

**VOICE VS. TEXT CHATS: THEIR EFFICACY FOR LEARNING  
PROBING QUESTIONS BY NON-NATIVE SPEAKING  
MEDICAL PROFESSIONALS IN ONLINE COURSES**

by Olga Ellis

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A Dissertation Submitted to the Faculty of the  
GRADUATE INTERDISCIPLINARY DOCTORAL PROGRAM IN  
SECOND LANGUAGE ACQUISITION AND TEACHING

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2012

**THE UNIVERSITY OF ARIZONA**  
**GRADUATE COLLEGE**

As members of the Dissertation Committee, we certify that we have read the dissertation,  
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## ACKNOWLEDGMENTS

First and foremost, I would like to thank my Chair of the Dissertation Committee, Dr. Robert Ariew. Your unparalleled experience, scholarly insight, and immeasurable support have been invaluable and enormously appreciated throughout the project. I could not have succeeded in this endeavor without your guidance, encouragement, flexibility, and understanding. Thank you, sincerely.

I would also like to extend my gratitude and thanks to my Dissertation Committee Members, Dr. David Betts and Dr. Jonathan Reinhardt. Your professional advice and expertise have sustained my progress through the project from the beginning to the end. For your substantial assistance in my success with this study, I thank you, as well.

Finally, I would also like to extend my heartfelt thanks to the faculty and students who participated in this research study. I certainly could not have done it without you. You will always have a special place in my heart. Thank you.

## **DEDICATION**

I dedicate this achievement to my friend, my partner,

the love of my life, and my husband

Rick...

Your love, patience, understanding, and support

made me the person I am today.

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## ABSTRACT

Through an English for Specific Purposes (ESP): Communication in Nursing online course, the present study examines the efficacy of synchronous voice-based and text-based chats as instructional and communicative modes in learning to use open questions for probing in therapeutic dialogues by non-native speaking (NNS) participants, students of a nursing college at a major university in the Philippines.

The study draws on a plethora of research findings in online education, ESP online course designs, text-based vs. voice-based synchronous chats and their place in learning online, efficacy and application of text and voice-based communicative practices in online courses designed for NNS students, issues related to medical discourse, humanization, and patient-centeredness of communicative encounters (e.g., between a nurse/provider and a patient/client). The study examines the following questions: (1) which interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for everyday healthcare-related communicative settings in an online course; (2) what evidence is there to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa; (3) which interactional mode – voice or text – is perceived by the online-course participants as more effective for learning to use probing questions in therapeutic dialogues and healthcare-related communicative encounters.

The results of the analyses supported many of the hypotheses for both research conditions. More specifically, they supported the predicted efficacy of both forms of online instruction and communication – voice-based and text-based – in learning probing techniques by the online course participants; furthermore, a possibility of the two-way language-skill transfer modes – from text-to-speech and from speech-to-text – was suggested in learning second language online through application of synchronous chat sessions. Although more research is necessary in the above-mentioned areas of language learning in the context of online education, the research findings of the present research study are highly suggestive of effective implementation of voice-based and text-based synchronous chats in ESP online course designs for NNS speaking students.

## **CHAPTER I**

### **INTRODUCTION**

Chapter I of the project states the problem of the study – computer-mediated communication. It further situates the purpose of the study within the focus areas of the research questions that are extensively addressed in Chapter II of this project where an extensive literature review of current research findings in these areas is provided. After that, Chapter I presents the research questions with their respective hypotheses. Finally, a brief overview of each chapter of the project is given.

#### **1.1. Statement of the Problem: Computer-mediated Communication**

Computer-mediated communication (CMC) has been transforming the traditional views of face-to-face (F2F) language learning, shifting the focus to world-wide, rather than localized, opportunities for language learners to practice languages with native speakers and expert users in other countries. The Internet not only made these opportunities available but also turned them into indispensable tools of language learning in today's society. Synchronous and asynchronous forms of communication – both written and oral – have gained popularity at an exponential speed. It is almost impossible to imagine our current everyday life without such routine tasks such as sending/receiving

electronic mail and sending/receiving text messages on cell-phones. Globalization of education is greatly simplified by the existence of the World Wide Web and a vast number of information exchanges and communicative opportunities that it provides. For learning online, it means getting straightforward and unlimited opportunities to access to the best educational institutions of the world from the comfort of people's homes and at the convenience of their schedule. Contemporary technologies, in conjunction with the Internet, allow people to access information (e.g., electronic libraries, databases, books, etc.) and receive assistance online that had been unthinkable just a few years ago.

In terms of SLA and L2 learning, CMCs have been grounded extensively in the interactionist theory, which, in its turn, is based on the corner-stone hypotheses in SLA research that surfaced as early as the 1980's and 1990's: (1) Krashen's (1985) input hypothesis; (2) Long's (1983) and Chapelle's (2004) interaction hypothesis; (3) Swain's (1985) output hypothesis, and (4) Schmidt's (1990) noticing hypothesis. The interactionist approach claims that NNS students benefit greatly from negotiation of meaning processes (e.g., modified language input), which promotes L2 learning through enhanced comprehension and rapid interlanguage development (Pellettieri, 2000; Block, 2003).

In addition, social constructivist theory (Vygotski, 1997) focuses on the importance of social interaction and effective collaboration with peers for effective knowledge construction and promotion of learning. Wang (2005) suggests that CMC aids to constructivist learning processes because of "its capability to support interaction and

collaboration among diverse and dispersed students in the form of online discussion” (p. 303).

#### 1.1.1. Computer-mediated communication: Voice vs. text

In recent years, there has been considerable interest in various CMC modes and their application for online education, particularly a text-based chat as a means of synchronous computer-mediated communication (SCMC). The number of findings on applications of voice-based chats in contemporary research on online learning, communication, and interaction is growing exponentially. These findings not only demonstrate a huge potential in wide application of voice-based and text-based chats in online courses but also outline multiple benefits of using them in online education.

Warschauer’s research findings (2000) suggested that students were more eager to participate in text-based chats than in regular face-to-face (F2F) classroom activities and, through consistent application of a new reader/writer activity, their language production rates increased considerably. As SCMC combines features of both, speech and writing (Chun, 2003), students were found to be less anxious to communicate ideas in their mutual construction of text/talk (Neuage, 2004).

Kitade’s (2000) discourse analysis of SCMC texts was among the first to emphasize L2 learners’ strong engagement in self-initiated and other-people-initiated noticing and correction of their linguistic errors. This important observation – second-language (L2) learners’ noticing of gaps in their interlanguage – was further echoed in the research findings of Salaberry (2000), Pellettieri (2000), and Izumi (2002) among others.

As learners notice new linguistic features in CMC texts, they also notice gaps in their own and/or their communication partners' interlanguage, which, as it is suggested, facilitates L2 acquisition (Pellettieri, 2000).

Less attention has been given to voice-based chats online in the current research. With their paralinguistic features (e.g., tone, pitch, etc.), they are found to be enhancing CMC encounters, providing nurturing environments for voice-based synchronous communication and interaction, and improving students' speaking abilities in their L2 (Hampel & Hauck, 2004). Significant gains were found in students' overall oral proficiency scores after their extensive exposure to voice-based chats (Volle, 2005).

Poza (2005) examined the influence of voice-based CMC on students' anxiety levels and suggested that they were considerably lower with voice chats than with traditional F2F class discussion formats partially due to the perceived physical "absence" of L2 instructor in online voice-based CMC settings. However, a principal concern was expressed that traditionally "dominant" students in F2F class formats might also take control over online voice-based discussions, and, as a result, shy students might not benefit significantly from their voice-based chats (Hampel & Hauck, 2004).

Students with higher-levels of language proficiencies are found to be benefitting greatly from online voice-based chats, so at least an intermediate L2 language proficiency has been recommended as the lowest L2 language proficiency provided instructors plan to include real-time voice-based CMC in their online-course design (Kotter, 2001).

## **1.2. Theories, Tenets and/or Overarching Ideas That Guide the Dissertation**

As it can be observed from the above-mentioned points, the project is firmly grounded in the communicative approach to second language acquisition (SLA) and communicative methods and practices in learning L2 within the interactionist framework by focusing on NNS students' cognitive processes (self-correction and self-repair as manifestation of noticing) and attention to form (Kern, 2006; O'Rourke, 2005).

What makes the project especially valuable for SLA is its overarching approach to learning L2 in online environments and, further, suggesting guidelines for ESP course designs and the use of voice-based and text-based techniques within the contexts of distant education and learning online for NNS students. It is firmly grounded in the theories of medical discourse and communication in healthcare-related settings (e.g., Mishlers' (1984) Theory of the Voices of Medicine and the Voices of the Lifeworld and Egan's (2007) Helping Model for therapeutic dialogues) and, as a result, humanization and patient-centeredness of healthcare communicative encounters.

