning. Case study methodology yielded evidence about the blended learning model that previous comparison studies were not able to provide. This dissertation has practical implications for language programs and teachers and theoretical implications for the innovation and blended learning frameworks that informed it.

CHAPTER 1: INTRODUCTION

Statement of the problem

The widespread adoption of computer technology in all aspects of human lives in the last decade has led to its growing presence in educational settings. Teaching and learning do not have to take place in the traditional face-to-face classroom anymore and students increasingly expect some level of computer-mediated instruction in their college classes. This amount of computer-mediated instruction can vary from, for example, students accessing the class syllabus and notes online to students taking part in online simulations of lab experiments. According to Picciano (2009), classes where face-to-face and online activities are integrated in a planned, pedagogically valuable manner and where online activities replace a portion of face-to-face time are blended learning classes.

A general definition of blended learning is a combination of face-to-face and computer-mediated instruction (Graham, 2006). Blended learning is seen as natural evolution of the learning agenda and even as the most important advancements of this century (Thorne, 2003, p. 2). Graham (2006) goes as far as to claim that blended learning "may even become so ubiquitous that we will eventually drop the word *blended* and just call it learning" (p. 7). Along the same lines Ross and Gage (2006) argue:

> In the long run, almost all courses offered in higher education will be blended. […] It is almost certain that blended learning will become the new traditional model of course delivery in ten years. […] What will differentiate institutions from one another will not be whether they have blended learning but rather how they do the blending and where they fall on the blended learning spectrum." (p. 167)

What made these authors so enthusiastic about blended learning? How did researchers determine advantages of blended learning, in particular blended language learning of interest to this dissertation? They did so by comparing performance of students in blended and traditional classes; surveying views of teachers, students and administrators; and evaluating

blended learning initiatives. For example, a number of studies comparing blended foreign language classes against traditional classes found no statistically significant differences on a number of language performance indicators: (Barr, Leakey, & Ranchoux, 2005; Chenoweth & Murday, 2003; Chenoweth, Ushida, & Murday, 2006; Echavez-Solano, 2003; Green & Youngs, 2001; Scida & Scaury, 2006). Student and teacher input about their experience in blended learning courses indicated a trend of increasing satisfaction (Murday et al., 2008). A blended French program was evaluated in Adair-Hauck, Willingham-McLain, and Youngs (1999) and performance of students in blended and traditional classes found equal.

With the evidence for effectiveness of blended instruction at hand, it may appear that blended learning research agenda has been exhausted. This is far from truth. While there will always be interest in global effectiveness studies, some blended learning researchers suggest another line of inquiry. The second part of the quote from Ross and Gage (2006) above suggests a shift in focus: it is not a matter of whether an institution will blend but *how* that blend will be made. Similarly, White (2006) proposes a future research agenda: "a crucial avenue for research concerns *how* students work within environments comprising typically classroom instruction, independent learning and online learning environments both individual and collaborative" (p. 259-260).

To answer the question of *how*, descriptive research is needed to depict the environment of blended learning classes and many of its variables. The comparative methodology of effectiveness studies which requires equal conditions in blended and traditional classes so meaningful comparisons can be made, does not allow for the fine-grained portrayal of specific features in blended environments that make blended learning effective. Without knowing these features it is hard to say *how* learners performed the way they did or formed certain attitudes towards blended learning. The first step in the direction of descriptive research represents examination of blended learning models so that new models as effective as or better than those already researched can be created. Graham and Robinson (2007) state this research goal: "a good beginning point will be to develop well articulated examples, cases and models of how blended learning can work in a variety of different contexts" (p.

108). This description of the models needs to be guided by theory that systematically unifies information about a phenomenon and leads its research on a number of levels. However, blended language learning seems to lack theoretical conceptualization, research agenda, and qualitative research (Neumeier, 2005, p. 164). To address the need for descriptive research, blended learning models, theoretical conceptualization of blended learning, and qualitative data, this dissertation provides a thorough description of the blended learning model in ESL classes using case study methodology while it also approaches blended learning from the theoretical standpoint of an innovation.

Purpose of the study

The purpose of this case study is to describe the blended learning environment in an ESL class where use of online CALL materials delivered through a commercially-made learning management system, creates the blend. In this study technology-enhanced blended learning is defined as face-to-face teaching and learning supplemented by an online component delivered through a learning management system (LMS). In this blend, the amount of face-to-face class time is not reduced and replaced by computer-assisted language learning (CALL) activities, but remains the same.

The first goal of the study is to describe the blended learning model using criteria previously outlined in the blended language learning literature (Neumeier, 2005). The study employs descriptive, single-case design with two embedded units of analysis. Next, the dissertation aims to establish whether the use of a learning management system in blended listening/speaking classes represents an innovation according to definitions from Rogers' Diffusion of Innovations theory (2003) and Markee's Curricular Innovation Model (1997). An additional goal is to investigate the attributes which can help or hinder the diffusion of an innovation (Rogers, 2003). The third objective is to collect the attitudes of teachers and students towards the innovation. The final goal is to describe the stages of the innovation-decision process teachers go through (Rogers, 2003).

Significance of the study

I believe that knowledge obtained in this study can make contributions to the field of CALL and applied linguistics. The first benefit of this study is the description of the blended learning model and many of its features previously unaddressed in the literature on blended language learning. The study employs case study methodology which incorporates qualitative and quantitative data to yield evidence earlier comparison blended learning studies were not able to provide. This work also applies the diffusion of innovations framework to the study of a CALL innovation thus showing that innovations theory can provide a theoretical foundation missing from some of the previous studies. Finally, this dissertation has practical implications for language programs and language teachers and theoretical implications for innovation-diffusion and blended learning frameworks that informed it.

Organization of the dissertation

This dissertation consists of five chapters. The first chapter introduces the study by defining blended learning, and presenting motivation for the study, its purpose and significance. Chapter 2 reviews the literature on blended language learning, introduces theoretical background and lists four research questions. It first presents the framework for blended learning design (Neumeier, 2005) that guides the review of literature and then situates the study within two theoretical frameworks: Diffusion of Innovations (Rogers, 2003) and Curricular Innovation Model (Markee, 1997). Chapter 3 introduces case study research methodology and describes the setting, participants, and materials followed by data sources and steps taken in the data analysis. Chapter 4 presents and discusses the results by research questions. Chapter 5 summarizes the results and brings into discussion limitations and implications. The chapter ends with directions for future research and general conclusions.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews literature which influenced this dissertation and provided a starting point for investigation of blended learning. First, a discussion of two blended learning frameworks (Sloan-C's and Neumeier's (2005)) is presented and a case made for using the latter because it is more specific to the field of applied linguistics and computer-assisted language learning. Neumeier's framework guides the description of the blended learning model researched in this study as well as the review of eleven blended language learning comparison and non-comparison studies. The thorough review indicated insufficient information about several important features of blended language courses (materials, teaching methods, patterns of interaction, and participant roles), which created a need for the present study.

Second, the chapter discusses two theoretical frameworks, Diffusion of Innovations theory (Rogers, 2003) and Curricular Innovation Model (Markee, 1997), which situate the present research. Diffusion of Innovations guides the investigation of the use of a learning management system in a technology-enhanced blended learning class, its classification as an innovation, its attributes, and stages of the innovation-decision process. The Curricular Innovation Model approaches the study of the innovation from the field of language teaching and learning and is used to look at innovation products. After the discussion of the literature which highlighted main gaps and description of theoretical frameworks which positioned the study, four research questions are presented.

Blended learning frameworks

The discussion of blended learning in higher education begins with the quality framework created by Sloan Consortium (Sloan-C). Sloan C is a non-profit organization dedicated to integration of online education into the mainstream of higher education (Sloan-C website). Although the framework was originally established to assess online learning, it has increasingly been used to evaluate blended learning (Lorenzo & Moore, 2002; Laumakis, Graham, & Dziuban, 2009). The framework consists of five pillars: learning effectiveness,

student satisfaction, faculty satisfaction, cost effectiveness, and access (Lorenzo & Moore, 2002). According to the Sloan-C website, the goal of learning effectiveness is meeting or exceeding institutional standards, which can be demonstrated by measuring student progress. Students and faculty are satisfied with blended learning courses if they are pleased with their learning and teaching experience. Cost effectiveness aims at improving services and reducing costs while providing a fair return on tuition rates for the institution. Finally, access includes administrative and technical infrastructure and learner support services which allow access to all learners. This framework was successfully applied to a range of academic disciplines from psychology (Laumakis, Graham, & Dziuban, 2009) to management information systems (Larson & Sung, 2009) as judging by journal publications while the Sloan-C website publishes a current list of user-supplied effective practices related to any topic in online education.

Although guiding research in a variety of fields, I found some pillars overly broad for the study of blended learning in this dissertation. First, institutional aspects of the framework were not of immediate interest for this study which focused on the experience of individuals (teachers and students). Moreover, institutional cost effectiveness and access fell beyond the scope of this research. Finally, the purpose of the study was the description of the learning environment which did not include assessment of learning outcomes as a way to demonstrate learning effectiveness. Instead of Sloan-C's framework, the framework for designing blended learning environments for language teaching and learning was employed in this work (Neumeier, 2005) because it is more specific to the field of applied linguistics and computer-assisted language learning.

In this study, Neumeier's framework (2005) allows for a fine-grained look at the number of components of the language classroom. Neumeier writes that the framework focuses on "requirements that are specific to the teaching and learning of languages" (2005, p. 176) and is the result of research and development of a blended learning course, *Jobline,* at Munich University. The course was designed to teach students at German universities how to apply

for a job in English through practice in writing CVs and cover letters and speaking in job interviews.

There are six parameters in the framework: 1) mode, 2) model of integration, 3) distribution of learning content and objectives, 4) language teaching methods, 5) involvement of learning subjects (students, tutors, and teachers), and 6) location. The framework guides the description of the blended model in this study and represents a starting point for the discussion of CALL blended learning studies later in this section. Each of the parameters is discussed next.

According to Neumeier, two major modes in blended environments are face-to-face and CALL. The mode which guides learners and where they spend most of the time is called the lead mode. Sequencing and negotiation of content is also done in the lead mode. The modes are further divided into components or sub-modes (for example, different teaching methodologies in the face-to-face mode or synchronous and asynchronous communication in the CALL mode).

Neumeier finds the second parameter, model of integration, very important. Overall, integration is related to the obligatory or optional nature of activities. Moreover, level of integration is connected to sequencing of modes which can be alternating, parallel, or overlapping to name just a few. For example, the face-to-face mode can alternate with a CALL sub-mode (such as message board) or the message board can be available throughout the course parallel to the other sub-modes. A decision on how to sequence activities could be based on the degree of transactional distance defined as the "physical distance that leads to a communication gap" (Moore & Kearsley, 1996, p.203). Neumeier gives an example of a blended model where an activity with a low degree of transactional difference, a group face-to-face discussion, was scheduled after individual work on a CD-ROM with a little collaborative character.

Parameter three, distribution of learning content and objectives, can be implemented in two ways: parallel or isolated. Parallel distribution allows a certain language skill to be incorporated and practiced in both modes. Neumeier's blended course, *Jobline,* uses isolated distribution because speaking was only practiced in the face-to-face mode (Neumeier, 2005). Language teaching methods, parameter four, are influenced by online materials, the online tutor, and the face-to-face teacher. Neumeier claims that the CALL mode is often considered limited in comparison to face-to-face teaching regarding the range of teaching methods; therefore communicative language teaching methods should be employed to counterbalance CALL mode limitations.

Involvement of learning subjects, parameter five, refers to types of interaction that can take place in the blended environment. In addition to two major interaction patterns, human-to-human and human-to-computer, there are a number of variations (for example, student-to-student through computer). Another descriptor of this parameter is teacher and learner roles. In the blended environment both teachers and students assume new roles so teachers can become online tutors and students more autonomous learners. The final parameter, location, refers to the physical space were learning takes place. In addition to traditional locations such as classroom and home, new technologies (such as mobile phones) can allow for learning to take place elsewhere.

CALL blended learning studies

Previous CALL blended learning research and practice provided a background for this dissertation. In this section I reviewed eleven blended language learning studies (for the list see Table 1) using the previously described Neumeier's framework (2005). In the review, I divided the studies into comparison and non-comparison based on their research design. Comparison blended learning studies (marked as CS in Table 1) examined the effectiveness of blended learning in higher education foreign language instruction by comparing blended instruction (face-to-face together with CALL instruction) with traditional instruction (face-to-face without CALL instruction). Non-comparison studies (marked as NCS in Table 1) examined blended learning program design and implementation, and student and teacher

attitudes towards blended learning. This review highlighted the lack of information about important features of blended models in these studies, which ultimately motivated this study.

Participants in comparison studies were students of French, Spanish, and German who received instruction either in the traditional class (control groups) or working on computer-based or web activities in addition to the traditional class (blended learning groups). Participants in non-comparison studies were students of English as a Foreign Language (EFL), Spanish, and French taking blended learning classes. Table 1 gives an overview of these studies including the type of study (comparison or non-comparison), number of participants, language taught, and proficiency level.

Table 1. Overview of blended learning studies by type of study, number of participants, language taught, and proficiency level

Study	Type of study	Number of participants	Language taught	Proficiency level
Adair-Hauck et al. (1999)	CS*	33	French	beginner
Banados (2006)	NCS*	39	EFL	beginner
Barr et al. (2005)	CS	29	French	beginner
Chenoweth and Murday (2003)	CS	20	French	beginner
Chenoweth et al. (2006)	CS	365	French and Spanish	beginner and intermediate
Echavez-Solano (2003)	CS	160	Spanish	beginner
Green and Youngs (2001)	CS	46	French and German	beginner
Murday et al. (2008)	NCS	not reported	French and Spanish	beginner and intermediate
Scida and Saury (2006)	CS	41 + 135	Spanish	beginner
Stracke (2007)	NCS	32 + 9	French and Spanish	beginner
Ushida (2005)	NCS	9 + 14 + 7	French and Spanish	beginner and intermediate

* CS: a comparison study, NCS: Non-comparison study

Blended learning classes in these studies combined two modes: face-to-face and CALL. The time spent in each mode per week ranged from 1 to 2.5 hours in the face-to-face mode and from 20 minutes to 2 hours in the CALL mode. As can be seen in Table 2, students spent most of the time in the face-to-face mode which was the lead mode in all studies. The location of the face-to-face mode was the classroom and the location of the CALL mode was the computer lab or student home. The technology used in the CALL sub-mode included CALL programs, course management systems, and the web. Most of the studies used learning management systems -- LMSs (*WebCT* or *Mallard*) to deliver instruction, sometimes in conjunction with computer-mediated communication tools. For example, through *WebCT*, learners had access to course materials, quizzes, electronic bulletin boards, e-mail, and synchronous chat programs (Chenoweth & Murday, 2003; Chenoweth et al., 2006; Murday et al., 2008; Ushida, 2005). In these studies, French and Spanish students

participated in weekly text chat sessions with classmates in addition to weekly twenty-minute meetings with the instructor and one contact hour meeting in the classroom. While all authors in Table 2 described technology and some activities conducted in the CALL mode, they did not specifically address the teaching methods or activities used in the face-to-face mode. For example, no classroom observations were done in Stracke (2007) to determine how instruction was conducted. The only three exceptions are Barr et al. (2005), Adair-Hauck et al. (1999), and Echavez-Solano (2003). Barr et al. (2005) mentioned that participants had group discussions and conversations in class while Adair-Hauck et al., (1999) reported students doing in-class speaking tasks. Echavez-Solano (2003) described structured input exercises students worked on both in the CALL and face-to-face mode and called in-class activities communicative probably because they were speaking tasks.

Table 2. Modes in blended learning classes

	Face-to-face mode	CALL mode			
Study	**Time**	**Time**	**Sub-mode**	**Technology used**	**Sample activities**
Adair-Hauck et al. (1999)	3 days a week for 50 min (Lead)	35 min	CALL programs	Reading, grammar, and vocabulary CALL programs	Students read authentic texts in *French Reader*, worked on grammar and vocabulary exercises in *Dasher* and viewed videos.
Banados (2006)	Regular classes with teachers and conversation classes with native speakers*	not reported*	Web	Course management system *UdeC English Online*	Students did role plays with video characters.
Barr et al. (2005)	1 hour for both modes**	1 hour for both modes**	CALL program and web	Four-skill CALL program and web activities	Students did pronunciation drilling and role plays with *Tell Me More*, recorded voices, and searched the web.
Chenoweth and Murday (2003)	1 hour a week in class, 20 min with instructor in groups or individually (Lead)	1 hour	synchronous chat	Course management system *WebCT*	Students did text chat, sent e-mail messages, posted on the bulletin board and did exercises in *Hot Potatoes*.
Chenoweth et al. (2006)	1 hour a week in class, 20 min with instructor in groups or individually (Lead)	20 min	synchronous chat	Course management system *WebCT*	Students did text chat, sent e-mail messages, posted on the bulletin board and did exercises in *Hot Potatoes*.
Echavez-Solano (2003)	3 days a week for 50 min (Lead)	Approximately 1h 40min***	asynchronous text chat	Course management system *Mallard*	Students viewed videos did asynchronous text chat.
Green and Youngs (2001)	3 times a week for 50 min (Lead)	35 minutes	Web	Language and culture web activities	Students visited pre-selected websites and answered questions in writing.

* Banados did not report the actual times neither in the face-to-face nor CALL mode
** Barr et al. reported class meetings lasting 1 hour. It is not clear how the time was divided between the modes.
*** Echavez-Solano did not report the time in CALL mode. The CALL mode replaced two class meetings so approximate time should be around 1hour and 40 minutes to make the group comparable to the control one

Table 2. Continued

	Face-to-face mode	CALL mode			
Study	**Time**	**Time**	**Sub-mode**	**Technology used**	**Sample activities**
Murday et al. (2008)	Same as Chenoweth and Murday (2003)				
Scida and Saury (2006)	3 times a week (Lead)	2 hours	Web	Course management system *Mallard*	Students did structured vocabulary and grammar activities and practice in listening, reading and writing.
Stracke (2007)	Not reported	90 min	CALL programs	CALL programs for self study	Students worked on *Think and talk French/Spanish* and *Learn speak French/Spanish*
Ushida (2005)	Same as Chenoweth and Murday (2003)				

In comparison studies materials used to assess learning goals were described in detail. This is not surprising given that the studies measured effectiveness of blended learning based on end-of-the-course performance measures such as tests of listening, speaking, reading, writing, grammar, vocabulary, and culture knowledge. Additionally, the utmost attention was given to making materials the same or similar in blended and control groups. For instance, in Echavez-Solano (2003), the control group textbook was turned into an electronic book, that way exposing participants to the same content. In Green and Youngs (2001), two groups had the same syllabus, homework assignments, essays, and quizzes, and the control group did similar in-class activities. While the comparative research methodology required carefully designed and administered assessments and uniformity of materials used, the actual use of materials (especially in the face-to-face mode) remains unaddressed.

Due to the set-up of studies, some blended learning groups had only online materials (Chenoweth et al. (2006) and Stracke (2007)). Student interviews showed that this lack of printed materials presented a problem for some of them (Chenoweth et al. (2006), Murday et al., (2008), Stracke (2007)). Learners in Chenoweth et al. (2006) reported the need to print out large parts of course materials and wished they had a paper textbook. Additionally, students had difficulties in finding their way through materials on *WebCT* rich in images, audio files, and interactive exercises, which shows that design of materials needs to be carefully considered.

The authors paid attention to the integration of modes, the second parameter in Neumeir's framework, by making the activities obligatory. Some such as Scida and Saury (2006) took advantage of CALL technology features to set deadlines for grammar and vocabulary exercises so students would complete them in a timely manner. Although the issue of integration was considered in the course design, students in Chenoweth et al. (2006) reported needing more support from the instructor in addition to a more specific work plan that would lay out assignments and deadlines (Murday et al., 2008). Some students observed that lessons and exercises were not connected, which indicates low level of integration as perceived by end users. Lack of connection between classroom and individual work was one of the reasons

why some students dropped out of blended French and Spanish classes which employed face-to-face instruction and individual study with a CALL program (Stracke, 2007). All of these findings underscore the need to provide examples of well-integrated modes as well as describe the features that make the integration successful.

Distribution of learning content, the third feature of blended environments, was influenced by the type of technology employed in the CALL mode. For example, in Adair-Hauck et al. (1999) students did not work on speaking tasks in the CALL mode because the CALL programs they were using in the lab targeted only reading (*French Reader*) and grammar and vocabulary (*Dasher*). Consequently, speaking was practiced only in the face-to-face mode. Similarly, the web activities in Green and Youngs (2001) involved reading on the Internet and writing so listening and speaking could not be practiced. As a result, in Adair-Hauck et al. (1999) and Green and Youngs (2001), the distribution of learning content or more precisely language skills was isolated with certain skills practiced only in one of the modes. In contrast, in Barr et al. (2005) and Banados (2006) students practiced speaking both in the CALL mode (role plays with the computer program) and face-to-face mode (class discussions) making the distribution parallel. In other studies, the distribution of content or skills was not addressed and researchers did not specify how the distribution was made. Given the nature of the CALL task in Adair-Hauck et al. (1999) and Green and Youngs (2001), it may not be surprising that students expressed concerns about the development of their speaking and listening skills in the blended class. However, a similar concern was raised by learners in Chenoweth and Murday (2006) who had weekly text chat sessions in addition to small group meetings with the instructor. These results indicate the need to rethink the CALL tasks especially given new allowances for oral production that technology affords as well as to reconsider teaching methods used in the face-to-face mode.

Language teaching methods, the fourth of Neumeier's parameter, was not discussed except in Scida and Saury (2006) who found the change of teaching methods in blended Spanish classes. Instructors in that study reported spending more class time on communicative activities and less on grammar and vocabulary presentations and mechanical practice, which

were available in the learning management system. For instance, all instructors spent 20% of class time or less on the presentation of new vocabulary.

The next parameter, involvement of learning subjects, Neumeier operationalized through types of interaction and participant roles. This parameter was often not addressed in blended learning studies, so the types of interaction which took place in each mode could only be speculated. Ushida (2005) briefly mentioned that different teachers utilized different types of interaction (teacher-class, teacher-student, student-student) depending on the perceived purpose of face-to-face meetings. The other evidence comes from Scida and Saury (2006) who reported increased student-computer interaction documented through computer logs and student surveys. The fact that instructors set a minimum passing score for some online activities prompted many students to attempt them multiple times, thus increasing student interaction. In addition, 78% of students reported that they always worked on online activities until they got the perfect score. One of the authors, Echavez-Solano (2003), realizes the importance of interaction in blended environments and calls for future research in this area (2003, p. 143). Participant roles were only investigated in Adair-Hauck et al. (1999) and Banados (2006) who addressed the adjustments both teachers and students had to make in blended classes. Teachers needed to learn many new skills such as how to integrate materials, use hardware and software, and troubleshoot computer problems (Adair-Hauck et al., 1999). Students also needed to learn the new technology but also learn to be autonomous learners. Finally, Ushida (2005) and Muray et al. (2008) reported on the direct relationship between student motivation and student progress and stressed the importance of students taking responsibility for their learning. The lack of research into this blended learning feature creates a gap in understanding how a blended environment functions and should be addressed in future studies.

Although the comparison blended learning studies did not provide a detailed description of the environment judging by Neumier's framework (2005), they did produce evidence about the effectiveness of blended classes. Overall, none of the studies found a significant difference between the performance of the blended learning and control groups, except for

Scida and Saury (2006), who found overall better performance of the blended learning class (see Table 3). Some blended learning classes performed significantly better than control classes on writing (Adair-Hauck et al., 1999; Chenoweth et al., 2006; Chenoweth & Murday, 2003); reading (Adair-Hauck et al.,1999), and some oral production measures (Chenoweth et al., 2006). Performance of one blended class (intermediate Spanish I) in Chenoweth et al. (2006) on oral production was significantly better than that of the control group counterparts, which is an interesting finding given that the students in Chenoweth and Murday (2006) and Green and Youngs (2001) worried about the development of their speaking and listening skills in the blended class.

Table 3. Findings of comparison blended learning studies

Study	Number of classes (control + blended learning)	Variables	Findings
Adair-Hauck et al. (1999)	1+1	listening, speaking, reading, and writing skills, and cultural knowledge	No significant difference between groups on speaking, writing and cultural knowledge gain scores. No significant difference on listening outcome measures. Blended learning group performed significantly better on writing and reading outcome measures and the control group on speaking outcome measures.
Chenoweth and Murday (2003)	1+1	grammatical knowledge, written and oral production, listening and reading comprehension,	No significant difference between groups on grammatical knowledge, oral production, listening and reading comprehension on outcome measures. Blended learning group performed significantly better on written production outcome measures.
Chenoweth et al (2006)	21+ 13	listening and reading comprehension, grammar knowledge, vocabulary, and written and oral production	No significant difference between groups on all outcomes measures listed on the left. Exceptions: One control group performed better on vocabulary outcome measures, two control groups performed better on listening and reading comprehension outcome measures, three control groups performed better on grammar knowledge outcome measures. One blended learning group performed better on oral production and one on written production measures.
Echavez-Solano (2003)	5+7	general language proficiency, listening and speaking skills	No significant difference between groups on all outcomes measures listed on the left.
Green and Youngs (2001)	4+4	reading, writing, listening, speaking, and cultural understanding	No significant difference between groups on all outcomes measures listed on the left.
Scida and Saury (2006)	1+1	course grades	Median course grade higher for blended learning group.
Barr et al. (2005)	1+1	pronunciation, listening, speaking	No significant difference an outcome measure that includes pronunciation, listening and speaking tasks. Control group significantly better based on oral proficiency gain scores (fluency measure).

To better understand findings in comparison blended learning studies, it is also important to look at cases when the control group exhibited better performance than the blended learning group. Control group students in Barr et al. (2005) exhibited larger gains in development of oral proficiency compared to their counterparts in the blended group. Similarly, Adair-Hauck et al. (2000) found better performance of the control group on the test of speaking skills at the end of the semester. In Chenoweth et al. (2006), elementary Spanish I and II control groups performed better on listening and reading comprehension, grammar knowledge, and vocabulary tests. To explain student performance, Adair-Hauck et al. (2000) and Chenoweth et al. (2006) interviewed participants in small groups and found that the blended learning group complained of technical difficulties as well as difficulties in finding their way through *WebCT* materials, as mentioned earlier. Along the same lines, students in Barr et al. (2005) lost time getting used to the technology and dealing with technical problems, the time that they should have used for oral practice. Most of the students in the blended learning classes in Echavez-Solano (2003) cited "difficulties involved in figuring the program out" (p. 142). Given all this, it can be concluded that technical problems and unfamiliarity with the online environment could be reasons blended learning may not have worked effectively.

In addition to comparable learner progress, one of the most encouraging findings from blended learning studies includes overall student satisfaction with their blended learning experience. Stracke (2007) used student and teacher questionnaires and semi-structured interviews to investigate learner attitudes and found students had predominantly positive views of blended learning. Positive views of blended learning were also found in Ushida (2005). Similarly, the student data from Murday et al. (2008) indicate "a trend of increasing satisfaction with online courses compared with traditional courses" (p. 125). Students in Green and Youngs (2001) and Adair-Hauck et al. (2000) reported making progress in the course. In Scida and Saury (2006) all students would recommend the course to others, 94% were satisfied or very satisfied with the course, and 92% benefited from the use of the learning management system. Some of the benefits of blended learning listed in Echavez-Solano (2003) and Scida and Saury (2006) included immediate feedback, individualized attention, greater control, and non-judgmental testing. While successful learner performance

and positive attitudes were valuable findings, descriptive methodologies could be employed to offer a richer understanding of blended learning environments.

Finally, the last component in the analysis of previous literature addressed theoretical background that should ideally inform blended learning investigation or at least some of its aspects. It was found that several comparison studies were grounded in previous research only since they did not mention any theoretical framework (Chenoweth & Murday, 2003; Chenoweth et al., 2006; Green & Youngs, 2001; Scida & Saury, 2006). Moreover, some non-comparison studies also lacked theoretical framing (Stracke, 2007; Murday et al., 2008). Theory informed program evaluation (Adair-Hauck et al., 1999) and development of course materials for English Online program in Banados (2006). In Echavez-Solano (2003) online materials were created based on premises of input-processing theory. Communicative and constructivist theories of SLA underpinned the pedagogy in Barr et al. (2005) while in Ushida (2005) two frameworks for L2 motivation helped interpret the results of the study; these are the only two studies with firm theoretical conceptualization. Sparse use of theory in blended learning research represents another gap which this dissertation aimed at addressing. Further discussion ensues in the next section.

Theoretical basis for blended learning

As the literature review in the previous section indicated, blended learning may lack theoretical conceptualization which is especially true for some comparison studies. Without a theoretical background, it is difficult to make applications of findings to other blended contexts. The theory helps systematically unify information about a phenomenon so findings from individual studies add to the body of knowledge and better understanding of the topic of investigation. Furthermore, theory can guide research on a number of levels: from conceptualization of the study and development of methodology and research questions to interpretation of results (Chapelle, 2003). For example, the theory helped to conceptualize this dissertation as an innovation research because of blended learning novelty. Similarly, the theory helped direct the study of innovation towards two of its most salient aspects given the

setting and participants available. For these reasons, it was very important to clearly situate the present study within a theoretical framework.

In this study, blended learning and its elements are investigated from two theoretical perspectives: Diffusion of Innovations theory (Rogers, 2003), and Curricular Innovation Model (Markee, 1997). These theories were chosen because they help better understand the complex phenomenon of technology-enhanced blended learning. From the standpoint of Diffusion of Innovations theory, blended learning that uses an LMS is approached as an innovation since it is the first time it has been introduced into the setting. This theory guides the investigation through examination of innovation attributes and stages of the innovation-decision process. The scope of this theory is the largest because it paints a big picture of blended learning while the other focuses on one of its aspects. Curricular Innovation Model applies the blended learning innovation to the field of language teaching and is used to look at innovation products. Each theoretical perspective is discussed next.

Diffusion of Innovations theory

Diffusion of Innovations theory by Everett Rogers (2003) represents a well-established theory that explains a universal process of social change. The central tenet of this theory is any kind of innovation, its operation, and diffusion into the world. The theory examines innovation diffusion, development, innovation-decision process, its attributes and rate of adoption, adopter categories, diffusion networks, and many other aspects. Rogers' Diffusion of Innovations originates in the field of agricultural innovations, in particular, hybrid seed corn diffusion in rural Iowa communities, which was one of the first studies Rogers worked on in mid 1950s. Since then, the theory has been adopted and used by scholars in a variety of disciplines such as sociology, communication, education, marketing, anthropology, and public health to name just a few. No matter how different these fields may be, they undertake diffusion research using similar qualitative and quantitative methodologies. Qualitative data sources include case studies, observations, and interviews while quantitative are mainly questionnaires. Statistical data analyses are performed in many disciplines, too.

Diffusion of Innovations is used to explain a wide range of innovative practices and objects from boiling water to prevent the spread of diseases in undeveloped countries, creating a car pool lane on highways, to owning personal computers by US households. What all of these practices and objects have in common is their novelty for users. Rogers defines innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 12). Newness of an innovation is a subjective characteristic and depends on the perception of the user.

The dissertation builds on two major strands of the theory: attributes of innovation and the innovation-decision process. Each innovation is characterized by five attributes that can help/hinder its diffusion: 1) relative advantage, 2) compatibility, 3) complexity, 4) trialability, and 5) observability. Relative advantage is whether users perceive the innovation as advantageous. The more advantage the innovation brings, the more rapidly it will be adopted. The same relationship applies to compatibility—the perception of innovation as compatible with previous experiences and values of adopters. On the other hand, complexity has a negative effect on adoption because the more complex the innovation, the less likely it will be accepted. The fourth attribute, trialability, is the degree to which a user can try out the innovation. Finally, observability applies to the degree the innovation can be observed before adoption. The last two attributes have a positive effect on the rate of adoption. These attributes of innovation are very important for understanding how users perceive the innovation, which is one of the goals of this study.

As in Rogers' theory, relative advantage and complexity are important elements of another theoretical framework, Technology Acceptance Model which describes how people approach and employ new technology. In the Technology Acceptance Model (Davis, 1989; Bagozzi et al., 1992), Rogers' attributes of relative advantage and complexity roughly translate into qualities of perceived usefulness and perceived ease of use. Perceived usefulness is the perceived level to which a piece of technology would improve one's job performance while perceived ease of use represents the level a piece of technology would be considered effort-free. While the Technology Acceptance Model could be another valuable theoretical model

for the study of technological innovations, Diffusion of Innovations was found more appropriate for this dissertation because of its strength in another area: the study of the innovation-decision process.

Rogers' model of the innovation-decision process explains stages an individual goes through from the first contact with an innovation to its complete adoption. There are five stages in this model: knowledge, persuasion, decision, implementation, and confirmation. In the first stage—knowledge—the individual is exposed to an innovation and learns about its purpose and function. Three types of knowledge about the innovation may be available in this stage (Rogers, 2003, p. 173): awareness-knowledge (information that the innovation exists), how-to knowledge (information on how to use the innovation), and principles-knowledge (functioning principle of the innovation).

In the next stage-persuasion-individuals form an opinion about the innovation. This opinion may be positive or negative, which in turn influences whether the innovation will be further adopted or rejected. To see whether the innovation works in a specific context and to reduce uncertainty about its effectiveness, the individual seeks evaluation information from other individuals, scientific sources, or mass media. Peers are the major source of reinforcement in this stage and can provide a support system for the new adopter and decrease the uncertainty about innovation outcomes.

The decision to adopt the innovation is made in the decision stage. Before deciding to adopt, individuals try the innovation out to see its usefulness in their setting. They may also seek additional information from different sources. If the innovation is still viewed favorably after it has been piloted, the process is moved to the implementation stage which usually follows decision promptly.

Innovation is put to use in the implementation stage. This stage is characterized by the continued use of innovation, which eventually starts to be used on a regular basis. The adopters may seek support from others in form of technical assistance or positive

reinforcement. Once the innovation becomes institutionalized, the implementation stage ends and the confirmation stage begins. In this final stage, the innovation becomes completely integrated into the ongoing routine while the adopter may start promoting the innovation to others.

Although applied linguistics was not represented among nine major diffusion research disciplines (see Rogers, 2003, pp. 44-45), the field was, nevertheless, influenced by the diffusion theory and research. Bax (2002) and Chambers and Bax (2006) used the diffusion framework to study CALL as an innovation and how it becomes diffused and eventually normalized i.e. completely integrated into teaching and learning practices. Bax (2002) builds on the Rogers' stages of the innovation-diffusion process and slightly alters them to suit his purpose and context in order to produce seven stages of normalization in CALL. Chambers and Bax (2006) approach the study of innovation through factors that influence CALL diffusion. Their work uses qualitative research methods of participant and class observations and teacher and administrator interviews to study the use of CALL at two institutions in England. In this study, Diffusion of Innovations helped authors conceptualize and situate their work. The results, eleven issues significant in the normalization of CALL, help inform the general theory of innovation as well as research and practices specific to CALL.

Rogers' theoretical stance was also used by Wall (2000) in the area of language assessment as she investigated the influence of another innovation, in this case language tests. Wall was looking for a common framework to categorize findings about the impact of high stakes tests on teaching and learning and used Rogers' qualities of the innovation as a starting point. The innovation-diffusion model Wall eventually employed was the one by Henrichsen (1989) because it applied the innovations ideas to the English language teaching context. Similar application and field-specification of the theory was done by Markee (1997) in his curricular innovation model discussed in the next section.

Curricular Innovation Model

Ideas of Rogers and other diffusion researchers were applied to language teaching and teacher education contexts by Numa Markee to create a theoretical framework of curricular innovation (1997). This framework is geared specifically towards language teaching professionals who are presented with principles of how an innovation may be designed, implemented, and maintained. According to Markee, curricular innovation is "a managed process of development whose principal products are teaching (and/or testing) materials, methodological skills, and pedagogical values that are perceived as new by potential adopters" (1997, p. 46).

In his book Markee sought evidence if a new task-based syllabus constituted a curricular innovation for teaching assistants (TAs) in the ESL program he directed. TAs created task-based materials, tried them out in their classrooms, and reflected on the experience. Markee, who also instructed the TAs, surveyed them, examined their papers, and in some cases collected samples of TA's journals at the end of the semester. Markee found evidence that the first principal product, new teaching materials, were developed by all participants but evidence of the second product, development of new methodological practices, in five out of eleven TAs who taught that academic year. Markee wrote that he could not "document empirically the extent to which all TAs have developed new methodological skills" (1997, p. 156). One participant who exhibited a methodological change was Lori Chinitz who reported that the outcome of her task depended on how she had divided her students into groups which in turn changed her perspective on group composition. To document change in other participants, Markee suggested collection of longitudinal data. Finally, Markee reported difficulties in determining the development of new pedagogical values due to their abstract nature and complexity. He concluded that "the implementation of methodological and attitudinal changes has been uneven and has not progressed as far as the implementation of changes in materials" (1997, p. 164).

Other innovation researchers were more successful in documenting curricular innovation using Markee's framework. Todd (2006), for example, looked at the implementation and continuation of an innovation: task-based language teaching at a university in Thailand. The products of this innovation were teacher-created materials and changes made to them over the course of four years. To show that task-based curriculum is an innovation, Todd provided an extensive background that explained teachers' dissatisfaction with the previous skills-based curriculum and the need for a curricular change that will better meet the needs of students. In addition to curricula, innovation in language teaching can take form of new practices such as "introduction and institutionalization of counseling in language learning centers" (Rubin, 2007, p. 4). Rubin claims that "introduction of counselors who promote LSM [learner self-management] is usually a new approach" and finds Markee's work useful for researching this phenomena. Rubin provides evidence that language counseling is an innovation by citing the work of Reinders (2007) who gave examples of new materials and the work of Mozzon-McPherson (2007) and Karlsson, Kjisik, and Nordland (2007) who discuss the development of counseling philosophy which would constitute new pedagogical values and beliefs according to the Markee's definition.