The project builds on the earlier research findings from computer-mediated communication (SCMC) that suggests that the use of text-based chats in online courses can also develop L2 speaking ability via skill transfer (see Abrams, 2003; Payne & Whitney, 2002 among others). However, it moves even further to investigate whether voice-based SCMC encounters in online courses may also lead to development of L2 writing ability via effective skill transfer processes.

Finally, the project sets itself apart by breaching the physical borders of L2 acquisition and learning in contexts of a given country (i.e., the United States) and globalizing its practices by making them available to NNS students in other countries through effective use of distance learning environments.

### **1.3. Purpose of the Study**

Through an online course designed for non-native speaking (NNS) medical professionals (i.e., current and/or prospective NNS students of nursing programs in the U.S. or abroad), this project intends to answer the research questions outlined below. In pursuing the task, the present study is grounded extensively in the following research areas, the current findings of which are further outlined in Chapter II of this project:

- Online education vs. traditional F2F education;
- Online course designs, in general, and English-for-Specific-Purposes (ESP) course designs, in particular;
- Text-based vs. voice-based synchronous chats and their application for learning online;
- Efficacy and application of text-based and voice-based communicative practices in learning items of medical discourse in online ESP courses designed for NNS medical professionals;

- Issues related to medical discourse and communication in healthcare-related settings; humanization and patient-centeredness of healthcare communicative encounters (e.g., between a nurse/provider and a patient/client).

#### **1.4. Research Questions and Hypotheses**

Through an ESP online course: Communication for Nursing, designed for NNS medical professionals, this project aims to examine the following research questions and to test the following hypotheses:

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

Hypothesis 1A: If the participants were instructed via voice throughout the course of study (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition

and voice-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 1B: If the participants were instructed via text throughout the course (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition compared to the text-based pre-treatment condition and text-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

Research Question #2: What evidence is there to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

Hypothesis 2A: If the participants were instructed via voice throughout the course (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would also produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment

condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 2B: If the participants were instructed via text, throughout the course of study (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition. The observed difference between the means of scores would be statistically significant.

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

Hypothesis 3: Assuming that both interactional modes (voice-based and text-based chats) are most likely to be firmly integrated into the participants' everyday lives and activities (e.g., instant messaging with friends on Facebook and/or other social interactive media and environments; using video chats on Skype, Face Time on iPhones and iPads, applications for face-to-face communication on Android-based cell-

phones or other devices with similar features; cell-phone text-messaging features, etc.), the preference of the instructional mode– voice or text – and the perception of its effectiveness in learning would be unrelated to the mode of instruction used throughout the course; rather, it would depend on the participants’ personal preference, the level of familiarity and comfort with it, and the frequency of its use in their everyday lives.

## **1.5. Chapter Overview and Dissertation Outline**

### **1.5.1. Overview of Chapter I: Introduction**

Chapter I of the project briefly outlines the problem of the study: computer-mediated communication (CMC), which will be further discussed in-depth in Chapter II: Literature review of the project. It further situates the purpose of the study within specific focus areas related to the research questions: (1) online education; (2) online course designs, in general, and English-for-Specific-Purposes (ESP) course designs, in particular; (3) text-based vs. voice-based synchronous chats and their place in learning online; (4) efficacy and application of text-based and voice-based communicative practices in learning specific medical discourse items in online ESP courses designed for NNS students; (5) issues related to medical discourse and communication in healthcare-related settings; humanization and patient-centeredness of health-care communicative encounters (e.g., between nurse/provider and patient/client). These research areas will be

extensively addressed in Chapter II where an extensive literature review of current research findings in these areas will be provided.

One other thing that Chapter I discusses is the general theoretical stance of the project situated within the SLA theories and tenets of overarching ideas, which make the project especially valuable.

### 1.5.2. Overview of Chapter II: Literature Review

The above-outlined research questions are grounded in the interrelated foci of the project that are reflected in the literature review in Chapter II of this project. First, the differences and significant relationships among the terms of *distance learning (distance education)*, *open learning*, *learning online*, and *online education* are explained. Next, Chapter II focuses in depth on the current developments in online learning at higher-education institutions of the United States. The chapter outlines the earlier advances in online-course offerings and the steady growth of online student enrollment in 2002-2010 in the U.S. Also, it summarizes the current data on online student enrollment by degree, academic discipline, and size of higher education institutions and offers a comprehensive comparison between online-course and F2F learning outcomes. Moreover, Chapter II delineates striking changes in the perception of the quality of online education by higher education leaders between 2003 and 2010 in the U.S. The chapter talks about faculty satisfaction with teaching online compared to teaching F2F courses.

Next, Chapter II focuses on the research studies and their findings in the area of medical discourse in healthcare communication by outlining the issues of salient

interactive imbalance during communicative encounters between patients/clients and medical professionals/ practitioners/nurses (Ainsworth-Vaughn, 2001; Candlin & Candlin, 2003; Fleischman, 2001; Hyden & Mishler, 1999, Gwyn, 2002; among others). Furthermore, Mishler's (1984) Theory of the Voices of Medicine and the Lifeworld is presented and grounded in Habermas's (1984) Theory of Communication Action in their relationship to nurse/patient interactions and control over the outcomes of their communicative acts. Then, Chapter II emphasizes the manifestation of Mishler's (1984) Voices of the Lifeworld's approach in Egan's (2007) principal goals for therapeutic dialogues that form the essence of his Helping Model in medical discourse. In particular, the chapter focuses on Egan's approach to different kinds of probes and their application in therapeutic dialogues; more specifically, it analyzes in depth the use of various types of probing questions in order to help clients to engage in therapeutic dialogues with helpers and tell their stories freely. The chapter outlines the distinctive guidelines for using open questions vs. closed questions as an effective probing technique in healthcare-related communicative settings.

Finally, Chapter II deals with the current research findings on online course designs and establishing interactions and learning in online environments through social, cognitive, and teaching presences in virtual learning communities (VLC) (Luppacini, 2003). It addresses the research data findings on students' interactive issues with course management systems (CMSs), platforms, and interfaces and outlines advantages and disadvantages of the main features of major CMSs available on the current market and their efficacy in teaching and learning online. Also, the chapter outlines online course-

design models and some practical applications for experiential L2 learning online (e.g., role-play through text-based and voice-based modes online; noticing in L2 online, language-skill transfer research findings).

### 1.5.3. Overview of Chapter III: Methods and Data

Chapter III begins with an overview of the research questions to establish their correlation to the methods, instruments, and data collection protocols described in the chapter. Next, it explicates the ESP online course design: Communication in Nursing and its purpose as a vehicle for data collection in the present research study. It goes in-depth into structural elements of the course (e.g., modular structure, course schedule, goals and outcomes, readings, video clips, discussion questions, forms of assessment, and, finally synchronous online voice-based and text-based chats with the instructor and classmates) and the various ways these elements form a cohesive entity within the utilized online course design in order to answer the research questions and test the suggested hypotheses. Finally, this section of the chapter presents brief summaries of seven modules of the course.

Chapter III, then, introduces the project's participants and online course section set-up, followed by a detailed description of the treatment stages, instruments, and data collection protocols. It ties each stage of the research procedures and the data collected during them back to the research question(s) that it is expected to answer and the hypothesis/hypotheses that it is supposed to test. Thus, the pre-treatment stage procedures, instruments, and data collection address Research Question #1 and

Hypotheses 1A and 1B. The data collected during the pre-treatment stage establishes the base-line/pre-treatment data sets 1A (voice-based) and 1B (text-based). Then, the instruction stage procedures, instruments, and data collection are presented that add the midsession treatment/immediate production data sets 2A (voice-based) and 2B (text-based) to the above-mentioned base-line/pre-treatment ones. Finally, the data collected during the post-treatment stage/delayed production – data set 3A (voice-based) and 3B (text-based) – and the instruments are described in Chapter III. Together with the base-line/pre-treatment and the midsession treatment sets, sets 3A and 3B complete the research data framework, the analyses of which are presented in Chapter IV. The results of these analyses provide the answers to the research questions and test the proposed hypotheses.

Finally, Chapter III establishes the correlation between the collected data and the research questions and explains the ways the data sets are treated and analyzed in Chapter IV.

#### 1.5.4. Overview of Chapter IV: Data Analyses

Chapter IV starts with a brief summary of the research data sets described in Chapter III and establishes a correlation between the collected data sets and the research questions. The treatment of the collected data sets and establishment of the research items (i.e., open questions, closed questions, self-correction/self-repair/noticing items) in the voice-based and text-based conditions are explicated and examples provided. Next, the

choice of quantitative analysis tools is presented and the collected data sets paired for the Paired Samples T-test analyses.

After that, Chapter IV presents the results of the data-set analyses for the voice-based and text-based conditions that are employed to answer Research Question #1 and test Hypotheses 1A and 1B. In each section, outlining the results of the data-set analyses for the voice-based and text-based conditions, the Paired Samples statistics, Paired Samples correlations, and Paired Samples T-test results are presented and explained. In addition, the statistical significance of the difference between the means of scores in both conditions is established and explained. Lastly, graphic representations of the statistically significant differences between the means of scores in the data sets are also provided.

Next, Chapter IV addresses the results of the research data-set analyses that are conducted to answer Research Question #2 and test Hypotheses 2A and 2B. The research data pairs that are used only for the Paired Samples T-test analyses are selected and presented in order to answer the research question and their correlation in both conditions – voice-based and text-based – is explained. After that, the statistically significant results of the differences between the means of scores in both conditions are presented, graphed, and explained.

Finally, Chapter IV establishes the relationship between the collected data sets, as outlined in Chapter III, and Research Question #3 and Hypotheses 3. The results of the end-of-the-course questionnaire related to the research question are analyzed and the reasons for the participants to select one mode of communication and instruction over the other are statistically tested.

#### 1.5.5. Overview of Chapter V: Discussions, Implications, and Conclusions

Chapter V of this project starts with a brief summary of the results of the research data-set analyses presented in Chapter IV. It presents the synopsis and interpretations of the research findings specifically targeting those related to each research condition and each research question.

First, it focuses on the research findings for the voice-based condition related to Research Question #1 and interprets those that showed statistical significance described in Chapter IV of the project. This section of Chapter V addresses Hypothesis 1A and summarizes the research findings that support its predictions.

Next, Chapter V summarizes the research findings for the text-based condition related to Research Question #1, interprets those that were statistically significant, as well as those that failed to show statistical significance contrary to the predictions in Hypothesis 1B. Possible reasons and implications for the lack of statistical significance in those findings are also suggested and explained.

Then, Chapter V proceeds to outline the research findings related to Research Question #2 and the suggested predictions in Hypotheses 2A and 2B for both research conditions. The implications of those findings are also discussed extensively.

The next section of Chapter V focuses on interpretations of the results of the qualitative analyses related to Research Question #3. Specific examples of the participants' feedback from the end-of-the-course questionnaire are provided as they support the predictions of Hypothesis 3.

The chapter, then, proceeds to present an extended summation of the research findings for both research conditions – voice-based and text-based – outline unique features and limitations of the study, suggest pedagogical application of the research findings, and outline future research opportunities to benefit second language learning in online environments.

Now moving forward, Chapter II presents an extensive literature review of the current research findings that tie their direct implications in the research questions and their respective hypotheses of the present study.

## CHAPTER II

### LITERATURE REVIEW

#### 2. Introduction

The research questions and hypotheses of the present study are grounded in the following interrelated foci that are reflected in the literature review presented in this chapter.

First, the chapter will focus on the extensive differences among the terms: *distance learning (distance education), open learning, learning online, and online education*. It will outline the current developments and issues in online learning in higher-education institutions of the United States in 2002-2010 as an overarching framework for the present research study as it has already been mentioned in Chapter I.

Second, Chapter II will focus on the research findings in the area of medical discourse in healthcare communication through Mishler's (1984) Theory of the Voices of Medicine and the Lifeworld grounded in Habermas's (1984) Theory of Communication Action as it relates to nurse/patient interactions and establishing control over the outcomes of communicative acts in medical discourse. Also, Chapter II outlines Egan's (2007) Helping Model and focuses on the use of open questions for probing in therapeutic dialogues as it is one of the main research items in this project.

Finally, Chapter II will deal with the current research findings on online course designs and the use of course management systems (CMSs), platforms, and interfaces in

online course designs. It will present practical applications and approaches to experiential L2 learning online through role-plays and address the issues of self-correction/self-repair as manifestation of noticing and learning of L2 structures. Finally, this section of the chapter will present the research findings on language-skill transfer in L2 learning.

## 2.1. Online Education

### 2.1.1. Distance learning/education, open learning vs. learning online, online education

The words *distance learning* (*distance education*), *open learning*, *learning online*, *online education*, and *hybrid classes* have recently entered our lexicon. Thus, it seems appropriate here to clarify them before any discussion of learning online can be undertaken.

The terms *distance learning* and *open learning* have been used interchangeably in the current literature reviews. Some researchers suggest that there is no difference between them (Rumble, 1989); that “distance learning is a sub-category of open learning” (Lewis & Spencer, 1986, p. 17). Others, however, disagree with that viewpoint and propose that “open learning is not synonymous with distance education” (Foks, 1987, p. 74).

It seems that *distance learning* refers to the mode of delivery, which usually implies students’ independent studies supported by provided textbooks, learning materials, distance means of communication with classmates, tutors, and instructors in a

somewhat defined learning environment. However, *open learning* usually indicates openness, accessibility of learning materials (i.e., with no restrictions or privileges), students' autonomy in their studies (i.e., when they choose what to learn and how to learn it), and distance (i.e., defined as independence from tutors and instructors). Keegan (1990) specifies the main features of distance learning as (1) the separation of teachers and learners, (2) the influence of educational institutions, (3) the use of technical media to deliver educational contents, (4) the access to two-way communication between instructors and participants, and (5) the possibility of occasional meetings for communication and formative and/or summative assessment purposes.

Recent research findings on distance education in the U.S. have demonstrated extensive growth and expansion of online courses and programs all over the country during the last decade. Moreover, it seems that online learning practices are growing at an exponential rate as new online learning modes and forms have appeared and evolved.

With the advent and rapid proliferation of computer technologies, *mainstream* (or *traditional*) courses – where content is delivered orally or in writing and no technology is used – are forfeiting their novelty and appeal in the U.S. Instead, they are being replaced by *web-facilitated* courses with one to twenty-nine percent of content delivered online (Allen & Seaman, 2010). In short, web-facilitated courses are essentially F2F courses with some course-management-system (CMS) or web-site support where instructors can post their course syllabi or assignment descriptions.

Furthermore, blended or hybrid courses have gained more popularity in the last decade. With thirty to seventy-nine percent of content delivered online, these courses

combine both instructional formats: F2F and online (Allen & Seaman, 2010). While these courses typically provide some F2F meetings, a considerable portion of the content is delivered online through online discussions, assignment postings, practices, synchronous and asynchronous modes for student-instructor communication (e.g., blogs and chats), streaming video and audio links, and assessment practices (e.g., quizzes and exams).

Finally, online courses with eighty to one-hundred percent of content delivered online (in essence without F2F meetings) have entered the mainstream and created the need for the concept of *mainstream* to be revisited (Allen & Seaman, 2010).

#### 2.1.2. Towards becoming an online nation

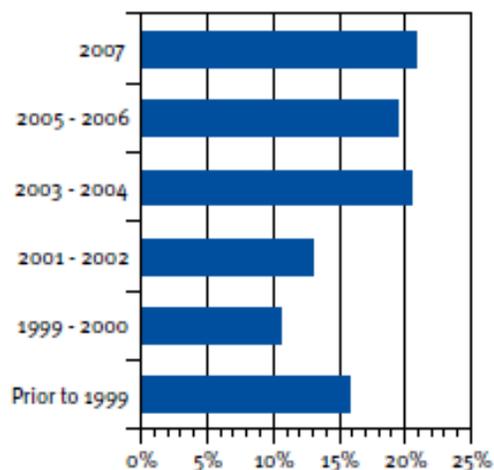
In recent years, online education has become an integral part of postsecondary education in the U.S. The Sloan Consortium *Growing by Degrees: Online Education in the United States* report states that in 2005, 65 percent of graduate schools that offered traditional F2F courses also offered graduate courses online. Among them, 44 percent of schools that offered F2F Master's degrees, also offered Master's courses online. The Sloan Consortium report released in 2007, titled *Online Nation: Five Years of Growth in Online Learning*, states that almost "twenty percent of U.S. higher education students were taking at least one online course in the fall 2006" (Allen & Seaman, 2007). The Sloan 2010 report, titled *Class Differences: Online Education in the United States, 2010*, emphasizes, "Online enrollments have continued to grow at rates far in excess of the total higher education student population, with the most recent data demonstrating continued

substantial growth. . . . Nearly thirty percent of higher education students now take at least one course online” (p. 2).

### 2.1.3. Online-course offering: History in the making

As current research findings suggest, about 15 percent of higher-education institutions in the U.S. first offered online courses in the late 1990’s and early 2000’s (Allen & Seaman, 2008). At the wake of the next decade, they remain leaders in the field of online education by having maintained and expanded their online course offering, having gained the knowledge and experience in reaching their students, and by addressing their specific educational goals and meeting their needs (See Figure 2.0).