Although Markee (1997) does not mention educational technology innovations in his book (since his examples are different types of syllabi), his framework is applicable to the study of CALL as an innovation (for example, Zapata, 2002, 2004). In the study of five Spanish teaching assistants (TAs) at a large US university, Zapata (2002) investigated whether CALL (use of computers and the Internet, VCRs, tape and CD players), represents a true curricular innovation. TAs were all novice teachers in a language program that started with the introduction of CALL into the curriculum. From six computer lab observations of TAs and subsequent interviews with them at three points over one semester, Zapata concluded that the participants varied in the use of CALL from no or minimal use to ample use of a variety of media. Overall, Zapata found that CALL failed to be a real curricular innovation because, for the majority of participants, it did not bring about a change in methodological practices but only physical location of the class. In order to investigate factors that contributed to this outcome, Zapata looked at attributes of innovation and participants' roles.

In this study, Markee's definition of curricular innovation is also used to determine if the use of a learning management system in a technology-enhanced blended class represents an innovation. Given Markee's definition, it was necessary to determine if all three products of the innovation (materials, methodological skills, and pedagogical values) were perceived as new. To do so, several data sources were used to inquire about teachers' previous exposure to materials and possible differences in teaching methods in the traditional and blended learning class.

Research questions

The purpose of this case study was to investigate the blended learning environment in an ESL class where the use of online CALL materials delivered through a commercially-made learning management system, created the blend. The study described the blended learning model using criteria previously outlined in the blended language learning literature (Neumeier, 2005). This dissertation employed the innovation-diffusion theoretical framework (Rogers, 2003) to investigate the innovation, its attributes, stages of its adoption, and attitudes towards it. The following research questions guided the study:

Question 1: How is the blended learning model used? How are the two modes, face-to-face and CALL, integrated?
The first research question investigates the blended learning model following the six-parameter framework proposed by Neumeier (2005). Although blended learning has been investigated in CALL, my review of literature indicated insufficient information about materials, teaching methods, patterns of interaction, and participant roles. Without knowing these features, it is difficult to create new models that could be as effective as or better than those already researched. Since previous research has highlighted the importance of integration of modes (Bliuc et al., 2007; Neumeier, 2005; Stracke, 2007), this question explores the connection made between the CALL and face-to-face part of two classes. In particular, occurrences of episodes that point to the integration of modes and teacher and student feedback were collected to determine the level and success of integration in two classes and discuss integration in the hypothetical class.

Question 2: Do participants see the use of a commercial LMS in a technology-enhanced blended learning class as an innovation? How do participants perceive the innovation attributes?

The second research question asks about participants' perception of innovation and its attributes (Rogers, 2003). The first step was to determine if the students and teachers saw the new practice as innovative (Rogers' definition of innovation) and if the innovation resulted in new products (Markee's definition of innovation). The second part of the question asks about five innovation attributes.

Question 3: What are the attitudes of teachers and students towards the innovation?

In this research question attitudes of participants towards blended learning are examined. Some of the advantages of blended instruction reported by students in Echavez-Solano (2003) and Scida and Saury (2006) include immediate access to feedback and more control over learning. Students in Green and Youngs (2001) and Adair-Hauck et al. (2000) reported making progress in the courses. The data were collected from both teachers and students because the lack of multiple perspectives has been previously identified as a shortcoming in research on blended learning (Zapata, 2002).

Question 4: What stages of the innovation-decision process as described by Rogers (2003) do the teachers go through?

The fourth research question used Rogers' Diffusion of Innovations model (2003) to describe the stages of the innovation-decision process two teachers went through. Experiences of both teachers are presented and similarities and differences in the innovation process discussed.

Chapter summary

This chapter reviewed the literature that inspired this dissertation work. It first discussed two theoretical frameworks of blended learning and made a case that the framework by Neumeier (2005) is the most suitable for this dissertation. Then, this framework was used to guide a comprehensive review of previous literature on blended language learning which indicated a gap in the description of blended models and lack of theoretical conceptualization in some studies. Next, theoretical basis was presented through the discussion of Diffusion of Innovations theory (Rogers, 2003) and Curricular Innovations Model (Markee, 1997). Finally, the research questions were introduced. The next chapter explains the study's research design followed by the description of participants, procedures, materials, data sources, and analytical methods.

CHAPTER 3: METHODOLOGY

This chapter describes case study methodology undertaken in this dissertation. It provides the rationale for the descriptive, single-case design with two embedded units of analysis. The case is the hypothetical lower-intermediate listening/speaking class described based on the analysis of two actual classes. The classes were followed during the first semester of innovation use in their language program which is the context of the study. This dissertation employs both qualitative and quantitative data sources obtained from thirty-one ESL students, seven instructors, and two administrators. A detailed description of the participants is given followed by the examination of the researcher's position and procedures used to ensure the quality of research findings. Since the present study uses the data collected during the pilot study, a description of the pilot study is included. In the next section, textbook and online materials are described. Further, all data sources are presented and procedures outlined, including teacher and student training. A separate discussion of qualitative and quantitative data analysis ensues. The chapter closes with the evaluation of student survey instruments.

Research methodology

In this dissertation case study methodology is used to describe the blended learning model and investigate the innovation, its attributes, stages of its adoption, and attitudes towards it. As demonstrated in the previous chapter, a number of studies approached the investigation of blended language learning by comparing the performance of blended and traditional classes. This study employs a different design because the comparative methodology did not allow for a sufficient description of what actually happens in an environment of a blended learning class and in its context. Instead, this dissertation sought a "thick description" (term coined by anthropologist Clifford Geertz) of blended learning and its context. Moreover, some authors of blended learning studies in higher education have cautioned against comparison studies which tell more about separate components in a blend than their integration (Bliuc et al., 2007). Similarly, some CALL experts have encouraged the departure from large-scale comparison studies of CALL vs. classroom arguing that neither CALL nor face-to-face

teaching and learning represent distinct methods (Levy & Stockwell, 2006). Instead, authors call for investigations of specific features expected to make a difference, the learning process, and best ways to use the available technology (Chapelle, 2003; Felix, 2005).

The analysis of the previous literature indicated the lack of information about materials, teaching methods, patterns of interaction, and participant roles, which are all important features for successful design and implementation of blended models (Neumeier, 2005). Without knowing these features it is hard to say *how* learners performed the way they did or formed certain attitudes towards blended learning. Instead of carefully controlling variables and designing outcome measures necessary to obtain valid conclusions about effectiveness, this dissertation investigates the use of a blended model by teachers and students to provide a description of its elements and its context. To accomplish this, case study research approach is employed.

Case study research has been used in various areas of applied linguistics for the last thirty years (Duff, 2008) to study a wide range of phenomena ranging from bilingualism, language fossilization and loss to the effects of individual learner differences, identity, and gender on language learning. Although they do not abound, case studies can be also found in CALL. For example, Lam (2000) investigated how text chatting, e-mail writing, and creation of web pages influenced the development of writing skills of a Chinese ESL learner living in the US. Similarly, in a multiple-case study, Murray (1999) examined how 23 second language learners of French used a computer program for autonomous language learning. These works indicate that the case study has its place in CALL when a deep understanding of technology use by individuals, groups, and programs is warranted.

Eisenhardt (2002) defines case study as "a research strategy which focuses on understanding the dynamics present within single settings" (p. 8). As a qualitative approach, case study strives to understand situations in their uniqueness as a part of a larger context and to provide in-depth understanding of a phenomenon using multiple sources of information (Merriam, 2002).

Yin (2003) distinguishes two basic types of cases study designs: single-case and multiple-case (see Figure 1). As their names indicate, single-case studies examine one case while multiple-case studies include more than one case each within its separate context. Furthermore, Yin divides case studies into holistic and embedded based on the number of units of analysis. In holistic studies the unit of analysis is the case itself whereas in embedded there are two or more units of analysis within the single case.
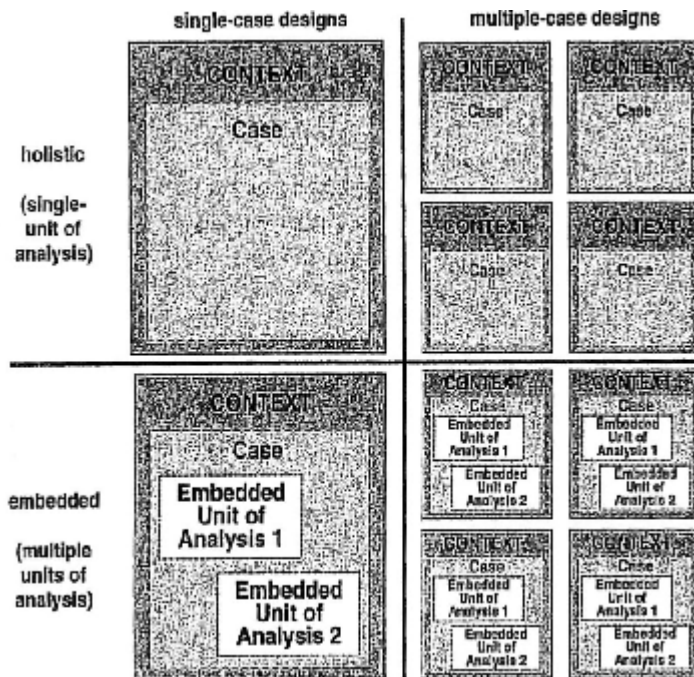
Figure 1. Basic types of designs for case studies according to Yin (2003)

This study follows a single-case design with two embedded units of analysis. The case is a hypothetical lower-intermediate listening/speaking ESL class within a broader context of an English language program at an institution of higher education. The two embedded units of analysis are two actual lower-intermediate listening/speaking classes in the program. The hypothetical case is an abstract category created for the purpose of this study to describe the application of the information gained in the analysis of two real classes. Therefore, it represents a theoretical construct formed on observational data.

Two units of analysis were carefully chosen to reflect purposeful sampling used in qualitative research because "we intentionally sample a group of people that can best inform the researcher about the research problems under examination" (Creswell, 2007, p. 118). The choice of the unit of analysis was made based on several criteria. The first unit of analysis is the class taught by the same instructor from the pilot study. This allowed for the collection of longitudinal data especially important in studying the innovation-decision process, as well as the curricular innovation and changes it is hypothesized to bring about. As pilot study results showed, this instructor is very comfortable with instructional technology and had had more than a semester of LMS use before the beginning of the study. The other unit of analysis is the class taught by an instructor who is a novice technology user and is in the first semester of LMS use. It could be argued that this sampling examines teachers at two different sides of the technology know-how spectrum comprised of original five teachers who instructed lower-intermediate listening/speaking classes that semester. For a detailed discussion of teachers' technology background, see the section on Instructors later in this chapter.

Since cases need to be bounded, integrated systems (Merriam, 2002, p. 8), the boundaries of the case need to be clearly identified. In this study, the boundaries are defined as the beginning and end of the first semester when introduction of the innovative LMS technology into listening/speaking classes is done. In addition, participants (two instructors and two groups of students) included in two units of analysis define the case, too.

According to Yin (2003), there are three types of case studies: exploratory, descriptive, and explanatory. Exploratory case studies aim at exploring the phenomenon and developing hypotheses for further investigation. Descriptive case studies describe the phenomenon in the setting where it happened. Finally, explanatory case studies explain the phenomenon by focusing on cause-effect relationships. This particular study is descriptive in nature because it presents a description of the phenomenon within its context using various constructs such as blended learning, innovation, and integration. The study is not exploratory because it does not generate hypotheses for later testing and does not establish cause-effect relations as explanatory case studies do.

In this study the description of the case, hypothetical class, is made based on the analysis of two actual classes in the program. The case description includes similarities and differences between the two classes. While similarities speak about common characteristics, differences highlight the possible options in blended learning classes.

The intensive description which was missing from the previous comparative literature on blended learning is here achieved by using multiple sources of evidence: interviews, focus groups, and observations. Interviews were conducted with teachers and administrators, focus groups were conducted with teachers and students, and classroom and lab observations were done. In addition to qualitative data sources, case studies can also include quantitative data (Duff, 2008; Eisenhardt, 2002; Yin, 2003). This case study uses student surveys to quantify student responses and student LMS records to determine homework time and teacher feedback. This triangulation of methods made possible by multiple data sources increases the quality of the study.

Case study research is appropriate for the study because it can produce more complete knowledge that can inform the innovation theory (Diffusion of Innovations theory), the blended learning design and curricular innovation models, as well as teaching practices (teaching in technology-enhanced blended learning environments) better than quantitative, statistical methods alone. This approach also provides a detailed description of the blended model that can be used to design and implement new models in the ESL setting. Moreover, the case study gives voice to the participants and presents their views of the phenomenon -- the part that is missing in comparison blended learning studies (see the section on CALL blended learning studies in the Literature review chapter). Another strength of the case study is investigation of the context and its many variables (Yin, 2003) which can influence teaching and learning in the blended learning setting. Finally, the case study allows for corroboration of findings from qualitative and quantitative sources (Eisenhardt, 2002), which produce stronger and more valid conclusions than data from a single method would allow.

Setting

The study was conducted in the Intensive English and Orientation Program (IEOP) at Iowa State University (ISU). The purposeful sampling was used to choose the program which was the place where I worked as a teaching assistant and thus had easy access to teachers, students, and administrators. IEOP has been offering English instruction to non-native speakers of English since 1966. In addition to language instruction, the program provides cultural orientation to students "in order to improve their English proficiency, prepare them for academic study, and enhance their professional development, intercultural relationships, and interpersonal communication" *(IEOP Faculty Handbook,* 2007, p. 1).

IEOP offers a full-time program four sessions a year with six language levels from beginner to advanced. Full-time students take 21 hours of instruction over five days a week and attend Listening/Speaking, Reading, Writing, Grammar, and TOEFL preparation classes. Each skill class meets daily for 50 minutes. Instead of meeting in the regular classroom, the instructor can choose to meet in the computer lab for 50 minutes once a week.

IEOP facilities consist of offices, classrooms, and computer labs. Classrooms and computer labs are shared with other university classes. The computer lab used in the study is equipped with sixteen PC computers for students, one for the instructor, a data projector, and a projection screen. The students' computers are against the wall of the room with the instructor's computer at the front and a large table in the middle of the room. Two main listening/speaking classes met in this lab twice a week and in the classroom three times a week, while other listening/speaking classes met in other computer labs once a week or less depending on the instructor.

IEOP is a member of the consortium of University and College Intensive English Programs (UICEP) which consists of 65 IEPs from 32 states. To become a member of the consortium, a program must meet the guidelines for program management, preparation and conduct of administrative and teaching staff, and program activities. The description of IEOP was obtained from the administrator in the interview:

It (the program) is associated with a university; its student body is largely made up of students who want to attend the university so it is geared mostly toward academic preparation. It has students entering at a variety of levels and working thorough the program levels. Like many IEPs, not all of them, students are geared towards an external criterion that they have to meet, in our case most of them are looking for TOEFL and now more and more Chinese students like to use IELTS. […] Those are the things we have in common. Multiple score delineated levels, academic focus, at least in this part of the country mostly Asian students but that's of course not essential to it being an IEP. The I in IEP is intensive so that is another feature of it… is that the students are in class a significant amount of time every day or week. For the Consortium we belong to, 18 is the minimum and some are 20 or even more. (Administrator interview, p. 8-9)

As can be seen, program's affiliation with the university, its academic focus, multiple proficiency levels, language assessment at the outset and end of the program, and intensive pace of instruction are qualities of program's structure IEOP shares with other IEPs. Furthermore, different language proficiency of incoming students and even students' geographical origin may be common characteristics when it comes to student body.

Over the past two years, the program has experienced a huge increase in the number of students. It has grown from an average of 70 students per semester and seven full-time instructors in Fall 2007 to 253 students and 14 full-time instructors in Fall 2009. All IEOP instructors hold an MA degree in TESL or Linguistics. In addition, a number of teaching assistants who are pursuing doctoral degrees in applied linguistics or education at ISU have been a part of the teaching staff.

In Fall 2009 there were 14 listening/speaking classes in the program divided into six proficiency levels (1-beginner, 2-false beginner, 3-lower intermediate, 4-intermediate, 5-upper intermediate and 6-advanced). Levels 3 and 4 had five sections each, level 5 had two, while levels 1 and 6 consisted of one section each. The largest proficiency level in listening/speaking classes represented students at the lower-intermediate and intermediate

level of language proficiency (levels 3 and 4 with 10 sections total). The majority of IEOP students in Fall 09 were from China.

Participants

Participants in the study were 31 ESL students, seven instructors, and two administrators. Two main instructors expressed interest in teaching a technology-enhanced blended learning class and were chosen based on their level of instructional technology expertise. Student participants were enrolled in two lower-intermediate level listening/speaking classes main instructors were teaching. The other five instructors used the LMS with students and were asked to share their experience teaching with it. Two administrators, the program director and coordinator, were in charge of the program. The study took place over a fifteen-week period in the Fall 09 semester.

Students

Thirty-one students were enrolled in two lower-intermediate level listening/speaking classes: class A taught by Bill[*] (16 students) and class B taught by Grace[*] (15 students). All thirty-one students were from China and spoke Chinese. Classes were on the same language level (level 3) and used the same materials: paper textbook *NorthStar Listening and Speaking,* third edition and online materials MyNorthStarLab which accompanied the textbook. Moreover, the classes followed the same syllabus. Both classes met five times a week: three times in the classroom and twice in the computer lab. The data on student demographics, English proficiency, and computer use were collected in survey 1 administered in week 3 of the study. The survey consisted of eighteen open-ended, multiple response, and Likert-scale questions.

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[*] Names have been changed to protect the anonymity of participants.

Table 4. Number of students and their previous language learning experience

	Class A (N=16)	Class B (N=15)
Male/Female	12/4	9/6
Previous years of studying English (mean, range, median)	6, (1-13), 6	7, (3-12), 6

Class A consisted of 12 Chinese males and 4 Chinese females (Table 4). Students in class B were 9 Chinese males and 6 Chinese females. All students were new arrivals and had spent less than a month in the US at the time of survey 1. Fall 2009 was also the first semester in IEOP for all the participants. Years of studying English in the native country ranged from 1 to 13 with the mean and median of 6 years for class A. Class B students spent on average 7 years studying English in China with a mean of 6 years and the range of 3 to 12 years.

In order to determine students' overall language proficiency, ISU institutional TOEFL records were used because most of the students took the test several days before the start of the semester. ISU's institutional TOEFL is a paper-based test given to incoming international students at the beginning of each semester. In addition, in survey 1, students were asked to report their most recent TOEFL score. In only one case, official TOEFL scores were not available and the student's self-reported scores was used.

For class A, the scores ranged from 367 to 457 on the paper-based TOEFL test, with the mean score of 407, median of 403, and the standard deviation of 23 (see Table 5). The mean score on the listening section of the TOEFL was 43 with the range 40-44. Class B had a little bit higher original TOEFL scores with the mean of 429 (median 430, standard deviation 17, range 407- 457). The mean score on the listening section of the TOEFL was 44 with the range 44-45. While the overall language level of class B was higher, listening scores are rather similar in both classes.

Table 5. TOEFL scores for classes A and B

	Class A (N=16)		Class B (N=15)	
	Mean (range)	Median, StDev	Mean (range)	Median, StDev
Overall TOEFL score	407 (367 - 457)	403, 23	429 (407 - 457)	430, 17
Listening section TOEFL score	43 (40 - 44)		44 (44 - 45)	

In survey 1, students in class A indicated their overall English level as lower-intermediate (13 students) and higher intermediate (1 student). In class B, there were 2 beginners, 7 lower-intermediate students, and 5 intermediate students. Moreover, students evaluated their oral skills on the scale of 1 (poor) to 10 (excellent). On average, they rated speaking skills 4.5, listening skills 4.2, and pronunciation 4.6 in class A. Speaking skills were rated 4.9, listening 5.1 and pronunciation 5.6 by class B. These data indicate that all students were lower-intermediate level English learners but that class B perceived themselves as a stronger proficiency group.

In addition to demographics and English proficiency, students were asked about computer use in survey 1 (Table 6). The results show that 75% of students in class A were very confident or confident about computer use, and 25% were somewhat confident. In class B, 60% of students were very confident or confident, 13% were somewhat confident, and 27% were a little confident. No student in either group indicated not being able to use the computer. All students owned a computer and tended to spend 3.6 hours a day (class A) and 3.8 hours a day (class B) on average at a computer. Students most often used computers for e-mail, communicating with friends and family, and Internet surfing and least often for word processing and spread sheets.

Table 6. Classes A and B's responses about computer confidence level (in percentages)

	Class A (N=16)	Class B (N=15)
Very confident	31	20
Confident	44	40
Somewhat confident	25	13
Little confident	0	27
Not confident at all	0	0
Total	100	100

Many students in class A had previous experience using computers for English study since 81% of them indicated they had worked on TOEFL exercises, taken online tests, or visited Internet sites for learning English. In class B, 53% had used computers before for the same educational purposes. Overall, it can be concluded that students were generally familiar with computers and more than half in each class had previously used them for English study.

Students were also asked if they had used a learning management system (LMS) before. Only one student in each class responded positively to this question. One student had used WebCT and the other a LMS in the private language school where he used to study. Two students in class A and one student in class B reported previous familiarity with blended learning in private language schools they attended in their home country. In sum, the majority of student participants were new to LMSs and had not had experience with blended language learning.

As student data show, classes A and B had a lot in common: country of origin (China), proficiency level (lower-intermediate), length of stay in the US before the semester started (less than one month), computer literacy (all were computer literate), and lack of experience with LMSs and blended learning.

Instructors

Two instructors, Bill and Grace, taught the two main listening/speaking classes A and B. These instructors were observed teaching in classes and labs and interviewed three times over the course of the study. The other four listening/speaking instructors took part in the focus group and one took part in an interview.

Bill, the instructor of class A, is an experienced ESL teacher who has been teaching for more than twenty years both in the US and abroad. He started teaching in Japan and worked in a number of language schools and intensive language programs in California, Hawaii, Indiana, and Iowa. Bill has been affiliated with the IEOP program at Iowa State University for seven years and has taught skills courses on all levels and coordinated special student projects. The instructor holds an MA degree in English with a specialization in TESOL and describes himself as a daily computer user who is comfortable with computers both in terms of hardware and software. Bill shared: "I'm a big computer user. […] I'm comfortable with electronic equipment. I don't use it to guide my life although I can't imagine a life without a computer these days. […] I'm not intimidated by things. […] I can take a computer apart and put it back together again. I've done that" (Teacher interview 1, pilot study, p. 4). DVDs, CDs, video tapes, websites containing language learning activities, word processing programs, and digital video are some of technologies Bill has utilized in his classes.

Bill claims he does not know as much as he would like about website development, and computer languages and programming, but he appears to be a confident classroom technology user especially when it comes to Internet language learning resources. He is aware of a quite a number of sites that can help students a great deal such as different listening, grammar, and timed reading exercises with comprehension questions. In the very first interview, Bill acknowledged that he sometimes feared he was behind times with technology (Teacher interview 1, pilot study, p. 10). The opportunity to get familiar with a new technology and to learn new skills may have motivated him to participate in the study. The program director recommended Bill to me when I asked about teachers who, in her opinion, would be interested in taking part in my research.

As a fellow ESL teacher in the program, I had known Bill for two years prior to the beginning of the study. From the beginning, he appeared to me more comfortable with technology than other teachers. I noticed this at several instructors' meetings when other teachers would turn to Bill with questions about technical issues. The program director always asked Bill to be the point person when the lap top computer needed to be set up for any out-of-class activities by the whole program. Bill also appeared interested in the use of technology for language study and this interest was the main reason I decided to approach him. Bill gladly accepted my invitation.

Bill had a chance to get familiar with MyNorthStarLab materials and the LMS during a three-week pilot program in Spring 08. During the pilot, the class worked on a sample NorthStar unit and the instructor explored the course content and its functionality. That was the first time he had used the LMS. Bill was interested in continuing teaching a technology-enhanced blended learning class and was therefore prepared to participate in the dissertation pilot study conducted in Fall 2008. I was also glad to continue investigating Bill's use of technology especially since his initial reactions were very positive. During Fall 2008 Bill used the same LMS in a blended listening/speaking and was observed and interviewed. The data from the pilot study are included in this project to describe the changes in the attitudes and practices towards the LSM innovation and the blended learning class. Bill's participation in the project lasted for two semesters and allowed for the collection of longitudinal data.

Grace, the instructor of class B, is also an experienced ESL teacher who has been teaching for ten years both in the US and China. In the US, she taught mainly in adult education programs in a number of cities. Grace joined IEOP in Spring 2009 and that was her first time to teach at an American university and work in academic ESL program with college-age students. In the first two semesters, Grace taught all skills in IEOP. Fall 2009 was her second semester teaching listening/speaking in the program. Grace has an MA degree in TESOL and completed the practical aspect of the program while teaching in China. In her BA, she received general technology training in the use of Power Point and overhead projectors but no training on language learning software.

I invited Grace to participate in the study because she seemed to be one of the less technology-savvy instructors in the program. At instructors' meetings Grace never spoke of classroom technology use and a fellow instructor pointed Grace to me as one of the suitable participants for my study based on her lack of technology know-how. To make sure Grace would fit the participant profile, I had asked her several questions before I invited her to participate. In an e-mail Grace confirmed that she "has never been good about technology use in the classroom" (personal communication, May 7, 2009). On the scale from 1 (very low) to 10 (very high) Grace gave herself a 3 for the comfort level and a 4 for her previous experience with technology for language teaching (personal communication, May 7, 2009). Her previous technology use includes positive experiences with Rosetta Stone computer program in her adult education ESL teaching and individual study of Chinese. She has also used VCR tapes, DVDs, CDs and cassette tapes, but had not used an LMS before the beginning of the study (personal communication, May 7, 2009). After finding out these facts about Grace, I asked her to be a part of the project.

Grace believes computers are a good addition to classroom teaching but when she started teaching in IEOP and was assigned the lab, she did not always use it. Grace explained: "My first semester I did not really know what to do with the lab. That's why a lot of times we would go but we would not use the computers, we would just use 106 (the adjacent classroom) and I would just teach a regular class in there. I really did not know what to have students do" (Grace, interview 1, p. 7). When asked about out-of-class computer use, Grace said "I use the Internet a lot. I go shopping online. I'm kind of addicted to the Internet, maybe" (Grace, interview 1, p. 3). However, Grace thought she had "a minimal understanding of the computer" and did not consider herself an expert at all (Grace, interview 1, p. 4). She was interested in taking part in the project so she could improve her technology skills which could make things easier for her (Grace, interview 1, p. 4). Grace participated in the project for one semester.

Examination of Bill and Grace's profiles shows that they share common characteristics in terms of graduate education and teaching experience. They hold MA degrees in TESOL/English and have ten or more years of teaching experience. Also, they taught English both in the US and abroad (Asia). Since Bill and Grace were chosen for this project based on their instructional technology skills, it is important to discuss their skills in comparison to those of other teachers teaching the same level class in Fall 09. There were five teachers (Bill, Grace, focus group participant teacher 1, and two other teachers) who taught level 3 listening/speaking class that semester. Information on their technology background is presented in Table 7. Information on Bill and Grace was supplied in interviews (as discussed above) while three other teachers answered my questions by e-mail in which they rated their technology confidence as not confident, confident, or very confident (personal communication, August 25, 2010). As can be seen from Table 7, all teachers are at least confident when it comes to technology use outside of classroom. Their experience with instructional technology varies so they perceive themselves as not very confident (Grace) to very confident (Bill, teacher 1). It can be argued that Bill and Grace's technology expertise places them at two ends of the continuum: Bill is a very confident educational technology user and Grace a novice one. The other three teachers fall somewhere in between.

Table 7. Technology background of five level 3 listening/speaking teachers in Fall 09

Teacher	Section C (Bill)	Section D (Grace)	Section E (Teacher 1)	Section B	Section N
Confidence with every-day technology use	Very confident	Confident	Very confident	Confident	Confident
Confidence with educational technology use	Very confident	Not confident	Very confident	Confident	Confident

The last group of study participants are five other listening/speaking instructors (teacher 1, 2, 3, and 5) took part in the study. The requirement to participate in the study was that the teachers use the LMS with students. All teachers I invited to participate were happy to do so. Teachers 1, 2, 3 and 4 participated in the focus group in the fourteenth week of the semester about their experience teaching a blended learning class and using the LMS. Teacher 5, who

could not participate in the focus group due to a family emergency, was interviewed using the same focus group questions in week fifteen.

Administrators

Two administrators took part in this research: program director and program coordinator. The program director was interviewed in the pilot study, while the program coordinator participated in an interview in this study. The program coordinator was more involved with the actual implementation of the blended model than the program director because she herself taught a listening/speaking class.

The program director had been in charge of the program for five years when the research began. She performs a variety of duties including scheduling, hiring, budgeting, marketing, and textbook selection. Although the examination of the *IEOP Faculty Handbook* showed that it does not specifically address instructional technology in its mission statement, the director strongly encourages technology use and knows instructors use technology to varying degrees. For example, the director explained that instructors have access to the computer lab and most of them take students there to do things on the Web. Some of the CALL initiatives that the director mentioned include encouraging teachers to post materials on-line on the IEOP website, digitalizing audio tapes for easier student access, and purchasing new computer software. Moreover, teachers are "encouraged to go to conferences" (Program director interview, p. 3) and take advantage of technology training workshops offered by the university.

The program coordinator had held this position for three years at the time of the first interview and had taught in the program for sixteen years. Her duties include students testing, placement, and class scheduling. She thinks that instructional technology is used enough in the program although individual instructors may use it more or less. Overall, she gave the program's technology use a 7 on the scale from 1(low) to 10 (high) and believes the teaching staff ranges from 5 to 10 in their technology use. According to the coordinator, technology is integrated into the curriculum, its use is appealing to students, and it can save teachers' time.

Technologies used in the program computers, the Internet, general purpose software, language learning software and CD players. Both administrators have very favorable views of technology and are satisfied with its use on the program level.

Position of the researcher

As a researcher and a doctoral student in the Applied Linguistics and Technology program, I wanted to investigate the introduction of CALL into an ESL setting. I had been working in the IEOP program as a teaching assistant for a total of five semesters and continued teaching there during both the pilot and dissertation study data collection. IEOP presented an excellent environment for my project since I knew instructors, administrators, and students. Additionally, the program already had computer facilities and equipment in place and encouraged the use of the computer lab as a supplement to classroom instruction. One of my goals in working in this setting was to help the program staff learn about the availability and application of the new LMS technology and the advantages the innovation brings to the teaching and learning process.

In addition to being a researcher and a fellow teacher, I was also a materials designer of some of the LMS content and had tested the earlier versions of MNSL used in the study. I did this work for the LMS publisher while the platform was still being developed. My involvement with content creation and platform testing represented an additional incentive for me to research the actual use of the LMS with IEOP teachers and students.

My researcher, teacher, and designer roles translate into the role of the change agent according to the Roger's classification of roles in the innovation-decision process (2003). Change agents are accepted by clients, possess a high degree of expertise regarding the innovation, and are sometimes peer educators. I was a part of the teaching staff and knew the innovation very well in terms of content and functionality which enabled me to introduce it into the setting, train the instructors and students, and offer technical support. My primary role as the change agent was to make the innovation available to the clients but I did not prescribe how the innovation is to be used and left the instructors the freedom to experiment

with it. While the change agent can help with the innovation dissemination process, the decision to accept the innovation ultimately lies with the program staff, administration, and students.

In addition to the change agent, I also assumed the role of an observer; although whenever the two instructors sought my help with technical issues, I was happy to help. In those cases my role was more of a participant observer. During the course of the study, I felt that students got accustomed to my presence and regarded me as another teacher and not as an outsider. I believe that the fact that I was closely involved with the program helped me establish a good rapport with the instructors and students.

Ensuring quality of research findings

I am aware that my role as a change agent, researcher, and participant observer may have influenced the interpretation of results. I was involved in the research of an educational innovation I helped design and introduce and it can be expected that I wanted the innovation to succeed. At the same time, I strived to be an unbiased researcher and observer. To address the possible conflicts of these roles, I employed a number of strategies to enhance the accuracy of my findings.

First, I used multiple methods of data collection to triangulate findings so I compared my observations with findings from teacher interviews, focus groups, student surveys, and data logs. My data sources are both qualitative (observations, interviews, focus groups) and quantitative (student surveys, student LMS records) in nature and complement each other. The comparison of themes across the data sources strengthens the construct validity of the study (Yin, 2003). On occasions when the sources showed inconsistent data, I explained this discrepancy and initiated a new line of thinking about the issue as suggested by Miles and Huberman (1994). Second, I spent a prolonged time in the field so I could provide a rich description of participants and the setting. I followed the advice of Miles and Huberman (1994) and stayed on the site as long as possible spreading out observations so I would have at least two per week and scheduling teacher interviews at the beginning, middle, and end of

the study. Third, I showed the draft of the report to two main teacher participants and asked for their feedback on my interpretations. Both teachers got back to me after having read the report and confirmed that everything I wrote was factually correct. Next, I used peripheral sampling (Miles & Huberman, 1994) to include participants not central to the phenomenon but neighbors to it. I interviewed five other teachers in addition to main teacher participants to "obtain contrasting and comparative information that may help understand the phenomenon" (p. 34). Before all participants signed consent forms, they were informed about the purpose of the study, data collection methods, and results use. This helped clarify my intentions as a researcher and a change agent and protect their rights as participants. Furthermore, a part of the data set was coded by a second coder and inter-rater reliability calculated. To additionally address the internal validity of findings (Merriam, 2002), I conducted a peer debriefing session by showing my data and conclusions to a fellow IEOP teacher. My colleague was familiar with the setting, instructors, and administrators having previously taught in the program for four years. Finally, I tried to be as descriptive as possible in the Methods and Results section so that readers could compare this case and its context to their research situation and draw conclusions about its transferability themselves. Triangulation of multiple data sources, member checks, peer review of data and interpretations, and open discussion of the investigator's position are, according to Merriam (2002), strategies used to support internal validity and reliability of study findings.

Pilot study

Before the present study was conducted, the research procedures and materials had been piloted in the dissertation pilot study in Fall 2008. An intermediate listening and speaking class of nineteen students was taught by Bill, one of main teachers in the present study. The class used the same materials, the paper textbook and LMS, for a period of nine weeks. The blended format of the class included meetings in the classroom four times a week and in the computer lab once a week. The pilot study addressed the same research questions (description of blended learning model, perception of innovation, attitudes of teachers and students, stages of innovation-decision process) as the present study. The data collection

methods included two teacher interviews, one administrator interview, ten class and lab observations, three student surveys, and student LMS records.

The pilot study results indicate that the blended learning class successfully integrated modes and successfully distributed learning content to both modes. Student surveys showed that the students could see a clear connection between class work and on-line work. It was also found that the use of online materials represented an innovation according to Rogers' definition (2003) and that participants had positive attitudes towards the innovation. Finally, evidence was found that the teacher passed through the first three stages of the innovation-decision process.

In addition to getting preliminary results, the pilot study served as a way to test data collection instruments and possibly add new ones; therefore, some changes were made to the present study. First, student surveys were revised and improved. The number of answers to multiple choice questions was decreased to four to eliminate the "no opinion" answer which had caused a lot of missing data. Also, the number of items measuring the same construct was increased and some items were repeated in more than one survey. Second, two focus groups were added: one with students and one with teachers. The student focus group was added to get better explanation to some survey answers than could be obtained from open-ended survey questions. The teacher focus group served to obtain data from teachers other than two main participants and thus provide more information about the context of the study.

Some shortcomings of the pilot study were addressed in the present study. First, it was not possible to determine the exact time in the CALL mode of the class because student homework time had not been recorded. For this reason, in the present study, students were asked to report time spent doing homework in weekly logs entered in the LMS. Second, due to the length of the pilot study only three stages of the innovation-decision process could be observed. Therefore, the teacher was asked to continue with participation in the present study, which he was happy to do.

The final use of the pilot study was the revision of research procedures. In the pilot study, the class spent 74% of the time in the classroom and 26% in the computer lab. The classes met for 80 minutes two times a week and for 50 minutes three times a week. Since then, the program's schedule was changed to 50 minute classes every day. To try to keep the time in the face-to-face and CALL mode approximately the same (50% in each mode), two classes in this study had two labs a week instead of one.

Because pilot study data on teacher Bill are important for understanding his views, attitudes, and teaching practices, they are referred to in this work. Every time a pilot study data source is cited, it is clearly labeled as such.

Materials

Classes worked on online materials called MyNorthStarLab which are delivered through the LMS, as well as on the class textbook (*NorthStar Listening Speaking,* third edition*)*. An LMS is a computer software application used for organization and delivery of educational content over the Internet. The LMS in this study is a commercial product created by Pearson Longman ESL, the publisher of the textbook. According to textbook authors, *NorthStar* materials motivate students to succeed in their academic and personal language goals (Solorzano & Schmidt, 2009). *NorthStar* provides a fully-integrated approach to language learning with a structured approach for more extended and creative oral practice and an enhanced focus on academic skills (Solorzano & Schmidt, 2009, p. iv).

MyNorthStarLab materials follow and complement the structure of the book. Approximately 20% of online materials are the same as in the textbook. The other 80% are new materials developed for the LMS, media (audio and video), and assessments (readiness check and achievement test). In addition to supporting and extending textbook materials, an added quality of online materials is their availability from any place at any time. Finally, online assessments allow instructors to deliver tests over the Internet and students to get scores right away. This flexibility of online materials makes them suitable for blended language learning ESL classes.

Due to some of their characteristics, MyNorthStarLab materials allow for strong integration of modes, an important feature of blended environments (Bliuc et al., 2007) and the second parameter in Neumeier's framework (2005). First, MyNorthStarLab materials are directly connected to the textbook, follow the structure of the book, and even include some of the same materials. Second, the LMS features such as the calendar (which shows when assignments are due), and announcements (which allow the teacher to leave notes to students) additionally help orient the students to the online environment and schedule their work. Moreover, different types of activities allow for varying degrees of transactional distance or physical distance between participants (Neumeier, 2005). The activities range from those with high level of transactional distance such as vocabulary activities with machine feedback; those with medium level (speaking activities where the teacher provides the feedback); and low levels (asynchronous discussion board where students post messages and give each other feedback). According to Neumeier (2005), different degrees of transactional distance help sequencing of modes in blended models.