*Figure 2.0: Year Institution First Offered Online Learning Courses (Adopted from Allen & Seaman, 2008)*



Among the leaders of online education are associate-level institutions (e.g., community colleges), public institutions, and some of the largest institutions in terms of overall student enrollment.

#### 2.1.4. Steady growth of online student enrollment in 2002-2010

While unfavorable economic times are immobilizing growth rates in numerous business and economic spheres, three-quarters of higher-education institutions claim that they are observing an increased demand for online courses and programs (Allen & Seaman, 2010).

*Figure 2.1: Total and Online Enrollment in Degree-granting Postsecondary Institutions – fall 2002 through fall 2009 (Adopted from Allen & Seaman, 2010)*

	Total Enrollment	Annual Growth Rate Total Enrollment	Students Taking at Least One Online Course	Annual Growth Rate Online Enrollment	Online Enrollment as a Percent of Total Enrollment
Fall 2002	16,611,710	NA	1,602,970	NA	9.6%
Fall 2003	16,911,481	1.8%	1,971,397	23.0%	11.7%
Fall 2004	17,272,043	2.1%	2,329,783	18.2%	13.5%
Fall 2005	17,487,481	1.2%	3,180,050	36.5%	18.2%
Fall 2006	17,758,872	1.6%	3,488,381	9.7%	19.6%
Fall 2007	18,248,133	2.8%	3,938,111	12.9%	21.6%
Fall 2008	18,698,630	2.5%	4,606,353	16.9%	24.6%
Fall 2009	19,036,860	1.2%	5,579,022	21.1%	29.3%

Figure 2.1 demonstrates that while the annual growth rate of student total enrollment in 2009 was up 1.2 percent, the online course enrollment as a percent of total enrollment experienced a considerable growth of 29.3 percent with the average annual growth rate of online enrollment increase of about 21.1 percent. The research also suggests that the observed growth in online student enrollment comes from the increased demand for the online courses and program offerings that were established back in the late 1990's and early 2000's rather than from the newly established ones (Allen & Seaman, 2010). Finally, as the Sloan 2010 *Class Differences: Online Education in the*

*United States* report states, “the evidence for past years has shown little, if any, indication that this [online enrollment] growth is slowing” (Allen & Seaman, 2010, p. 22).

Students choose learning online over traditional F2F classes for various reasons. The most common of those are professional obligations (e.g., work load, fixed work schedule, extensive business travel) or family responsibilities (e.g., adult students with child care needs) that prevent them from taking F2F classes. These students consider online learning because “the convenience, flexibility and adaptability of this mode of education suit individual students’ needs” (Holmberg, 1989, p. 24). During times of economic and financial instability and uncertainty in the U.S. and all over the world, a lot of people rethink their career paths and consider going back to school, completing a degree, and enhancing their employment opportunities. For many, online education is the most viable option. For those students, nearly all colleges and universities in the U.S. provide online support services, one-on-one tutoring, and easy access to information, programs, and online library resources.

New developments in technology provide multiple opportunities to reach various educational sites and resources. Among their numerous useful features, the latest versions of iPhones, iPads, and smart phones include an Internet access through Wi-Fi that enables not only browsing the World Wide Web from any location on the globe but also sending/receiving emails, texts, and real-time communication options through Face Time and other similar applications. Voice-supported PowerPoint presentations allow online learners to access presentations and hear their instructors’ comments and explanations of the material. Multi-user video-conferencing, which is a recent development in online

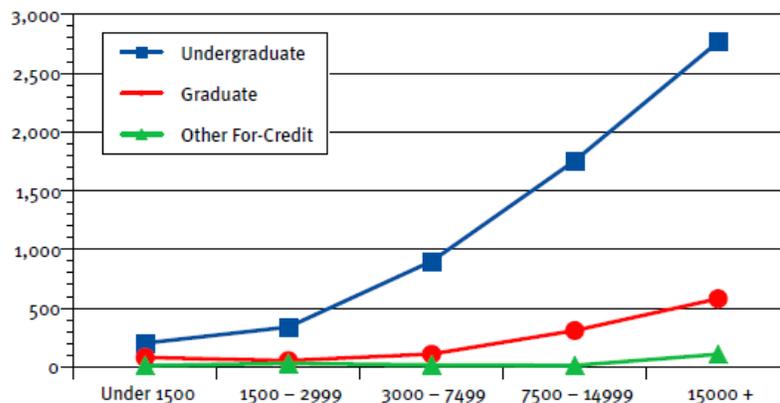
learning, erases boundaries in access to synchronous communication and promotes globalization of educational practices. With online education, all people who wish to learn have an opportunity to do so at their own pace, time, and location.

#### 2.1.5. Online enrollment by degree and size of institution

Thirty-seven percent of the students enrolled in higher-education institutions in the U.S. represent student body in associate's degree programs. Moreover, the Sloan 2008 research findings state that over 50 percent of all online students are enrolled at associate's institutions, and the trend seems to remain constant through the years of the research: "associate's institutions have consistently been overrepresented among the online student population compared to their share of higher education student enrollments" (Allen & Seaman, 2008, p.6).

The remaining half of the online-program student enrollment is shared by the doctoral/research and master's degree students (more than two-thirds) and baccalaureate/specialized program students. Finally, the size of the institution seems to show considerable correlation with the number of students enrolled in its online courses and programs (See Figure 2.2) (Allen & Seaman, 2008).

*Figure 2.2: Mean Online Enrollment by Size of Institution – Fall 2007 (Adopted from Allen & Seaman, 2008).*



#### 2.1.6. Online vs. F2F: Comparison of learning outcomes

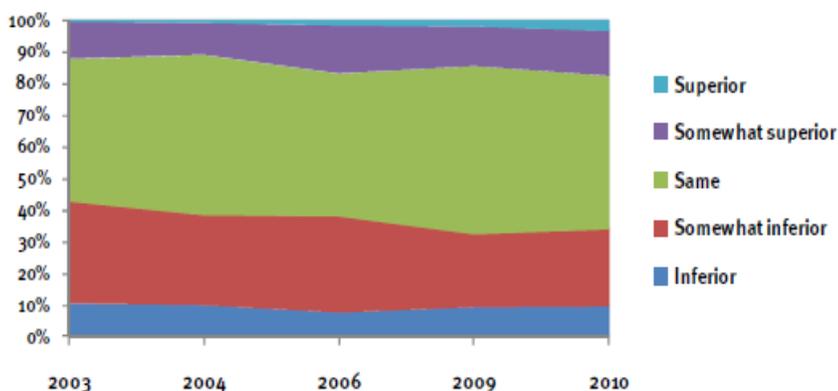
Every form of learning requires students to demonstrate high levels of commitment, motivation, self-discipline, and independent thinking. It is even more relevant in the case of learning online with self-paced courses, fixed assignment and assessment deadlines, and lack of instructor supervision, compared to those of F2F courses. Threlkeld and Brzoska (1994) point out that “maturity, high motivation levels, and self-discipline have been shown to be necessary characteristics of successful, satisfied students” (p. 35). Numerous studies of students’ success and satisfaction with online learning emphasize these factors as indispensable for effectiveness of online learning outcomes.

Furthermore, access to libraries and other reference materials is an essential component in online education especially for those students who live in areas where libraries are scarce. Dillon, Guanawardena, and Parker (1992) suggest that “library resources are very important to distance students as the majority of them... indicated that success in the course required access to library materials” (as cited in Threlkeld &

Brzoska, 1994). Online access to library resources enhances effectiveness of learning online.

The recent research findings in a comparative study of learning outcomes in online courses vs. F2F courses suggest that in 2003, 57 percent of higher-education leaders “rated the learning outcomes in online education as the same or superior to those in face-to-face. That number is now sixty-six percent [in 2010]” (Allen & Seaman, 2010, p. 3). It seems that with the proliferation of technology, a number of higher-education leaders perceive online education as the way of the future since they realize its undeniable value as another viable and convenient way of reaching their students and helping them to achieve their educational goals. They also understand that learning outcomes in online vs. F2F courses are comparable if not better (See Figure 2.3).

*Figure 2.3: Learning Outcomes in Online Education Compared to Face-to-face: 2003-2010 (Adopted from Allen & Seaman, 2010).*



In the public institution sector, over three-quarters of higher-education leaders rated outcomes in online courses the same or better than those in F2F courses (Allen & Seaman, 2010).

### 2.1.7. Faculty satisfaction with teaching online

A large number of higher-education instructors embrace distance education practices and shift from traditional F2F courses to teaching online if they find it personally rewarding and professionally beneficial. They welcome the opportunity to connect with new students and communities online. As Sloan 2008 report states, 64.7 percent of full-time faculty in higher-education institutions also teach online. For adjunct faculty who teach online courses and programs in those institutions, the number is 18.1 percent (Allen & Seaman, 2008).

On the other hand, some instructors reject the opportunity to teach online simply because they are intimidated by new technologies for learning and teaching that evolve at immense rates. To address the issue, colleges and universities in the U.S. develop teacher-training courses for instructors who want to teach online. They organize professional development workshops and seminars that take instructors through the steps of online course development and management, set up conferences, professional organizations (e.g., The Computer Assisted Language Instruction Consortium (CALICO)) and interest groups (e.g., Teaching English to Speakers of Other Languages (TESOL): Technology and Distance Education interest group), and encourage research opportunities in online education. Instructors who teach online constantly share experiences, practices, and knowledge with their colleagues, thus, inspiring new faculty to team up. The data from online post-course surveys show that at least 90 percent of online instructors emphasize their positive teaching experiences and desire to continue teaching online (Maor, 2003).

#### 2.1.8. Academic disciplines that offer online courses and programs

The Sloan 2010 report states that business programs, liberal arts and sciences, general studies, humanities, health professions and related sciences, education, computer and information sciences, social sciences and history, psychology, and engineering are among the disciplines that have established major presence in online education. A large number of these disciplines show steady growth rates in online student enrollment between 2003 and 2010 (Allen & Seaman, 2010).

In the fall of 2010, 34 percent of colleges offering F2F courses in health professions and related sciences also offered them online (Allen & Seaman, 2010). Learning online has become a new reality in the U.S., and nursing and medical-professional programs across the country follow suit. In online learning environments for NNS medical professionals, special emphasis is placed on acquisition of effective communicative skills. Frequently, online courses for nursing students address peculiarities of medical discourse in the contexts of linguistic and cultural diversity and, as a result, they equip students with communicative skills to establish nurse/patient relationships, identify patients' needs and concerns, achieve the desired outcomes in consultations, and provide appropriate healthcare.

#### 2.1.9. Research on the benefits of online language courses

As it has been already mentioned in Chapter I, the research studies on the success of online language courses have demonstrated numerous benefits for L2 learners. NNSs

are more eager to participate in online chats than in regular F2F classroom activities and their language production rates show considerable increase (Warshauer, 2000). As chatting online combines the features of speech and writing, language learners seem to be less anxious to use L2 to construct text/talk (Chun, 2003; Neuage, 2004).

Furthermore, NNSs have been found to be more engaged in self-initiated and other-people-initiated correction and repair of linguistic errors in their interlanguage (Kitade, 2000; Salabery, 2000; Pelletieri, 2000, Izumi, 2003). The use of voice-based language activities in online courses helped to increase L2 learners' overall proficiency scores (Hampel & Hauck, 2004; Volle, 2005).

Even though language activities in online courses seem to lower NNS' anxiety levels compared to traditional F2F discussion formats (Poza, 2005), traditionally "dominant" L2 speakers were demonstrated to take control over online discussions (as they do in F2F classes), so shy L2 learners did not find those activities particularly beneficial to them (Hampel & Hauck, 2004).

This project sets itself apart by employing an *online* course as a vehicle for its research data collection.

## **2.2. Towards Patient-Centered Healthcare**

Next, Chapter II focuses on the research studies and their findings in medical discourse and healthcare-related communicative settings through Mishler's (1984) Theory of the Voices of Medicine and the Lifeworld, grounded in Habermas's (1984)

Theory of Communication Action as they relate nurse/patient interactions and control over the outcomes of communicative acts. Then, Chapter II emphasizes the manifestation of Mishler's (1984) Voices of the Lifeworld in Egan's (2007) Helping Model and focuses on Egan's use of different kinds of probing questions in therapeutic dialogues between helpers and clients.

### 2.2.1. Issues of medical discourse and healthcare-related communication

The last thirty years have been marked by abundant research studies in the area of medical discourse and healthcare-related communicative settings (Sarangi, 2002) that focuses on salient interactive asymmetry in communicative encounters between patients/clients and medical professionals/practitioners/nurses (Ainsworth-Vaughn, 2001; Candlin & Candlin, 2003; Fleischman, 2001; Hyden & Mishler, 1999, Gwyn, 2002; among others). As it has been noted, medical professionals exercise absolute control over typical medical communicative situations (e.g., counseling, history-taking), which can lead to distorted outcomes in collecting relevant and accurate information about their patients for decision making and diagnoses since patients do not seem to be given ample opportunities to voice out their concerns and present their side of the issues.

Initially, Beckman and Frankel (1984) and later Marvel et al. (1999) demonstrated that patients are interrupted while stating their medical concerns from eighteen to twenty-three seconds after the beginning of doctor/patient conversations, which approximately coincides with the moment when patients state their first concern. These practices influence the outcomes of contextualization and decontextualization of patients'

experiences and stifle their desire to present their concerns (Mishler, 1984). Moreover, if medical professionals fail to establish the initial favorable contact with patients and select welcoming, non-threatening line of questioning for history-taking or counseling, patients do not volunteer more information than they are asked for, which in turn, may have a significant adverse effect on correctness and completeness of the gathered information. It might impede accuracy of diagnosis, on the one hand, and influence patients' satisfaction with the doctors' services, on the other (Frankel, 2001).

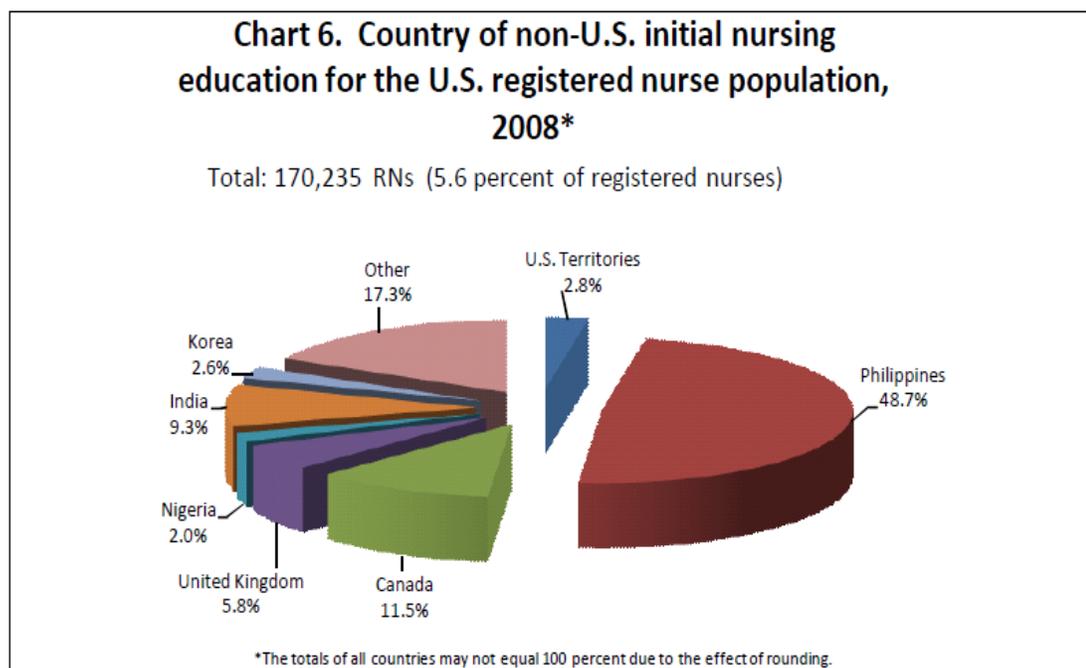
At the micro-level (e.g., clinical settings: consultations, regular doctor/patient appointments), language is a vehicle in medical discourse encounters that shapes the subsequent moves: “from noting symptoms, questioning patients and describing physiological functions, to history taking and noting the progress of disease, to writing a prescription (and can be extended to medical case notes and the complaints procedure)” (Sarangi, 2004, p. 4). The effectiveness of patient/practitioner communicative encounters in medical discourse, however, extends beyond just basic language skills and develops significant importance if practitioners are also non-native speakers (NNSs) of the language.

### 2.2.2. The importance of language learning/training for NNS medical professionals

As of this writing, there are over 3,063,163 licensed registered nurses (RN) in the United States. Approximately 87 percent of all RNs are Caucasian. As of March 2008, more than 170,235 RNs practicing in the United States received their education in another country or a U.S. territory, which comprises 5.6 percent of the total. About 48.7 percent

of NNS nurses practicing in the U.S. are from the Philippines, 11.5 percent are from Canada, and 9.3 percent are from India (The Registered Nurse population, 2010). Naturally, all of them claim that English is not their native language. Moreover, in recent years, an increasing number of NNS students have been seeking admission to Associate of Science (AS) and Bachelor of Science (BS) degrees in nursing and graduate nursing programs.