Another characteristic of MyNorthStarLab materials which makes them particularly appropriate for blended delivery is that they allow for parallel distribution of content (Neumeier's parameter three) so all skills could be practiced in both modes. As could be seen from the review of previous literature, technology influenced the content of modes so, for example, speaking skills could not be practiced in the CALL mode (Adair-Hauck et al., 1999, Green and Youngs, 2001). Here, powerful database-driven LMS technology that stores and retrieves student responses and the voice recording tool make speaking practice possible.

Solorzano and Schmidt (2009) listed five principles that guided the design of NorthStar approach. First, materials were created to stimulate students intellectually and emotionally so that they can use and retain more language. Second, "students can learn both the form and content of the language" (p. v). Third, the approach stimulates active learning through up-to-date topics that bring the outside world to the classroom. Next, opportunities for students to receive feedback are given both through whole class activities and MyNorthStarLab computer and teacher feedback. Finally, materials promote "genuine interaction, acceptance

of differences, and authentic communication" (p. v). All these qualities of materials influence teaching methods and views of instructors and students in blended learning classes.

In order to access MyNorthStarLab materials, the textbook includes an access code for students. Instructors are given free codes by the publisher. To use materials, teachers and students need an internet connection, a web browser, headphones, and a mike. The instructor signs up for the course on the Internet, receives a password, and gives it to the students who then use it to register for that particular course. The student registration is straightforward and takes around 15 minutes to complete.

Unlike with other LMSs popular in higher education (for example, WebCT and Moodle), the instructors using MyNorthStarLab do not have to create their own course from scratch or import the outside activities into the LMS. In MyNorthStarLab, instructors choose the activities to assign from the content provided by the publisher and can, if they want to, create new activities within the platform. This greatly decreases the time spent on course set-up in comparison with the time it would take instructors to create all the content by themselves.

MyNorthStarLab materials consist of several sub-modes: activities, assessments, e-mail, and discussion board. There are two types of activities that differ according to the source of feedback provided to students -- machine and teacher graded. There are also two types of assessments--at the beginning of the unit (readiness check) and at the end (achievement test). E-mail and discussion board are asynchronous text-based communication features.

The first groups of activities, machine-graded, offer immediate feedback, scores, and allow for several attempts. The scores are reported directly into the grade book for each student to monitor their progress. There is a variety of machine-graded activities such as: multiple choice, drop-down menu, matching, drag and drop, fill in the blanks, and select a response. Figure 2 shows an example of an activity where students drag and drop sentences that contain contractions of will. Vocabulary, grammar, and most listening activities are machine-scored.
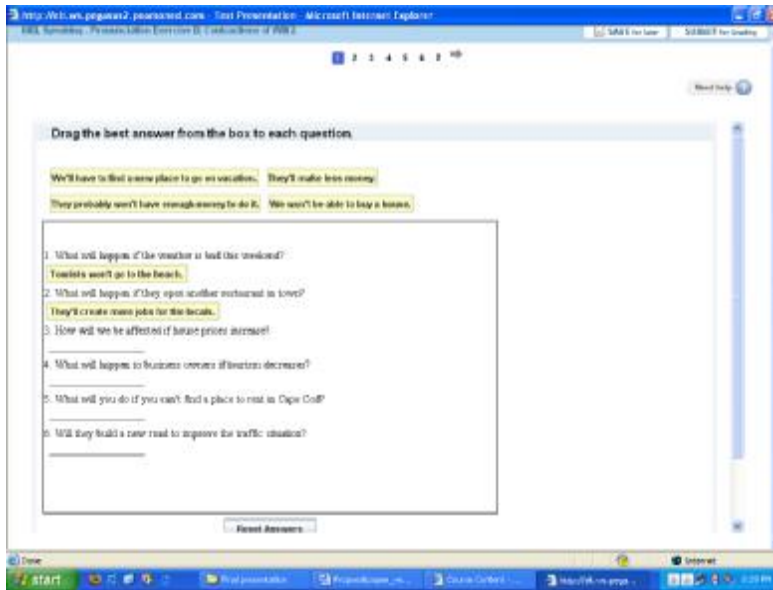
Figure 2. Example of a machine-scored drag and drop activity

On the other hand, teacher-graded activities are open-ended and require the teacher to assign a score. The teacher can write comments or respond orally to student work. All speaking and pronunciation activities and several listening activities are teacher-scored. To record and play back their voices, students use the Wimba recorder, a recording feature within the LMS, which can be seen in Figure 3. Figure 3 shows a speaking prompt which asks students to contrast different ideas. The teacher also uses the Wimba recorder to listen to student responses and give oral feedback when grading.

Figure 3. Example of a teacher-scored speaking activity

The first assessment, readiness check, assesses students' vocabulary knowledge and readiness to start the new unit through two machine-graded exercises. If students perform well on the readiness check, they are given additional practice activities before the start of the unit. The achievement test measures students' performance in the unit and all its parts, except the speaking one, are machine-scored.

Data sources

In this study, three main qualitative sources of evidence are interviews, focus groups, and observations. Interviews with two main teachers and the administrator were done. Focus groups with four other teachers and students from class B were done. Observations of class and lab meetings were conducted. A total of 45.5 pages of typed-up observations and a total of 11 hours and 46 minutes of audio taped data were collected. The interview and focus group transcription resulted in 125 type-written pages. The other sources are three student surveys and student LMS records which add quantitative data to the investigation of technology-enhanced blended learning. The data collection resulted in four sources to be analyzed: typed-up observations, interview and focus group transcripts, surveys, and LMS

records. Table 8 provides an overview of data sources and is divided into primary (main source for obtaining data for a research question) and secondary (source used to check for additional evidence for the same research question). For example, class and lab observations are a primary data source in research question 1 and secondary in research question 4.

Table 8. Data sources by research questions

Data source	Primary data source	Secondary data source
Teacher interviews	1, 2, 3, 4	
Administrator interview		2, 3
Focus group with teachers	2	3
Focus group with students		1, 3
Class and lab observations	1	4
LMS records	1	
Student surveys	2, 3	1

RQ1: Description of blended model; RQ2: Innovation and its attributes;
RQ3: Attitudes towards blended learning; RQ4: Stages of the innovation-decision process

Interviews

There was a total of eight interviews in the study- six with two main teachers, one with teacher 5, and one with the administrator (please see Data Collection Schedule in Appendix A). There were three interviews with instructor A, Bill, and three with instructor B, Grace. All interviews were semi-structured and used the same questions as a starting point, so teachers' answers could be compared. However, some of the questions about specific class and lab episodes were different. The questions were partly motivated by theoretical frameworks and partly on my own ideas about the best ways to address the research questions. For example, teachers were asked about the novelty of LMS technology, attributes of the innovation, and innovation decision process (Diffusion of Innovations theory, Rogers, 2003) as well as changes in teaching methods and pedagogical values (Curricular innovation theory, Markee, 1997). The interview with teacher 5 who had to cancel the focus group participation at the last minute included the same questions as the focus group. The interview with the program coordinator was semi-structured. All interviews were audio recorded and later transcribed by me using conventional spelling. The list of questions used in all interviews can be found in Appendix B.

The first interview with Bill and Grace was conducted in weeks 6 and week 4 respectively. It is important to note that due to student placement changes, classes started using *NorthStar* textbook only in week 4 of the semester. Since background information was already collected from Bill in the pilot study, the interview lasted 40 minutes. It focused on reflections about the past LMS use and plans for its future use as well as reflections about the blended learning model. It addressed possible changes in class set-up, choice of activities, teaching methods, and pedagogical values-- the latter two being products of an innovation (Markee, 1997). Additionally, Bill was asked about the teacher training workshop he initiated and his role in the dissemination of the innovation into the program. The first one-hour interview with Grace was about 1) background (education and teaching career), 2) teaching (philosophy, methods, materials), 3) technology (personal and classroom use, skills), 4) LMS (newness of this technology, potential advantages and disadvantages), and 5) blended instruction (previous experience, expectations, advantages for teachers and students).

The second teacher interview was conducted after the classes had finished two units: in week 10 (Grace's class) and week 11 (Bill's class). Interviews lasted around one hour. The purpose of this interview was to find out the teachers' opinions about online materials, feedback given to students, and the set up of the blended model. The questions were divided into four groups: 1) online activities overall, 2) teacher-graded activities and feedback given to students, 3) questions based on observations, and 4) other questions. Each question elicited an answer that mapped to a research question and in turn to a construct under investigation. For example, the first group of questions asked about the order activities were assigned to students (RQ 1-language teaching methods), features of the LMS (RQ 2- innovation attributes), and teacher's role (RQ 1-participant roles). I prepared questions from group 2 after I had examined the instructors' feedback on student oral responses in the LMS. Group 3 questions were based on class and lab observations, so I would remind the instructors of what I observed and ask them to comment on the episode.

The third teacher interview was conducted in week 15, the last week of the project. By that time both classes had finished four textbook units. Both interviews lasted one hour. The

interview questions included benefits and drawback of blended learning and LMS use (RQ 2-innovation attributes), recommendations and interest in its continued use (RQ 3-attitides), reflection on the MNSL use over the course of the semester (RQ 4- innovation decision process), and questions based on observations.

The interview with the program coordinator was conducted after the last week of the project and lasted 40 minutes. It asked about her views of the first semester of *MyNorthStar* use, its continued use, factors that influence the diffusion, and benefits of blended learning classes. The interview with the administrator helped shed additional light on the context (the IEOP program) within which the case (a hypothetical listening/speaking class) is situated.

Focus groups

There were two focus groups in the study: one with teachers and the other with students. The focus group with four listening/speaking teachers (called teachers 1, 2, 3 and 4) was conducted by me in the fourteenth week of the semester and lasted one hour and twenty minutes. The focus group did not include the two main participants, Bill and Grace, but the other four teaches who used MNSL materials in blended learning classes. How the selection of teachers was done was explained in the section on participants. The focus group participants were asked twelve questions about the use of MNSL, choice of activities, and feedback given to students (RQ 1-description of the model), innovativeness of the LMS technology and difficulties in its use (RQ 2-innovation attributes). The teachers were also asked about their attitudes towards the new technology and the new class format (RQ 3-attitides), training received (RQ 2-innovation attributes), and continued future use (RQ 3-attitides). The same questions were used in the interview with teacher 5. The focus group and teacher 5 interview data help describe a hypothetical blended learning class by revealing similarities and differences between five classes and adding to the data obtained about the two main classes. The list of all focus group questions can be found in Appendix C.

The focus group with the best six students in class B was conducted in week eleven and lasted forty five minutes. The class B was chosen for the focus group because it was on a

slightly higher level of proficiency than class A (see the section on Students in Participants) and represented a more motivated group according to instructors' feedback. Grace was first asked to recommend the best performing students in her class. From that group, six students whose MNSL performance was 77% or higher on three units and who had spent more than 3 hours and 50 minutes on MNSL activities were invited to participate. All students agreed to take part in the focus group during one of the lab meetings.

The focus group was administered one week after survey 2 to get more detailed explanation about some survey responses. The nine focus group questions were based on the survey 2 questions but were not exactly the same. Since student attitudes had been collected in the survey, the focus groups probed into the explanation of the attitudes (RQ 3-attitides). For example, the students were shown screen shots of speaking, pronunciation, and listening activities in MNSL and asked to talk about the reasons for their helpfulness. Similarly, they were asked about the helpfulness of activities from the *NorthStar* textbook. The list of all student focus group questions can be found in Appendix C. Because all students in the study were native speakers of Chinese, the focus group was conducted in Chinese by my Chinese colleague, a fellow doctoral student. This way, data collection could be expedited and more questions could be covered in the same amount of time. My colleague first transcribed and then translated the focus group from Chinese into English.

All interviews and focus groups were digitally recorded. During interviews and the teacher focus group I occasionally took down notes as the participants were talking. The notes were to be used to reconstruct the interview/focus group in case there was a problem with the recordings. Since all the audio data had recorded well, only transcripts were used in the data analysis.

Observations

The observations started in week 4 when the two classes started using *NorthStar* textbook and online materials and discontinued in week 13. Every attempt was made to do at least one class or lab observation per week per each class. In week 13, I felt that the observation data were saturated and that I could easily provide a description of classes and labs. The observation schedule is given in Table 9. As can be seen, there was a total of 25 observations: 12 of class A and 13 of class B. Class A was observed 6 times in the classroom and in the lab. Class B was observed 8 times in the classroom and 5 in the lab.

Table 9. Schedule of class and lab observations

Week	Class A observations	Class B observations
4	Lab	
5	Lab, Class	Class, Lab, Class
6	Lab, Lab	Class, Lab
7	Class	Lab, Class
8	Class	Class, Lab
9	Class, Lab	Class
10	Class	
11	Lab	Class
12	Class	Lab, Class
Total	**12 (6 class, 6 lab observations)**	**13 (8 class, 5 lab observations)**

Class observation days were chosen based on the instructors' suggestion on when it would be the best to observe listening, speaking, and pronunciation activities. I did all the observations and because both classes met at the same time, I could do only one observation per day. After some time, students got so used to my presence that they regarded me as another class instructor. My observation protocols contained 1) description of what happened in class, 2) my interpretation of classroom episodes, and 3) notes to myself about questions I would like to ask the instructor in a subsequent interview. The observations were not audio/video taped because that level of detail about the language use in the classroom/lab is not necessary for this study, but hand-written or typed notes were taken. All hand-written notes were later typed up on the computer and all notes used in the analysis. The length of typed-up observations was 45.5 pages.

Observations were primarily used to answer RQ1 about the qualities of the blended learning environment. In particular, evidence from observations was used to address the following constructs: language teaching methods, level of integration, and interaction patterns. For example, I took notes on material covered to see which materials the instructor chose (language teaching methods). Then, in the second interview, I asked the instructor to comment on this choice to triangulate the findings from multiple data sources. Additionally, observations provided the evidence of the stages of the innovation decision process the instructors went through (RQ 4).

LMS records

Once a week in the lab, students in classes A and B were asked to report the time spent on MNSL for homework, so the total time on online materials could be calculated. These records were used to answer research question 1 about the blended learning mode and time spent in the CALL mode of the class.

Student surveys

Three student surveys (student survey 1, 2, and 3) provide quantitative data about student views and attitudes. After the pilot testing in the pilot study, three surveys were revised and improved. First, the same terminology (e.g. MyNorthStarLab online materials) was used throughout and the number of multiple choice answers was changed to four to eliminate the "no opinion" answer which had caused a lot of missing data. Second, the number of items measuring the same construct was increased and some items repeated in surveys 2 and 3 to investigate the change of attitudes over time. Finally, expert judgment was used to classify survey items by six constructs. Four doctoral students in applied linguistics labeled all survey items using definitions in Table 10. Items with 75% or more agreement among four raters were kept in surveys.

Table10. Definitions of six constructs measured in surveys 2 and 3

Construct	Definition
Innovation	novelty of blended learning
Attitude	students' attitude towards blended learning
Location	location where learning takes place
Integration	connection between class and online work
Relative advantage	benefits of using MyNorthStarLab online activities
Complexity	difficulty in using MyNorthStarLab online activities
Interaction	student interaction with MyNorthStarLab online activities

Most of the survey questions were close-ended, but the last question in the second and third survey provided a space for students to add additional comments, which were very helpful in understanding their responses. The majority of questions were Likert-scale type with four answers (strongly agree, agree, disagree, strongly disagree).

Survey 1 administered in week 3 asked about student background: demographics, English proficiency and test scores, and computer use. This information was used to provide a description of student participants. The questions about LMS use and previous blended learning experience were used to determine if these were new concepts for students so that the innovativeness of the practice could be established (RQ 2- innovation). The survey consisted of eighteen open-ended, multiple response, and Likert-scale questions.

Mapping of each survey question to a research question and the construct that prompted it for surveys two and three can be found in Table 11. Table 11 shows the survey question, construct measured, survey question number (for example, 2-5: survey 2, question 5), research question, and survey question type (Likert-scale, multiple response, open-ended).

Table 11. Survey questions mapped to constructs and research questions

Survey question	Construct	Survey question number	Research question	Survey question type
For me, online activities in *MyNorthStarLab* are a <u>new</u> way to learn English.	Innovation	2-1	2	Likert-scale
I do not know how to use *MyNorthStarLab* online activities.	Complexity	2-2	2	Likert-scale
I like to work on *MyNorthStarLab* online activities in the computer lab.	Location	2-3	1	Likert-scale
I like to work on *MyNorthStarLab* online activities outside of the computer lab.	Location	2-4	1	Likert-scale
I prefer to work on *MyNorthStarLab* online activities for homework and <u>not</u> during class time.	Location	2-5	1	Likert-scale
My computer had difficulties with *MyNorthStarLab* online activities.	Complexity	2-6	2	Likert-scale
MyNorthStarLab online activities are connected to what we do in the classroom.	Integration	2-7, 3-3	1	Likert-scale
MyNorthStarLab online activities are easy to use.	Complexity	2-8, 3-11	2	Likert-scale
I completed some listening activities <u>several times</u> until I got the score I wanted.	Interaction	2-9	1	Likert-scale
In speaking activities, I recorded my answer <u>again</u> if the teacher indicated that I made a mistake.	Interaction	2-10	1	Likert-scale
Recording my voice and having the teacher listen to it is a good way to practice <u>speaking.</u>	Relative advantage	2-11	2	Likert-scale
In pronunciation activities, I recorded my answer <u>again</u> if the teacher indicated that I made a mistake.	Interaction	2-12	1	Likert-scale
Recording my voice and having the teacher listen to it is a good way to practice <u>pronunciation.</u>	Relative advantage	2-13	2	Likert-scale
It is difficult for me to find my way through *MyNorthStarLab* online activities.	Complexity	2-14	2	Likert-scale
I can see the connection between *MyNorthStarLab* online activities and *NorthStar* paper textbook.	Integration	2-15, 3-8	1	Likert-scale
I had technical problems when working on *MyNorthStarLab* online activities.	Complexity	2-16, 3-4	2	Likert-scale + explanation

Table 11. Continued

Survey question	Construct	Survey question number	Research question	Survey question type
Working on *MyNorthStarLab* online activities helps me with speaking English.	Relative advantage	2-17, 3-5	2	Likert-scale
Working on *MyNorthStarLab* online activities helps me with listening to English.	Relative advantage	2-18, 3-6	2	Likert-scale
Working on *MyNorthStarLab* online activities helps me with pronunciation of English.	Relative advantage	2-19, 3-7	2	Likert-scale
This is the first time I am in an English class that combines classroom learning with online learning.	Innovation	2-20	2	Likert-scale
Textbook activities are related to *MyNorthStarLab* online activities.	Integration	2-21, 3-12	1	Likert-scale
I need help learning how to use *MyNorthStarLab* online activities.	Complexity	2-22, 3-9	2	Likert-scale
I like that my class meets in the classroom and computer lab.	Attitude	2-23, 3-1	3	Likert-scale
The fact that my class meets in the classroom and computer lab helps me learn English.	Attitude	2-24, 3-2	3	Likert-scale
Which of these features of *MyNorthStarLab* online activities were useful to you?	Relative advantage	2-25	2	Multiple response
Comments about the class, computer lab, homework, and online activities	None specifically targeted	2-26, 3-16		Open ended
All IEOP classes should have online activities (such as *MyNorthStarLab* or other Internet activities*)* in addition to regular class activities.	Attitude	3-13	3	Likert-scale
I would recommend a class that uses *MyNorthStarLab* online activities in addition to class activities to other students.	Attitude	3-14	3	Likert-scale
I would like to take another IEOP English class that has *MyNorthStarLab* online activities together with the regular class activities.	Attitude	3-15	3	Likert-scale + explanation
I like both classroom activities and *MyNorthStarLab* online activities.	Attitude	3-10	3	Likert-scale

Survey 2 investigated opinions about the innovation (RQ 2- attributes), location, interaction, and integration (RQ 1- description of the model), and attitudes of students (RQ 3). The survey was given in week 10 after students had completed Units 1 and 2. It consisted of twenty-four multiple choice questions, one multiple response question, and one open-ended question. Answers to survey 2 were examined and individual student responses that indicated disagreement or strong disagreement were flagged. In survey 3, students that indicated negative experiences were asked to explain their opinions and were give several open-ended questions. For example, in survey 2, student 206 in class B indicated that MNSL activities did not help him with speaking English. An open-ended question in survey 3 asked him to explain why. The student wrote that he preferred to talk to the teacher than to the computer.

The third survey was given in week 13 after the completion of Unit 3. It consisted of fifteen multiple-choice questions and one open-ended question about the attributes of innovation (RQ 2) and satisfaction with and possible offering of online materials and blended classes in the future (RQ 3- attitudes). Results of each survey were calculated separately for each class.

Procedures

This study was conducted over a period of one semester (please see Data Collection Schedule in Appendix A for procedures by weeks). The classes met five times a week for 50 minutes– three of the days were in the classroom, and two in the computer lab. These 250 contact minutes per week were devoted to work on *NorthStar* paper materials or MyNorthStarLab online materials. Students also worked on textbook and online materials for homework. For the distribution of time spent in face-to-face and CALL modes, please see the section on Mode in Chapter 4.

After two main teachers had been explained details of the project and had agreed to participate in the study, they signed consent forms in week 1. As the Data Collection Schedule in Appendix A shows, the students were given an overview of the study in week 3 and told it was a part of their course, but that the data would be used for research purposes only if they wanted to give their consent. All students in both classes agreed to participate in

the study and signed informed consent forms. Before the teacher focus group was conducted in week 14, a written consent was also obtained from other teachers. The signing of the consent form was also done before the administrator interview the last week of the project.

Student and teacher training

After students, Bill, and Grace had signed the consent forms, classes took part in learner training which is seen as an important step in familiarizing participants with the CALL application so they can effectively use it (Hubbard, 2004). The learner training in the computer lab consisted of two parts: MNSL orientation and course registration. During the orientation, I introduced students to the LMS by showing them its interface, navigation, and functionality. I explained how to access MyNorthStarLab, log in, and navigate to the calendar, activities, and the grade book. I also demonstrated how to record and play back oral responses and how to get to teacher and system feedback. The students were provided with a paper handout that contained training information. The second part, course registration, immediately followed the orientation. The students were guided through the registration process, and upon completion asked to work on Unit 1 Readiness check and a pronunciation activity. Since the pilot study showed that some students did not know how to access teacher feedback after the orientation, during the next lab meeting the instructors asked all students to look up the feedback on the pronunciation activity they had previously completed. I was present in the lab during this meeting and assisted the instructors with answering student questions. Both instructors expressed appreciation for my assistance because it was hard for them to help all students at once. Instructor B was particularly relieved by my presence since she was at times unsure what she wanted students to do and how they would do it. During these times I acted as a participant observer especially in instructor's B class.

The two main instructors and other interested listening/speaking instructors were offered three teacher training workshops in week 1, 5, and 12. The first workshop lasted one hour and fifteen minutes and was attended by 9 instructors including Bill and Grace. The first workshop covered the same aspects as the student MNSL orientation, but also included the course set-up. In addition, I showed the teachers how to assign content and grades as well as

provide aural and textual feedback. The teachers were provided with a step-by-step course set-up handout and instructions the workshop covered. They were also given a copy of a student handout to photocopy for their classes. By the end of the workshop, all teachers successfully created their courses.

The second workshop was initiated by Bill who felt that he could help his colleagues by sharing his positive experience with MNSL and answering their questions. Bill invited teachers by e-mail and asked me to assist with the workshop. Eleven teachers attended the workshop which lasted for one hour and ten minutes. Bill showed the teachers his course and reviewed the main procedures covered in workshop one. I demonstrated more advanced features of running student reports. Then, teachers asked questions about things they were not sure about (e.g. how to delete student records and how to change the activity deadlines). Some instructors needed help with basic features (course set-up, pop-up blocker enabling), while some asked about more advanced features not covered in the first workshop (e.g. downloading mp3 audio files, setting up Java). Grace did not attend the workshop because she felt she had all her questions answered with me being in her labs.

The third workshop lasted for forty-five minutes and gathered seven teachers including Bill. I invited the teachers to share one activity that worked well in their classes and labs, ask questions, and express concerns. Teachers talked about how they were using MNSL, things that worked well (accessibility of materials), and problems they ran into (lack of headphones and microphones for all students, need for lab support). Some teachers including Grace did not attend because they did not have any questions. Throughout the semester, I made myself available to all teachers and would answer their questions about MNSL by e-mail. Some asked me to help in their labs, which I was happy to do when I was not doing observations.

Qualitative data analysis

Since in qualitative research "data analysis is simultaneous with data collection" (Merriam, 2002, p.14), I started analyzing data while data collection was still under way. The first step in the analysis included printing out all transcripts and reading carefully through them. I coded the complete dataset. Data sources from each class were analyzed separately. The analysis followed the coding procedures outlined in Miles and Huberman (1994). According to Miles and Huberman "codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during the study" (p. 56). The original set of codes was organized by research questions and included codes used in the pilot study. Main coding categories originated in theoretical frameworks so for example, codes for the first research question about the blended learning model were labeled the same as Neumeier's parameters. Similarly, the names of innovation attributes were the main codes under the second research question. Many main codes contained sub-codes which emerged from the data both in the pilot and present study. For instance, the main code distribution of learning content contained three sub-codes: value of online listening, speaking, and pronunciation activities which were the content specific to this dissertation.

In the first pass through the teacher interview data, I marked units (a sentence or several sentences) on the right-hand side margin. I assigned the codes to each unit, but also added new codes or sub-codes and revised the existing code definitions. This part of coding is known as open coding. In the second pass through the data, I checked all code definitions, organized codes, and deleted the unnecessary ones. I used the revised coding scheme (Appendix C) to conduct a rater training on two interviews (second and third interview with teacher Grace) which represent training data. The second rater was an ESL teacher with an MA degree in TESL. Appendix C shows the research questions associated with the code, the code itself, and its definition.

The second rater was explained the purpose of the study, research questions, codes, and their definitions in a one-hour meeting. The two coded interviews were then given to the second rater who went through the first interview and compared my codes to hers. Next, she had

coded the second interview by herself and later compared the codes. A detailed discussion about assigning codes and addressing discrepancies in coding lasted 2 hours. In case of discrepancies, an agreement was reached on how a piece of text should be coded and no text was discarded from the analysis. The training dataset was not included into calculations of inter-rater reliability. The training was done to make sure both raters were well-calibrated to code the rest of the dataset.

After the training, the second rater coded two teacher interviews (second and third interview with teacher Bill) by herself. The inter-rater reliability was calculated for each of the two interviews. Once the coded interviews were received back from the second coder, they were divided into segments consisting of one interviewer's question and one participant's answer. There were 37 segments in second interview with Bill and 29 in the third interview with Bill. An Excel sheet was made for each interview listing all segments by number, number of codes assigned by each coder per segment, and number of codes marked the same by both coders per segment. Inter-rater reliability was calculated using simple percentage agreement which is the number of segments coded the same by both raters divided by the highest number of codes per segment. Using simple percentages to calculate inter-rater reliability is "appropriate for continuous data (i.e., data for which the units can theoretically have any value in their possible range, limited in precision only by our ability to measure them)" (Mackey & Gass, 2005, p. 243). Inter-rater reliability for the second interview was 73% and the third was 75%. A subsequent discussion about disagreements in coding lasted one hour for the second interview and fifty minutes for the third interview. The coders could agree on almost all discrepancies except for one code in segment 5 and one in segment 28 (second interview) and one code in segment 13 (third interview). These pieces of data were not included in the analysis. The inter-rater reliability was calculated again and the coefficients obtained were 98.2% and 99.3% for the second and third interview respectively.

The inter-rater training and second coding were done on four out of six teacher interviews. The four interviews were chosen because they contained the bulk of information used to compare two classes in research question 1 about the blended learning model, so a

hypothetical class could be described. Mackey and Gass (2005) point to time and resources as main factors in determining the amount of data coded by the second coder. In this study, both of these factors influenced the second coding.

In the next step of the analysis, all instances of a certain code were examined across data sources. I made a table for each code and cut and pasted segments from different data sources into it. The tables facilitated the comparison between classes and teachers. Frequent re-reading of previously coded material was done to help create a big picture of themes in the data.

For each embedded unit of analysis (each class), a separate analysis was done. Then, the comparison of findings across units of analysis was provided to highlight similarities and differences. As suggested by Miles & Huberman (1994) and Yin (2003), a matrix was made containing information about two classes. The matrix was organized by research questions. The similarities were used to describe the case, a hypothetical listening/speaking class at lower-intermediate level, while the differences were used to show a range of options in blended learning models.

Quantitative data analysis

In addition to qualitative data sources, LSM records of student homework time in minutes were also analyzed. The homework time for two classes was entered into two Excel files. A mean homework time per day per class was calculated as well as the minimum and maximum homework time.

Quantitative analysis encompassed student surveys, too. Survey responses were analyzed separately for each class and later compared between classes. All student answers were entered into an Excel spread sheet and later imported into SPSS to calculate descriptive statistics for each survey item, to calculate Cronbach's alpha reliability estimate for items that measure the same construct, to compare mean scores of items included in both survey 2

and 3 (Wilcoxon rank-sum test), and to determine if the survey items combined to form latent factors (factor analysis).

First, each Likert-scale answer given a value (strongly agree-4, agree-3, disagree-2, strongly disagree-1). Some of the items on surveys were phrased in the negative light: for example item 2-6 (question 6 on survey 2) "My computer had difficulties with MyNorthStarLab online activities". For this and items 2-2, 2-14, 2-16, 2-22, 3-4, and 3-9, reverse coding was performed using the following scale (strongly agree-1, agree-2, disagree-3, strongly disagree-4). Descriptive statistics (mean, standard deviation, and range) were calculated for each question. In cases when several questions asked about the same construct (for example innovation) the scores obtained for the responses to those questions were summed to create a measure of innovation. The reliability of scores for the new measure (Cronbach's alpha) was reported (see the discussion in the next section). Cronbach's alpha based on standardized items was reported instead of regular Cronbach's alpha because it adjusts to the differences in means and standard deviations among variables.

Some of the questions were repeated from survey 2 to survey 3. In cases when their mean scores were very different, a test was run to see if the difference was statistically significant. Because all questions did not produce scores with a normal distribution, a nonparametric test, Wilcoxon Rank, was used. The test compared two related samples because the samples comprise the same students. In cases when the significance value was higher than 0.05, no statistical significance was found between students' opinions, so it was concluded that their views remained unchanged between survey administrations.

Factor analysis was also run on each survey to identify underlying factors which explain the pattern of correlations within variables (survey questions). Although factor analysis is intended for analyzing interval scale data, it can also be used to analyze ordinal data (scores assigned to Likert scales), which was the case in this study. Since factor analysis assumes that there is a correlation pattern among variables, a correlation matrix among all variables in the survey was first calculated. Then the communalities table was examined for the amount

of variance accounted for in each variable. Next, factors were extracted together with the amount of variance in the data they explain. For class A, survey 2, four factors which explain 77.95% of the variance were extracted, while in survey 3, four factors which explain 77.16% of the variance were found. This means that the complexity of the survey data sets can be reduced by using four components with 22% (survey 2) or 23% (survey 3) loss of information respectively. For class B, survey 2, five factors with 87.985% of the variance were extracted, while for survey 3, three factors with 80.36% of the variance were found. In case of class B, the data complexity can be reduced with only 12% (survey 2) and 19% (survey 3) information loss. In the next step, the scree plot was graphed to help determine the optimal number of components (factors). Finally, the rotated component matrix showed which variables were strongly correlated with each other, while at the same time weakly correlated with other variables. Each variable was assigned to a factor. The variables that loaded highly on a factor should be included in future surveys, while those that did not load highly could possibly be eliminated. The detailed interpretation of the factor analysis is provided in the next section.

Evaluation of measuring instruments: student surveys

As mentioned in the previous section, Cronbach's alpha and factor analysis were statistical procedures used to check the quality of student surveys. All items measuring the same construct were examined together and Cronbach's alpha values entered into the tables which can be found the Results chapter. The discussion of the Cronbach's alpha values follows.

Student surveys were used to obtain student feedback on integration of face-to-face and CALL modes in research question 1. Tables 15 and 16 contain reliability estimates for all three items in surveys 2 and 3 respectively. Cronbach's alpha values for class B are relatively high (0.720 and 0.860 respectively). However, class A's values are lower (0.610), especially for survey 2 (0.313). A possible explanation could be a slightly lower proficiency level of group A than of group B. Another explanation could be the survey instrument itself. During the administration of survey 2 in class A, students were told they could ask questions about the words they don't understand. Several students asked about the meaning of item 2-21

especially the word "related". It could be speculated that the students did not know this word and did not interpret it as a synonym for the words "connected" and "connection" in items 2-7 and 2-15, which asked about the same construct. This is an important thing to keep in mind for the design of future surveys, especially if given to lower proficiency levels than that of students in class A. In this case, survey designers may look into providing questions in students' native languages.

In research question 2, the first attribute of innovation, relative advantage, was examined. Tables 20 and 21 contain all relative advantage questions asked in student surveys 2 and 3 respectively. Very high alpha values (survey 2: 0.843 (class A) and 0.957 (class B); survey 3: 0.909 (class A) and 0.956 (class B)) show that all the items measure the same construct. The factor analysis of survey 3, for both classes A and B, further confirms that items 3-5, 3-6, and 3-7 measure the construct of relative advantage because they belong to the same factor. Similarly, items 2-11, 2-13, 2-17, 2-18, and 2-19 for class B make a factor. For that reason, all these items should be included as measures of relative advantage in future surveys with similar participants.

The results of the analysis of all complexity items from research question 2 are presented in Table 22 (survey 2) and Table 23 (survey 3). Cronbach's alpha values for both classes and surveys (except class B survey 2) are around 0.550 which is rather low. Consequently, 6 complexity items may not be analyzed together but broken down into more discrete parts (e.g. technical difficulties items, ease of use items, need help items). The factor analysis for class A survey 2 showed that variables 2-2, 2-6 and 2-16 make a factor. When only these variables were used to calculate the reliability of the measure, a much higher value of 0.838 was obtained. Due to this, was possible to include only 3 instead of 6 items in the measurement of the complexity construct in survey 2 for class A. The high Cronbach's alpha value of 0.896 for class B, survey 2 indicates that class B answers are more consistent and hang together much better than answers of class A. Additionally, four out of six complexity items (2-2, 2-8, 2-16, and 2-22) belong to the same factor. Cronbach's alpha for these four variables is 0.928 which is higher than the value for all six of them. Based on this, only four

complexity items were found to be sufficient to measure this construct. In survey 3, the small number of items (3) may have influenced the alpha values in both classes.

Research question 3 asked about student opinions about blended learning and MNSL innovation. The results of survey 2 can be found in Table 24 and of survey 3 in Table 25. When a new measure of student attitudes towards blended learning was made based on the two items in survey 2, the reliability of scores indicator (Cronbach's alpha) was found to be 0.636 and 0.937 for class A and B, respectively. In class B, two attitude items in survey 2 belong to the same factor further supporting their strong correlation with each other. In survey 3, class B, Cronbach's alpha was found to be 0.894, an acceptable value in social science research. However, the alpha value for class A survey 3 is very low 0.392, so a different analysis was performed using only items 3-2 and 3-13 which the factor analysis indicated would make a factor. In this case, the alpha value increased to 0.786. A better measurement of student views for survey 3 class A are items 3-2 and 3-13 than items 3-1, 3-2, 3-10, 3-13, 3-14, and 3-15. This way the data can be reduced to a smaller number of uncorrelated variables if the survey is to be used with a similar group of students in the future.

Chapter summary

This chapter outlined case study methodology and justified its use in blended learning research in this dissertation. It further explained the choice of descriptive case study and single case design with two embedded units of analysis. Next, the context of the study was presented followed by the description of participants and explanation of researcher's position. Procedures used to ensure the quality of research findings were provided to address validity of results. Since this dissertation used the data collected during the pilot study, the description of the pilot study was also included followed by the description of teaching materials. Next, all data sources were discussed and data collection procedures outlined. Finally, strategies used in data analysis were presented separately for qualitative and quantitative data and evaluation of student surveys given. The next chapter details the results of the study.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter presents and discusses the results concerning the blended learning model, perceptions of the innovation and its attributes, attitudes towards the innovation, and stages of the innovation-decision process. Both qualitative and quantitative data sources described in Chapter 3 were used to obtain the results.

First, the results of the first research question are introduced. The description of the blended learning model is given using six parameters from Neumeier (2005). The model of the hypothetical blended learning class is described based on the analysis of classes A and B. Data sources include teacher interviews, class and lab observations, student focus group, student LMS records, and student surveys. The findings show that teachers and students in classes A and B could see a clear connection between modes, which suggests that the hypothetical class could accomplish mode integration successfully. Moreover, learning content would be distributed in a parallel way because all language skills could be practiced in both modes. In classes A and B, parallel distribution allowed online presentation and in-class review/practice as well as in-class presentation and online practice. A number of interactional patterns were observed in the two classes: in the face- to-face mode the teacher interacted with the individual student, the whole class, and students in pair/group work, while the student interacted with the teacher and with other student(s) in pair and group work. In the CALL mode, the teacher and student interacted through the computer, and student interacted with the computer and through the computer with other students. These findings point to a range of interactional patterns in the hypothetical class where teachers would assume several roles such as instructor, facilitator, and monitor. Finally, it was found that there are at least three locations where learning in the hypothetical class would take place: classroom, computer lab, and student homes and that the preferred location for access to online activities could vary from student to student.

Following this, the results of the second research question are presented and discussed. Through examination of teacher interviews, student survey, and focus group it was found that two teachers and students perceived the use of MyNorthStarLab in their technology-

enhanced blended learning classes as an innovation according to Rogers' definition (2003). Moreover, four innovation attributes were studied: relative advantage, complexity, trialability, and observability using interviews with teachers and administrator, student surveys, and student and teacher focus groups. The results show that teachers viewed the innovation as advantageous and its use improvement from past practices. Furthermore, both teachers and students could see the value of teacher-graded activities in MyNorthStarLab. Major drawbacks of the innovation for teachers were the time-consuming nature of providing student feedback and problems with computer software. Overall, student survey responses showed that both classes found MNSL relatively easy to use but that technical difficulties were present and for class A continued through the semester. Lastly, the data indicate that the teachers had sufficient opportunities to try the innovation out and that the results of their experience could be observed by their colleagues.