*Figure 2.4: Country of Non-U.S. Initial Nursing Education for the U.S. Registered Nurse Population, 2008 (The Registered Nurse population, 2010).*



In the context of interactional routines in the medical field, the ability to conduct productive patient/provider sessions and gather accurate information about patients' concerns combined with effective communicative skills in English translates into learning more about patients' needs and, ultimately, facilitates professional care. Thus, for NNS

medical practitioners who are also L2 learners, the issues of attaining effective communicative skills in English span far and beyond ordinary acquisition of vocabulary, grammar, and sentence structures. They contain a “dynamic and variable set of resources which are context-specific” (Sarangi, 2004, p. 5) and include the scope of skills necessary to become effective helpers (Egan, 2007).

Through the needs-analysis questionnaire, conducted for their research in F2F course design that focuses on effective communicative skills for NNS nursing students, Boshier & Smalkoski (2002) identify the following areas in which L2 nursing students have to be proficient enough to be able to succeed on the job after they complete their studies:

1. being assertive with clients, colleagues, and nursing instructors in clinical settings;
2. communicating clearly and effectively, using appropriate paralinguistic features of communication, such as stress and intonation, and volume and rate of speech, particularly in clinical settings with elderly clients;
3. understanding clients, particularly those who speak non-standard dialects of English;
4. using appropriate non-verbal communication skills, such as eye contact;
5. making “small talk” with clients and understanding when clients are engaging in small talk with them;
6. feeling self-confident and comfortable asking other nursing students and nursing supervisors for assistance;

7. understanding how cultural values influence their interaction with clients from cultural backgrounds different from their own;
8. understanding the instructor's directions and following through with step-by-step procedures in performance tests and clinicals;
9. listening carefully to client protocols and understanding information that is being stated about clients, asking for clarification when necessary; and
10. charting or documenting appropriately in clients' records. (p. 65)

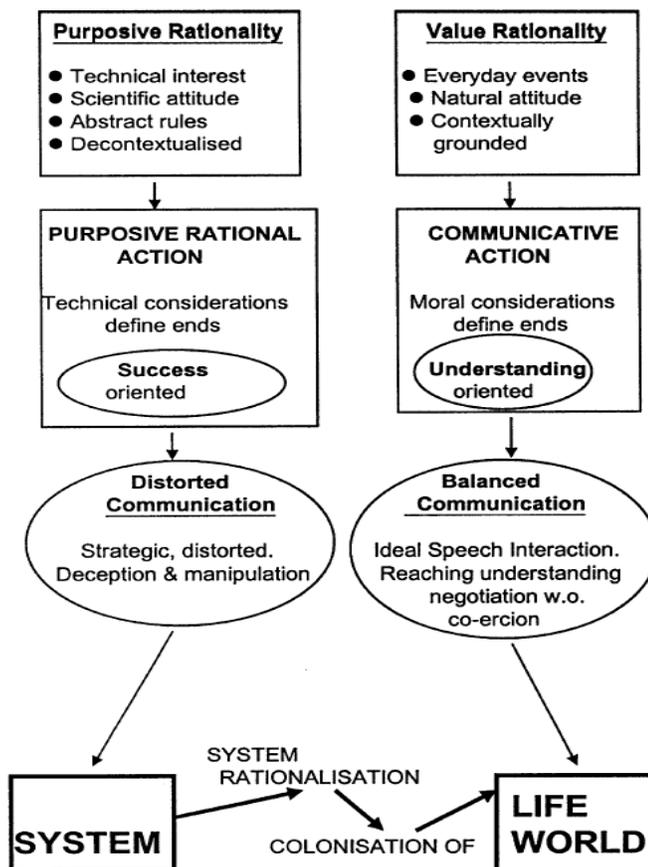
In terms of designing an effective ESP online course (and ESP: Communication in Nursing in particular), the above-mentioned skills have to be integrated into methods and practices that can be delivered through distance education by situating them within online learning environments.

### 2.2.3. Habermas' Theory of Communication Action

In the mid-1980's, Jurgens Habermas suggested his Theory of Communication Action to examine the patterns of communication between interlocutors, which proposed antagonistic struggle between two dialectal types of rationalities during any speech act: communicative (or value) and purposive. According to Habermas, the communicative rationality finds its manifestation in the *lifeworld*, which is defined as a scope of "contextually grounded experiences of everyday events" (Barry et al., 2001, p. 488), while the purposive rationality is grounded in the *system* or manipulative, success-oriented, "technical interests expressed in the scientific attitude, where abstract rules are used to strip away context" (Barry et.al., 2001, p. 488). Habermas' Theory of

Communication Action suggests (see Figure 2.4) that the above-mentioned rationalities are subjected to a constant threat that the *system* – with its distorted, success-oriented speech – can consume the *lifeworld* in communicative encounters, called System Rationalization. To establish a balance between the rationalities and preserve the lifeworld in speech interactions, mutual understanding, respect, and negotiations of meaning between interlocutors are required. Both parties involved in a speech act would have to display their willingness to contribute to the interaction and to sustain it until they achieve meaningful results that satisfy both of them.

*Figure 2.5: Habermas's Theory of Communication Action (Adopted from Barry, et al., 2001)*

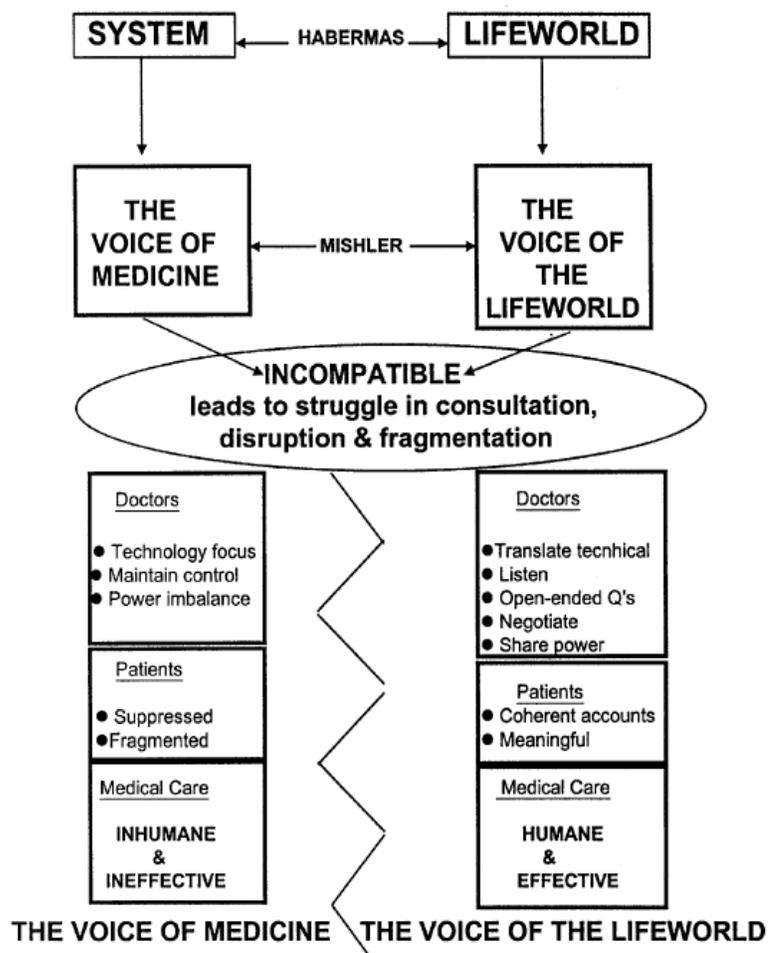


#### 2.2.4. Mishler's Theory of the Voices of Medicine and the Lifeworld

Mishler's (1984) Theory of the Voices of Medicine and the Lifeworld is grounded in Habermas' concepts regarding provider/patient communicative encounters while also expanding into the areas of medical discourse and communication. The theory emphasizes strategic moves exercised by the system in order to direct provider/patient interactions, control the outcomes of communicative acts (Beisecker, 1990; Brody, 1992; Maseide, 1991), achieve a particular desired final result, and maintain dominance in communicative settings (see Figure 2.5). Since the Voice of Medicine and the Voice of

the Lifeworld are out of balance as they struggle for dominance, patients' accounts and concerns are oftentimes neglected and suppressed, which results in "disruption and fragmentation of communication" (Barry, et al., 2001, p. 489). The traditional formula of medical discourse: "provider's request/patient's response/provider's follow-up comment" (or request for further information or clarification) is prevalent in healthcare-related interactions and, as a result, leads to frequent interruptions of patients' stories and disintegration of provider/patient communicative acts (Mishler, 1984). Since the initial and the final statements in the formula belong to the provider, he or she remains in complete control over a conversation, has full power to shift among questions and topics, and, thus, hinders the patients' ability to influence the interaction. This, in turn, leads to the fragmentation of context, loss of continuous progress in the conversation, and overall adverse outcomes of the consultation due to the fact that patients feel dissatisfied since the voices of their lifeworlds are stifled.

*Figure 2.6: Mishler's Voices of Medicine and the Lifeworld (Adopted from Barry, et al., 2001)*



As Mishler (1984) indicates, an attempt to balance interactions between the two voices – the Voice of Medicine and the Voice of the Lifeworld - is indicative of the shift towards *patient-centered healthcare* as it emphasizes the patients’ “contextually-grounded experiences of events and problems” (p. 104). He also specifies that in the Voice of Medicine “the meaning of events is provided through abstract rules that serve to decontextualize events, to remove them from particular personal and social context” (p. 104). The Subcommittee on the Humanization of Healthcare of the American Sociology

Association defines *humane medicine* as “a view of patients as autonomous, unique and irreplaceable ‘whole persons,’ who are treated with empathy, warmth and share in decisions with doctors in an equal and egalitarian relationship” (Howard, Davis, Pope, & Ruzek, 1977).

#### 2.2.5. Egan’s Skilled-Helper Model and its implications for medical discourse

The emphasis on the patients’ Voices of the Lifeworld finds its reflection in Egan’s (2007) principal goals of therapeutic helping:

Goal One: Help clients manage their problems in living more effectively and developing unused or underused resources and opportunities more fully.

Goal Two: Help clients become better at helping themselves in their everyday lives. (pp. 6-8)

Furthermore, in outlining tasks for the stages of his Helping Model, Egan suggests to “help clients tell their stories” (p. 35), which can be accomplished through *therapeutic dialogues* that are focused on helping, problem-solving and management, and developing opportunities for clients. Echoing Hyden & Mishler’s (1999) emphasis on balancing the Voice of Medicine and the Voice of the Lifeworld, Egan further states that therapeutic dialogues require the following elements to be present: (1) turn taking; (2) connecting; (3) mutual influencing; (4) co-creating outcomes (p. 72). It is worth noting here that several of these issues resonate in the general L2 learning practices, as well, and are grounded in interactionism, focus-on-form, task-based learning, and pair work approaches (see Blake, 2000 & 2005).

These elements can be achieved through visibly tuning in during the dialogue to establish a sense of empathetic presence, exercise active listening as a foundation for understanding, sharing empathetic highlights to communicate understanding to clients, probing and summarizing to provide focus and direction, and challenging clients to reach deeper levels of self-awareness.

Stage I of Egan's Skilled-Helper Model focuses on techniques to help clients tell their stories; as a result, they develop new perspectives on their issues and, hopefully, find means to resolve them. Among the techniques required to be a skillful helper, Egan emphasizes the "art of probing," the use of verbal and non-verbal prompts in order to provide focus and direction to therapeutic dialogues during which clients are encouraged to tell their stories (p.122). In the medical discourse, the use of probes is considered an important communicative skill that elicits more therapeutic information from clients by stimulating their stories. While non-verbal probes (e.g., nods, leaning forward, gestures, eye movements, etc.) establish a sense of physical presence, other actions such as active listening and comprehension, and vocal or verbal prompts help clients "name, take notice of, explore, clarify, or further define any issue at any stage of the helping process" (Egan, 2007, p. 123). According to Egan, there are different kinds of verbal probes used in therapeutic dialogues:

- (a) statements generated by the needs for further clarifications (e.g., "It is still not clear to me whether you want to...");
- (b) direct requests for further information or clarifications (e.g., "Tell me what you mean when you say...");

(c) direct probing questions (e.g., “What do you mean..?” “What is going on?” “What might that be?”);

(d) single words or phrases that serve as requests or questions (e.g., Client: “I really hate her.” Helper: “Hate?” (p. 123-124).

Effective use of probing questions enhances the outcomes of helper/client (also, provider/patient, nurse/patient) communicative encounters, establishes higher levels of engagement in their conversation, clarifies issues and intentions, and promotes a balanced approach for both voices to be heard: the Voice of Medicine and the Voice of the Lifeworld (Mishler, 1984). This, in turn, allows the helper to achieve higher stages of the helping process through effective therapeutic dialogues. Egan specifies that the art of probing includes turn-taking, meaning co-creation, mutual understanding between a helper and a client, and interest in achieving specific, desirable outcomes of the dialogue.

For the purpose of this research, the project will further focus only on the use of closed vs. open-ended questions for probing in therapeutic dialogues.

#### 2.2.6. Use of closed vs. open-ended questions for probing

Probes help clients to engage in the therapeutic dialogue and tell their stories freely. The effective use of questions either helps to promote that feeling of “freedom” in communicative exchanges between a client and a helper or to hinder it. Egan (2007) specifies two basic guidelines for using probing questions judiciously: (1) do not ask too many questions and (2) ask open-ended questions. Sometimes during communicative acts, meaningless questions are asked to fill an awkward pause when both interlocutors

lose the train of thought and forget about the purpose of a conversation. The downside of asking too many questions in medical communication is quite obvious: it brings the Voice of Medicine (Mishler, 1984) to the forefront, suppressing the clients' Voice of the Lifeworld and upsets the tangible balance between the two in healthcare-related communicative acts.

Of the two types of questions – open-ended and closed – the former one is, of course, preferred in therapeutic dialogues because open-ended questions require more than just a simple “yes”/“no” answer and sustain the conversation. It would be erroneous to assume, however, that closed questions should not be used in medical communication. They are very useful, for example, when a very specific answer to a question is required to confirm previously-stated facts or information. They are also very useful at the information-gathering stage of medical consultations. Open-ended questions, on the other hand, allow clients to tell their stories freely. They shift the focus from a provider/nurse to a client/patient nourishing the Voices of the Lifeworld (Mishler, 1984). Open questions usually begin with “when,” “where,” “how,” “who,” and “why.” “How” questions call for the clients' perspective on the issue; “why” questions require an in-depth analysis in search for underlying reasons of the issue; “when,” “where,” and “who” questions are used for gathering specific information about the issue. Questions “why” should be used judiciously in medical communication as they might make clients feel defensive as they frequently carry accusatory connotations (e.g., Why did you say that to your mother?).

Some tag questions can be interpreted as open questions since clients are most likely to elaborate on their answer after they simply respond “yes” or “no” (e.g., You seem to look at the problem differently now, don’t you?). Sometimes a closed question can be followed by an open question, which prompts clients to elaborate on their responses (e.g., Do you look at the problem differently now? What differences have you noticed?). Finally, hypothetical open questions are particularly useful in medical discourse as they make clients put their problems in perspective of what “might” happen if they do or do not address their issues (e.g., What do you think might happen if you do not put your addictions under control?). These questions help clients to focus on the more positive future and favorable outcomes of their issues (e.g., If you told your husband about your addictions, how might that reduce your fear?). In her program *Enhancing Communication and Counseling Skills in Today’s Nursing Practice*, Westera (2005) outlines specific guidelines for using open questions as an effective probing technique:

- listen carefully;
- have a therapeutic purpose;
- be clear, concise and simple;
- be judicious;
- be client-oriented;
- move the conversation;
- help the client engage.

Westera also emphasizes active listening since the best probing questions in communicative acts are usually asked in response to the information provided by clients.

She also states that all probing questions should have a very specific therapeutic goal and should not be used by nurses to fill a pause in a conversation or as a form of “think aloud” as they might confuse and frustrate clients hindering the outcomes of a conversation. All probing questions should be client-oriented to move the conversation along from general to specific and let the Voices of the clients’ Lifeworlds (Mishler, 1984) be heard.

Based on the information presented above, this project focuses on learning to use open questions for probing in therapeutic dialogues by NNS medical professionals in an ESP: Communication in Nursing online course.

### **2.3. Online Course Design**

Among the numerous research findings related to distance learning/online education and online course design, a lot of attention is devoted to the course contents, variety of methods and materials used in online course designs, and socialization issues (see Boshier & Smalkovski, 2002 among others). However, for the purpose of the current study, hereby, Chapter II deals with current research findings on online course designs that promote interaction and learning in online environments through social, cognitive, and teaching presences in virtual learning communities (VLC) (Luppacini, 2003). It addresses the use of course management systems (CMSs), platforms, and interfaces in

online courses, presents online course design models, and practical applications and approaches to experiential L2 learning online.

### 2.3.1. Interactions and learning in online environments

The concept of learning in online environments has been transforming traditional understanding of learning processes and approaches for the last 25 years. The medium of an instructional interface (e.g., course-management systems (CMS), platforms or interfaces) provides an exceptional foundation for establishing presences in online environments: (1) social presence (interaction with peers/classmates), (2) cognitive presence (interaction with course content), and (3) teaching presence (interaction with instructors) (Rourke et al., 2001). Their effective interaction has been cited as indispensable for students' success and satisfaction with online learning outcomes (e.g., see Garrison, Anderson, & Archer, 2001; Haythornthwaite, 2002). Learning online, therefore, is a multifaceted construct grounded in a course content/knowledge, learning/teaching discourse, and online educational environments.