Next, the results of the third research question are given. Teacher and student attitudes were studied through teacher interviews, student surveys, and student focus group. Positive teachers' attitudes were shown through their interest in continued innovation use, its use in other skill classes, and its recommendation to colleagues. The majority of students in both classes expressed positive views of the innovation in terms of its appeal and helpfulness. While two teachers and their students agreed that extra practice, preparation for future college studies, opportunities for autonomous learning, and the ability to work at one's own pace represent some advantages, some disadvantages were also reported.

Last, the innovation-decision process two teachers went through was described. The data were collected in teacher interviews and lab observations and presented in five stages taken from Rogers (2003). It was found that two teachers both passed through the first four stages (knowledge, persuasion, decision, and implementation). At the end of the study, Bill's assistance to others in using the innovation could indicate the beginning of the last stage, the confirmation stage. Ultimately, the future of the innovation in this setting lies not only with two teachers but with all teaching and administrative staff.

Research question 1: Blended learning model

The first research question looked into how the blended model in classes A and B was used through class and lab observations, teacher interviews, student focus group, student LMS records, and student survey responses. The analysis of each class is made using six parameters from Neumeier (2005): 1) mode, 2) model of integration, 3) distribution of learning content and objectives, 4) language teaching methods, 5) involvement of learning subjects (students, tutors, and teachers), and 6) location. After each parameter is discussed, the hypothetical blended learning class is described based on similarities and differences between the two classes.

Mode

The blended model in this study is composed of two modes: face-to-face and CALL. Face-to-face mode consisted of meetings in the classroom three times a week (see Table 12). The CALL mode consisted of meetings in the computer lab twice a week and time students spent doing homework in MNSL outside the lab hours. All meetings lasted for 50 minutes.

Table 12. Location and contact days for Classes A and B

Class A	Mode		
	Face-to-face	**CALL**	
Location	Classroom	Computer lab	Other
Contact days	Mon, Tue, Thu	Wed, Fri	When MNSL homework was given

Class B	Mode		
	Face-to-face	**CALL**	
Location	Classroom	Computer lab	Other
Contact days	Mon, Wed, Fri	Tue, Thu	When MNSL homework was given

The time spent in each mode is given in Table 13 (Class A) and Table 13a (Class B). The tables include the ten-week period from September 14 (week 4) when the classes started using NorthStar textbooks to November 20 (week 13) when the observations were

discontinued. All extra-curricular activities that took place instead of classes and labs are indicated. The time students spent doing homework in MNSL was calculated from their weekly self-reported logs. Homework time includes the average, minimum and maximum homework time for all students who reported doing homework that day. These values help give a range of homework time and a more precise calculation of the length of the CALL mode than when only lab times were included (as was the case in the pilot study).

Table 13A. Class A: Time in each mode per day (in minutes) and in total (in hours and minutes)

Date and day	Face-to-face mode	CALL mode		
	Class time	Lab time	MNSL homework on average	Homework minimum	Homework maximum
14 Mon **Sep**	50				
15 Tue	50				
16 Wed		50			
17 Thu	50				
18 Fri		No lab: field trip			
19 Sat					
20 Sun					
21 Mon	50		18.9	5	30
22 Tues	50		21.3	5	30
23 Wed		50			
24 Thu	50				
25 Fri		50			
26 Sat					
27 Sun					
28 Mon	50				
29 Tue	50				
30 Wed		50			
1 Thu **Oct**	50				
2 Fri		50			
3 Sat					
4 Sun					
5 Mon	50		19.6	10	30
6 Tue	50		18.3	10	30
7 Wed		50			
8 Thu	50				
9 Fri		No lab: seminar	21.4	13	30

Table 13A. Continued

Date and day	Face-to-face mode		CALL mode		
	Class time	Lab time	Date and day	Class time	Lab time
10 Sat					
11 Sun					
12 Mon	No class: midterm conferences				
13 Tue	50		23.125	10	45
14 Wed		50			
15 Thu	50				
16 Fri		No lab: meeting with advisors	25.7	12	45
17 Sat					
18 Sun					
19 Mon	50		25.4	10	30
20 Tue	50				
21 Wed		50			
22 Thu	50				
23 Fri		50			
24 Sat					
25 Sun					
26 Mon	50				
27 Tue	50		25.75	10	40
28 Wed		50			
29 Thu	50				
30 Fri		50			
31 Sat					
1 Sun **Nov**					
2 Mon	50				
3 Tue	50		16.75	4	40
4 Wed		50			
5 Thu	50				
6 Fri		50			
7 Sat					
8 Sun					
9 Mon	50				
10 Tue	50				
11 Wed		50			

Table 13A. Continued

Date and day	Face-to-face mode	CALL mode			
	Class time	Lab time	Date and day	Class time	Lab time
12 Thu	50				
13 Fri		50			
14 Sat					
15 Sun					
16 Mon	50				
17 Tue	50				
18 Wed		50			
19 Thu	50				
20 Fri		No lab: Thanksgiving activity			
Total (in min)	**1450**	**800**	**216.225**	**89**	**350**
Total (in hours and min)	**24h 10 min**	**13h 20 min**	**3h 36 min**	**1h 29 min**	**5h 50min**

Table 13B. Class B: Time in each mode per day and in total (in hours and minutes)

Date and day	Face-to-face mode Class time	Lab time	CALL mode MNSL homework on average	Homework minimum	Homework maximum
14 Mon Sep	50				
15 Tue		50			
16 Wed	50		15.75	8	30
17 Thu		50	10*	10	10
18 Fri	No class: field trip		20**	20	20
19 Sat			40**	40	40
20 Sun			10**	10	10
21 Mon	50				
22 Tues		50	20*	20	20
23 Wed	50				
24 Thu		50			
25 Fri	50		5***	5	5
26 Sat					
27 Sun					
28 Mon	50				
29 Tue		50			
30 Wed	50				
1 Thu Oct		50			
2 Fri	50				
3 Sat					
4 Sun					
5 Mon	50				
6 Tue		50			
7 Wed	50				
8 Thu		50			
9 Fri	No class: seminar				
10 Sat			30***	30	30
11 Sun					
12 Mon	No class: midterm conferences				
13 Tue		50			
14 Wed	50		20***	20	20
15 Thu		50			

Table 13B. Continued

Date and day	Face-to-face mode		CALL mode		
	Class time	Lab time	MNSL homework on average	Homework minimum	Homework maximum
16 Fri	No class: meeting with advisors				
17 Sat			20***	20	20
18 Sun					
19 Mon	50		10***	10	10
20 Tue		50			
21 Wed	50				
22 Thu		50			
23 Fri	50				
24 Sat					
25 Sun					
26 Mon	50				
27 Tue		50			
28 Wed	50				
29 Thu		50			
30 Fri	50				
31 Sat					
1 Sun Nov					
2 Mon	50				
3 Tue		50			
4 Wed	50				
5 Thu		50			
6 Fri	50				
7 Sat					
8 Sun					
9 Mon		50 (Class met in the lab to do an Achievement test)			
10 Tue		50			
11 Wed	50				
12 Thu		50			
13 Fri	50				
14 Sat					
15 Sun					
16 Mon	50				

Table 13B. Continued

| Date and day | Face-to-face mode | CALL mode | | | |
	Class time	Lab time	MNSL homework on average	Homework minimum	Homework maximum
17 Tue		50			
18 Wed	50				
19 Thu		50			
20 Fri	No class: Thanksgiving activity				
Total (in min)	1200	1050	200.75	193	215
Total (in hours and min)	20h	17h 30 min	3h 21 min	3h 13 min	3h 35min

Notes: * Reported by student 204, ** Reported by student 209, *** Reported by student 205

When looking at Tables 13A and 13B, it can be seen that Class A students received MNSL homework mostly on class days when they did not meet in the lab. In the first interview, Bill, class A teacher, explained that he preferred to assign homework the night before the lab day so that the students could get started with the activities and finish them in the lab the next day (Bill, interview 1, p. 3). On the other hand, Class B students did not have MNSL homework on class but on lab days and only in cases when they did not finish their work in the lab. Also, with the exception of September 16, only one student (204, 209, or 205) reported doing MNSL homework on the rest of the days. These data indicate that class B had less online homework than class A and that fewer class B students completed it. When class B instructor, Grace, was asked about homework, she confirmed not assigning a lot:

> Seems like having lab for two days a week, (students) still end up doing every activity in there during those times. So there is not much left to do for homework. If they don't finish it in the lab, they finish it for homework. (Grace, interview 2, p. 3)

In addition to homework from MNSL, instructors were asked about assigning homework from the textbook.

> Maja: Is homework always from MNSL or it is sometimes from the book, too?
>
> Bill: There have been a couple of occasions when there is something from the book. Several occasions. But the vast majority is MNSL, whether it's the lab day the next day or not. (Bill, interview 2, p. 5)
>
> Grace: The only thing I've really done from the book is the grammar. That's why I don't spend a lot of time on the grammar in class. [pause: Grace is looking at the book] Only grammar. The rest of it I like to do in class. (Grace, interview 2, p. 4)

As teachers' answers show, homework other than from MNSL was assigned but not very often. The amount of time students spent on that homework was not investigated but should be looked into to understand learning that takes place outside of face-to-face and CALL modes.

The distribution of modes can be seen from the total time in each mode (Table 14). Class A spent 1450 min in the face-to-face mode and 800 min in the lab. When the average homework time is added to the lab time, CALL mode time is 1016.225 minutes on average (range 889 -1150). In case of class B, face-to-face mode lasted 1200 min and the lab time 1050 min. Average CALL mode time is 1250.75 min (range 1243 - 1265).

Neumeier's definition of the lead mode encompasses two variables: time in and content of the mode. Neumeier writes about the lead mode: "learners often spend most of the time in this mode, they are guided through the learning process here" and "the sequencing and organization of content or negotiation of content is done and presented in the lead more" (2005, p. 167). When the first part of the definition is used, total time in percentages shows that face-to-face is the lead mode for class A because students spent most of the time in it. While the distribution of modes is almost even for class B (49% and 51%), CALL mode appears to be the lead mode for class B. Moreover, the homework time did not influence the CALL mode duration for class B (remains 51%) but did for class A (ranges from 38% to 44%). When the evidence for the second part of the definition was sought in observations and

teacher interviews, it was found that class B received guidance from the teacher and negotiated content in the face-to-face mode more than the CALL mode, so face-to-face mode could be considered the lead (please see the evidence for this claim in the section on participant roles later in this chapter). Another consideration in determining mode distribution is that homework time data were self-reported because that was the only way to obtain them. Ideally, MNSL platform should record time on each activity and provide this information by student in an easily downloadable format. This process would insure more confident calculation of instructional time and modes.

Table 14. Distribution of modes

Modes	Face-to-face	CALL				Both modes
	Class*	Lab**	Homework average***	Homework min****	Homework max****	
CLASS A Total in min	1450	800	216.225	89	350	2466.225
Total in %	59%	41%				100%
	62%			38%		100%
	56%				44%	100%
CLASS B Total in min	1200	1050	200.75	193	215	2450.75
Total in %	49%	51%				100%
	49%			51%		100%
	49%				51%	100%

* Total time spent in the classroom during the study
** Total time spent in the computer lab during the study
*** Average time students spent doing MNSL homework during the study
**** Minimum and maximum time students spent doing MNSL homework on average during the study

In addition to distribution, Neumeier (2005) further examines the modes by dividing them into components or sub-modes. The sub-modes of the face-to-face mode were listening, speaking, vocabulary, grammar and pronunciation sections both classes covered in all four units. Examination of LMS records showed that CALL sub-modes in both classes were listening, speaking, pronunciation, grammar, and vocabulary activities as well as

assessments. Both teachers administered end-of-the-unit tests (Achievement tests) in the CALL mode. Their rationale was that the class met in the lab two times a week and that it made sense to have the test done there (Bill, interview 2, p. 4) especially since it "did not take more time away from class" (Grace, interview 2, p. 7). Bill also liked not having to make copies of paper tests and having the tests scored for him. Finally, both teachers assigned diagnostic assessments, Readiness checks, at the start of each unit.

In addition to activities and assessments, MNSL also contains asynchronous communication features (e-mail and discussion board). Neither teacher used the MNSL e-mail system but I failed to ask them to explain this choice. Bill did not use the discussion board because he did not see it working well with his students due to their lack of dedication and involvement (Bill, interview 1, p. 4). Grace used the discussion board on two occasions. Here are her comments on the first occasion:

> It was interesting! I think they liked it! I'd like to see them write more. […] Maybe that's just like texting to them. […] They got into it and posting messages to each other. They were real curious to see what the other students wrote and everything. (Grace, interview 2, p. 5)

Grace saw the value of this activity in helping students put more thought into their response because they knew everyone would be reading it.

Mode: Hypothetical class

Based on the analysis of classes A and B, the description of the hypothetical listening/speaking class at the lower-intermediate proficiency level can be made. This description is based on similarities and differences between classes A and B. It can be concluded that the hypothetical class would meet three times a week in classroom and twice in the lab. It was found that the distribution of modes in classes A and B varied depending on the number of extra-curricular activities (whether they fell on a class or lab day) and the amount of MNSL homework assigned (see Tables 13 and 13a). Due to extra-curricular activities, Class A had more face-to-face meetings and spent a total of 1450 min (59% of total instructional time) over the ten-week period in this mode while class B spent 1200 min

(49%) (see Table 14). The amount of homework in class B did not change the duration of CALL mode, while in the case of Class A, CALL mode could take up anywhere from 38% to 44% of instructional time. In sum, in the hypothetical class the ratio of face-to-face vs. CALL mode could fall anywhere from 49%-62% to 38%-51%. When looking at the time distribution, the lead mode for class A is face-to-face and class B is CALL (although the class B percentages are very close: 49% (face-to-face) and 51% (CALL)). However, evidence indicates that class B students did not receive substantial support from the teacher in the CALL mode, thus making the case for the face-to-face mode to be designated as the lead one.

The examination of sub-modes showed that the hypothetical class would work on listening, speaking, pronunciation, grammar, and vocabulary activities in CALL and face-to-face modes. Finally, diagnostic and unit assessments would be administered in the CALL mode due to their availability and sufficient CALL mode time.

Model of integration

According to Neumeier (2005), the second parameter - model of integration - consists of sequencing of individual modes and level of integration. In this study, sequencing of individual modes or the order the modes were put together was determined by the program's schedule because lab and class days had been determined before the semester started. Sequencing of activities in different modes can sometimes be based on the degree of transactional distance (Neumeier, 2005, p. 170) so, for example, collaborative and individual activities can alternate. This rationale was not used in the two classes.

Level of integration refers to the flexibility the students have in deciding to work on certain activities so some materials can be made obligatory and some optional. Given the nature of blended learning, Neumeier (2005) writes that the face-to-face phases are often obligatory while some online activities may not be. Giving learners this flexibility presumes that students are autonomous learners who will take responsibility for their own learning. In this study, all materials were made obligatory by the instructors and students did not have a

choice in choosing which activities to complete. In fact, Bill complained that some students were not putting in sufficient effort into the class and that he had to remind them numerous times to complete the online work (Bill, interview 2, p. 5-6). It can be speculated that making activities optional would not have worked well for class A because students were not seen as autonomous learners by their instructor. A similar view was shared by Grace about her class. When asked if class B students are mature enough to be responsible for their own learning, she explained:

> A couple of (students) could have studied on their own. Most of them would have just goofed off the whole time. […] I think it helps if they have some kind of outcome. If they are going to be graded on it, or they have to turn it in. If there is some kind of accountability, they can do it themselves. But if you left it open-ended, I don't think they would do it. (Grace, interview 3, p. 1).

In addition to Neumeier's view of integration, this parameter was also examined from the perspective of previous findings in blended learning studies. Since the lack of integration was cited as one of the major reasons why blended models failed to work (Stracke, 2007), this study carefully investigated how class and online work were connected. First, class and lab observations were examined to see if Bill and Grace explicitly made connections between the two modes. Then, the teachers were asked to comment on the integration episodes in their interviews.

A number of occurrences of the integration theme were found in class A's data.
In the class, Bill mentioned that he would be assigning MyNorthStarLab activities for homework or lab work and explained when the activities were due. Additionally, he would remind the students to check out the feedback he provided on their oral responses. Before the class, Bill would look at students' work in MNSL and if many students made the same mistake, he would address the mistake in class. Here are my notes about feedback on a MNSL pronunciation activity from the class observation on September 24:

> The class reviews the pronunciation of target vocabulary from the unit. *Humorous* is one of the words from the first question. Teacher: "How do we pronounce this

word?" Teacher repeats the pronunciation 3 times. Teacher also reviews the word meaning. Then, he calls on individual students to answer the exercise. Teacher: "You already did this--you recorded this" […] Teacher writes *rely on* on the board and corrects the student's pronunciation: *relay on* is pronounced /relai on/. Sometimes the teacher repeats the complete sentence with the target word inserted. He also addresses the whole class: "how do we pronounce this word?" and writes *emotional* on the board. "This is the word many of you had trouble with. That was difficult for you when you recorded". He calls on a student by name. "I remember you had trouble with this word". (Class observation, September 24, p.1)

Several instances of integration were observed in regards to the progress individual students in class A made (Lab observation, September 23; Class observations, October 13 and October 20). Bill would make a list of students who did not complete assigned exercises and call on them to complete the work. He would also write their names and number of incomplete activities on the board. In class on October 13, Bill read the names of students who finished homework and praised them for it. Here is what Bill said about these practices:

In the class the next day, the day after the assignment was due, I'll mention whether there was a good response or whether the students did it or not. Maybe point out who did not and remind them that they still have to do it. I've tried to stay on the top of that in general---to talk about exercises that have not been done to people who have not done them. […] Because I just don't like having students not attend to class requirements. (Bill, interview 2, p.5-6)

By giving in-class feedback and monitoring student progress, Bill showed that completing online work is an essential part of class requirements and that it is integrated with what is being done in the face-to-face mode.

In class B, Grace also connected online and class work but fewer times than Bill. In the second interview, Grace could recall only one such occasion:

In some speaking activities, a lot of (students) were making the same mistake. Then I would address it in class after I graded it and saw a lot of them were making the same error. I remember it was "giving advice" and they were supposed to use the sentences

that were on the screen and use modals for giving advice. And every time there was a negative one like "don't share your pin number" they would always say "you had better don't share". So I covered that in class. And then in feedback too I said the same thing. I thought that was a good thing. It has really been a couple times that I've really connected the two.

(Grace, interview 2, p. 10)

Grace did not see the need to make these connections more often because she believed students themselves could see the relationship between the modes. When she listened to their responses, students sounded like they knew they were doing and she never got a lot of questions about things they did not understand (Grace, interview 3, p. 6). Moreover, students were able to use the language from the unit and were transferring what they were learning in class to the online activities (Grace, interview 3, p. 6). As shown below, student surveys supported Grace's views that integration could be observed.

Students' responses to questions about integration were analyzed to see if there was an agreement between students and their teachers. Students marked the answers on a Likert scale (strongly agree-4, agree-3, disagree-2, strongly disagree-1). Table 15 shows the integration questions asked in the second survey and Table 16 questions in the third survey. During the survey 3 administration, one student from each class was missing bringing down the number of respondents to 15 (class A) and 14 (class B). Number of responses, mean scores, and standard deviations are given for each question and each class (please note that the values of means and standard deviations should not be taken literally due to the small sample size). In the next step of the analysis, the answers to the integration questions were combined and the reliability of the scores was given as Cronbach's alpha. The detailed discussion of the quality of survey instruments based on Cronbach's alpha values was provided in the Methods chapter (see the section on Evaluation of measuring instruments).

Table 15. Survey 2: Students' views about the integration of face-to-face and CALL modes

Survey 2 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
2-7 *MyNorthStarLab* online activities are connected to what we do in the classroom.	16	3.00	0.365	15	3.40	0.507
2-15 I can see the connection between *MyNorthStarLab* online activities and *NorthStar* paper textbook.	16	2.75	0.775	15	2.87	0.834
2-21 Textbook activities are related to *MyNorthStarLab* online activities.	16	3.19	0.403	15	3.07	0.458
All items	16	2.98	0.514	15	3.11	0.600
Cronbach's Alpha based on standardized items	0.313			0.720		

Table 16. Survey 3: Students' views about the integration of face-to-face and CALL modes

Survey 3 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
3-3 *MyNorthStarLab* online activities are connected to what we do in the classroom.	15	3.27	0.458	14	3.14	0.663
3-8 I can see the connection between *MyNorthStarLab* online activities and *NorthStar* paper textbook.	15	3.13	0.516	14	3.07	0.829
3-12 Textbook activities are related to *MyNorthStarLab* online activities.	15	3.13	0.352	14	3.00	0.679
All items	15	3.18	0.442	14	3.07	0.724
Cronbach's Alpha based on standardized items	0.610			0.860		

As can be seen from Table 15, the students in class B could make a connection between modes indicated by the range of mean scores from the highest of 3.40 to the lowest of 2.87 in survey 2. In survey 3 (Table 16) all mean scores are 3.0 or above and show that the

integration could be observed by both classes. Furthermore, in the student focus group, a class B student shared that "lab classes are tightly related to regular classes in terms of content" (p. 9). Grace's comments on successfully perceived integration by students corroborate class B's opinions. When Cronbach's alpha values in survey 2 and 3 were examined, it was found that in class B they were relatively high (0.720 and 0.860 respectively). However, class A's values were lower (0.610), especially for survey 2 (0.313). Some of the reasons could be a slightly lower proficiency level of group A than of group B and difficulty in understanding the survey questions (see the section on Evaluation of measuring instruments in the Methods chapter for a detailed explanation).

To determine if student views on integration changed over time or remained constant, mean scores for questions 2-7 and 3-3, 2-21 and 3-12 were compared. While mean scores for class A increased (from question 2-7 to 3-3) or remained almost the same (questions 2-21 and 3-12), there was a decrease in class B on both pairs of questions. A nonparametric test, Wilcoxon rank-sum, was run to see if the differences in means were significant. Wilcoxon rank-sum for two related samples was used because questions do not have normal distribution necessary for parametric tests and two samples comprise of same students. The significance value for pair 2-7 and 3-3 was 0.257 and for pair 2-21 and 3-12 was 0.567. Both of these values are higher than 0.05 and thus not statistically significant which indicates that students views about connection between online and class activities did differ, but this difference was not statistically significant.

Model of integration: Hypothetical class

The analysis of two classes showed that they had a lot in common and that the hypothetical level 3 listening/speaking class in IEOP would be able to observe mode integration. Both teachers used online activities to check student individual responses (CALL mode) and in case of common errors offered additional feedback in the classroom (face-to-face mode). In addition, Bill showed the importance of student work in the CALL mode by calling on students in the face-to-face mode and discussing the activities they had/had not completed. It can be concluded that in the hypothetical class these instructional practices would help

students perceive the integration of modes. Moreover, students would also be able to make the connection between the modes. The level of integration rated by students could vary based on their level of proficiency and general work effort. These are the areas to take into account when measuring the success of mode integration in the future.

Distribution of learning content

Distribution of learning content and objectives can be implemented in two ways: parallel or isolated. Parallel distribution allows a certain language skill to be incorporated and practiced in both modes (Neumeier, 2005). In this study, learning content was distributed in the parallel way because the online materials offered presentation and practice of the same skills as in the textbook and followed the organization of the textbook closely. The availability of the Wimba recording feature allowed students to practice speaking and pronunciation, skills that are usually difficult to practice online, in the CALL mode.

In cases of parallel distribution, Neumeier (2005) discusses two ways of teaching language functions: online presentation and face-to-face practice or face-to-face introduction and online practice (p. 171). Both of these patterns were employed by Bill and Grace.

In my notes from Bill's class observation on September 24, I wrote that students had first completed vocabulary and pronunciation activities in the CALL mode. Then, Bill examined student recordings and was reviewing the meaning and pronunciation of words in the face-to-face mode. In the first interview, Bill explained that he liked students to work on pronunciation practice online and that in class he checked how well they learned. "And some of the (students) were really good and some of them struggled a little bit, but that was a reflection of how they did on MNSL site" (Bill, interview 1, p.5). Grace followed the same presentation-review pattern although less often. For example, in class on October 14, class B students reviewed a grammar and pronunciation activity previously completed online.

Bill sometimes reviewed listening activities in class, too. He wanted to make sure students could recall information or wanted to offer additional practice. This is Bill's rationale:

I tend to like to review things in class just to make sure that there is some recall involved and that they actually learned something as opposed to trying exercises again and again, just to get a better score and not really remember what the conversation was about or the lecture was about. I like to get some verification in my mind that they really did understand it and they do know what the person was talking about---that sort of thing. It's just a little piece of mind for me as opposed to putting the whole burden on the site to keep records and things. […] And then there are times when I could see that maybe they didn't understand all that well so it was helpful to go over it in class and give them more opportunities just to practice---whether it is a pronunciation thing or grammar point or something. (Bill, interview 2, p. 11)

Grace preferred to use the second method: face-to-face introduction and online practice. For example, vocabulary was usually introduced in class and then practiced online. Grace explained:

I'm not the one to use the computer to teach new concepts, I want to reinforce them. That's how I approach it myself. I like to cover in class and then give them the activity they can work on to reinforce (online). (Grace, interview 2, p. 7)

Teachers also chose how to distribute content based on the type of activities. Early on in each unit, Bill liked to cover the online pronunciation activity which was not in the book. This exercise contained vocabulary from the unit so he wanted to see how well students could repeat and read sentences with target vocabulary. Later in the unit, he would also assign the longer online pronunciation activity (Bill, interview 1, p. 4).

Each textbook unit included final speaking activities which synthesized the knowledge and skills from that unit. Bill saw these activities as "beneficial and interesting" (Bill, interview 3, p. 14) because they provided speaking practice through group work, role play, and discussions. Creating an advertisement was the speaking activity from Unit 1. Bill felt students did not do well with this activity due to difficulty of working in groups and lack of motivation and effort:

> It didn't go very well, unfortunately. I wasn't very optimistic ahead of time and my fears proved to be correct. It's hard to get them to work in groups or pairs. They act bored, use Chinese half the time. I have to really stay on the top of them and go around and maybe provide feedback, model things, give them an example of what I'm looking for although it is already provided. But still they get in groups and act if they have no idea what they are supposed to do. (Bill, interview 2, p. 8)

I observed the preparation for this activity and wrote the following in my notes (Class observation, October 5)": "It is the end of the class and groups did not make a lot of progress. It took twenty minutes to explain instructions and divide into groups. Most of the groups were just discussing ideas or thinking". For the above mentioned reasons, Bill skipped the other final speaking activities from the book and in the third unit replaced those with a role play on roommates he created himself. Bill told me he wanted to change the pace of the class and try an activity which had worked well for his classes in the past. This is his account of student performance in roommate role play:

> There were a couple of entertaining role plays where some thought was involved and they really did try to demonstrate the realistic emotions for that kind of situation. And I appreciated that and I told them about that. And there were other cases where they just weren't really well prepared, so there were a couple of good ones but mostly not so good. (Bill, interview 3, p. 13)

My observation of this activity confirms that some pairs performed better than others (Class observation, November 10). Overall, I noticed that pairs spoke mainly in their native language during the preparation stage although Bill insisted on them using English. Several students were not motivated to work on the task in English, which in turn limited what could be accomplished in class. In sum, it appears that for class A, distribution of speaking activities depended a lot on the students. Bill speculated that "with a different group of students or with a few different students in class, (speaking activities) could be a lot of fun" (Bill, interview 2, p. 8).

In class B, type of activities influenced content distribution in the following way. In class, Grace covered vocabulary building activities at the beginning of the unit and later listening

exercises because both were referred to throughout the unit. She wanted to make sure students understood them (Grace, interview 2, p. 8). She also tried not to spend a lot of class time on grammar activities or tended to cover them faster; she would "make sure they are doing it right and let them practice the rest online" (Grace, interview 2, p. 3).

Just as Bill, Grace liked final speaking activities (Grace, interview 2, p. 3, p.8) which allowed her to see if students made all the connections. In class, she would prepare students for doing online speaking exercises:

> In the classroom, when we are doing speaking, I like to be helping them more and giving them more support and scaffolding. Then they can go to the lab and do the speaking part on the Internet and they have already had the preparation for that. I like to build up to the speaking things they do on the Internet. (Grace, interview 2, p. 3)

Class B completed final speaking activities at the end of each unit. However, at the start of the semester, class discussions did not go that smoothly:

> It was difficult to do group discussions at first. They would all just sit there. It goes back to me because I have not given them enough preparation. I think now that I'm taking the time to prepare them, they are doing better. There are always a few people that are not doing well as others, but I think for the most part they are doing better. (Grace, interview 2, p. 9)

Bill complained about group work difficulties with his class, too. According to Grace, she should have provided better preparation for this type of work. Unlike Bill's, Grace's students seemed to have improved as the semester progressed because group speaking activities worked better later in the semester than at the beginning according to Grace's interviews and my class observations. Here is what Grace said about advertisement (unit 1 activity) and role play (unit 2 activity):

> I think they've done really well. I've been impressed with what the students have come up with. They've been using the stuff from the unit, most of them, anyway. Overall, I think maybe the ad was more interesting to them, so they've put more effort into that. (Grace, interview 2, p. 8)

I observed both of these speaking activities in class B. In lab on September 28, students were divided into four groups and worked on creating their own advertisement. They seemed to understand instructions and started working on the task right away. Some of the planning was done in their native language but Grace did not react to that. When Grace approached, the group would start speaking English. All groups wrote their scripts and rehearsed at least once before performing in front of the class. Some groups showed the script to Grace or rehearsed in front of her. According to my notes, students had a lot of fun listening to ads and took an active part in rating each of them. I share Grace's opinion that the class went very well.

The second speaking activity was observed on October 19. Students were divided into three groups of three and had to write a role play on identity theft. Just as in the previous observation, some students spoke Chinese but wrote their outlines and rehearsed in English. I noted that their performances included new vocabulary from the unit and that their language was correct most of the time. Overall, the students seemed to have mastered the content of the unit well. In conclusion, as in case of class A, class B showed that students did contribute to the distribution of content across the modes but that the teacher also played a role in preparing students for completing language tasks.

Distribution of learning content: Hypothetical class
In the hypothetical listening/speaking lower-intermediate level blended learning class in IEOP, learning content would be distributed in a parallel way because all skills could be practiced in both modes. Speaking and pronunciation activities usually restricted to the face-to-face mode in the past (Adair-Hauck et al., 1999) were made possible due to the Wimba recording feature in MNSL. Parallel distribution allowed online presentation and in-class review/practice as well as in-class presentation and online practice. Class A usually completed vocabulary-pronunciation and listening activities online and then reviewed them in class so Bill could check students understanding. Grace preferred to introduce vocabulary and do listening in class and then let students practice on the computer. These teachers' experience shows how versatile the hypothetical blended learning class could be when it comes to the distribution of content.

In the hypothetical class, choice of materials would also depend on the type of activities. For example, Bill always assigned online pronunciation activities because they were not in the textbook while Grace saved in-class time by having students complete grammar activities online and briefly covering them in class.

Based on the feedback from Bill and Grace, it could be speculated that the teacher of the hypothetical class would value culminating speaking activities from the book and would want students to practice speaking in class. Bill and Grace had different levels of success with face-to-face speaking activities, which they attributed to students' unfamiliarity with group work, initial insufficient preparation for the activity, and student lack of motivation. In sum, in this setting, it appears that both teachers and students would contribute to the distribution of materials in the hypothetical class.

Language teaching methods

According to Neumeier (2005), when examining teaching methods in blended learning environments it is important to look at three main sources of influence: online materials, the online tutor, and the face-to-face teacher (p. 172). I would argue that in addition to online materials, it is also important to examine the nature of printed materials. In this study, the online tutor and the in-class teacher represent the same person, so online and paper material and teachers' beliefs and experiences will be discussed in relation to the choice of teaching methods.

In the very first interview Bill was asked about the type of teaching materials that have the highest pedagogical value. This is his opinion:

> I like materials that have connections to reality to what the students are dealing with on a daily basis, functional-based things that they can utilize in their daily lives. […] Things that allow them to more easily grasp it because they see some relevance to what they are doing or see some relevance to what they need. (Teacher interview 1, pilot study, p. 3)

Grace was asked the same question and responded in the similar way:

> I would say to work towards an interactive activity where (students) are using the skill in a real-life situation and having to transfer it over from a book exercise to a real-life situation. (Grace, interview 1, p. 3)

As can be seen, both teachers stressed the connection between instructional and real-life tasks and wanted students to use the skills learned in the classroom and apply them to situations outside of class.

Examination of the publisher's description of materials shows that they were created based on premises both teachers value. In the Welcome to NorthStar section of the textbook, the authors describe the content as "authentic and engaging" and "linking students to language use outside of the classroom". Moreover, the authors claim that "tasks and topics 1) allow teachers to bring the outside world into the classroom and 2) motivate students to apply their classroom learning in the outside world" (Solorzano & Schmidt, 2009, p. v). It appears that there was a good match between teachers' views of pedagogically-sound materials and the materials their classes used that semester.

At the end of the semester, I asked Bill and Grace to comment on the materials again. Bill liked the variety of exercises in MNSL which "further build skills that textbook exercises attempt to work on" (Bill, interview 3, p. 9). Grace thought there were "a very good variety of activities that increased in difficulty. (Students) start from listening and repeating what they hear all the way up to having a discussion about certain topics" (Grace, interview 3, p. 9). It seems that Bill and Grace appreciated the variety and structure of exercises, which were listed as the principles of the NorthStar approach. Solorzano and Schmidt (2009) wrote that NorthStar offers "creative, active, and varied tasks" as well as "a structured approach for more extended and creative oral practice" (p. iv). Again, it can be concluded that the materials had qualities that corresponded to the qualities teachers were looking for.

To get familiar with their teaching philosophies, I asked Bill and Grace to comment on teaching methods they were using. Bill explained his approach in the first pilot interview:

> As far as methods, it is, of course, very communicative. I try to engage the students actively and try to get everybody actively involved in classes. I try to create a non-threatening, or comfortable atmosphere in the class to try, try to encourage them to feel relaxed and more comfortable, and thus, more willing to contribute to the class, to participate, to try even though I know it's not an easy thing for them to do but… if they feel comfortable they seem to be more likely to at least give it a try. […] I utilize the standard practices I guess that most teachers in my professions do. You know, group work, or pair work. (Teacher interview 1, pilot study, p. 2)

While doing classroom observations during the pilot, I felt that Bill really created a comfortable atmosphere and was actively engaged with students (Teacher interview 1, pilot study, p. 3). In my opinion, the same qualities were characteristic of Bill's teaching of class A. For example, I observed that small talk would take place often at the beginning of the period. For example, Bill usually introduced a cultural topic (Chinese National Day and how it is celebrated in China, Thanksgiving celebration in the USA) and was eager to get students' ideas and opinions. Bill also tried to put students in pairs and groups but he often did not get the response he desired (see the discussion in the earlier section on Distribution of learning content and the following section Interactional patterns in this chapter).

When I asked Grace about teaching methods she was employing, she explained she does not know specific terminology and described what she was doing:

> I think it is good to set up and do the same thing. The students know what to expect and what is coming up next. Each semester I figure out what the routine is going to be, structure is going to be, and follow that. […] When I do activities, I try to go from more-structured activities to less-structured. They start with more prompts and end up with more free-flowing speech or writing. (Grace, interview 1, p. 2)

My lab observation on October 6 indicates that class B got into a routine early in the semester. When I came to the lab before the class officially started and Grace had not arrived

yet, I observed students already working on online activities. Grace was very impressed with students' behavior and praised students for it (Grace, interview 2, p. 10; Lab observation, October 6). Additionally, I observed that Grace followed more- structured to less-structured approach to activities. Each unit ended with productive activities where students were using vocabulary, grammar, and structure from the unit in creative ways (Class observations, September 28, October 19). As discussed previously, the book's approach matched Grace's approach to structuring instruction and helped her apply her teaching philosophy to her teaching practice.

Language teaching methods: Hypothetical class

The analysis of teaching methods in the hypothetical class is based on the examination of teaching materials and teaching philosophies. Based on the discussion and observation of teaching methods used in classes A and B, the teacher of the hypothetical class would value the correspondence between instructional and real-life tasks. According to NorthStar authors, the online and paper materials were created to accomplish this correspondence. In particular, Bill and Grace praised the variety and structure of materials. This indicates a good match between teachers' beliefs and materials design approach in the two classes. This could be the case in the hypothetical class, too.

Teaching methods in this class could be described as communicative (as in case of class A) and routine-oriented (class B). Bill worked on building a comfortable atmosphere in his class and engaging students while Grace stressed the introduction of a consistent schedule early on. Both teachers managed to establish these procedures as shown in class and lab observations.

Involvement of learning subjects

There are three components Neumeier (2005) discusses under the fifth parameter, involvement of learning subjects: interactional patterns, participant roles, and level of learner autonomy. Learner autonomy was discussed in the section on Integration in this chapter and interactional patterns and participant roles will be analyzed here.

Interactional patterns

Interactional patterns are determined based on the form of communication between the individuals involved in the learning process (Neumeier, 2005). She writes that the CALL mode adds an important agent, the computer, to the communication process. In this study, several different types of interactional patterns were observed in each mode (Table 17). Due to the overlap between some patterns, Neumeier's categorization was not used although some patterns were adopted from her list (p. 173). Teacher to student, student to teacher, student to student in pair work, student to students in group work, and teacher to students in pair/group work were types observed in the face-to-face mode while student to teacher through the computer, teacher to student through the computer, student to computer, computer to student, and student to student through the computer were types seen in the CALL mode.

Table 17. Interactional patterns observed in this study by mode

Face-to-face Mode	CALL Mode
Teacher to student	Student to teacher through the computer
Student to teacher	Teacher to student through the computer
Student to student in pair work	Student to computer
Student to students in group work	Computer to student
Teacher to students in pair/group work	Student to student through the computer

In the face to face mode in the pilot study, the analysis of observations revealed that interactional patterns in Bill's class were mainly teacher to individual student. The notes from the second pilot classroom observation show this:

> The instructor directs the question to the whole class, and then calls on individual students to answer. He reads the question and calls the name. He then comments on what they have said or repeats their answer if he thinks other have not heard it.
>
> (Second classroom observation, September 23, p. 2)

The same interactional pattern was noted during the third pilot classroom observation -- the question directed to the whole class would be rarely answered by a volunteer and Bill usually had to call on a student to answer. The same teacher-student, student-teacher pattern continued to be observed in this study (Class observations, October 5, October 20, and October 29). For example, when working on a listening activity in unit 2, Bill called on

individual students by name to answer questions from the book. On two occasions during that class, student 105 supplied an answer without being called on, which was a rather rare occasion (Class observation, October 13). I also noted that Bill tried to involve the students who did not seem engaged by calling on them (Class observation, October 29).

In Bill's class, out of six class observations made, pair work was present on one occasion (Class observation, November 10) while group work took place on two occasions (Class observations, October 5 and October 20). When students were working in pairs and groups, Bill circulated around the classroom, listened to students, and prompted them to continue working on the task (Class observations, October 5, October 20, and November 10). In the second interview, Bill explained that he was able to assist students during pair and group work:

> I'm able to navigate the room and if I have them working on something in pairs or in small groups, I'll go around and make sure that they are doing what they are supposed to do and provide some feedback. (Bill, interview 2, p. 7)

Bill's active involvement with students represents another interactional pattern: teacher to students in pair/group work.

Bill wished more pair and group work could be done but it was difficult to have students focused because they were not a particularly motivated group (Bill, interview 1, p. 3; Interview 2, p. 7). Bill remembered his dissatisfaction with the outcome of pair work on November 10:

> More often than not I've been disappointed with this class. There were few instances where I thought "way to go guys, good job, thanks everybody". It's been a frustrating experience that could have gone much better than it did. (Bill, interview 3, p. 13)

According to Bill, there were three reasons why pair and group work were not successful:

> I think it is just apathy. They don't care to do it. […] Maybe in China, we can guess, group work probably does not happen. […] It's hard to imagine in a typical class in China that they are paired up discussing things and sharing their observations. I don't see that as being normal. There could be a little bit of resistance to this because it had

never been done prior to coming here. I tried to mix students as opposed to those that
are sitting near one another all the time. They could be resistant to that, too, because
maybe they don't particularly like to work with that person, who knows. It's
disappointing. (Bill, interview 2, p. 9)

As this excerpt shows, Bill saw students' lack of motivation, lack of previous experience
with this kind of instructional method, and personal preferences as reasons hindering more
substantial student-to-student interaction. Bill was convinced that the student factor was the
determining one and that better results could be obtained with a different class:

I'd be much more confident putting them into the groups and having them actually
work on things where now I'll reluctantly say to myself--this really won't work. It
would be a waste of time and I'd get frustrated. Just skip it. (Bill, interview 2, p. 13)

Instances of teacher to individual student pattern were also observed in class B (Grace, class
observations, October 7 and October 14). For example, on the class observation sheet on
September 21, I wrote that Grace made sure every student would participate by calling
students by name to complete Integrate Listening 1 and 2 activity in Unit 1. Teacher to whole
class pattern was also observed on the same occasion when Grace posed a question but
waited for a volunteer to answer. On a number of occasions, students would supply an
answer to a question directed to the whole class (Grace, class observations, September 21,
October 7, October 14, November 2, and November 13).

Class B practiced pair or group work every time a classroom observation was done. There
were six instances of pair work on five occasions (Class observations, September 21,
September 25 (two instances), October 7, October 14, and November 2) and six instances of
group work on six occasions (Class observations, September 21, September 28, October 14,
October 19, November 2, and November 13). Group work on September 28 and October 19
took entire class periods. Here is Grace's rationale for using pair and group work frequently:

I think it's good because it gives them a chance to talk and it is not as scary as talking
in front of the whole class. Then I like to walk around and listen to them and see how
they're doing. I know in my own language learning I like that time, too…where you

can process and practice. There's really no pressure except when the teacher walks up

and starts listening. (Grace, interview 2, p. 9)

Just like Bill, Grace went around the classroom, listened to students, and offered feedback and praise for good performance when students worked in pairs and groups. This teacher to students in pair/group work pattern was seen on a number of occasions (Grace, class observations, September 21, September 25, September 28, October 7, October 19, November 2, and November 13). After students would finish, Grace would call on one member from each pair/group to check as a class because she wanted students to hear each other's ideas and hold them accountable for what they were practicing (Grace, interview 2, p. 9).

Based on the frequency of pair and group work, it appears that class B had higher levels of student to student interaction than class A. The issues Bill brought up as impeding this type of communication seem not to have affected class B students who also came from the same instructional culture where pair and group work may not have been practiced often. These differences in interactional patterns could be attributed to students and their level of motivation. For example, Grace shared that for some of her students seeing the icon of the red clock in the calendar in MNSL (sign that an activity was late) was enough motivation while some students needed a lot of reminding and pushing to complete their work (Grace, interview 3, p. 1-2). She shared:

> I have a few students that don't understand much what is going on in class. When
>
> they come and do internet activities, they have a hard time. Or they don't come to
>
> class a lot. […] There are a few that always look confused and have to ask their
>
> classmates what is going on. When I put them in groups, they don't have much to say.
>
> There are 2 or 3 of those. (Grace, interview 2, p. 11)

Bill also had several hard-working students (students 113, 101, 104 (Bill, interview 2, p. 2, p. 12-13)), but most of the students did not seem to put in sufficient effort. This is how Bill described motivation of his students:

> Unfortunately, in my class there are a number of people who have never really
>
> exhibited much of a desire to do anything successfully or unsuccessfully. But I do
>
> have…half the class is pretty good at trying to put some effort into their work. It does

not mean they do it successfully every time, but at least I can tell that the effort is

there. (Bill, interview 2, p. 7)

As the data suggest, both teachers had highly and poorly motivated students but Bill seemed to have a much larger number of weak performers who may have affected the overall class motivation and consequently interactional patterns. Finally, an additional factor influencing interaction may have been the teacher. For example, a recurrent teacher-student interaction pattern was observed with two different groups of students in Bill's classes (in the pilot and in this study) which could indicate teacher's factor. Unfortunately, this issue was not probed deeper in teacher interviews.

In the CALL mode, teachers and students could communicate in speaking, pronunciation and some listening activities where students recorded their voices and teachers gave feedback on their work. The feedback could be written and oral and both Bill and Grace chose to provide written feedback. Teacher and student views on communication in these activities are presented in the section on Relative advantage (Innovation attributes) in this chapter. Other interactional patterns observed were student to computer and computer to student. Students could input text or make selections by clicking and dragging and dropping objects in different kind of activities. The computer provided immediate feedback and scoring for vocabulary, grammar, and most listening activities (see the section on Materials in the Methods chapter). Student-to-student through the computer was the least common type of interaction and was only observed in class B on two occasions. Class B students used asynchronous discussion board to post written messages while Bill did not see his students as motivated enough to engage in this type of communication. More detailed discussion of this interactional pattern is given in the section on Mode in this chapter.

Participant roles

Another characteristic of participant involvement is teacher and learner roles. Neumeier (2005) borrows the following definition of roles from Lam and Lawrence "a role can be defined as what one does or is expected to do in a given environment" (p. 174). In a blended learning environment, Neumeier continues, participants assume a wider variety of roles than in the environment limited to one mode.

When Bill was asked about his role in the classroom, he used the terms "teacher and instructor" (Bill, interview 2, p. 7). For Bill, the classroom represented a more traditional setting than the lab. In the lab he was "monitor, facilitator, and helper" (Bill, interview 2, p. 6). During the lab observation on October 23, I made a note that Bill was acting as a facilitator, going around and helping individual students. Bill elaborated on his lab role in the second interview:

> I'm not a person who goes into the lab, tells them what to do, and sits down at the computer and plays around. […] I'm just a very active teacher. I just like to go around and make sure that everybody understands a particular exercise. I'm comfortable doing that. (Bill, interview 2, p. 7)

A part of Bill's active role was giving a lot of feedback to students while they were in the lab. Bill would go around, talk to individual students and would sometimes address the whole class if there was a common mistake he wanted students to pay attention to:

> I walked up behind some students when I know they are recording sentences in pronunciation activities and I'll say "I think you missed that word, go back and do it again". Again, why not tell them right away if I'm there and I can give them some feedback at that time and let them go back and try it again. And they'll do it. They'll record right over. Or if I see that something is not being done the right way and I can catch it, I'll certainly bring it to their attention. If I see the trend developing, I'll stop the class and tell everyone about it. (Bill, interview 2, p. 6)

Grace believed that her roles in two modes were different. In the classroom she was more "front-centered, up there to give them information, and lead them in practicing" (Grace, interview 2, p. 12). The classroom was the place where she was "teaching the new information" (Grace, interview 2, p. 12). The terms teacher and instructor that Bill used to describe his role in this mode could be used for Grace as well.

In the lab, Grace would "step back more" and let students do independent work (Grace, interview 2, p. 12):

> Students come in (to the lab) and do their assignments. I leave them alone. I don't want to interrupt them much. I just walk around and see what they are doing. […] The lab is where they are practicing on their own and I'm just giving them feedback on what they have done. (Grace, interview 2, p. 12)

Unlike Bill, Grace did not give a lot of feedback to students in the lab. When she wanted to communicate something, she would approach individual students. Here is her explanation:

> I think I look at the lab time as their individual time to reinforce what they've been working on in class. […] I also think it is difficult to give too much instruction in the computer lab because I feel I cannot get all their attention. It takes a lot of effort. If I have something I need to tell them, it is difficult to get them to listen to me. If I have something I need to tell some of them, I go around and tell them individually to keep the rest working and not to get the whole class' attention. (Grace, interview 2, p. 9-10)

While Bill was comfortable and successful at interrupting students to make class announcements in the lab, Grace thought it required a lot of effort and preferred not to do it. This, in turn, influenced the amount of feedback students received from her in the lab.

Both instructors were asked about students' role in the interviews. According to Bill, the students who benefit the most from the lab were serious and made an effort to do well on exercises (Bill, interview 2, p. 7). Grace was of a similar opinion: students who succeed "come to class every day, they practice in class and do well in the lab. The ones that can make the connections (between class and lab) and understand what we are doing" (Grace,

interview 3, p. 11). As these comments show, student effort, regular attendance, and diligent class and lab work were seen as important factors in student success in the blended environment by their teachers.

Involvement of learning subjects: Hypothetical class

There are a number of interactional patterns that could be expected in the hypothetical listening/speaking lower-intermediate level blended learning class. The analysis of interaction in classes A and B revealed that in the face-to-face mode the teacher interacted with the individual student, the whole class, and students in pair/group work, while the student interacted with the teacher and finally with other student(s) in pair and group work. In class A, Bill would usually call on a student by name when he wanted the student to participate because students rarely supplied answers themselves. In class B, Grace also called students by name but also left it open to anyone in the class to answer. In the latter case, her students would often volunteer answers. Both teachers offered individual attention to students by being actively engaged during their pair and group work. Like Bill and Grace, the hypothetical blended learning class teacher could use a variety of interactional patterns.

The level of pair and group interaction differed in two classes from three instances in six class observations (class A) to twelve instances in eight class observations (class B). This indicates that in the hypothetical class, the amount to student-to-student interaction could vary. According to Bill, it was the students who determined how much pair and group work could be done. He believed most of his students lacked motivation to engage in pair and group work in addition to not being accustomed to this type of classroom interaction. Just like Grace, Bill had stronger and weaker performers, but weaker performers seemed to constitute a majority in his class. The hypothetical class would probably have a similar student body. While students do influence the amount and type of classroom interaction, it is also important to examine other factors such as the teacher. Teacher influence surely warrants more investigation in future research on interactional patterns in the face-to-face mode.

In the CALL mode of the hypothetical class, student and teacher interactions would be done through the computer. Students would do exercises in MNSL and the teacher would respond to student work. In addition, in machine-graded activities the computer would offer feedback to students. Student to student through the computer pattern represented by asynchronous text chat was not very frequent in class B and was not observed in class A, so this pattern may not be exhibited often in the hypothetical class.

In the hypothetical blended learning class the teacher would take on a variety of roles. This corroborates Neumeier's claim (2005) that blended learning environments are more diverse in terms of participant roles than single mode environments. Bill and Grace's roles in the classroom were that of teacher and instructor because they were leading the class and transferring information to students. In the lab, Grace was mainly a monitor who let students do independent work. Bill was a facilitator who would supply feedback on the spot and sometimes explain a common mistake to the whole class. Overall, the teacher of the hypothetical class could be teaching, monitoring and facilitating learning in different modes. To do well in the blended learning class, students would need to be serious, attend regularly, work hard, and make connections between two modes. These are the qualities Bill and Grace saw in their successful students.

Location

The last parameter on Neumeier's list (2005) is the location where learning takes place. Classroom and computer lab represent two locations where learning was observed. Classes met in the classroom three times a week and in the computer lab twice a week. When teachers were asked about the class schedule, they had different preferences. Bill liked having two lab days a week and preferred this schedule to meeting once a week in the lab during the pilot (Bill, interview 1, p. 1). His preference for two lab days remained unchanged during the semester (Bill, interview 3, p. 6) and he felt he would like to keep the same schedule in the future. Bill explained his preference:

> I like having the lab time because it ensured that students were doing what they were
> supposed to do. […] I appreciate having it two days in the lab because so much of the

material is MNSL-based. […] Also, it largely erased the issue that some students had recording their voice at home because they didn't have a microphone or it did not work well. If you know that the lab computers are set up properly and students can easily record, then that is a problem avoided. […] This allows you again to complete things that might not otherwise get completed. (Bill, interview 3, p. 6)

Availability of the lab allowed Bill to cover more material while not having to worry about technical difficulties that could prevent some students from completing work at home.

On the other hand, Grace expressed a preference for one lab meeting a week:

I feel like two days in the lab may be too much. It might be better to have one day in the lab for listening-internet activities. I think it is important to spend time on speaking in class. Because […] that is the only place where I can teach them speaking skills, whereas they can do listening on their computer for homework or in the lab. (Grace, interview 2, p. 2)

An additional reason is that Grace felt she did not have enough time in the classroom and often felt rushed (Grace, interview 2, p. 3). At the end of the semester Grace shared she still preferred the schedule with lab meetings once a week, which she would like to keep for the next semester (Grace, interview 3, p. 1).

The space outside of the computer lab where students worked on MNSL materials were student homes. While students themselves supplied the time spent doing homework in MNSL, they were not surveyed about time on textbook homework nor other possible locations for access to the CALL mode (for instance, library).

As discussed in the section on Mode in this chapter, Class A spent 1450 min in the classroom and 800 min in the lab (see Table 14 in the same section). If it is assumed that students worked on homework only at home, this is where they spent 216.225 min on average (range 89-350 min). In case of class B, classroom time was 1200 min and lab time 1050 min. The average time spent at home was 200.75min (range 193-215 min). These data indicate that for classes A and B, classroom was the most frequently used location followed by the computer

lab and student homes. However, these data need to be interpreted carefully because information on textbook homework done at home was not elicited. It can be speculated that if elicited the amount of time spent at home would be higher but it is questionable whether it would change the frequency of location use. For the explanation about the amount of textbook homework assigned see the section on Mode.

Student survey 2 asked about student preferences regarding the access to the CALL mode. The great majority of students in class A (88%) liked working on online activities in the lab (see Table 18, question 2-3). Similarly, most of the students liked doing the activities outside of the lab (69%, question 2-4). Students also liked to have access to MNSL in both modes because 56% would not like to have it available only for homework (question 2-5). A smaller group (44%) would prefer to work on activities for homework only (question 2-5). For example, in survey 2 student 108 wrote that he liked to do homework in the textbook and not online. Another classmate (116) commented that he did not like to do MNSL in the computer lab. These results show that the access to the CALL mode may be a matter of personal preference for many students.

Eighty percent of students in class B reported liking to work in the computer lab and 53% outside of class (see Table 18, question 2-3). There is no clear majority regarding the work and preference for homework outside of the lab with 53% supporting these views and 47% opposing them (question 2-4). For instance, student 205 commented in survey 2, "I'd prefer to have the work online as homework instead of in-class work".

Table 18. Students' views about the access to the CALL mode (in percentages)

Survey 2 question	Class A (*N*=16)				Class B (*N*=15)			
	Strongly agree	Agree	Disagree	Strongly disagree	Strongly agree	Agree	Disagree	Strongly disagree
2-3 I like to work on *MyNorthStarLab* online activities in the computer lab.	6	82	6	6	13	67	13	7
2-4 I like to work on *MyNorthStarLab* online activities outside of the computer lab.	13	56	31	0	0	53	40	7
2-5 I prefer to work on *MyNorthStarLab* online activities for homework and not during class time.	13	31	50	6	20	33	47	0

In sum, the majority of student participants in both classes liked to work on MNSL in the computer lab. Also, the majority liked to work outside of lab. This indicates that both locations were seen as favorable for learning to take place. Finally, the opinions about the homework are split between classes with 44% of class A wanting to work on homework outside of class. Class B students appear to be more self-directed than students in class A because 53% would like to work on MNSL for homework and would not need lab time. Again, it appears that the preferred location for learning may be a matter of personal preference for these students.

Location: Hypothetical class

There are at least three locations where learning in the hypothetical class would take place: classroom, computer lab, and student homes. The schedule of two lab and three class meetings a week may or may not work for hypothetical class instructors depending on their teaching style and preferences for certain instructional activities. Therefore, instructors' input should be sought when scheduling blended learning classes.

Based on the amount of time classes A and B spent at each location, classroom would be the most frequently used physical space followed by the computer lab and student homes. The frequency of location use may change depending on amount of textbook homework assigned. To get information about other locations where learning could take place, future studies should obtain student feedback in addition to looking at technologies other than computers (for instance, mobile phones) that make blended learning possible.

In this study, surveys showed that students liked to work on CALL activities both in the computer lab and for homework and that the preferred location for access to online activities varied from student to student. It can be concluded that the hypothetical class would see all three locations as valuable learning environments, which is what gives blended learning its flexibility.

Research question 2: Innovation

The first part of the second research question examined whether technology-enhanced blended learning with MyNorthStarLab was seen as an innovation. The data were collected from three interviews with each teacher, student survey one, and the student focus group. The first step in the analysis was to determine if the participants saw the use of MNSL in their blended learning class as an innovative practice. Two definitions of innovation were used (Rogers, 2003; Markee, 1997). According to Rogers, innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (2003, p. 12). Markee defines innovation as "a managed process of development whose principal products are teaching (and/or testing) materials, methodological skills, and pedagogical values that are perceived as new by potential adopters" (p. 46). Discussion of teachers' experience is given first followed by students' opinions.

Teachers: Bill and Grace

In the first pilot interview, Bill was asked about the familiarity with the LMS and online materials. He explained that the LMS was a new technology for him when he first used it in the three-week pilot program in Spring 08. In the same interview, Bill talked about his unfamiliarity with LMSs which are common in other ISU classes - WebCT and Moodle:

> I hear about different teaching tools that are utilized today that I'm not familiar with--WebCT or Moodle. I hear these terms and I really don't know what they are. I've never been in a position to need them. I don't know how they are utilized in class. Classroom management techniques, tools-- I don't know anything about those.
> (Bill, pilot interview 1, p. 5)

Before the start of the study, I asked Grace about her previous LMS use. In an e-mail, Grace wrote that she had never used a system like that previously (personal communication, May 7, 2009). Later in the first interview, Grace confirmed LMSs and MyNorthStarLab were a new technology for her (Grace, interview 1, p. 7-8). Participation in this project gave Grace a chance to experience the LMS as a teacher while she was also a student in the Chinese class that used WebCT the same semester.

Bill and Grace's responses show that the LMS constituted an innovation for both of them according to Rogers' definition. The same responses indicate that the teachers had not seen or used materials in MNSL before their exposure to the LMS, so the first principal product of the innovation according to Markee's definition was found.

I started inquiring about the second product of the innovation, novelty of methodological skills used in the blended learning class, at the beginning of the pilot study with Bill. I first wanted to see whether teaching methods would be different from the past and if so, what would be new about them. In the first pilot interview, Bill was not sure if his teaching methods would change but did not anticipate he would instruct the class any differently than in the past (Bill, pilot interview 1, p. 10). The four class observations I made showed the

classes were conducted in a similar fashion, thus confirming unchanging instructional practices. At the end of the pilot, Bill did not envision new teaching practices in the future.

> Maja: If you were to teach this class, the same class again, would you make any changes to the class organization, online activities, lab meetings, or teaching methods?
>
> Bill: I probably wouldn't change too much. Because I think everything has worked out fairly well. […] I don't envision changing things up dramatically. (Bill, pilot interview 2, p. 12)

At the beginning of the present study, Bill was asked to compare his teaching methods to those in the pilot blended learning class:

> I can't think of any big differences. No, I'm not aware of pursuing it in a different way. I'm just more familiar with the material, that's all. That makes it easier for me. I don't have to consult the teacher's guide. (Bill, interview 1, p. 3)

In the same interview, Bill could not see how his instruction in this study would be different. The only difference was the amount of material he wanted the class to cover. Bill explained:

> At this point, we are still in unit one, I don't have in mind a different approach. I may try a little harder to push them to complete things on time so we can make a little bit more progress. I would like to get through 5-6 units in the book. Getting through the whole book is out of the question (Bill, interview 1, p. 3-4).

The faster pace of instruction Bill planned did not occur because the class managed to cover four units. The amount of material covered may not by itself indicate a change in methodological skills. The only change Bill brought up at the end of the study was more lab meetings than in the pilot which allowed him to "monitor more what students were doing, and how they were doing", plan achievement tests easier, and provide more assistance to students (Bill, interview 3, p. 5-6). "Other than that, I don't think I taught the class any differently", Bill concluded (Bill, interview 3, p. 6).

These excerpts from Bill's interviews over two semesters indicate that, overall, differences in teaching methods due to the new format of the class and new technology were not found which would suggest that no new teaching skills were used. However, some changes in the level of student monitoring and guiding did occur in the present study. For the discussion of Bill's new role in the blended class environment, please see the section on Participant roles (research question 1) in this chapter.

To examine if Grace would use new teaching methods, I asked her in the first interview to speculate about instructing her blended learning class. She shared that she thought of having students do listening and vocabulary in MNSL for homework while she considered doing speaking in class. Grace explained:

> Maybe I'll try to fix it so that we kind of introduce the topic and maybe they do the listening exercises at home. […] I like the fact we can discuss something in class and they can go home and I can give them some vocabulary exercises to reinforce that.
> […]   And maybe try to focus more on speaking parts in class. Because I think, the listening they can do on their own somewhat, but with speaking I think they need more guidance on. (Grace, interview 1, p. 8-9)

This is an excerpt from our dialogue about a change from past practices:

> Maja: Do you anticipate that the use of MNSL will change how you teach the class or how the class is structured?
> Grace: I think so. Like I said, I think I would be cool if I can assign some of the listening things for homework. It would be a change, different from what I did before.

This answer indicates that Grace anticipated she would structure the class in a new way, differently from previous semesters. She wanted to move listening and vocabulary online and spend more class time on communicative speaking activities. The same change of teaching methods was reported in Scida and Saury (2006) where, for example, Spanish instructors spent less than 20% of class time on vocabulary since students practiced it in the LMS.

In the second interview, I wanted to see whether Grace was able to put her ideas into practice. I had previously observed students working on vocabulary activities in class (Grace, class observations, October 7). Grace told me she had diverted from her original plan:

> I've shifted to where I like to focus on the vocabulary at the beginning and try to help them have new vocabulary words they can use thought the chapter. Because I noticed when I did the first chapter, I did not spend much time on the vocabulary and then it was very difficult for them to do speaking activities. I've noticed the difference when I focused on the vocabulary and they have a good grasp, they can actually use it in their discussions. (Grace, interview 2, p. 8)

While having students do vocabulary only online seem not to have been possible, a combination of online and in class vocabulary work (review) took place (see the discussion in the section on Distribution of learning content in research question 1).

Finally, at the end of the semester, Grace mentioned that a change did take place:

> There was just one thing which was probably a good thing cause sometimes as a teacher I might slow down too much. It (having the materials in MNSL) helped to keep the pace going. Because if I was running out of online activities, I knew I had to finish up in the book. That kept me on check to make sure I wasn't straggling along. So that was probably the only thing that was different. (Grace, interview 3, p. 3)

Materials in MNSL helped Grace keep the steady class pace since not having any more online activities to assign indicated she needed to move on to the next textbook chapter. Thus, Grace may have spent less time on a textbook chapter than she would have in the past. Nevertheless, this practice may not suggest that her methodological skills were different or new.

Grace's speculations about future changes in teaching the class included sustaining a faster pace of covering materials so more chapters would be completed and carrying out her original idea of moving some activities completely online (Grace, interview 3, p. 12). Grace continued:

In the future I would be more familiar with the book, so I would just jump in and get going. Whenever I use a new book it takes a while to get used to how it's laid out and how I want to use it. In the future, I may not spend as much time on grammar in class and let them do that online, on their own and then just focus on speaking in class. (Grace, interview 3, p. 12)

Although Grace did not manage to completely shift listening, vocabulary, and grammar work to MNSL in order to devote more time to speaking, she was envisioning a possible change in the future. In sum, Grace's experience suggests that new teaching methods had been speculated about but did not take place completely therefore indicating insufficient evidence for the second principal product of the innovation, according to Markee (1997).

The existence of the third principal product, new pedagogical values, is tightly connected to the second product. Since new methodological skills were not found in the data, no probing for the novelty of pedagogical values was done. Markee (1997) argues that this construct is very difficult to investigate because it requires longitudinal data which were not possible to obtain in Grace's case. In Bill's case, two semesters of data collection could have provided evidence which, unfortunately, was not sought. The lack of data collected on pedagogical values represents one of the major drawbacks of this study.

In conclusion, the assessment of innovation according to Markee's definition (1997) is incomplete based on the data in this study. First, the evidence for the novelty of teaching materials was found in both Bill and Grace's case. While some changes in class instruction were reported and could be considered new, overall novelty of methodological skills could not be established. Last, evidence for new pedagogical skills was not collected. In conclusion, by examining only two products of innovation from Markee (1997), teaching the blended learning course with MNSL may not have been a curricular innovation for the two participants. On the other hand, according to Rogers' definition that a practice or an object is considered an innovation if it is perceived as new, the evidence for the innovation was found.

Students

To determine students' familiarity with the learning management systems and blended learning, student survey 1 asked about the previous use of learning management systems. Ninety four percent in class A and ninety three in class B reported never using an LMS (Table 19). Only one student in each class had previous LMS experience (students 111 and 214). Student 111 used it in a private language school, while student 214 used WebCT to take a test.

Students' previous experience with blended learning classes is similar to their experience with LMSs. Only two students in class A (111 and 105) and one student in class B (214) took a blended learning class in the past. All of these blended learning classes were offered by language schools. Most students, 94% in class A and 87.5% in class B, had not taken blended learning classes before. Furthermore, two students in the focus groups described the class as "an original way to study English" because it is taught in the computer lab and classroom and a new type of course (Student focus group, pp. 1, 4, 9).

Table 19. Students' previous experience with learning management systems and blended learning

Survey 1 question	Class A (*N*=16)		Class B (*N*=15)	
	Yes	No	Yes	No
1-17 A content (learning) management system is a computer program on the Internet that contains educational materials. Have you used a content (learning) management system before? (For example WebCT, Blackboard, Moodle, Angel, Sakai, DesiretoLearn or any other)	1 (6%)	15 (94%)	1 (7%)	14 (93%)
1-18 Have you ever taken an English class that combined learning in the classroom with learning online (on the Internet)?	2 (12.5%)	14 (87.5%)	1 (7%)	14 (93%)

In sum, for the majority of students in classes A and B, the LMS represented a new technology and blended learning a new type of language instruction according to Rogers' definition (2003).

Research question 2: Attributes of innovation

The second part of the second research question required an examination of the main qualities of innovation as described by Rogers (2003). Four innovation attributes were examined: relative advantage, complexity, trialability, and observability. Interviews with teachers and administrator, student surveys, and student and teacher focus groups were data sources used. The fifth quality, compatibility, was not described separately because its aspect, compatibility with needs, was addressed in the section on stages of the innovation-decision process (needs of adopters).

Relative advantage

The first innovation attribute, relative advantage, is considered the strongest predictor of adoption (Rogers, 2003). To investigate the benefits the innovation brings, teachers were interviewed (Bill-four interviews, Grace-three interviews), students surveyed (surveys 2 and 3) and the student focus group administered. The inquiry about this quality encompassed comparison of teachers' previous teaching practices to teaching with MNSL. Teachers and students were asked about useful LMS features and pronunciation, speaking, and listening activities. In particular, the input on the ability to provide and receive individualized feedback was sought from both teachers and students.

Teachers: Bill

In the third interview, Bill was asked why blended instruction was beneficial for him and the students. He listed access to materials as a major advantage. Bill shared: "You don't tie up class time. You could assign things at home and have students work on them" (Bill, interview 3, p. 7). Bill liked that the students could access materials from anywhere, which in turn freed class time. In addition, he praised the amount and variety of online exercises which provided additional practice. Bill explained: "There is enough in the book and online to fill

the semester easily" (Bill, interview 3, p. 6). He later added: "And the other major thing is the variety of exercises that are available to further build skills that textbook exercises attempt to work on. So you just have additional opportunities" (Bill, interview 3, p. 9).

Rogers defines relative advantage as "the degree to which an innovation is perceived as being better than the idea that it supersedes" (2003, p. 229). In this case, the practice of teaching using MyNorthStarLab in the blended environment should be better than the practice of teaching using internet websites Bill used to do in the past. As early as in the pilot study, Bill brought up several advantages of MNSL: record keeping and management, time saving, monitoring student progress, and individualized assessment (Bill, pilot interview 2). He continued to value the same advantages in this study. Every time Bill logged into MyNorthStarLab, he could see student performance on all activities in the grade book which was "a wonderful element of the system" (Bill, interview 3, p. 9). If a student did not perform well and wanted to repeat a test, Bill could clear the student's record. The fact that there was no need for paper records and photocopies of exercises and tests saved instructor's time. Bill shared: "I don't have to keep all of these grades on paper. It's all there. I can check them. I can see who did what. That's a time saver" (Bill, pilot interview 2, p. 12). Bill monitored student progress by looking at the activities completed, deadline for completion, and time spent on them. Finally, teacher-graded activities provided opportunities for individualized feedback as Bill could address students' individual speaking and pronunciation problems (Bill, interview 2, p. 3). In Bill's opinion, the greatest advantage for the students was the ability to record spoken responses because it allowed for language practice that is not possible in the regular classroom. Here is Bill's explanation from the pilot study:

> You got 18 or 20 people in the full class. We could not do the individual pronunciation, for example. That would be impossible. Any of the individual things that the students record would be impossible in the classroom environment--we just could not do it and they could not get that individualized feedback. So, we are limited to group activities in the class and we couldn't do any of the recording elements we do in the lab or when students work at home. And I think those are really good. […] I

do like the recording aspect of it where students could record. And I can record my comments. (Bill, pilot interview 2, pp. 5-6)

Bill particularly liked that in pronunciation activities students read numerous sentences as opposed to one isolated sentence in class a student gets to read so everyone would get their turn. Speaking activities "provided students with an opportunity to analyze a topic, think about it, plan a response, and then say it. That's a useful skill that will pay dividends in their future university classes because you have to make short presentations" (Bill, interview 3, p. 10).

All of the above mentioned advantages were absent from the technology Bill had employed before and the new LMS technology, therefore, can be regarded as being perceived as advantageous both for Bill and his students.

To get a better idea of the individualized feedback Bill provided, on several occasions I asked him about its kind and level of detail. In both the pilot and present study, Bill expressed a preference for written feedback because "students can always see what I wrote as opposed to having to listen to it again and not having to follow up with something written" (Bill, interview 2, p. 1). He was very specific with his feedback and addressed not only key words in the sentence but other mispronounced words, too (Bill, interview 2, p. 1). Bill explained: "If there is really nothing negative to say about something, I will write *excellent job* but even then I'll write *thank you for your effort*. […] I'll write *thank you* because I appreciate [the effort]" (Bill, interview 1, p. 5-6). This approach to giving feedback is, according to Bill, a part of his nature because he likes to be detailed and put some thought into composing feedback no matter how much time it may take.

In addition to positive qualities of innovation, I asked Bill about its negative sides. His concern was about the cost of materials to students who paid more for the version of the textbook with access to MNSL than they used to pay for the book without the online component. This point was also brought up by other teachers in the teacher focus group and

could have made an impact on the overall perception of the innovation in the program (see the section on Future of the innovation and IEOP as an organization in research question 4 in this chapter).

Teachers: Grace

When Grace was asked about some advantages of blended instruction, the biggest one she listed was that it gave students the ability to work at their own pace since "the better students can work faster and students who are not so good can spend a little more time" (Grace, interview 1, p. 11). In addition, Grace liked the variety and abundance of online materials as well as their connection to the textbook. Grace believed that students also liked different types of activities so they are not doing the same things all the time and that even "the students who don't come to class, seem to show up for the lab" (Grace, interview 2, p. 11). She appreciated having all the activities in MNSL so she could choose the ones to reinforce class work and not having to look for supplemental activities herself, some of which may not work for her students, after all.

The availability of online materials and their connection with the textbook was a huge bonus for Grace who revealed that in her first semester in the program she did not know what to do with students in the computer lab, so the class would not use the computers at all (Grace, interview 1, p. 7). Grace elaborated: "Because in the past, whenever I had a lab day, it was like "what do I do"? I would try to find something. I don't like random things. When I'm teaching, I really like things to fit together, to kind of complement each other" (Grace, interview 3, p. 2-3). This quality of the innovation is an improvement from past practices as is the ability to assess students' oral skills in less time. In the past, Grace had students meet with her individually outside of the class time and speak to her. That was very time-consuming. With MNSL, students record their speech, Grace can listen several times, and give them a more confident grade than when assessing them face-to-face.

When asked about preferences for the kind of feedback given to students, Grace said she had given only written feedback because it was easier to write than say it. This was her approach: "I usually don't give a lot of feedback, just a little bit. I try to focus on whatever the focus is for that activity, for example, on certain types of words […]. If they make mistakes in other areas, if it is not a big blaring mistake, I don't address it. If it is a repeated one, if it interferes with comprehension, I correct it" (Grace, interview 2, p. 1). When there were a lot of activities to grade and she was behind, Grace sometimes gave scores without any feedback. If the score was perfect, there was usually no feedback, but "if I don't give them a perfect score, I usually want to tell them why" (Grace, interview 2, p. 1). Grace adopted this approach to giving feedback due to time constraints: "It takes a lot of time which may be another reason why my feedback is pretty short and to the point" (Grace, interview 2, p. 2).

Just as Bill, Grace could see the value of pronunciation, speaking, and listening activities in MNSL. Students could listen to prompts as many times as they wanted until they understood listening passages or felt ready to record their pronunciation. Whether students were able to produce longer spoken responses at the end of the chapter gave Grace a chance to check their understanding and mastery of the material.

To ensure that Grace provided a comprehensive picture of innovation advantages, she was also asked to comment on the disadvantages of blended instruction. The only thing Grace brought up was that two lab meetings a week may have been too much for her class. She explained: "The drawback is that it is kind of tough because I have only 3 days in the classroom to do other materials (Grace, interview 1, p. 9)". Instead, Grace preferred one lab a week, so she would not feel rushed in the classroom (Grace, interview 2, p. 3). A detailed discussion of Grace's preferences for a different class schedule can be found in the section on Location (research question 1) in this chapter.

Students

Student feedback about the advantages of MNSL was collected in surveys which asked about particular features and activities in this LMS. Tables 20 and 21 contain all relative advantage questions asked in surveys 2 and 3 respectively.

The results of survey 2 indicate that students recognized that the recording feature is an advantage (Table 20). When asked if recording their voice and having the teacher listen to it represents a good way to practice speaking (item 2-11), the following mean scores were obtained: 2.88 (N=16, SD=0.806) for class A, 3.20 (N=15, SD=0.775) for class B on a scale from 1 (strongly disagree) to 4 (strongly agree). Similarly, question 2-13 asked about the pronunciation practice. The means of 2.94 and 2.87 were obtained for classes A and B respectively. For both items the mean scores of around 3 indicate that students agreed that there is a value in the recording tool.

When students were asked if the recording feature was helping their oral skills, they gave very positive answers. The mean scores for class A range from 2.88 to 3.06 and from 2.93 to 3.07 for class B and show that students realize that oral skills can be practiced in the CALL mode of the class. In both classes, students found MNSL helping them the most with listening, then pronunciation, and speaking. The same questions were repeated in survey 3 (Table 21). All three items received high mean scores but this time with pronunciation getting the highest score (3.13 class A, 3.00 class B) followed by listening and speaking which got exactly the same ratings in each of the classes (3.07 class A and 2.86 class B). This trend can indicate that while advantages of listening activities in MNSL may be obvious right from the beginning, it may take some time for students to use and realize the advantages of other MNSL features, such as the recording feature for help with pronunciation. This may be why MNSL pronunciation activities were seen as most helpful only later in the semester.

Cronbach's alpha values for both classes and both surveys were found be to be very high (survey 2: 0.843 (class A) and 0.957 (class B); survey 3: 0.909 (class A) and 0.956 (class B)) indicating that all items measure the same construct. To examine whether student opinion

about helpfulness of MNSL for development of oral skills remained the same from survey 2 to survey 3, mean scores of some speaking and listening items were looked at. When mean scores for pairs of questions 2-17 and 3-5 (speaking) and 2-18 and 3-6 (listening) were compared using Wilcoxon rank-sum test for two related samples, no statistically significant differences were found. The values of 1.000 and 0.317 for each pair respectively are higher than 0.05 and show the stability of student views over time.

Table 20. Survey 2: Students' views about speaking, listening, and pronunciation activities in MNSL.

Survey 2 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
2-11 Recording my voice and having the teacher listen to it is a good way to practice speaking.	16	2.88	0.806	15	3.20	0.775
2-13 Recording my voice and having the teacher listen to it is a good way to practice pronunciation.	16	2.94	0.772	15	2.87	0.743
2-17 Working on *MyNorthStarLab* online activities helps me with speaking English.	16	2.88	0.806	15	2.93	0.799
2-18 Working on *MyNorthStarLab* online activities helps me with listening to English.	16	3.06	0.443	15	3.07	0.704
2-19 Working on *MyNorthStarLab* online activities helps me with pronunciation of English.	16	3.00	0.516	15	3.00	0.756
All items	16	2.95	0.669	15	3.01	0.755
Cronbach's Alpha based on standardized items	0.843			0.957		

Table 21. Survey 3: Students' views about speaking, listening, and pronunciation activities in MNSL.

Survey 3 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
3-5 Working on *MyNorthStarLab* online activities helps me with <u>speaking English.</u>	15	3.07	0.594	14	2.86	0.770
3-6 Working on *MyNorthStarLab* online activities helps me with <u>listening to English.</u>	15	3.07	0.458	14	2.86	0.770
3-7 Working on *MyNorthStarLab* online activities helps me with <u>pronunciation of English</u>.	15	3.13	0.516	14	3.00	0.679
All items	15	3.09	0.523	14	2.91	0.74
Cronbach's Alpha based on standardized items	0.909			0.956		

Students' comments in survey 2 and 3 further helped explain their ratings. Student 102 in class A wrote this about online speaking activities in survey 2: "MNSL can help me with speaking. I am always shy. So it gives me an opportunity to speak." This comment indicates that a shy student does not feel in the spotlight when practicing English online; thus, online activities may be particularly suitable for this type of learner. When in the focus group six best performing students from class B were asked to explain <u>how exactly</u> the speaking activities were helping them with speaking practice, they brought up their relevance. The comments below explain how the speaking tasks were seen as comparable to the tasks outside of the classroom (both in real-life and on a language test):

> The questions in the speaking activity are very similar to those that Americans will likely <u>ask you in daily life</u>. You have to cope with these questions by planning and organizing your speech, as if you were in <u>real-life situations</u>.
>
> (Student focus group, student 205, p. 3)

I feel this type of speaking activities is fairly good. The topics for the activities are very similar to those used in IELTS, so practicing speaking on these topics will help me pass the test. Also, the topics involve a lot of daily life situations.

(Student focus group, student 208, p. 3)

The type of speaking practice is good. It is very similar to the speaking section of IELTS. So we can prepare for the test by doing these speaking activities.

(Student focus group, student 213, p. 4)

Moreover, students liked the preparation before attempting a speaking task:

This type of speaking activity is fairly good. You need to plan your speech in (your) mind within a very limited time frame. You must find accurate words and expressions as soon as possible to describe something. I feel this type of training is helpful.

(Student focus group, p. 4)

However, not all students liked speaking activities. Student 113 in class A wrote the following in survey 2: "The lab is good, but I don't like to practice speaking English on the computer. It is a kind of inconvenience because I have to turn on the computer, use it, and so on". Student 103, class A, commented in the same survey: "I don't like to study online. I like speaking face-to-face". These data indicate that there are individual differences with respect to students' desire to practice speaking online.

The focus group with students also revealed the strategies students were using to get the most out of pronunciation and listening activities.

I usually do this type of pronunciation activity very earnestly. I spend ten to twenty minutes on a passage that consists of only 5 sentences because I pay attention to all the details, trying to pronounce every word accurately. While doing such type of activity, I listen to each sentence multiple times and […] I also compare my speech with the samples from the computer to find out the drawbacks in my pronunciation. I

feel this type of activity is quite helpful (for improving my pronunciation). (Student focus group, student 208, p. 2)

I think repeated listening helps improve your listening. If you have difficulty understanding the passage for the first time, you can listen to it for the second time and then you will understand its main idea. (Student focus group, p. 7)

These comments are encouraging and indicate that the best students were applying useful learner strategies to help them succeed in the CALL mode of the class. Whether this could be said for weaker performing students remains a question and could be investigated in future studies.

Just like teachers, students were asked about the feedback provided in teacher-graded activities. Item 2-25 in survey 2 asked students to choose from the list of most useful LMS features. The following features were seen as most useful by both classes: seeing which answers were correct and which incorrect, the calendar that showed when activities are due, and the explanation of incorrect answers. The teacher feedback feature was rated number 1 by class A and number 4 by class B. This was probably due to the amount of feedback teachers provided. According to LMS records, Bill gave longer and more detailed feedback in comparison to Grace. The preferences for the amount of feedback and its focus were explained and confirmed by instructors in interviews.

Class B students brought up minimal teacher feedback on MNSL activities in the focus group. Here are their comments:

After we submit our audio recordings, the teacher may listen to them, but she didn't give us any feedback. (The teacher) is supposed to point out your weaknesses and provide suggestions for improvement, like syllables you should pay attention to. If she only gives you comments in general, you will only know your overall performance, but not the aspects that you need to work on. (Student focus group, p. 2)

We didn't know whether our speech was appropriate or not as the teacher didn't give us any feedback. I suggest the teacher giving us some feedback in a regular class

following a lab speaking activity. She doesn't necessarily have to give us feedback through the computer. (Student focus group, student 208, pp. 3-4)

These data indicate that students' perceptions of feedback may differ from the teacher's. It appears that some focus groups students required a more specific feedback than provided by their teacher. They welcome both the feedback through the computer and in the face-to-face class. In sum, students rated a technology feature as more or less useful depending on the level of its utilization by the teacher.

Relative advantage and participants
Previous sections showed that two main teacher participants both viewed the following benefits of the LMS use in their technology-enhanced blended learning classes as most important: wealth of online materials, variety of exercises, and time saving features for the teacher (grade keeping for Bill and testing of oral skills for Grace). Bill also liked the individual feedback he could provide to students, while Grace highlighted the connection between online and paper materials. For both teachers, the availability of MNSL in the computer lab was an improvement from the past; it provided Grace with teaching materials and Bill with useful features that web sites he used to assign to students did not have. Teachers' views indicate that the innovation was perceived as advantageous, thus making it likely to be used in the future.

Bill and Grace's interviews and their students' surveys showed they could see the value of pronunciation, speaking, and listening activities in MNSL. Students in both classes perceived listening exercises as most helpful in survey 2, followed by pronunciation and speaking exercises, while in survey 3 pronunciation exercises were at the top followed by listening and speaking which got exactly the same ratings in both classes. While the advantages of online listening activities may be apparent from the beginning, the value of pronunciation activities students had not previously used may become more evident later. Online speaking practice was seen as helpful for shy students, mimicking real-life and test situations, and requiring good preparation (a skill Bill also valued as relevant for academic preparation). However, not

all students liked speaking online which shows that individual differences play a role. Students in class A and B ranked immediate scoring, the calendar, and explanation of incorrect answers as the most useful MNSL features. In conclusion, student views suggest that the innovation was advantageous for most of them although some students did not value all its features.

Another major advantage for Bill and Grace was the ability to provide feedback. Both of them preferred written over spoken feedback just as the two teachers from the focus group, who also gave comments. However, teachers were not sure if students took advantage of their feedback. For example, students never commented back on Bill's feedback while Grace was not sure whether weaker students took time to read what she wrote and hoped more conscientious students did it. In the teacher focus group, Teacher 2 observed that her students were not reliable about checking feedback. In the student focus group, six of the strongest Grace's students confirmed they were reading and using feedback, but whether this was the case with all students was not investigated.

The scope and length of Bill and Grace's feedback was different which in turn impacted how useful the students saw it. Bill tended to give more detailed and longer comments and his class rated the feedback feature as the most important one. Grace gave comments on specific points in cases when the students did not perform well and the students evaluated the feedback feature as the fourth most important one. Moreover, her students requested more specific feedback in the focus group. According to the teachers, the differences were due personal preferences and the amount of time it took to give feedback to the whole class. These findings indicate that the use of an innovation feature by teachers influenced students' believes about its usefulness and that time involvement was an important quality when it came to overall innovation benefits.

Complexity
Rogers (2003) defines complexity as "the degree to which an innovation is perceived as relatively difficult to understand and use" (p. 257). In this analysis, difficulty refers to

problems teachers had with the innovation use (such as time commitment) as well as technical difficulties in its implementation. All the problems participants had with the innovation could negatively impact their views of it and consequently its adoption. The complexity data were collected in three interviews with each teacher, lab observations of innovation use, and two student surveys.

Teachers: Bill

The main problem with innovation Bill had was in connection to the recording feature. While Bill highly valued the feature that allowed students to capture their voices, responding to students' work took up a lot of time. This was the remark Bill shared in the pilot study and his views remained unchanged in the present study. Bill said: "I could take literally hours and hours trying to give detailed responses to all of the things the students are doing" (Bill, pilot interview 2, p. 7). This was one of the drawbacks of the innovation but Bill was ready to put in extra time because he found individualized instruction worthwhile:

> But that is the price of individualized instruction, that's what happens. It's like you are tutoring 20 people. It just takes more time. But if you really want to help the students, that's what it takes, you have to do it (Bill, pilot interview 2, p. 7).

Bill understood that time commitment may contribute to the perception that the innovation use is overly demanding and that it may even deter teachers from using it. In order to help, Bill gave the following advice to his colleagues:

> You don't have to write 600 lines of text or speak for 5 minutes about each person. It does not have to take that long. You could focus on one particular aspect of that student's work and just correct those things, as opposed to more general overall comments. […] I don't think teachers should disregard certain exercises because they are concerned about the amount of time it takes to give comments […] and I think it is helpful to the students. That's one of the main strengths of MNSL -- the ability to do that. Otherwise, really, what's the point? (Bill, interview 2, p. 3)

Here, Bill is sharing his strategy of using teacher time effectively, so that every student gets feedback and can potentially benefit from it. For Bill, the advantages of this innovation feature outweigh its disadvantages.

Students losing access card codes for MNSL was the major difficulty Bill was aware of. The codes came with the textbook but some students accidentally threw them away and were unable to log in to the site. While nobody in Bill's class had this issue, he understood the frustration other teachers might have experienced and how this would add to the negative view of the innovation.

As with every new instructional technology, technical difficulties can occur and my observations of MNSL use in the computer lab in both studies confirm this. For example, during the second lab observation in the pilot (p. 2) some students had trouble logging in because they forgot their password or opened the wrong browser (Mozilla Firefox instead of Internet Explorer), could not record their voices (because they did not load a Java applet), or could not play back their responses (because they plugged in microphones incorrectly). In most cases, Bill could assist the students and if he was not able to, he would turn to me for help. Once initial technical problems were overcome after the third lab meeting, I did not observe many technical difficulties in the pilot study. In the first few lab observations from the present study, I noted that students had to be reminded to turn off the browser's pop-up blocker in order for content to display (Lab observations, September 16, 23, and 30). Bill confirmed this issue as well as students closing the browser window before finishing the exercises and achievement tests that could be attempted only once. In the latter case, Bill was able to clear students' records and allow them to try again. Other than these two, Bill reported that his students did not have too many technical problems during this initial period (Bill, interview 1, p. 6) and that by mid-semester they were in the routine of turning off the blocker at log in (Bill, interview 2, p. 7).

Teachers: Grace

Grace shared Bill's opinion about the time-consuming nature of feedback which impacted the amount of feedback she provided. In spite of this disadvantage, Grace found the feedback valuable (Grace, interview 3, p. 8; Grace, interview 2, p. 2) and the recording feature the system's overall advantage (see the discussion in the section on relative advantage). She also agreed with Bill that lost access code cards presented "a big hurdle for teachers" (Grace, interview 3, p. 14) but was fortunate not to have any students in that situation.

To learn about the level of difficulty in using online materials, I asked Grace about it. Her views from the first interview in the first week of MNSL use and the second interview more than a month later show the innovation was perceived less complex the longer it was used:

> Maja: How difficult is it to use MNSL?
>
> Grace: It's getting better. It is still a little cumbersome for me. It still takes me more time than it should probably, but it is getting better. […]The major challenge is navigating to the right spot. That'll just come with practice. I think the grade book is where I don't always know what I want to do or how to get there. (Grace, interview 1, p. 10-11)

> Maja: How difficult is it to use MNSL?
>
> Grace: It's not very difficult. I have the basic things down. I can do the basic things down pretty easy. (Grace, interview 2, p. 6)

The biggest technical problem for Grace involved achievement tests in MNSL she administered at the end of each unit. The tests contained exercises that required the newest version of the Java script to run, otherwise they would not display. Grace had to remember and remind her students to manually download the new version of Java before each test. If students forgot to do it, they could not do that section of the test and were not allowed the second attempt by the computer resulting in lower overall scores. Since students' course grades were based on these assessments, Grace felt "bad giving them a score when they are having technical difficulties" (Grace, interview 2, p. 5-6). To alleviate the problem, Grace

wanted to learn how to allow the students the second attempt on missed sections. She also commented on some of the exercises having an incorrect answer key which is a serious concern for the LMS publisher. The technical problems Grace encountered should be addressed in teacher training in order to decrease the complexity of innovation use.

On the first computer lab day, Grace's students required a lot of instruction how to find her feedback. Grace seemed unsure explaining it to students herself, so I demonstrated the path to the grade book to the whole class and then the two of us went around and answered individual questions (Lab observations, September 22). Several students had problems with the pop-up blocker at this time, but on subsequent lab observations I did not notice this issue except on one occasion when a student asked a fellow classmate for assistance (Lab observation, September 22, p. 1). By the second interview the class B seemed to have cleared all the technical problems other than the achievement test display issues due to Java, Grace reported (Grace, interview 2, p. 4).

Students

The students were asked about the ease of MNSL use in survey 2 (6 items) and survey 3 (3 items). The purpose was to determine if students had any problems with MNSL that may have negatively impacted their views of it. It is important to note that for items 2-2, 2-6, 2-14, 2-16, 2-22, 3-4, and 3-9 inverse coding was performed because they are phrased in the negative light. The following inverse coding scale was used: strongly agree-1, agree-2, disagree-3, strongly disagree-4. Therefore, for all complexity items, the higher mean indicates a better outcome.

Table 22. Survey 2: Students' views about complexity of MNSL use

Survey 2 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
2-2 I do not know how to use *MyNorthStarLab* online activities.	16	3.31	0.479	15	3.20	0.862
2-6 My computer had difficulties with *MyNorthStarLab* online activities.	16	2.69	1.014	15	2.53	0.915
2-8 *MyNorthStarLab* online activities are easy to use.	16	3.00	0.365	15	3.13	0.834
2-14 It is difficult for me to find my way through *MyNorthStarLab* online activities.	16	3.00	0.000	15	2.80	0.676
2-16 I had technical problems when working on *MyNorthStarLab* online activities.	16	2.75	0.683	15	2.80	0.676
2-22 I need help learning how to use *MyNorthStarLab* online activities.	16	3.19	0.544	15	2.73	0.884
All items	16	2.99	0.514	15	2.86	0.808
Cronbach's Alpha based on standardized items	0.547*			0.896		

*All items were included in Cronbach's Alpha calculation except for 2-14 because it has zero variance.

Table 23. Survey 3: Students' views about complexity of MNSL use

Survey 3 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
3-4 I had technical problems when working on *MyNorthStarLab* online activities.	15	2.73	0.594	14	3.00	0.555
3-9 I need help learning how to use *MyNorthStarLab* online activities.	15	2.73	0.594	14	2.71	0.611
3-11 *MyNorthStarLab* online activities are easy to use.	15	2.87	0.743	14	3.07	0.616
All items	15	2.78	0.643	14	2.93	0.594
Cronbach's Alpha based on standardized items	0.533			0.571		

As can be seen from Table 22, both classes found MNSL relatively easy to use judging by the mean scores for item 2-8 (3.00 and 3.13 respectively). The scores from the same item, 3-11 in survey 3 (Table 23) have not changed much (2.87 and 3.07 respectively). The question that asked about the ease of use just phrased negatively (2-14: it is difficult for me…) showed exactly the same mean (3.00) for class A. All students in class A responded with "disagree" making the standard deviation zero.

Students indicated that they knew how to use the system (question 2-2: 3.31 class A and 3.20 class B) and did not need help with it (question 2-22: 3.19 class A and 2.73 class B). Similar ratings were obtained in survey 3 (question 3-9: 2.73 class A and 2.71 class B). Slightly lower scores were found for items about computer problems in survey 2 (2-6 and 2-16). In both classes in survey 2, the mean scores are below 3.00, while in survey 3 (item 3-4) the mean was 3.00 in class B. This could indicate that technical difficulties were present. The explanation students provided in questions 2-16 and 3-4 lists the problems with the Java application in 78% of cases. Java was necessary for certain features (e.g. audio recorder) and activities (drag-and drop-exercise) in MNSL to appear properly. Students reported having trouble downloading Java onto their computers, and making it run on Mac computers and in

certain browsers. Java had to be regularly updated manually which was an added task students and teachers needed to remember. Both Grace and Bill complained about this issue in their interviews, especially because of achievement tests.

The analysis of reliability estimate returned low alpha values of around 0.550 for both classes and surveys (except class B survey 2). Additional statistical analyses indicated that 6 complexity items in survey 2, class A may not be analyzed together but broken down into more discrete parts (e.g. technical difficulties items, ease of use items, need help items). For example, the factor analysis for class A survey 2 showed that variables 2-2, 2-6, and 2-16 make a factor. When only these three variables were used to calculate the reliability of the measure, a much higher value of 0.838 was obtained. Low alpha values in survey 3 may have been influenced by the small number of items (3).

Differences in mean scores for class A from survey 2 to survey 3 on items 2-8 and 3-11 (ease of use) and 2-22 and 3-9 (need for help) show students continued to have technical difficulties through the semester. Comparison of mean scores on Wilcoxon test for the ease of use (3.00 and 2.87) returned the value of 0.414 which is not statistically significant at 0.05. However, the same test for the need for help items (item 2-22 mean scores 3.19 and item 3-9 mean score 2.73) returned the value of 0.005 which was statistically significant indicating a change in ratings not due to chance for class A. At the same time, the ratings for class B on this pair of items did not change much (2.73 survey 2 and 2.71 survey 3). A possible explanation could be found in the number of technical problems reported by each class in both surveys (class A: 8 comments, class B: 1 comment). Students in class A apparently had more difficulties using MNSL than students in class B according to the number of comments.

Innovation complexity and participants
Bill, Grace, and other teachers (T1 and T5) viewed giving student feedback in MNSL as labor-intensive due to its demands on teacher-time outside of class. While participants agreed that having the recording feature was an innovation advantage, it was also seen as adding to

the complexity of its use. Bill's suggestions what to address in the feedback so it adds value to the teaching and learning process could help save teacher grading time.

Another difficulty the program encountered was the delivery of student access cards which was discussed in several interviews and at instructors' meetings. Bill and Grace did not have any students lose their cards, but focus group teachers T1 and T3 did. Teachers 1 and 3 worked around the issue by obtaining additional access codes. However, this problem raises a red flag for the LMS designers and greatly impacts the perception of the innovation complexity.

Another technical red flag for MNSL designers is the incompatibility of Java software. 78% of all student technical complaints dealt with this issue and both Grace and Bill brought it up in interviews. Moreover, Bill, Teacher 1, and Teacher 3 also shared problems with pop-up blockers which prevented students from viewing content. These issues required a lot of teacher attention especially during first lab meetings but were later resolved as students got more experienced with MNSL.

Overall, student survey responses show that both classes found MNSL relatively easy to use. While my lab observations and Bill's interviews suggested that students' technical difficulties decreased as the semester progressed, student survey answers indicated that students continued to have technical difficulties throughout the semester. As a matter of fact, students in class A reported that they needed more help later on because statistical analyses showed a significant difference in ratings between the second and third survey on need help items. Additionally, the number of technical difficulties reported by class A (8 comments) was much more than by students in class B (1 comment). Perhaps, students needed more help outside of the computer lab than Bill and I were aware of. The responses of class B students about technical problems remained relatively constant in both surveys. These findings indicate that students' opinions about innovation complexity also need to be elicited so that a true assessment of this quality could be presented. The discrepancy between instructor's and students' views of the innovation difficulty in class A stresses the importance of triangulation

of methods in qualitative research. Finally, the results give another support for offering student training several times in the semester, which was not done in this study.

Trialability and observability

Rogers (2003, p. 258) defines trialability as "the degree that an innovation may be experimented with" and observability "the degree to which the results of an innovation are visible to others". The diffusion of the innovation in this study did not substantially depend on these qualities when it came to students. As discussed previously, the students were given training on how to use the LMS but they did not have a personal choice whether to use it or not because it was a required part of their class. As a result, these qualities are assessed based on the main instructors' and administrator's input only.

Teachers: Bill and Grace

Bill's examination of the innovation started in the pilot study when he tried MNSL out before introducing it to the class. Bill did not ask me for a formal training session and preferred to explore it by himself on his own time and pace with my support and guidance available if necessary. Trialing continued the first semester of the innovation use which helped Bill form a positive opinion and decide about its continued use. Monitoring student progress, record keeping and management, time saving, and individualized assessment were innovation advantages Bill highlighted and shared with colleagues at an instructor's meeting at the end of the pilot study. At the same meeting, I presented the innovation to the teaching staff and shared some of the insights from the pilot study. Instructors, program director and coordinator could get acquainted with MNSL and observe the results of its use with students. This increased innovation observability helped the program decide on the introduction of the innovation into other listening/speaking classes a year later. In the interview, the administrator corroborated that Bill's experience encouraged other teachers' interest in trying the innovation out (Administrator interview, p. 4).

Grace got an opportunity to try the innovation during the first teacher training workshop the first week of the semester. She also examined MNSL herself and asked Bill and me questions. Grace believed there was enough time to try the innovation and that she wouldn't have used more time even if it was available (Grace, interview 3, p. 3). During the semester, both Grace and Bill helped other teachers with the innovation (Teacher focus group), which may have increased its observability. Nevertheless, Bill's experience may have had more impact on this quality simply because he used the innovation longer. In summary, the data suggest that the two main participants had sufficient opportunities to try the innovation and that the results of their experience could be observed by their colleagues, which in turn positively influences the innovation-diffusion process.

Innovation, its attributes and the hypothetical class
Based on the experience of class A and B students and their teachers, it can be concluded that the hypothetical class participants would see the use of MNSL in their technology-enhanced blended learning class as an innovation. Just like Bill and Grace, the hypothetical class teacher would probably recognize MNSL advantages regarding its content (e.g. number and type of exercises) and features (e.g. grade keeping, feedback delivery). The teacher and students would likely see the benefits of online pronunciation, speaking, and listening practice. As in case of Bill and Grace, the innovation would be probably seen as compatible with teacher's needs. It is likely that hypothetical class students would not find MNSL difficult to use but that they could encounter technical difficulties early on or even throughout the semester. Technical difficulties could possibly be the main innovation drawback for both students and teachers while the teacher would also be sensitive to the time it took to give individualized feedback which could, in turn, influence its scope and length. Finally, the teacher would probably be able to test the innovation either in a workshop or through individual exploration before putting it to use. Other teaching staff members would be able to observe this teacher's use of the innovation before starting to use it themselves.

Research question 3: Attitudes towards blended learning and the innovation

The third research question examined Bill and Grace's attitudes towards the innovation as well as attitudes of their students. The data were obtained through teacher interviews, student surveys, and the student focus group. First, the attitudes of Bill and Grace are analyzed followed by the attitudes of their students.

Attitudes of Bill and Grace

The analysis of Bill's feedback over two semesters shows his unchanging positive attitude. At the beginning of the pilot study, Bill talked about the benefits the innovation brings to him and his students:

> It provides an abundance of material that can be utilized with the class. So it takes some of the burden off the instructor to invent materials or come up with materials. There is a wealth of material available so you can just pick and choose depending on students' needs and levels. So, it is very beneficial in that regard and I think it is interesting to the students, too. […] (The materials) can be accessed any time, any place. I think that is a wonderful advantage. That it does not have to be done during class time. (Bill, pilot interview 1, p. 8)
>
> I really like how that is tied in to the book so closely and offers additional materials for (students) to really solidify their understanding of what's presented in the chapters. (Bill, pilot interview 1, p. 9)

From the pilot to the present study Bill praised the wealth of materials, ease of access, and connection between online and paper materials as advantages of the innovation (see the section on Relative advantage in research question 2 for Bill's quotes from the present study).

At the end of the pilot study, Bill expressed interest in continued MNSL use as a part of the blended learning class. He liked the combination of classroom and lab time; classroom time was best used for discussions and lab time for individual work and practice. Although at the

beginning of the pilot Bill explained that he valued the classroom time more than the lab time, the second pilot interview showed that the lab time was seen as the time well spent because Bill could make sure the students were on task, could assist them, and answer their questions. The value of lab time for Bill increased in the second semester when he had an additional lab meeting per week. At the end of this study, Bill saw class and lab time as equally valuable and even advocated more lab time for other teachers:

> I would recommend that, as a matter of course, MNSL is used for LS classes and that instructors, if possible, have a couple of days in the lab. So much of the book content is available through the MNSL site and all the additional exercises that are not in the book. It's just very useful to have two days in the lab and three days out. I just thought that was great. (Bill, interview 3, p. 5-6)

Moreover, from the pilot to the present study, Bill continues to recommend the innovation to other teachers. Here is Bill's justification:

> I'd highly recommend that they (other teachers) give it a try. And make it a regular part of their listening/speaking curriculum. Because it incorporates today's technology and a lot of people are focused increasingly so on the computer-based language instruction. It's really the best of both worlds. You have your classroom component and you have the online component. […] I don't see why an (ESL) program would not want to attempt it at least and see how they like it. I would recommend it very highly. And the topics are interesting and timely. […] I honestly don't know why a program would not want to take advantage of all of the work that's gone into preparing this online content.
> (Bill, interview 3, p.11)

Finally, Bill was also enthusiastic about trying MNSL or another LMS in other skills classes in the program. He could clearly speculate about its advantages for grammar instruction ("things are graded, you could also provide speaking activities just to demonstrate if students know how to use the concepts in a particular unit") and reading instruction ("online access to

passages and comprehension questions: main idea, detail questions, vocabulary-based exercises from the readings") (Bill, interview 3, p.11).

Bill's positive views towards blended learning and the LMS are also shared by Grace. In her third interview, Grace mentioned that she enjoyed and liked MNSL and would probably miss having it next semester when the program uses a different textbook series. She also liked the idea of having an LMS in other skills classes. She offered the same rationale as Bill: students can work together in class and later practice on their own in the lab. The blended approach to instruction helped Grace with learning Chinese, which was an additional reason for her strongly supporting it both as a teacher and student.

Similar to Bill, Grace would also recommend the innovation to others. Here is the advice she would give to other teachers:

> Don't give too many pencil assignments you have to grade [laughter]. I would encourage them (teachers) to start out by trying all the activities and see which ones work well and which do not. Stick to the ones that work well with your class, maybe. I would also say don't let yourself fall behind in grading. (Grace, interview 3, p. 12)

Here Grace shares her strategy of exploring the material and using teacher's time efficiently when it comes to grading. She jokes about the time it takes to respond to student work (pencil assignments), and cautions that this time should be found on a regular basis. In contrast to Bill, Grace found one lab meeting per week sufficient and did not think more meetings would be necessary. Teachers' feedback indicates that blended learning worked for both of them although their ideal time distribution in face to face and CALL mode may be different.

Attitudes of students
Students' opinions about the blended learning and MNSL innovation were obtained in surveys 2 (see Table 24) and 3 (see Table 25) using a scale from 1 (strongly disagree) to 4 (strongly agree). As mean scores in survey 2 show, on average, students liked the blended format of the class (question 2-23: 3.06 class A and 2.73 class B), and found it helpful

(questions 2-14: 3.13 class A and 2.73 class B). Class A's ratings are a little bit higher in comparison to class B's, but class B's ratings increased in survey 3 and almost match class A's (see items 3-1 and 3-2). It is worth pointing that students' answers are consistent on questions 3-1 and 3-10 which ask about positive experience with the blended learning class and blended learning materials. Mean scores for both groups and items are 3.00. In sum, survey 2 shows positive student attitudes towards blended learning in terms of its appeal and helpfulness.

In both surveys Cronbach's alpha values are higher in class B (0.937 and 0.894) than in class A (0.636 and 0.392). When in case of class A (survey 3) the alpha was calculated only for items 3-2 and 3-13 for which the factor analysis indicated would make a factor, the value of 0.786 was obtained showing that a smaller number of items could better measure the same construct with groups like class A in the future (please refer to Evaluation of measuring instruments in the Methods chapter for details).

Table 24. Survey 2: Students' views about blended learning

Survey 2 question	Class A			Class B		
	N	*Mean*	*St Dev*	*N*	*Mean*	*St Dev*
2-23 I like that my class meets in the classroom and computer lab.	16	3.06	0.250	15	2.73	0.704
2-24 The fact that my class meets in the classroom and computer lab helps me learn English.	16	3.13	0.500	15	2.73	0.799
All items	16	3.095	0.375	15	2.73	0.7515
Cronbach's Alpha based on standardized items	0.636			0.937		

Table 25. Survey 3: Students' views about blended learning

Survey 3 question	Class A			Class B		
	N	Mean	St Dev	N	Mean	St Dev
3-1 I like that my class meets in the classroom and computer lab.	15	3.00	0.535	14	3.00	0.679
3-2 The fact that my class meets in the classroom and computer lab helps me learn English.	15	3.20	0.414	14	3.07	0.616
3-10 I like both classroom activities and *MyNorthStarLab* online activities.	15	3.00	0.655	14	3.00	0.555
3-13 All IEOP classes should have online activities (such as *MyNorthStarLab* or other Internet activities*)* in addition to regular class activities.	15	2.87	0.640	14	2.93	0.829
3-14 I would recommend a class that uses *MyNorthStarLab* online activities in addition to class activities to other students.	15	2.80	0.676	14	2.86	0.770
3-15 I would like to take another IEOP English class that has *MyNorthStarLab* online activities together with the regular class activities.	15	2.73	0.884	14	2.57	0.852
All items	15	2.93	0.634	14	2.90	0.716
Cronbach's Alpha based on standardized items	0.392			0.894		

The ratings are slightly lower for both classes when it comes to questions 3-13, 3-14, and 3-15 in survey 3. These questions asked about a blended option of other IEOP classes, recommending the class to other students, and taking another blended learning class. Students do think that other classes should include online activities (question 3-13: 2.87 class A and 2.93 class B), and would recommend the class to others (question 3-14: 2.80 class A and 2.86 class B). The lowest rating among the three items was obtained on the last question. Some students in class B would not like to take another IEOP blended learning class (question 3-15: 2.57). The explanation could be found in students comments on that question. Student 204 from class B wrote: "I don't want to take IEOP again", while student 205 remarked "I don't want to take another class like this because I think that online activities should be left for homework". These students feel that their English is good enough, so no

more ESL classes are necessary no matter what their format is and that the present format of the class does not work for them. While the blended model may work for the majority of students, it may not work for all.

On the other hand, the students would like another blended learning class because: it increases English speaking opportunity (student 102), it can help improve the grade (student 115), it is popular and students like it (student 209), it is interesting and attractive (student 106), MNSL can help improve listening and speaking (student 207), and MNSL gives more practice (student 212). In the focus group, student 204 from class B mentioned the extra practice available in the computer lab as "the teacher teaches things in regular classes and we review them on the computer" (Student focus group, p. 1). This was the same advantage Grace and Bill brought up in the interviews several times and shows teacher and student agreement about useful qualities of blended instruction. Teachers, students, and the administrator also agreed about other advantages of blended instruction such as preparation for future college studies (Teacher focus group, p. 7; Bill, interview 3, p. 10; Administrator interview, p. 3), autonomous learning (Grace, interview 2, p. 9; Bill, pilot study, interview 2, p. 12; Teacher focus group, p. 7), and the ability to work at one's own pace (Grace, interview 2, p. 12). The following student comments illustrate these benefits:

> Meeting both in the classroom and the computer lab prepares us for taking courses in our major in the future. When taking (these) courses, we'll need to learn a lot of things by ourselves via a computer at home. So we are getting used to the teaching method of courses in our major. (Student focus group, p. 5)

> Students have less freedom in a regular class than in a lab class. In a regular class, students learn the same things from the teacher together. Due to their various English proficiency levels, they learn English to different degrees. In contrast, students have their "personal space" in a lab. They are not affected by each other while studying and improve their English at their own pace. (Student focus group, p. 5-6)

These findings support positive student attitudes found in previous literature (Echavez-Solano, 2003; Scida & Saury, 2006; Ushida 2005).

In addition to positive attitudes, some students expressed negative views of the class in the focus group. These comments were about the course content which was seen as easy (student 212, 204) and vocabulary too simple (student 213) (Student focus group, p. 4 and p. 1). Several students also complained that the course did not sufficiently prepare them for the TOEFL test which they needed to pass to exit the program:

> The textbook of the L/S class—not only the textbook for this class but those for other classes—are not helpful for our TOEFL preparation. We have to pass TOEFL at the end of the semester, but these textbooks have nothing to do with TOEFL. (Student 212, Student focus group, p. 4)

> I feel you don't really learn much useful things from the computer lessons. They are not helpful for TOEFL as well. (Student 208, Student focus group, p. 1)

> I feel the vocabulary is not helpful for our preparation for the TOEFL test. (Student 213, Student focus group, p. 1)

These views indicate that the course may not have met the perceived language needs of all students. Both positive and negative participant views can be informative for blended course design.

Participant attitudes and the hypothetical class

When using the findings from classes A and B to describe the hypothetical lower-intermediate level listening/speaking class in IEOP it could be concluded that the teacher and student views of the innovation would be positive overall. hypothetical class participants would likely recommend the class to others and would welcome the technology which makes the blending possible in other classes, too. Students would probably like the class format and find it helpful for improving their English although not all of them would like to take another

blended learning class in the future. Furthermore, it is possible that both the teacher and the students would recognize the same advantages such as more opportunities for language practice, preparation for college classes which use LMSs, as well as taking responsibility for and self-pacing one's own learning.

Research question 4: Innovation-decision process

The fourth research question looked at the stages the two main participants, Bill and Grace, went through as they learned about the innovation and started using it. The stages of the innovation-decision process are five stages described by Rogers (2003): knowledge, persuasion, decision, implementation, and confirmation. Rogers' (2003) characteristics of each stage were looked for in the data during the analysis.

The innovation-decision process was studied through teacher interviews (four interviews with Bill and three with Grace) and lab observations of both classes. Experiences of other participants were collected in the teacher focus group, administrator interview, and teacher 5 interview. First, Bill's experience is told and then Grace's. In the last part, the discussion of similarities and differences in the process is presented followed by the observations about the future of the innovation in the program.

Bill's experience

The first stage Bill passed through was the knowledge stage in which the individual seeks knowledge about the innovation according to Rogers (2003, p.169). Since Bill was exposed to the innovation a year before Grace, he passed through the knowledge stage during the pilot study. From the first pilot interview with Bill, it was clear that he had had awareness about learning management systems before the study. For example, he heard that WebCT and Moodle were used in classes at Iowa State. He said:

> I hear about different teaching tools that are utilized today that I'm not familiar with--WebCT or Moodle. I hear these terms and I really don't know what they are. I've never been in a position to need them. I don't know how they are utilized in class. Classroom management techniques, tool-- I don't know anything about those. So, in that regard I'm way behind [other instructors]. (Teacher interview 1, pilot study, p. 5)

Here Bill also articulated the lack of need to use the LMS. This indicates that the awareness of the innovation came before the real need for it. However, Bill was interested in learning about the innovation and using it with the class. Where did this need come from? Bill may have hinted at it in the same answer -- he felt he was behind other instructors who were using this technology and looked at this study as an opportunity to learn new skills. Later in the same interview, Bill confirmed this view: "I fear that I'm behind times with technology, and that other people utilize it more than I do" (p. 10)". The situation that an individual had developed a need for an innovation after learning that the innovation existed was mentioned in Rogers (2003) as one of the possible ways the innovation-decision process starts.

In addition to not needing to use the LMS, Bill's response showed that he did not know how the LMS worked or was used; that is, he did not have how-to knowledge necessary to use the innovation properly (Rogers, 2003, p. 173). He was, however, able to speculate why an innovation of this kind would be beneficial:

I think [MyNorthStarLab] will bring additional opportunities to practice what they (students) talked about in class. Not just materials that are in the book but also additional things that they can do as many times as they wish in some cases if that is not submitted for grading and there is a deadline involved. So, it's just more opportunities. I think they need to be exposed to things numerous of times. And this allows them. And again it is convenient for them. They can do it any time, any place for homework or during regular lab time. So, I think that's a big benefit. And the fact it is not coming from a book. It is different--it is new, it is somewhat unique. I think it is more interesting for them, at least I hope they view it like that. (Teacher interview 1, pilot study, p. 9)

From this response it can be seen that additional practice, exposure to language, convenience, and uniqueness are seen as possible advantages of the innovation. Bill was also able to speculate about how he could be using the innovation with the class which served as a lead into the persuasion stage.

The gap in Bill's how-to knowledge was addressed in the persuasion stage when he started exploring the innovation. As already discussed, Bill was not given formal training because he preferred to look at the innovation by himself and ask me questions if necessary. The fact that I was around to show him certain functions of the innovation underline the social reinforcement necessary for the individual in this stage (Rogers, 2003). The main outcome of the stage was formation of a favorable attitude towards the innovation and Bill's decision to use it with the class after the initial self-familiarization.

After the short persuasion stage, Bill moved to the decision stage and piloting of the innovation which involved work with the LMS for one semester to determine its real usefulness. Trialing has a place in the innovation-decision process because innovations that can be tried out are adopted faster overall (Rogers, 2003). According to the feedback obtained in the second pilot interview, the trial appeared to be a success because Bill was satisfied with the innovation which he saw as well-designed, relevant, and valuable. In addition, he could also clearly articulate its advantages: monitoring student progress, record keeping and management, time saving, and individualized assessment. This further strengthened the positive views of the innovation Bill already expressed in the previous stage. Lab observations showed that the innovation was regularly used throughout the semester. In the second pilot interview Bill said he was interested in the continued innovation use and was happy to recommend it to his colleagues. His positive experience influenced the decision to use the innovation on the program level a year later. The administrator confirmed Bill's and my influence in her interview. She said: "I think because you had worked with Bill and because we knew somebody who had an interest in it. And Bill talked about it and advantages and people were interested in at least in trying" (Administrator interview, p. 4). She also shared that without my and Bill's involvement the implementation "probably wouldn't have happened" (Administrator interview, p. 5). The administrator's feedback highlights the importance of the change agent (me) and the early adopter (Bill) in the introduction of the new technology and instructional method in an IEP setting.

The next stage of the innovation-decision process, implementation stage, involves the continued use of the innovation and its use on a regular basis (Rogers, 2003, p. 199). A year later, at the beginning of this study, Bill continued integrating MNSL in his blended learning class. He enjoyed having me in the computer lab because there were times when I could help out. He thought that other teachers would have probably liked to receive that kind of assistance, too. The class worked on MNSL materials in the computer lab two times a week and received online homework. Bill liked having more lab time (an increase from once a week during the pilot) because he felt it worked well for the students who needed more support from him. He also felt he'd like to continue with two lab days (Bill, interview 2). It can be speculated that for Bill the next stage, confirmation, would seem like a natural stage to be in because the innovation would be so integrated that it would not be seen as new anymore. Integration of the innovation into one's ongoing routine is a feature of the confirmation stage (Rogers, 2003, p. 199).

Rogers (2003, p. 195) cautions that "we should not assume sharp distinctions between each stage". One of the descriptors of the confirmation stage is the promotion of the innovation to others (Rogers, 2003, p. 199). This quality could be clearly seen in Bill's implementation stage because he talked about innovation promotion in all of his interviews and was observed helping others use it. From the beginning of the semester, Bill was aware of the advantage he had over other teachers "because I'm the only person who knows about the MNSL who is teaching listening/speaking [this semester]" (Bill, interview 1, p. 9). Bill decided to use his previous experience with the innovation to assist his colleagues and sent an e-mail in the fourth week of the semester inviting teachers to a workshop. He had heard that some teachers hesitated to use MNSL or were having difficulties registering students, so in the workshop he demonstrated his course and answered questions. Bill used his interpersonal networks to convey a positive view of the innovation. His colleagues appreciated this effort and found the workshop helpful for having questions answered (Teacher 1, Teacher focus group, p. 11), useful for figuring things out (Teacher 2, Teacher focus group, p. 11), and the moment when they "got it" (Teacher 5 interview, p. 7). In the first interview Bill shared he hoped other teachers saw him as a person to come to if they had a question. Indeed, the other teachers did

see Bill as a great help because they could go to his office and ask questions (Teacher 5), and sit down with him and observe what he was doing (Teacher 1). Teacher 1 believed Bill's assistance shortened the learning curve and made it easier to learn about the innovation (Teacher focus group, p. 17). At the end of the semester, Bill mentioned he was regarded as an authority on MNSL by other teachers. This is his explanation:

> I end up having to explain things and show other instructors how to do certain things. And so that has solidified my comfort level because just being in that position I'm forced to use it more and get into areas that I might normally get into just to show people how to use it. And that's helped me. […] Because I think, if they are asking me, I must know something about it. [laughter] Makes you feel pretty good about yourself. (Bill, interview 3, p. 5)

While Bill has always felt comfortable with technology, being in position to assist others increased his comfort level even further and resulted in him being rightfully recognized among the colleagues for his help and technical skills. The qualities of being respected and considered a role model by peers have been previously noted in other early adopters (Rogers, 2003, p. 283).

Grace's experience

Grace had not used or known about the innovation before the study started. Her exposure started in the knowledge stage when she learned about MNSL from me and about WebCT she used as a student in the Chinese class (awareness knowledge--information that an innovation exists (Rogers, 2003, p. 173)). She was trying to figure out WebCT by herself and stated she needed time to do so (Grace, interview 1, p. 8). She attended the first MNSL teacher training workshop which she found helpful, asked Bill for help, and explored the materials herself. All of these behaviors helped Grace obtain how-to knowledge of the innovation (information necessary to use the innovation properly (Rogers, 2003, p. 173)). It appears that for Grace the need for the innovation came after she learned about its existence; when asked about it in the first interview, Grace mentioned needing an LMS for easier access to materials, automatic scoring, and to save time for the teacher.

In interview 1, Grace could envision how she could use MNSL with her class. She speculated about assigning listening and vocabulary activities for homework in MNSL which would leave more time for speaking activities in the face-to-face part of the class. Hypothesizing about the innovation use and seeking social reinforcement from others are characteristics of the persuasion stage (Rogers, 2003, p. 175). Grace especially liked having me in the computer lab with her because that forced her to dive in and play with the system. Reflecting on the first few weeks, Grace said: "If I hadn't been doing this with you, I may not have done it" (Grace, interview 2, p. 5). The new class format and stressful beginning of the semester made her feel overwhelmed, but the change agent's support and exposure to the innovation slowly made everything feel easy and her feel more confident. Later in the semester, Grace told me she understood the discomfort some teachers felt and that having me support her was the only thing that made a difference for her compared to them (Grace, interview 3, p. 11). This could suggest the importance of the change agent in shaping Grace's experience.

Although Grace did not have a chance to pilot the innovation for a semester as Bill did, her initial use of it resembled a trial phase which is usually a part of the decision stage. The first lab meeting, Grace assigned six different types of exercises in MNSL to see how students would do. She was getting familiar with the format and realizing what to spend lab time on. By the end of the first unit, she knew what to do better next time and told me she liked MNSL more now that she was more familiar with it (Grace, interview 2). Moreover, Grace revealed that other teachers are turning to her for help (Grace, lab observation, September 22) making her feel good. In the focus group, Teacher 1 who shared an office with Grace talked about getting assistance from her which made him comfortable early on (Teacher focus group, p. 17). As in case with Bill, Grace is seen as an early adopter by the social group, the one who provides advice and information and serves as a role model (Rogers, 2003, p. 283).

If the work on the first unit represented the decision stage for Grace, then the rest of the semester's work constituted the implementation stage. Grace reported being in the routine and knowing exactly what to do. In the last interview, I asked Grace to describe how her feelings about the innovation changed from the moment she started using it:

I know that at the beginning I was very overwhelmed and felt very much in the dark. I was a little nervous about trying to lead them (students), when I did not even know. I was really glad you were there. Because I'm not a very technical person, anyway. I was trying all the different activities and curious to see how they would do. As the semester went on, I got into my groove and figured out exactly how I wanted to use it and what I liked about it. I was always a little nervous about the tests because it seems we had quite a few technical problems about the test, but even that I felt comfortable enough towards the end. It got pretty easy towards the end. I knew I would go in and knew exactly what I want to put on there. And even grading them (students) and listening to them, I knew what I wanted to do. I was happy with it. (Grace, interview 3, p. 2)

The excerpt shows how Grace grew confident about the innovation use. Although the experience was "painful at times, she liked being challenged" and concluded that this was definitely the best computer experience she had ever had (Grace, interview 3, p. 2). Grace liked having all the materials provided and knowing what to assign. She would like to continue using the innovation in the future and offered to help other teachers in the process.

Bill and Grace's experience: Similarities and differences

There are many similarities between stages in the innovation diffusion process Bill and Grace went through. Both teachers passed through the first four stages: knowledge, persuasion, decision, and implementation. Neither knew how to use an LMS before the study, but once it was introduced and they gained basic knowledge of it, the need became apparent. Bill wanted to learn new technical skills and Grace was using another LMS as a student, which may have additionally motivated her to learn. During the course of the study, both Bill and Grace were seen as a useful source of assistance to others and it seems that their previous technology skills did not influence how their colleagues perceived their comfort with the new technology. Both participants shared that helping other teachers, in turn, helped them feel more confident.

My work with Bill and Grace made the process easier because I was present in their computer labs on many occasions and could help assist students, solve technical problems, and address their concerns on the spot. It appears that my help was especially welcome for Grace who at the beginning did not feel comfortable about her computer skills nor her ability to use the platform with students. She recognized my assistance as a crucial element in her success with the innovation which points to the significance of the change agent's role in working with a novice technology user. Here the difference in technology comfort level between participants could have influenced the experience and views of the innovation, but this was not the case. Both teachers reported having a positive experience and an interest in continued innovation use.

One of the differences between the participants was Bill's longer exposure to the innovation which in turn made him a stronger advocate for its adoption. Bill took an active part in promoting the innovation to others and was seen by the administrator as the key person together with the change agent.

Innovation diffusion and the hypothetical class teacher

Based on the experience of two teachers it could be speculated that the teacher of the hypothetical listening/speaking lower-intermediate class would follow the same stages of the innovation-decision process (knowledge, persuasion, decision and implementation) as Bill and Grace. After learning about the innovation either in a training session or through individual exploration, the teacher could probably be able to hypothesize about the innovation benefits and make plans for its use. In the persuasion stage, the teacher would likely seek social reinforcement and welcome the assistance of others (for example a more experienced colleague) especially if not particularly technology savvy. This teacher's trial period could vary in length but would probably result in a decision to put the innovation into practice. The same teacher would also likely offer to help others which would increase his/her technology comfort level as was the case of Bill and Grace.

Future of the innovation and IEOP as an organization

Bill and Grace's experience with the diffusion process is very similar and positive, but it represents only a small piece of a larger picture about the diffusion in organizations or "a stable system of individuals who work together to achieve common goals" (Rogers, 2003, p. 433), in this case IEOP. Rogers writes that innovations which require individual decisions are generally more rapidly diffused than those that require collective decisions (p. 221). Since IEOP's decision on the innovation's sustained use is not made by a single individual (administrator, Bill or Grace), this process needs to be followed longitudinally over a longer time period than this study allowed for. Nevertheless, the feedback of teachers and administrators may provide a glimpse into the future of the innovation in this organization.

At the end of the study, three out of five teachers interviewed expressed interest in the continued use of the innovation because they would like to master it, could use it more effectively, and the materials were interesting and students were engaged which in turn led to great class discussions. One teacher gave it 50% chance because the students did not like the topics that much, but was more willing and likely to use the textbook with the online component as opposed to without it.

All participants were asked about the likelihood of the program-wide adoption. Their views were mixed: Grace thought the innovation would be used again, Bill and the administrator believed that the chances are around 50%, while Teacher 5, although personally in favor of it, suspected the innovation would be discontinued. They listed the following reasons for the continued use: a lot of teachers had positive experiences, those teachers would offer to help others, and the program does not change textbooks very often. On the other hand, reasons that would hinder the diffusion were: the cost of the materials to students, the materials not meeting students' needs, the lack of academic content at higher levels, and difficulties with students losing access codes for MNSL. The administrator also brought up the fact that the program had a large increase in the student body that semester which made it more hectic at the beginning when the innovation should have been given sufficient attention to insure its adequate use. In addition, the increase in the teaching staff made it difficult to coordinate

both the new hire orientation and innovation training causing some teachers not to feel prepared and know what is expected of them. It appears that a combination of issues affected teachers' innovation-diffusion experience.

While Bill and Grace's experience certainly adds to the positive view of the innovation, the choice to adopt or reject lies with all members of the system. At this point in time, it remains unclear whether the innovation will be adopted or not. To find that out, the program and the teachers need to be followed in future semesters, which goes beyond the scope of this study. Moreover, the difficulties listed above should be addressed before the program offers the blended learning listening/speaking class again. For example, teachers could be required to attend MNSL training session before the semester to plan their lab classes and learn how to troubleshoot students' technical problems. I believe that the presence of Bill and Grace among the teaching staff and their positive experiences could help the program overcome potential issues and focus on advantages the innovation brings to the teaching and learning process.

Chapter summary

This chapter presented and discussed the results of four research questions. Data sources analyzed were both qualitative (teacher interviews, class and lab observations, student and teacher focus groups) and quantitative (student LMS records, student surveys) in nature. The findings about the blended learning model indicate that teachers and students in classes A and B could observe integration of face-to-face and CALL modes and that students could practice all language skills in both modes because of parallel content distribution. This type of distribution also allowed online content presentation and in-class review/practice as well as in-class presentation and online practice. A variety of interactional patterns among the teacher, students, and the computer were observed while teachers took on several roles such as those of instructors, facilitators, and monitors.

In the second research question, evidence was found that the use of MyNorthStarLab in blended learning classes represented an innovation according to Rogers' definition (2003).

However, the findings remain inconclusive when Markee's definition of innovation (1997) was employed. Furthermore, data analysis indicated that both positive (relative advantage, compatibility, trialability, observability) and negative (complexity) innovation attributes were present. Teachers believed the availability of MNSL in the computer lab was an improvement from the past and they praised online materials for abundance and variety of exercises, and time saving and individualized feedback features. Teacher interviews and student surveys showed participants could see the value of online pronunciation, speaking, and listening activities. Evidence for the presence of complexity among the innovation attributes was found in the time-consuming nature of providing student feedback for teachers and problems with computer software for students.

Overall, teachers and students expressed positive attitudes towards the innovation. Both teachers would be interested in using the innovation in future semesters and in other IEOP skill classes. Moreover, two teachers reported they would recommend the innovation to others. On average, students in classes A and B agreed that the blend of class and online instruction helped them learn English. Preparation for future college studies, opportunities for autonomous learning, and the ability to work at one's own pace were advantages reported by both teachers and students.

The data analysis in the last research question showed that two teachers passed through the first four stages of the innovation-decision process (knowledge, persuasion, decision and implementation) as described by Rogers (2003). The difference in previous technology expertise between them did not seem to influence the diffusion process which was helped by the change agent. For one of the teachers the promotion of the innovation to colleagues could suggest the outset of the final, fifth stage of the process, the confirmation stage. Based on the analysis of two classes and their teachers, descriptions of the hypothetical blended learning listening/speaking class at the lower-intermediate level were given for each research question.

The next chapter reiterates the purpose of the study, summarizes key findings by four research questions and synthesizes information about the hypothetical class. Next, limitations of the data collection procedures and data collection instruments are considered followed by practical and theoretical implications. The section on directions for future research concludes the chapter.

CHAPTER 5: DISCUSSION AND CONCLUSION

The purpose of this case study was to describe the blended learning environment in an ESL class where the use of online CALL materials delivered through a commercially-made learning management system created the blend. The study explored the blended learning model using criteria previously outlined in the blended language learning literature (Neumeier, 2005). It approached blended learning from the theoretical standpoint of an innovation (Rogers, 2003) and employed the innovation-diffusion framework to investigate the innovation, its attributes, stages of its adoption, and attitudes towards it.

This chapter summarizes key findings by four research questions and synthesizes information about the hypothetical class. Next, limitations of the data collection procedures and data collection instruments are considered. The discussion of practical implications for language programs and teachers and theoretical implications for innovation and blended learning frameworks ensues. Directions for future research offers suggestions for building on the results of this dissertation and for continuing research on blended language learning. The chapter ends with general conclusions.

Research findings

This section summarizes results of the study and presents them by research questions. First, the blended model is discussed followed by the investigation on innovation and its attributes (second research question), participants' attitudes towards the innovation (third research question) and stages of the innovation-decision process (fourth research question).

Blended learning model

The first research question was: How is the blended learning model used? How are the two modes, face-to-face and CALL, integrated? The description of the model was guided by the framework proposed by Neumeier (2005). The framework consisted of six parameters for blended learning design: 1) mode, 2) model of integration, 3) distribution of learning content and objectives, 4) language teaching methods, 5) involvement of learning subjects, and 6)

location. The analysis included the experience of students and teachers in classes A and B, which was used to paint a description of the hypothetical lower-intermediate listening/speaking class in the model. Data sources were teacher interviews, class and lab observations, student focus group, student LMS records, and student surveys.

Regarding the first parameter, mode, blended learning classes met in face-to-face and CALL modes. It was found that mode distribution depended on the amount of homework assigned as well as the number of extra-curricular activities which replaced some of lab meetings for class B. When the time spent in a mode was used to determine the lead mode, face-to-face mode was the lead for class A and CALL mode for class B. However, when the negotiation and organization of content was used as an indicator, it was argued that face-to-face mode was the lead mode in class B since all negotiation was performed there. Class observations showed the kind of activities that took place in the face-to-face mode, an important piece of evidence missing from previous studies which mainly focused on describing materials in the CALL mode. The examination of sub-modes showed that classes A and B worked on listening, speaking, pronunciation, grammar, and vocabulary activities in both CALL and face-to-face modes. Further investigation indicated that all materials in both modes were obligatory because students were not seen as autonomous learners by their teachers. Teacher interviews and student surveys showed that participants could observe mode integration. Integration episodes (teacher making explicit connection between modes) were also noted in observation data and were more frequent in class A than class B. Integration represents one of the most important parameters because the lack of integration is the main reason why blended models in the past did not work well (Chenoweth et al., 2006; Stracke, 2007). In this study, successful mode integration represents a major strength and can serve as an example for other blended learning models.

Distribution of learning content in classes A and B was parallel because all language skills could be practiced in both modes. Speaking and pronunciation activities usually restricted to the face-to-face mode in the past (Adair-Hauck et al., 1999) were made possible due to the Wimba recording feature in MNSL. As in previous studies, the kind of computer technology

influenced content distribution. It was observed that Bill and Grace used two patterns of content distribution: 1) online presentation and in-class review/practice, and 2) in-class presentation and online practice. Teachers also chose to distribute content based on the type of activities because they saw that some activities were more suitable for one mode than the other. To illustrate, both Bill and Grace had students work on final speaking activities in the unit in the face-to-face mode.

The examination of language teaching methods showed NorthStar materials were created on premises that matched teachers' views of pedagogically-sound materials, such as the correspondence between instructional and real-life tasks. Bill described his teaching methods as communicative and Grace as routine-oriented. In keeping with their teaching philosophies, Bill worked on building a comfortable atmosphere in his class and engaging students while Grace stressed the introduction of a consistent schedule early on in the semester.

A number of interactional patterns were observed in the two classes: in the face-to-face mode teachers interacted with the individual student, the whole class, and students in pair/group work, while students interacted with teachers and with other student(s) in pair and group work. The dominant pattern in class A observations was teacher-individual student. Pair and group work were practiced in class B every time a class observation was made (12 instances total in 8 class observations) which was more often than in class A (3 instances total in 6 class observations). Bill believed that his students determined the amount of pair/group work due to their lack of motivation, possible lack of previous experience with this kind of instructional method, and personal preferences. In the CALL mode, teachers and students interacted through the computer, and students interacted with the computer and through the computer with other students. In the first pattern, teachers provided written feedback to students' oral recordings and in the third students interacted with each other through the asynchronous discussion board.

In regard to participant roles, it was found that Bill and Grace assumed a variety of roles in the new environment. In the classroom they were teachers and instructors who conveyed new information and led students in practice while in the lab their role changed to that of facilitators, helpers, and monitors. This supports Neumeier's claim (2005) that blended learning environments encompass a diversity of participant roles. Two teachers differed in the amount of support provided to students in the lab; while Bill was actively engaged and liked giving feedback on the spot (helper), Grace preferred to step back and let students work on their own (monitor). According to the teachers, the characteristics of their successful students were responsibility for one's learning, regular attendance, and hard work.

Based on the data collected, the most frequent location where learning took place was the classroom followed by the computer lab and student homes. Majority of students in both classes reported liking to work on MNSL in the lab as well as at home. While most of class A students would not like to have online activities assigned only for homework, most of class B students would not object to such content distribution. This indicates that access to the CALL mode for students may be a matter of personal preference.

Innovation and its attributes

The second research question contained two lines of inquiry about the innovation. The actual questions asked were: Do participants see the use of a commercial LMS in a technology-enhanced blended learning class as an innovation? How do participants perceive innovation attributes? The examination of the innovation was approached from two theoretical perspectives: Diffusion of Innovations (Rogers, 2003) and Curricular Innovation Model (Markee, 1997). The data were collected from three interviews with each teacher, student survey one, and student focus group.

In relation to the perception of innovation, views of teachers and students differed depending on which of the two definitions was applied. It was found that the use of the LMS in the blended learning class represented an innovation for two teachers and most of their students according to Rogers' definition while the findings remain inconclusive when Markee's

definition was employed. For both Bill and Grace this study provided the first exposure to learning management systems and MyNorthStarLab in a blended IEOP class. Similarly, 94% of students in class A and 93% in class B had never used an LMS before the outset of the study. Finally, 94% of class A and 87.5% of class B had not taken blended learning classes before. Therefore, MyNorthStarLab use in the blended learning class represented an innovation for both teachers and students according to Rogers' definition.

In the case of Markee's definition, the evidence for the first dimension of innovation- new teaching materials- was found in teacher interview data. The second dimension, development of new methodological skills, was not documented because, overall, Bill and Grace did not change the way they instructed the blended learning class. Some changes in teacher's role were reported by Bill because he was monitoring and assisting students more than in the traditional class but no evidence for longitudinal changes over two semesters of observation was found. At the beginning of the study Grace speculated about changing instruction to take advantage of machine-graded vocabulary and listening activities online but had to modify her plan during the course of the semester because students did not learn vocabulary items well when they studied them only online. At the end of the study, Grace reported that in future blended classes she intended to attempt again her plan of moving some activities online. Markee argues that "the intention to implement an innovation cannot be interpreted as proof of actual implementation" (1997, p. 157) so until methodological changes actually take place, the second product of innovation cannot be seen. The evidence for the development of new pedagogical beliefs, the least tangible of all dimensions, was not sought in this study which is one of the major limitations. I believed that for two teachers the lack of changes in class instruction would translate into the lack of changes in pedagogical values. According to Markee (1997, p. 53), there is empirical evidence which indicates that teachers' beliefs may change as a result of their experience. In this case this finding could suggest that the lack of experience with new methodological skills caused no change in pedagogical beliefs. In sum, the assessment of the innovation according to Markee's definition (1997) is incomplete based on the data in this study.

After the novelty of LMS technology and blended class format was established according to Rogers' framework (2003), the second question explored five innovation attributes: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Triangulation of data collection procedures (interviews with teachers and administrator, student surveys, student and teacher focus groups) allowed for each of these characteristics to be thoroughly examined. The study found the presence of both positive (relative advantage, compatibility, trialability, and observability) and negative (complexity) innovation qualities.

The first quality, relative advantage, could be observed by both teachers and most of the students. The availability of MNSL in the computer lab was an improvement from the past; it provided Grace with teaching materials and Bill with useful features that web sites he used to assign to students did not have. Previously, Grace did not know how to use the computer lab and find appropriate materials on the Internet. Teachers valued MNSL due to its abundance and variety of exercises, and time saving features for the teacher in form of grade keeping (Bill) and oral skills assessment (Grace). This time-saving quality of the innovation represents a common subdimension of relative advantage, according to Rogers (2003, p. 233). Bill and Grace's interviews and their students' surveys showed they could see the value of online pronunciation, speaking, and listening activities. Bill stressed the uniqueness of online pronunciation practice not possible in the face-to-face class. Speaking practice in MNSL was reported helpful for shy students, in addition to mimicking real-life and test situations. These findings indicate the oral skills could be practiced in the CALL mode, thus overcoming major limitations in earlier blended learning studies where students could practice only reading, grammar, and vocabulary (Adair-Hauck et al., 1999) and reading and writing (Green and Youngs, 2001) in the CALL mode. However, not all students liked speaking online which shows that individual student differences play a role. Finally, another major advantage for teachers was the ability to provide individualized feedback. This feature was already recognized as a benefit of blended learning environments by participants in Echavez-Solano (2003) and Scida and Saury (2006). Here, MNSL records showed that Bill provided longer and more detailed feedback than Grace. The scope and length of teacher

feedback in turn influenced students' ratings of its usefulness according to their survey answers.

In relation to the second quality, it was found that the innovation was compatible with the needs of the two teachers. Bill felt that the innovation met his need to learn new computer skills while Grace saw the innovation as helping her save time. For both teachers the need to use the innovation had come after they learned about its existence. According to Rogers (2003) a need can exist before an innovation is found to fulfill it or, as in this case, the innovation can create a need.

Evidence for the presence of the third innovation quality, complexity, was found in the time-consuming nature of providing student feedback for teachers and problems with computer software for students. It is interesting to note that teachers viewed the MNSL recording feature both as an advantage for giving feedback and a disadvantage because composing feedback took a lot of their time. The majority of all student technical complaints dealt with incompatibility of Java software which interfered with proper display of activities in the computer browser. Overall, student survey responses suggested that both classes found MNSL relatively easy to use but that technical difficulties were present. Students' complaints of technical difficulties were frequently reported in blended learning studies (Adair-Hauck et al., 2000; Barr et al., 2005; Chenoweth et al. 2006; Echavez-Solano, 2003) and continue to present an issue. Although data from lab observations and Bill's interviews did not indicate that students had computer problems, student survey answers showed that difficulties persisted through the semester. The discrepancy between instructor's and students' views of the innovation difficulty stresses the importance of triangulation of methods and surveying of student views whenever possible.

The data collected on trialability and observability show that two teachers had sufficient opportunities to try the innovation out while their colleagues could observe their experience. Bill interacted with MNSL during the pilot study while Grace tried it out during the first teacher training workshop. Other teachers could observe Bill's interactions and learn about

his experience with MNSL in a presentation at the end of the pilot study. During the semester both Bill and Grace helped other teachers with the innovation which may have additionally increased its visibility to others.

Attitudes of participants

The third research question asked: What are the attitudes of teachers and students towards the innovation? The data were collected through teacher interviews, student surveys, and student focus group and reveal positive attitudes of teachers and both positive and negative attitudes of students.

Interviews with Bill indicated his unchanging positive attitudes towards MNSL and the blended class format from the pilot to the present study. Both Bill and Grace would be interested in using the innovation in other skill classes (grammar, reading classes) and would recommend it to others. Blended learning appears to have worked well for both teachers although their ideal time distribution in face to face and CALL mode may be different with Bill favoring two lab meetings a week and Grace one.

On average, students in classes A and B agreed that the blend helped them learn English. Although class A's helpfulness ratings were higher that class B's at first, they improved to match class A's later in the semester. In the last survey both classes on average liked the blended format and their ratings are exactly the same. Moreover, on average, both groups responded positively to adding online activities to other skill classes and reported they would recommend the class to fellow students. These results add to the positive student feedback on blended learning in Murday et al. (2008), Scida and Saury (2006), Stracke (2007), and Ushida (2005). In this study negative views were also expressed because not all students wanted to take another blended learning class. Those who did cited extra language practice as one of the main benefits which was also shared by their teachers in addition to preparation for future college studies, opportunities for autonomous learning, and the ability to work at one's own pace.

Innovation decision process

The fourth research question was: What stages of the innovation-decision process as described by Rogers (2003) do the teachers go through? Teacher interviews and lab observations showed that Bill and Grace passed through the first four stages of the innovation-decision process. The difference in previous technology expertise between two teachers did not seem to influence the diffusion process which was helped by me, the change agent.

In the first stage, knowledge stage, teachers gathered information about the innovation. Next, teachers formed a positive opinion about the innovation which was strengthened by my assistance to Bill during his self-exploration of MNSL and to Grace during her first lab meetings. Seeking social reinforcement from others is a characteristic of the persuasion stage (Rogers, 2003). In the third, decision stage Bill and Grace chose to use the innovation after trying it out. Bill's trial period lasted longer than Grace's since he had participated in the pilot study two semesters earlier. To try the innovation, Grace assigned a number of different MNSL activities in first unit to see how they would work with students. Continued innovation use in the present study represented the fourth, implementation stage for Bill, while Grace reported being in a routine after completing the first unit. For Bill, the promotion of the innovation to colleagues could suggest the outset of the final, fifth stage of the process, the confirmation stage.

Hypothetical class

Experience of classes A and B and their teachers presented above is used to describe a hypothetical lower-intermediate listening/speaking class in IEOP in Fall 09. This hypothetical class is described based on the similarities and differences between classes A and B. While similarities speak about common characteristics, differences highlight the variety of options in two classes. Readers can compare the experience of this hypothetical blended learning class with classes in their program to make applications to their situation.

The hypothetical listening/speaking class in Fall 09 would be composed mainly of Chinese students with average paper-based TOEFL scores between 400 and 430 before the start of the semester. The students would be lower-intermediate level learners. The hypothetical class teacher would have an MA degree and ten or more years of teaching experience both in the country and abroad. This teacher could be fairly confident about using instructional technology with the class.

The hypothetical class would consist of two modes: face-to-face and CALL. The time spent in the face-to-face mode could range from 49%-62% of total instructional time while the time in the CALL mode could be between 38%-51%. This distribution could be influenced by the amount of MNSL homework which could vary depending on the progress students made in the lab and teacher's structuring of the class. The teacher could prefer to alter mode distribution by reducing lab meetings in future semesters.

The availability of listening, speaking, pronunciation, grammar, and vocabulary activities in MNSL and in the textbook would allow the class to work on these activities in both modes. Diagnostic and unit assessments would be likely administered in the CALL mode. Content presentation, content review, and language practice could take place in both modes and could be combined in flexible ways. The fact paper and online materials were designed to integrate well would help the teacher and students make connections between the modes. In addition, the teacher could reinforce mode integration by checking and responding to student work in MNSL as well as by addressing common MNSL mistakes and referencing MNSL content in class. The teacher, students, and the computer could interact in a variety of ways in this class. The amount of student-student interaction could vary based on student motivation and teacher's pedagogy.

After a semester of use, the teacher and most of the students would view the class and MNSL technology in a positive light and would recognize the advantages of certain MNSL features such as the voice recording tool. The teacher would likely want to continue teaching technology-enhanced blended learning classes in the future. If the teacher is an early

innovation adopter, he/she would probably pass through the same innovation-decision stages as two teachers in this study, regardless of computer technology expertise. The teacher would gather knowledge about the innovation through formal training or self-exploration, try the innovation out, decide and then use it with the class. Without the change agent's presence, the teacher would be less supported in the computer lab than two teachers in this study so he/she would likely welcome the help of others. This is especially true if the teacher is not a confident technology user.

Limitations

In this dissertation few limitations related to data collection procedures and data sources need to be addressed. At present, results of the study should be interpreted having these limitations in mind.

First, no data were collected on teachers' changes in pedagogical values due to the blended format of the class. Teachers were asked about their pedagogy before the first semester of innovation use but not at the end of the study because no new teaching methods were observed. Because this evidence for the third dimension of innovation was missing, it could not be determined whether the innovation could be considered a true curricular innovation according to Markee's definition (1997). The data on two other dimensions offered mixed findings given that the innovation contained new teaching material but did not bring about the change in teaching practices. Future studies looking at curricular innovations could build on these shortcomings and seek a possible change in teaching methodology and pedagogy in a number of data sources and in a more systematic manner that done here. This could, in turn, help create specific pointers for recognizing change that are presently missing from the curricular innovation framework.

Second, no instruments were available to record time students spent on textbook homework. It could be argued that this time would not have changed the mode distribution since, according to the teachers, very few textbook activities had been assigned. Nevertheless, this information is important to collect because it could expand the present definition of modes

and should be included in mode time calculations in future studies. The next data source limitation concerns student LMS records with self-reported time on MNSL homework. Because the LMS did not automatically record time on individual activities, I could not obtain an unbiased record of CALL mode time. Finally, the student focus group included students from class B because they were a more motivated group than class A. At the same time these students were the best performers in class B. Feedback from weaker students would be equally informative so similar focus groups should sample from both types of performers. If class A students had been included, I could have possibly obtained student explanations of why pair and group work did not work well. In that case, student opinion would corroborate or refute teacher's speculations.

The final limitation is the lack of assessment measures to demonstrate student language improvement over the course of the semester. While both teachers gave MNSL achievement tests those were not used to document student progress due to technical difficulties in their administration (especially in class B). During the course of the study, the program worked on developing curriculum-wide final tests for each skill and class but those were not completed by the end of the study. Future research should make an attempt to include systematic program assessments that could further support the benefits of blended learning established using methods such as those in this dissertation.

Implications for language programs and language teachers

I believe that the results of this study can contribute to better understanding of technology-enhanced blended learning models by language programs and language teachers. The results have practical implications for language programs planning to redesign the curriculum to include blended learning classes or introduce online CALL materials into the blended curriculum. Since this research provided a rich description of two intermediate-level listening/speaking ESL classes and based on them the hypothetical class, other Intensive English Programs can determine similarities with their listening/speaking classes at the same proficiency level to establish whether the findings would transfer to their context.

This study highlighted necessary elements to implement technology-enhanced blended learning in an Intensive English Program in terms of facilities, technology, teaching materials, and teacher support. First, if the program plans to distribute face-to-face and CALL mode in the similar way as in this study, it needs to provide access to the computer lab for each class at least once a week. Next, the program should decide on an LMS to host online content and choose between commercial systems and freely available ones. In this study, Bill and Grace preferred having LMS materials provided by the textbook publisher to seeking the materials on the Internet. Features of the LMS and type of activities it can provide should also be carefully considered because they influence the perception of technology difficulty and distribution of learning content. For example, the grade book and online assessments were praised as time saving features by teachers in this study while online pronunciation and speaking activities allowed for oral practice in both modes. In this dissertation, online and paper materials were closely connected which helped participants perceive integration between two parts of the class, a very important feature of blended environments. For this reason, the design/choice of materials also needs to be taken into account. Finally, this study showed that my support to teachers positively influenced their experience with the new technology and class format (especially with novice technology users) so a support system should be in place before the new curriculum is implemented.

Teachers who are teaching or preparing to teach a blended language course could learn from the experience of Bill and Grace. They could become familiar with model's features such as: 1) availability of online tools for language practice and assessment, 2) flexibility of combining content presentation/practice in different modes, 3) variety of ways to establish interaction with students and among students around the computer, 4) diversity of teacher roles in two modes. Moreover, teachers could learn how Bill and Grace's experience changed as they grew familiar with the innovation during its first semester of use and note that the technology background did not alter the stages of the innovation-decision process when support was available. Finally, given that characteristics of two teachers, students, setting, and innovation process were described in detail, teachers can draw parallels to see whether the results are applicable to their classes.

Implications for Diffusion of Innovations theory

This study addressed the lack of theoretical background in some blended learning studies (Chenoweth & Murday, 2003; Chenoweth et al., 2006; Scida & Saury, 2006; Green & Youngs, 2001) by using Diffusion of Innovations theory (Rogers, 2003) as a theoretical model. Diffusion of Innovations informed this research in two ways. First, the theory helped to conceptualize the study as the study of blended learning as an innovation because of its novelty: it was the first semester of MyNorthStarLab introduction into listening/speaking classes in IEOP. Second, the theory helped direct the study of innovation towards two of its aspects which, to me, appeared would provide most salient data given the access to the setting and participants I had: important innovation qualities (second research question) and innovation decision stages (third research question).

The study results showed that Diffusion of Innovations can be used to research blended language learning in an ESL program. The use of a commercial LMS, MNSL, in technology-enhanced blended learning classes was found to be an innovation because teachers and students did not have any previous experience with it. Also, it was found that the innovation shared common attributes of other innovations; the innovation was beneficial to use because it saved teachers' time (relative advantage), it caused technical difficulties to students (complexity), it was compatible with teachers' needs (compatibility), it could be tested before use (trialability), and its use could be observed (observability). Finally, two teachers passed through the same innovation stages other potential adopters go through.

Without a theoretical background, these findings would represent isolated pieces of evidence that would be difficult to systematize and apply to other blended language learning contexts. Moreover, by knowing that a teaching practice represents an innovation one could anticipate how the innovation could be perceived by teachers and students and how teachers could interact with it even before the innovation-decision process starts. By stressing the positive innovation qualities and anticipating the negative ones before the innovation is introduced, the change agent is more likely to gain the approval and cooperation of teachers and administrators. In sum, I believe Diffusion of Innovations can guide the research on blended

learning and that applied linguistics can have its place on the list of diffusion research discipline together with sociology, communication, and education.

Implications for blended learning framework

In this study, Neumeier's framework (2005) allowed for a comprehensive description of the blended learning environment and many of its elements. The framework was useful for addressing gaps in understanding how blended models work in terms of teaching materials and methods and participant roles. The description and evaluation of other models could follow the same framework, thus allowing comparison among them. As the framework is applied, the data that are collected can further refine the framework itself. In this study, two of the model's parameters, mode and interactional patterns, can be revisited in the light of study findings.

Regarding the first parameter, mode, the study results indicate that the definition of the lead mode may need to be reexamined. Neumeier lists the following qualities of the lead mode:

- "the learners are guided through the learning process by the lead mode
- the sequencing and organization of content or negotiation of content is done and presented in the lead mode
- often the learners spend most of the time in the lead mode" (2005, p. 167)

However, Neumeier does not specify what happens in situations where not all three criteria are met, as was the case in this study. Here, the data showed the lead modes in two classes differed although the type of instruction and class content remained very similar. In class B the lead mode was influenced by: 1) small amount of MNSL homework assigned and 2) lab meetings being replaced by extra-curricular activities, which in turn shortened the CALL mode time in comparison to class A's. While I agree that it is important to examine the time in each mode, I think that the lead mode should be primarily determined based on the nature of instruction that happens in it. Course content use and organization of instruction should be more prominent features than the time spent in a mode. As a result, Neumeier's definition should place more weight on the first two criteria than it does now. Finally, blended learning

researchers should provide information on course organization and content negotiation/presentation so that the lead mode could be easily determined.

While it is informative to calculate the time in each mode, in my opinion, time is a more important feature of sub-modes. By recording the time students spent on each textbook activity in class as well as on each online activity in the CALL mode, a better description of sub-modes could be given than is the case now. This calculation could be expressed as the proportion of time in a sub-mode over the total mode time to show exactly how language skills practice divided over two modes. As a result, new evidence on value teachers give to certain activities could be obtained and information triangulated with evidence from other sources such as teacher interviews.

Neumeier's discussion of interactional patterns represents the weakest aspect of the framework and could be revisited for two reasons. First, the form of communication determines an interactional pattern so the discussion of this parameter needs to begin with the definition of communication especially when the new agent, the computer, is added to the teaching and learning environment. Although the patterns humans communicate in the face-to-face mode may be obvious (e.g. pair and group work), what constitutes communication between the computer and the human may not be so clear-cut. Does making a selection from a drop-down menu in an LMS grammar activity constitute student-initiated communication with the computer while computer's immediate feedback constitutes a response? If this is the case, definition of communication needs to be extended. Second, Neumeier lists three categories of interactional patterns that revolve *around*, *through*, and *with* the computer (p. 173) but the distinction between them is vague. It is hard to tell the difference between student to student pattern (interaction *through* the computer) and student to computer to different student pattern (interaction *with* the computer). For this reason, I did not employ Neumeier's categorization but adopted it to create two categories of patterns by mode (face-to-face and CALL). All patterns noted in the CALL mode were put into one category. Students' selection or text input in a machine-graded MNSL activity was considered a communication signal and computer's automatic response a returned communication signal.

While I acknowledge that I did not come up with an extended definition of communication and that my classification may have simplified CALL mode patterns, I believe my discussion of interactional patterns is sufficient for the scope of this study. For a more comprehensive treatment of patterns, areas of communication studies and human-computer interaction could be drawn upon.

Directions for future research

While one semester was a sufficient time period for teachers and students to form opinions about the innovation and its attributes, all stages of the innovation-decision process could not be observed during this time. Since Bill started promoting the innovation to his colleagues, there is emerging evidence to suggest that Bill entered the final stage of the process, confirmation stage, but more data need to be collected to validate it. Markee (1997) points out that the innovation takes time to implement and that this time is always longer than expected.

A study building up on the results of this dissertation could continue to follow the same two teachers who would be now considered early innovation adopters. In addition to Bill and Grace, a subsequent investigation could gather data on other teachers and approach the study of the innovation through the experience of the organization (IEOP). Case study that proved a suitable methodology in this research could be employed again to investigate IEOP as the unit of analysis. Furthermore, future research could extend the investigation to other intensive English programs where same or similar LMS technology is used to create the blend. The result could be a multiple case study that compares and contrasts experiences of several programs. An ambitious future study could do a replication of the seminal work *Innovation up close: How school improvement works* by Huberman and Miles (1984). In this multiple case study Huberman and Miles researched 12 educational programs in different areas (urban, suburban, rural), different parts of the US (Midwest, Southwest, Northeast), and with different educational innovations (e.g. reading, social studies, language arts, vocational education, etc) to gather evidence of innovations' application, adjustment, and re-invention. The elaborate study design of these two qualitative research experts could be replicated but

this time focusing on instructional technology innovations of the similar nature as in this dissertation.

Conclusion

To conclude, this dissertation makes a contribution to the fields of computer-assisted language learning and applied linguistics. It described the blended learning model and many of the features previously unaddressed in literature on blended language learning. Case study methodology which incorporated qualitative and quantitative data yielded evidence previous comparison studies were not able to provide. The study established that the use of new computer technology represented an innovation, and provided evidence of innovation characteristics and stages of the innovation diffusion process thus showing that innovations theory can have applications in applied linguistics. Despite few methodological limitations, this dissertation has practical implications for language programs and teachers and theoretical implications for the innovation and blended learning frameworks that informed it.

APPENDIX A

Data Collection Schedule-Part 1   **FALL 2009**

	Week 1 (Aug 24-28)	Week 2 (Aug 31-Sep 4)	Week 3 (Sep 7-11)	Week 4 (Sep 14-18)	Week 5 (Sep 21-25)	Week 6 (Sep 28-Oct 2)	Week 7 (Oct 5-9)	Week 8 (Oct 12-16)
	First teacher training workshop		Student consent forms obtained; Learner training; Student survey 1	Unit 1 starts	Second teacher training workshop		Unit 2 starts	
	Teacher consent forms obtained			Teacher B interview 1		Teacher A interview 1		
				Class and lab observations				

Data Collection Schedule-Continued   **FALL 2009**

Week	Dates			
Week 9	Oct 19-23	Unit 3 starts		
Week 10	Oct 26-30	Student survey 2	Teacher B interview 2	
Week 11	Nov 2-6	Student B focus group	Teacher A interview 2	
Week 12	Nov 9-13	Unit 4 starts Third teacher training workshop		Class and lab observations
Week 13	Nov 16-20	Student survey 3		
	Thanksgiving break	No classes		
Week 14	Nov 30 -Dec 4	Teacher focus group		
Week 15	Dec 7-11	Institutional TOEFL test	Teacher A interview 3 Teacher B interview 3 Teacher 5 interview	
	Dec 14-18		Administrator interview	

APPENDIX B

Interview and focus groups questions

I Teacher interview questions

Interview 1: Bill
A. Comparison between classes
1. Can you talk about the class last Fall and this Fall?
Address: class structure (two lab meetings instead of one, a different computer lab set up), choice of activities (what to do in the lab, what online-how do you choose activities), how you teach the class, student involvement
What is similar?
What is different?

Is there anything you want to do differently than last Fall?

2. How do you feel about MNSL at this point? This is your third semester using it-- (pilot in Sp 08, semester F 08). How is this previous experience affecting your present use?

Are there any features of MNSL that you have not use but would like to?
How do you choose when to assign a pronunciation and when a speaking or listening activity in MNSL?

Last Fall it was very time-consuming for you to provide student feedback. How is giving feedback going this time?

Did students receive enough instruction on how to use MNSL? Do they need more?

3. Did you teach a LS class this summer? If yes, did you use the lab? How is the fact you have MNSL affecting your teaching of a LS class? (as opposed to not having a lab at all or working on other materials in the lab)

B. Teacher workshop on MSNL
Can you talk about this? Why did you initiate this? Do you feel other teachers need help?
How did the workshop go?
What is the best way to help teachers?
Should there be more workshops? If yes, what should be covered in them?
How do other teachers perceive you?
Now I'm helping you when you have questions. What are you going to do when I'm not here to help?

C. Things I observed in class
Last week in class, I observed you say: I want perfect pronunciation in this room. Can you talk about this… Why do you want perfect pronunciation from students?

Do you think students do better when they review in class the material they did in MNSL? Can you tell that students perform better? Do you still have to explain pronunciation although they have practiced this online? In ideal situations? Should you be able to go faster through materials they covered online? How do you fell when they do not know something they practiced in MNSL?

Interview 2: Bill
A. Feedback
Talk to me about giving feedback to students.
Type of feedback- written, just score. Why not spoken?
What do you address in the feedback?
Are you requiring students to re-record answers? Why/ why not?
Some teachers may be discouraged from assigning the exercises where they need to provide feedback because this takes a lot of time. What kind of advice would you give to them?

Examples of activities where feedback was provided:
Speaking-Unit 2-Integrated task-Lily's story
Pronunciation-Unit 2 and 3

B. Homework
What are you assigning for homework from MNSL? What from the book?

C. AT tests
You did both ATs in MNSL and not paper tests. Tell me about this choice.

D. Advice to other teachers
What would be the advice to give to teachers who are new to MNSL and are planning to use it with their class?

What can be done to assist our LS instructors in the process of using MNSL?
How can our LS teachers be helped?

Overall
Are you learning something new about MNSL at this point?

What would be the single greatest advantage of MNSL? What would be its greatest disadvantage?

Is the combination of class and online work adding to instruction? Why? If yes, how?

E. Lab
In the first interview you told me you preferred two lab days to one. How do you feel about this at this point? Do you have enough time in the class?

In the future, would you prefer to have it once a week, two times a week, or more times a week?

I noticed that you give a lot of individual instructions to students in the lab. You go around and talk to almost everyone. What is your role in the lab? (what about the class?)

How do you like lab days in comparison to class days?
What do you like about lab days?
What do you dislike about lab days?

In your opinion, do students benefit from the lab?
Who are the students that benefit the most?

There is a data projector connected to the teacher's computer in 312. Do we need a lab that has a projector or we can have a class in a lab without one?

I noticed that some students stayed after the end of the class to complete work (Nov 3-lab, Oct 23-Lab). Tell me your thoughts on this.

F. Questions based on observations (all classes and labs up to Nov 6)

I was in the class when they started preparing their ads in Unit 1-group activity. I observed just the first part of it but did not get to see the final production.

How did it go? What was their production like? What was the main challenge? Are students used to working in groups? Were students given enough time? Did they understand instruction? Correct students?
For group work activity, do students need more scaffolding?

Unit 2-role play. Did you do it?

I observed this when they were preparing ads in Unit 1. When given a chance to speak, students do not speak English- How do you feel about this? What can be done about this?

The very first activity you did from the book was this one (show). You were in the lab and then after discussion you directed students to the computers to do Listening 1. What do you think about having 312 lab 5 days a week and conducting classes here? This way, students could use computers every class if necessary.

I observed that you go quickly over activities Ss completed in MNSL in class (Unit 2-Listening, Lily's story)
I noticed that students are given listening exercises to do for homework in MNSL and mark answers in the book. How has that been working for you?

The class does not have time to complete listening. T told them they will check in the lab. Did they check listening on page 22 last time in the lab?

Class observation-Unit 3, Listening for main ideas and Listen for details (p. 38 and 39). The class is not very responsive. Students do not seem engaged. Why? Not interested or it is too difficult.

G. Students
I observed on several occasions that you pay attention to disruptive students and check what they are doing, making sure they are following and not talking with each other. Talk to me about this. T spends a lot of class time making sure weak and unmotivated students are on task.

I observed that you often write the number of incomplete activities on the board. Is this helpful? What is the effect of this on students?

Speculation about ideal situation: Let's imagine. Would the class be different if students were more motivated--did all the work in MNSL and in the book, paid attention in class and did not speak Chinese? How?

In class you mentioned that student S always works quickly. Is he ahead of other students? Can you tell me about the quality of his work? Does he finish quickly because he is motivated or he just wants to get through? Not giving him enough work may be a missed opportunity for this student.

Class structure
Usually at the beginning of the class, you engage in a small talk is with students some 10-15 min of the class.

T: "Everything takes longer in this class. " Students are slow to get started in the lab.

Do you think students do better when they review in class the material they did in MNSL?

Interview 3: Bill
Training
The first week of the semester, we had a teacher training workshop about the introduction to MNSL. We were in the LA computer lab and we went over how to set up a course and enroll students. I also showed some main features. Then, at the end of September, you invited LS teachers for a meeting in the 312 lab to show your course and answer questions. Finally, at the beginning of November, we met again in 312 to share ideas on how teachers use MNSL in their classes.

What do you think about these workshops and meetings?

Do you think teachers had enough chances to observe MNSL in these meetings so they could use it by themselves?

What can be done to improve teacher and student experience with MNSL? What kind of support is necessary?

What kind of training should be provided to students? Who should provide training?

If you were asked to provide training before and/or during the next Fall semester and to be the resource person, how would you feel?

Curricular innovation model & stages teachers go through

Think of the time when you used MNSL for the first time-this was the first pilot in Fall 07 and involved only one unit-Long-necked women. Then in Fall 08, your class was the only class that used MNSL for the whole semester. This semester, Fall 09 other classes have used it too. We can say that you have been around this technology for some time now.

Can you talk to me about the stages you went through from your first contact with MNSL to the present moment?

How have you changed?
Did you have enough time to try out MNSL lab? Would you need more?

The class had the online and face-to-face component. Has the fact you had an online component changed the way you teach the class? (Change in teaching philosophy/methods)

What is a single biggest advantage of combining classroom instruction with online instruction in MNSL?

Questions based on observations (after November 6)
Role plays about roommates. You were in Durham and gave students cards with role play. I observed their preparation and several pairs performed.

Why did you do role-play with roommates? How did it go?
How did the other role plays go? I observed only 3.

I observed students speaking Chinese as they were preparing role plays.
I appeared to me that students were having a good time.

There was an activity in the book but you did not do it (see which one). Ask about other role plays from the book they may have completed.

Material covered

How far in the book did you get? (Note: students completed British/American English unit on Friday, Dec 4)

What are you working on this week (the last week of the semester)?

At the LS meeting, the administrator suggested students not meeting in the class and doing online activities on their own. What do you think of that?

Issues
Everything takes longer in this class. Students will not redo activities in MNSL when told to. Does students' proficiency level have to do with this?
The classes may not have gone the way you planned. What would need to happen for class to go smoothly?

MNSL
Are you learning something new about MNSL at this point?

What is the biggest advantage of MNSL?
What is the biggest shortcoming of MNSL?

Value of the activities:
Speaking activities? For speaking
Pronunciation activities? For pronunciation
Listening activities? For listening

Are there features/activities in MNSL that you have not used but would like to?

Do you have any comments for the designers of MNSL? Are there things that could be improved?

Future
What advice would you give to teachers in other Intensive English Programs, who are thinking of using MNSL for the first time?

If you are to teach the same class again next Fall, would you make any changes to it? Address class organization, online activities, lab meetings, and teaching methods.

What do you think about having a platform such as MNSL in other skills classes?

Next Fall semester, IEOP may use NorthStar textbook series and online materials again. I your opinion, how likely is this to happen? There is opposition to this series from some teachers. How will that influence the decision to use the series?

Interview 1: Grace
Background
Tell me a little bit about:
Education (degree)
Previous teaching experience
Teaching in IEOP
Teaching a LS course in IEOP

Teaching
What constitutes good teaching for you?
What are some teaching methods you are using in the classroom?
What kind of teaching materials and activities have the highest pedagogical value?
How do your students learn best?

Technology
Tell me a little bit about your use of technology outside of class.

Have you received any technology training?

What do you think about the use of technology for language teaching and learning?

Is there a need for using computers for language teaching in IEOP? If yes, where does this
need come from?

Previous experience with using technology for language teaching: answered in e-mail

Taking classes to the lab: answered in e-mail (Spring 09). Can you describe what you did in
the lab? By skill…Summer 09- LS class

Has the way you organize the class in the lab changed from Spring 09 to Summer 09?

LMS
Is an LMS/content management system (WebCT, Moodle) a new technology for you?

Is a commercially made LMS a new technology for you (MNSL)?

Is there a need for using a system like WebCT or Moodle or MNSL in IEOP? Where does
this need come from?

Lab
Yesterday was the first time students could use MNSL in the lab. How did the lab go?

What are you going to do in the labs? Talk to me about some of your plans. This may not be
what you actually do- what are you thinking at this point you'll do?

How are you planning on structuring the class?

You have the lab available twice a week- how is that affecting the structure of the class?

How are you going to choose the activities in MNSL?

At this point, how difficult is it for you to use MNSL?

At this point, how difficult is it for students to use MNSL?

What are some advantages of using MNSL in your LS?
Disadvantages?

Do you anticipate that the use of MEL will change how you teach the class or how the class is structured?

Blended classes
What are some advantages of having classes meet in the lab (for both teachers and students) and in the classroom?
Some disadvantages?

Interview 2: Grace
Feedback
Talk to me about giving feedback to students.
Type of feedback-spoken, written, just score- Sometimes written and sometimes just score
What do you address in the feedback?
Time involved --Is the time the teacher spends giving feedback in MNSL, time well spent?
Should you be doing something else instead?
Focus on accuracy - If there was an error--how did you react?
Are you requiring students to re-record answers? Why/ why not?

Questions based on observations (all classes and labs up to Oct 24)

Unit 1, class, Teacher explains: "While in class, I want you to do as much opportunity to speak." T: "I want them to do a speaking activity (ads on page 10). I should have given vocabulary for homework". (Sep 21, class) Why?

T: "The time goes so quickly" (Sep 21, class, Sep 25, class) Why do you feel this way? Do you feel you don't have enough time in the classroom?

In the first interview you mentioned that this may be an issue and mentioned having Ss do activities for homework those that they don't have time to do in class.
Are you assigning listening activities for homework? This would be one of the changes, you anticipated.

After one of the first class observations, you told me: it is difficult to get the students speaking in class - Why? Do you still feel the same? What can be done about this?

Group work- Unit 1-creating the ad. How did it go? Unit 2-role play. How did it go? Focus on accuracy/ fluency? Students speaking Chinese in class?

I observed that you do a lot of pair and group work in class. Talk to me about this. Then you call on individual students again. Why?

Change in comfort level:
T tells me: "I like MNSL more now that I'm familiar with it." What was your initial reaction? What is it now? How has this change happened? (Oct 6, lab)

S told me after class: "I think I'm teaching the second unit better because I'm familiar with the book." What are the changes you are making from Unit 1 to Unit 2? (Lab, Oct 1)

First lab (Sep 22) XX said: "I'm so glad you are here. Now other teachers are asking ME how to do things. I say thanks to Maja I can do this….. Otherwise I wouldn't have known." Why were you glad? How do you feel about other teachers asking you how to do things?

In the first interview you said I took you more time to prepare than it should. Also, navigating to the grade book was a challenge. Still? At this point, how difficult is it for you to use MNSL?

Choice of activities
T tells me they worked on vocabulary in class the previous day (Lab Oct 1) and spent a lot of time on vocabulary so it is good that students are working on vocabulary in the lab today.

Students have covered Grammar and Pronunciation materials in the lab on Tuesday (the day before). The class goes over the grammar materials very quickly in class. (Oct 14, class) T says: "Let's do this quickly"

Teacher does not like spending much time on grammar and vocabulary. After the lab T tells me: "I don't like to spend a lot of time on vocabulary and grammar". I like speaking and pronunciation part more. (Oct 6, Lab)

You did both ATs in MNSL. Tell me about this choice. In the first interview you mentioned it would be a big bonus to have speaking test on line.

How are you choosing the activities in MNSL?
What would be the single greatest advantage of MNSL?

Lab
I noticed that you don't give a lot of instructions to students in the lab. You don't prompt them at all to do their work. There was one lab I observed where you told them to log in and that was all (Lab, Oct 1). Students know their way around and know what to do.

T: "I was so happy when I came in [to the lab] yesterday. You are the most hardworking class. I love this class. Keep it up!" (said in relation to Lab Oct 6)

How do you like lab days in comparison to class days? You told me you like lab days (I'm so tired"). Why? (Oct 6, lab)

Do students benefit from the lab?
Who are the students that benefit the most?

Students
Some Ss finished the material half way through the class. T tells me: "They are getting so efficient"-why is this the case? (Oct 6, lab); I'm running out of activities to assign to this class". (Oct 15, lab)

Unit 2- new activity. T tells me before class" "I have assigned one activity (Discussion board) I have not done before. I'm curious what they will do with it". How did the students do?

Homework
How much homework is assigned? From the book? From MNSL?

 T tells me that students are not given homework in MNSL.(Oct 15_lab). Students who don't finish lab work should do it for homework. In some of class observations, I noted that they were given something for homework.

Lab
What is your role in the lab? What is your role in the classroom?

You have the lab available twice a week-- how is that affecting the structure of the class?

Is the choice of activities in the class affected by the lab?

Is the time in the lab, the time well spent?

What do you like about the lab day?
What do you dislike about the lab day?

Is the combination of class and online work adding to instruction? Why? If yes, how?

There is a data projector connected to the teacher's computer. What do you think about its use in the lab?

Interview 3: Grace
What do you think about meeting in the lab two times a week?

If you were to teach LS again next Fall and the same materials are used, how many lab meetings would you like to have?

What is a single biggest advantage of combining classroom instruction with online instruction in MNSL?

Curricular innovation model & stages teachers go through
Think of the lab when you used MNSL for the first time-this was at the beginning of the semester. Today was the last day of class. Can you talk to me about the stages you went through from your first contact with MNSL to the present moment?

How have you changed? Change in materials, methodological skills, and pedagogical values. Is there evidence for any of these things?

Did you have enough time to try out MNSL lab? Would you need more time? (trialability)

Did you have enough time to observe MNSL lab use before you started using it? Would you need more time? (observability)

The class had the online and face-to-face component. Has the fact you had an online component changed the way you teach the class?

Every class period I observed, students were doing at least one pair or group activity. If there were no lab meetings, would the number of pair/group activities stay the same?

Material covered
In the second interview, you mentioned that Integrated listening was hard for students and they always needed help with it. I observed one integrated listening activity that was hard (p. 40-42 in the book). Why is this the case? How did Integrated listening in Unit 4 go?

How far in the book did you get? (Note: students completed AT for unit on Language, on Thursday, Dec 3)

What were you working on this week (the last week of the semester)?

At one LS teachers' meeting, a suggestion came up that students may not need to be meeting in the class and could be doing online activities on their own. What do you think about that?

MNSL

Making connection between class and lab. She mentioned this once in class when she wanted to point out a common mistake (but no more). Can the students see the connection between the materials in the book and online? (Integration--not a lot of this observed in class or lab)

What is the biggest advantage of MNSL?
What is the biggest shortcoming of MNSL?

Value of the activities:
Speaking activities? For speaking
Pronunciation activities? For pronunciation
Listening activities? For listening

Are you learning something new about MNSL at this point?

Are there features/activities in MNSL that you have not used but would like to?

Do you have any comments for the designers of MNSL? Are there things that could be improved?

Training

The first week of the semester, we had a teacher training workshop about the introduction to MNSL. We were in the LA computer lab and we went over how to set up a course and enroll students. I also showed some main features. Then, at the end of September, Bill invited LS teachers for a meeting in the 312 lab to show his course and answer questions. Finally, at the beginning of November, we met again in 312 to share ideas on how teachers use MNSL in their classes.

What do you think about these workshops and meetings?

Do you think teachers had enough chances to observe MNSL in these meetings so they could use it by themselves?

What can be done to improve teacher and student experience with MNSL? What kind of support is necessary?

What kind of training should be provided to students? Who should provide training?

Future

What advice would you give to teachers in other Intensive English Programs, who are thinking of using MNSL for the first time?

If you are to teach the same class again next Fall, would you make any changes to it? Address class organization, online activities, lab meetings, and teaching methods.

What do you think about having a platform such as MNSL in other skills classes?

Next Fall semester, IEOP may use NorthStar textbook series and online materials again. I your opinion, how likely is this to happen? There is opposition to this series from some teachers. How will that influence the decision to use the series?

II Administrator interview questions
0. In what ways is IEOP a typical IEP program?

1. MyNorthStar series has been used in LS classes for several Fall semesters. However, IEOP used the same series with the online materials for the first time this semester (Fall 09). How was it decided to use the books with online materials?

2. From the administrator's perspective, are there any advantages of using MNSL online materials over the books without the online materials?

3. From the administrator's perspective, what is a single biggest advantage of combining classroom instruction with online instruction in MNSL?

4. From my class and lab observations and interviews with a number of teachers I get a sense that there was a wide variety of ways how MNSL was used (how often it was used, which activities were assigned, if MNSL was an essential part of the class or not). Do you think this is typical for an IEP program that starts using materials for the first time?

5. Training: The first week of the semester, we had a teacher training workshop about the introduction to MNSL. We were in the LA computer lab and we went over how to set up a course and enroll students. I also showed you some main features. Then, at the end of September, XX invited LS teachers for a meeting in the 312 lab to show his course and answer questions. Finally, at the beginning of November, we met again in 312 to share ideas on how teachers use MNSL in their classes.

What do you think about these workshops and meetings?

What kind of training should be provided to students? (Who should provide training?)

6. What can be done to improve teacher and student experience with MNSL? What kind of support is necessary?

6a. Some teachers may be hesitant to use MNSL or any new technology for that matter. Do you think teachers should be left to choose if they want to use the technology or not OR this decision should be made on the program level and should not be left to individual teachers to decide?

If decision on the program level to use technology, how can you make sure everyone is using the technology?

7. What advice would you give to administrators in other Intensive English Programs, who are thinking of using MNSL for the first time?

8. Next Fall semester, IEOP may use NorthStar textbook series and online materials again. In your opinion, how likely is this to happen given the opposition from some teachers?

III Student focus group questions
1. What do you think about having you LS class in the computer lab two days a week?

2. Here is an example of pronunciation activity (give out a piece of paper with screen shots of two pronunciation activities). Wait for participants to examine the activities. How are pronunciation activities helping your pronunciation?

3. Here is an example of a speaking activity (give a piece of paper with screen shots of two pronunciation activities). How are these activities helping your speaking?
If no one mentions teacher feedback, ask: What do you think about the teacher writing comments about your speaking and pronunciation?

5a. What is one good thing about the class meeting both in the classroom and computer lab?

5. How is this (the fact that the class meets in the classroom and computer lab) helping your English?

6. At the end of each unit, there is a test. You have completed two tests so far. What do you think about having the test in MyNorthStarLab?

7. Which activities in the classroom are helping you with speaking?
   Which activities in the classroom are helping you with pronunciation?

8. This is an example of a listening activity (give a piece of paper with screen shots of two listening activities). How are these activities helping your listening?

9. Sometimes you did some activities in MyNorthStarLab in the computer lab and then reviewed them in class (did them again quickly). What do you think about doing activities completed in MyNorthStarLab, again in class quickly for review?

IV Teacher focus group questions
1. How often have you used MyNorthStarLab in the computer lab?
   How often have you assigned MNSL activities for homework?

2. There are a lot of materials online. How did you choose which MNSL activities to assign?

3. Let's talk about pronunciation and speaking activities in MNSL. In these activities students record their voices and the teacher can listen to student responses. (Show screen shots of sample activities)

Have you assigned these activities?

Have you graded them?
How did you grade them- gave a numerical score, gave written comments, recorded oral comments? How did you decide on the kind of feedback to provide?

4. What is a single biggest advantage of combining classroom instruction with online instruction in MNSL?

5. For how many of you is MNSL a new technology--something you had not used before the Fall semester started? (Report the count)

6. Some of you told me you were apprehensive about using the platform at first. How many of you felt like this at the beginning of the semester? (Report the count)
How do you feel about it now?
(If participants say they are more comfortable now, ask what made them more comfortable?)

7. How difficult is it to use MNSL? (Ask this even if answered in Q 6)

8. The first week of the semester, we had a teacher training workshop about the introduction to MNSL. We were in the LA computer lab and we went over how to set up a course and enroll students. I also showed you some main features. Then, at the end of September, XX invited LS teachers for a meeting in the 312 lab to show his course and answer questions. Finally, at the beginning of November, we met again in 312 to share ideas on how teachers use MNSL in their classes.

What do you think about these workshops and meetings?

What kind of training should be provided to students?

9. Next Fall semester, IEOP may use NorthStar textbook series and online materials again. I your opinion, how likely is this to happen?

10. What can be done to improve teacher and student experience with MNSL? What kind of support is necessary?

11. What advice would you give to teachers in other Intensive English Programs, who are thinking of using MNSL for the first time?

12. What is your role in the classroom and what is your role in the computer lab?

APPENDIX C

Code definition	Code	Code Definition
Lab	Location-lab	Place, Time in computer lab (in hours or days a week)
preference	Location-lab-prefer	Preference for number/length of meetings. Why is this location good?
Research question 2: Innovation		
Novelty	New	Quality of being new. Novelty of blended learning instruction or novelty of MNSL(LMS) use.
Blended learning*	New-BL	Blended learning as new type of instruction
MNSL (MyNorthStarLab)	New-MNSL	MNSL(LMS-learning management system) as a new technology or as new materials
Attributes		
Advantage		
Blended learning*	Advantage-BL	Benefits of blended learning
MNSL (MyNorthStarLab)	Advantage-MNSL	Benefits of MNSL
Disadvantage		
Blended learning*	Disadvantage-BL	Drawbacks of BL
MNSL (MyNorthStarLab)	Disadvantage-MNSL	Drawbacks of MNSL
Complexity		
Complexity of MNSL use	Complexity-MNSL	Overall difficulty/ease of MNSL use
Technical difficulty	Technical difficulty	Specific technical problems
Things to learn in MSNL	Things to learn-MNSL	Features/aspects of MNSL the teacher would like to learn
Trialability	Trial	Comments about trying out MNSL before using with class
Observability	Observe	Observing others using MNSL before using with class
Research question 2: Innovation (Change)		Any change that is mentioned (in the ease of use, learning, belief)
teacher	Change-teacher	
Technology comfort level change	Change-teacher-comfort	How comfort level with technology changed
Feelings about change	Change-teacher-feelings	Exact words/phrases used to describe how the teacher felt
Change in teaching methods	Change-teacher-methods	Change in instructing class

List of codes

Code definition	Code	Code Definition
Research question 1: Blended learning model		
integration	Integration	Connection between classroom and lab work
learning content		
Textbook materials	Textbook materials	Comments about <u>particular</u> textbook activities/units/the book
Online materials (MNSL)	Online materials	Comments about <u>particular</u> online activities/online content/features (e.g. gradebook)
Value	Online materials-Value	What is the value of online materials?
Listening	Online materials-Value-List	Value specifically for listening comprehension
Speaking	Online materials-Value-Speak	Value specifically for speaking
Pronunciation	Online materials-Value-Pronun	Value specifically for pronunciation
teaching methods		
in classroom	Teaching methods-classroom	How is <u>instruction</u> conducted? Comments on teaching in classroom, what students are learning, type of work (pair/group/individual), addressing errors
in lab	Teaching methods-lab	Comments on teacher presence in lab, what students are doing/learning, type of work (independent)
participant roles		<u>Who are</u> the people involved?
teacher	Role-teacher	What is the role of the teacher?
students	Role-students	What is the role of the students? Other student characteristics: maturity, motivation, language level/ability, stronger/weaker performance
location		<u>Physical space</u>
classroom	Location-classroom	Place, Time in classroom (in hours or days a week)
preference	Location-class-prefer	Preference for number/length of meetings. Why is this location good?

Code definition	Code	Code Definition
students	Change-students	Any kind of change in students- how fast they are learning, change of what they are doing in class
Research question 2: Feedback (Relative advantage)		Only <u>online</u> feedback
Type of (online) feedback		3 different types of feedback in MNSL
written	Feedback-written	Feedback is text
spoken	Feedback-spoken	Feedback is oral
score	Feedback-score	Feedback is numerical score
Value of feedback	Feedback-value	What is the value of any type of feedback?
Student use of feedback	Feedback-student-use	Do students use feedback? Who uses the most?
Advantages of giving feedback	Feedback-advantage	Benefits of providing feedback
Disadvantages of giving feedback	Feedback-disadvant	Disadvantages of providing feedback
Other topics: Future BL* and RQ3:Attitudes		
Recommendation to others	Future-recommend	Would teacher recommend MNSL or use it again?
Change in future MNSL use	Future-change	How would future MNSL use change?
Use of LMS in other classes	Future-other classes	Could MNSL/LMS be used in other classes?
Likelihood of future MNSL use	Future IEP use	Will MNSL/NorthStar series be used again in IEOP?

*Blended learning is defined as a combination of face-to-face and online learning

REFERENCES

Adair-Hauck, B., Willingham-McLain, L., & Youngs, B. E. (1999). Evaluating the integration of technology and second language learning. *CALICO Journal,* 17(2), 296-306.

Banados, E. (2006). A blended-learning pedagogical model for teaching and learning EFL successfully through an online interactive multimedia environment. *CALICO Journal,* 23(3), 533-550.

Barr, D., Leakey, J., & Ranchoux, A. (2005). Told like it is! An evaluation of an integrated oral development project. *Language Learning and Technology,* 9(3), 55-78.

Bax, S. (2003). CALL—past, present and future. *System*, 31, 13-28.

Bagozzi, R. P., Davis, F. D., & Warshaw, P. R. (1992). Development and test of a theory of technological learning and usage. *Human Relations*, 45(7), 660-686.

Bliuc, A., Goodyear P., & Ellis, R. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *Internet and Higher Education*, 10, 231-244.

Chambers, A., & Bax, S. (2006). Making CALL work: Towards normalization. *System,* 34, 465-479.

Chapelle, C. A. (2003). *English language learning and technology: Lectures on applied linguistics in the age of information and communication technology.* Amsterdam: John Benjamins.

Chenoweth, N. A., & Murday, K. (2003). Measuring student learning in an online French course. *CALICO Journal,* 20(2), 285-314.

Chenoweth, N. A., Ushida, E., & Murday, K. (2006). Student learning in hybrid French and Spanish courses: An overview of language online. *CALICO Journal,* 24(1), 115-145.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches.* Sage Publications. Thousand Oaks: CA.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Duff, A. P. (2008). *Case study research in applied linguistics*. Lawrence Erlbaum Associates. New York: NY.

Echavez-Solano, N. (2003). *A comparison of student outcomes and attitudes in technology-enhanced vs. traditional second-semester Spanish language courses.* Unpublished doctoral dissertation, The University of Minnesota.

Eisenhardt, M. K. (2002). Building theories from case study research. In Huberman. M. and Miles. B.M. (Eds.), *The qualitative research companion*. (pp. 5-35). Sage Publications. Thousand Oaks: CA.

Felix, U. (2005). Analysing recent CALL effectiveness research-towards a common agenda. *Computer Assisted Language Leaning*. 18(1-2), 1-31.

Graham, C. (2006). Blended learning systems: Definitions, current trends, and future directions. In C.J. Bonk. and Graham, C. R. (Eds.), *The handbook of blended learning: Global perspectives, local designs.* (pp. 3-21). Pfeifer, San Francisco: CA.

Graham, C., & Robinson, R. (2007). Realizing the transformational potential of blended learning: Comparing cases of transforming blends and enhancing blends in higher education. In A.G. Picciano. and Dziuban, C. D. (Eds.), *Blended learning research perspectives.* (pp. 83-110). Sloan-C.

Green, A., & Youngs, B. E. (2001). Using the web in elementary French and German courses: Quantitative and qualitative study results. *CALICO Journal,* 19(1), 89-123.

Hauck, M. & Stickler, U. (2006). What does it take to teach online? *CALICO Journal*. 23(3), 463-475.

Henrichsen, L.E. (1989). *Diffusion of Innovations in English Language Teaching: The ELEC Effort in Japan, 1956-1968.* Greenwood Press, New York.

Hubbard, P. (2004). Learner training for effective use of CALL. In S. Fotos & C. Browne (Eds.), *New perspectives on CALL for second language classrooms* (pp. 45 – 68). Mahwah, NJ: Lawrence Erlbaum.

Huberman, M. & Miles, M. (1984). *Innovation up close: How school improvement works.* Plenum Press. New York: NY.

IEOP Faculty Handbook, Fall 2007 (2007). Intensive English Orientation Program, Iowa State University.

Karlsson, L., Kjisik, F., & Nordlund, J. (2007). Language counselling: A critical and integral component in promoting an autonomous community of learning. *System*, 35(1), 46-65.

Lam, W.S.E. (2000). L2 literacy and the design of the self: A case study of a teenager writing on the Internet. *TESOL Quarterly*, 34, 457-482.

Larson, D.K. & Sung, C-H. (2009). Comparing student performance: Online versus blended versus face to face. *Journal of asynchronous learning networks*, 13 (1), 31-42.

Laumakis, M., Graham, C., & Dziuban, C. (2009). The Sloan-C pillars and boundary objects as a framework for evaluating blended learning. *Journal of asynchronous learning networks*, 13 (1), 75-87.

Levy, M., &. G. Stockwell. (2006). *CALL Dimensions: Options and Issues in Computer-Assisted Language Learning.* New Jersey: Lawrence Erlbaum.

Lorenzo, G., & Moore, J.C. (2002). The Sloan Consortium report to the nation: Five pillars of quality online education. Accessed on September 1, 2010 from http://sloanconsortium.org/publications/freedownloads

Markee, N. (1997). *Managing curricular innovation*. Cambridge, UK: Cambridge University Press.

Miles, M. & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage Publications. Thousand Oaks: CA.

Merriam, S.B. (2002). Introduction to qualitative research. In Merriam. S.B. (Ed.), *Qualitative research in practice: Examples for discussion and analysis* (pp.3-17). San Francisco: Jossey-Bass.

Moore, M.G., & G. Kearsley. (1996) *Distance Education: A Systems View.* Belmont: Wadsworth.

Mozzon-McPherson, M. (2007). Supporting independent learning environments: An analysis of structures and roles of language learning advisers. *System*, 35(1), 66-92.

Murday, K., Ushida, E., & Chenoweth, N. A. (2008). Student learning in hybrid French and Spanish courses: An overview of language online. *Computer Assisted Language Learning,* 21(2), 125-142.

Murray. L. G. (1999). Autonomy and language learning in a simulated environment. *System*, 27, 295-308.

Neumeier, P. (2005). A closer look at blended learning: Parameters for designing a blended learning environment for language teaching and learning. *ReCALL* 17 (2), 163–178.

Picciano, A. G. (2009). Blending with purpose: The multimodal model. *Journal of asynchronous learning networks*, 13 (1), 7-18.

Reinders, H. (2007). Big brother is helping you: Supporting self-access language learning with a student monitoring system. *System*, 35(1), 93-111.

Rogers, E. M. (2003). *Diffusion of innovations* (5th edition). New York, NY: Free Press.

Ross, B., & Gage, K. (2006). Insights from WebCT and our customers in higher education. In C.J. Bonk. and Graham, C. R. (Eds.), *The handbook of blended learning: Global perspectives, local designs.* (pp. 155-168). Pfeifer, San Francisco: CA.

Rubin, J. (2007). Introduction to special issue: Language counseling. *System,* (35), 1-9.

Scida, E. E., & Saury, E. R. (2006). Hybrid courses and their impact on student and classroom performance: A case study at the University of Virginia. *CALICO Journal,* 23(3), 517-531.

Sloan Consortium website. Accessed on September 1, 2010 from http://sloanconsortium.org/

Solorzano, S. H., & Schmidt, P.L. J. (2009). *NorthStar 3, Listening and Speaking* 3rd Edition. White Plains, New York: Pearson Longman.

Stracke, E. (2007) A road to understanding: A qualitative study into why learners drop out of a blended language learning (BLL) environment. *ReCALL.* 19(1), 57-78.

Thorne, K. (2003). *Blended learning: How to integrate online and traditional learning.* Kogan Page. London: UK.

Todd, W.R. (2006). Continuing change after the innovation. *System*, 34, 1-14.

Ushida, E. (2005). The role of students' attitudes and motivation in second language learning in online language courses. *CALICO Journal,* 21 (1), 49-78.

Wall, D. (2000). The impact of high-stakes testing on teaching and learning: can this be predicted or controlled? *System*, 28, 499-509.

White, C. (2006). Distance learning of foreign languages. *Language Teaching*, 39, 247-266.

Yin, R. K. (2003). *Case study research: design and methods*. Sage Publications. Thousand Oaks: CA.

Zapata, G. C. (2002). *Teaching assistants' perceptions and use of instructional technology in L2 Spanish Classrooms.* Unpublished doctoral dissertation. The Pennsylvania State University.

Zapata , G. C. (2004). Second language instructors and CALL: A multidisciplinary research framework. *Computer Assisted Language Learning*. 17(3-4), 339-356.