### 2.3.2. Establishing presences in online environments

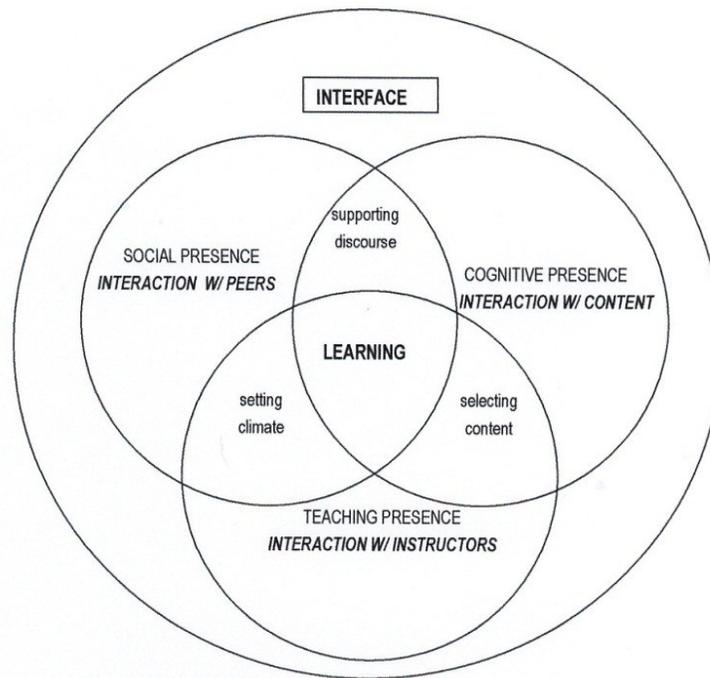
According to Luppicini (2003), learning online occurs in virtual learning communities (VLC) that are formed to facilitate inquiry, acquisition of knowledge, and exposure to cultures and practices. Thus, they have become fundamental tools for learning in online environments. In the Community of Inquiry framework (Garrison et al., 2001), VLCs provide constructive environments for social presence, cognitive

presence, and teaching presence as they sustain critical thinking, collaboration, encouragement, and learning online practices. Within this framework, social presence manifests itself through the following functions (Rourke et al., 2001):

- Affective responses (e.g., showing emotions, humor, self-disclosure, etc.);
- Interactive responses (e.g., active communication, praise of others' work, appreciation, encouragement, asking questions, etc.);
- Group cohesion (e.g., collaboration, interaction, active participation in group projects and taking responsibility for the outcomes, etc.).

Learning online occurs within virtual communities of practice that are more challenging to establish since they show more variable levels of social engagement compared to F2F courses (Gunawardena & Zittle, 2003; Haythornthwaite, 2002; Rovai, 2002). Successful learning online is linked to instantaneous verbal encounters that diminish or even eliminate physical distances among participants and encourage them to share experiences and beliefs in online courses (Richardson & Swan, 2003; Swan, 2003). Finally, it has been established that online learning is related to both quantity and quality of online interaction among students and the value instructors place on those interactions (See Figure 2.6) (Jiang & Ting, 2000).

*Figure 2.7: Relationships between Interactions and Learning in Online Environments (Adopted from Rourke, et.al. (2001): Community of Inquiry Model)*



The above-mentioned concepts guide the analysis, design, development, implementation, and assessment of online courses.

### 2.3.3. Cognitive presence: Interaction with content

Arnold et al. (2005) state that “the key element to success is cognitive presence, the learners’ ability to engage in critical thinking and construct meaning through interaction” (p. 3). Parker and Gemino (2001) and Picciano (2002) claim that online learning environments encourage experimentation and consideration of multiple perspectives more than learning F2F because content for online learning oftentimes includes discussions of open-ended, controversial issues that necessitate careful consideration, response, and acceptance of diverse points of view. In contrast to F2F teaching and learning formats, online learning happens in asynchronous and synchronous

modes, so the students' active participation in discussion boards and chats becomes a critical element of learning.

Reflective discourse (Maor, 2003) in the form of responses to required readings and classmates' ideas and/or negotiations of meaning among members of VLCs facilitates cognitive presence in online environments, stimulates critical thinking and learning, and creates a community of learners.

Other research findings, however, claim that learners might find it challenging to be engaged in online learning to the fullest due to Internet access issues (e.g., slow or interrupted connections) or problems related to limited capabilities of the available technology that they use in online courses (e.g., slow computer OSs, low-quality sounds of their speakers, microphones, and headphones), which create frustrations and considerable obstacles for their effective interaction with course contents (see Chapelle, 2004 among others).

To sustain effective cognitive presence in online environments, instructors should design assessment procedures to reward desired online learning behaviors, like active participation in online discussion boards. These procedures encourage active exchange of ideas and students' feedback to one another's comments. Various online written assignments, small-group interactive activities, and formative assessment practices ensure students' engagement with the course content through their active participation in collaborative activities, chats, blogs, and discussion boards. These are key elements that establish students' cognitive presence in online courses, which, in its turn, leads to

effective learning practices, students' success with the course, and their satisfaction with learning outcomes.

#### 2.3.4. Teaching presence: Interaction with instructors

Students' success in learning online is shaped by the course instructor's presence in the learning process. According to Shea et al. (2003), teaching presence online encompasses three main elements: (1) course design and organization, (2) learning discourse facilitation, and (3) direct instruction. The course design and organization element requires not only instructors' sound knowledge of the subject matter (i.e., scope and sequence) but also their hands-on experience with various educational interfaces and course-management platforms, which differentiates the training of teachers to teach online as opposed to training them to teach F2F. Establishing discourse-facilitation strategies and techniques in online environments promote students' creative thinking, self-reflection, and active collaboration in VLCs (Luppicini, 2003). They create effective cognitive presence and interaction in online learning environments.

Finally, as Jiang and Ting's (2000) findings suggest, students' success with learning online is often defined by the quality and quantity of students-teacher interactions. Therefore, frequent opportunities for instructor-student communication that can come in various forms: blogs, chats, timely feedback to students' work, one-on-one, small-group, and whole-class synchronous and asynchronous interactions are vital for the overall course success.

In addition, Riccomini (2002) and Kashy, et al. (2003) claim that students' performance in online courses is shaped by ongoing and frequent assessment, supportive, timely feedback, and individualized instruction. In contrast to traditional F2F modes, learning online is self-directed and self-guided, so instructors' timely responses to students' work and frequent assessment practices establish a secure feeling of constant teaching presence in online environments.

On the other hand, some instructors who teach online claim that even though they get a lot of satisfaction and numerous rewarding experiences from teaching online, they frequently find it physically taxing to deal with the sheer amount of work load that it involves (e.g., responding to students' discussion postings, grading written assignments and quizzes, conducting live, synchronous chats with students who are dispersed all over the U.S. due to time-zone differences, etc.). Oftentimes, an online course that requires students to spend up to 50 hours to complete all course requirements and assignments might require an online instructor to spend up to twice as much time on teaching it and completing all the expected tasks and responsibilities of an online instructor.

Despite all the above-mentioned adversities involved in teaching online, the data from online post-course surveys show that at least ninety percent of online instructors emphasize their positive teaching experiences and desire to continue teaching online (Moore, 2005).

### 2.3.5. Social presence: Interaction with classmates

The social aspect of learning online is noted by its variability in students' feelings of belonging to their virtual learning communities. Haythornthwaite (2002) and Rovai (2002) point out that the students' success in online courses is often defined in terms of their feelings of inclusion and acceptance in their communities of practice. Students of online courses sometimes claim that they miss companionship and verbal immediacy of traditional F2F classes. Richardson and Swan (2003) and Swan (2004) claim that the overall sense of social presence is linked to success in learning online. Effective practices that call for students' active participation, like discussions, blogs, chats, exchange of ideas, experiences, and beliefs are all of paramount importance for the overall online course success.

Furthermore, Jiang and Ting (2000) suggest that the quality and quantity of postings in online discussions and the value that online instructors place on them are indicative of and imperative to students' learning. By making participation in online discussions a major part of the final grade for the course, by developing grading procedures for discussion-board participation, and by requiring students to respond to their peers' postings, instructors can promote and reinforce VLCs, foster the feelings of belonging, and build bridges of communication and interaction among students, instructors, and contents of online courses. This practice can create unique online learning environments and teach students how to collaborate in their communities of practice (Wenger, 1998).

### 2.3.6. Interaction with CMSs and interfaces

Another essential factor to consider in online education (which is absent in F2F learning) is the negative effect of adverse experiences with online course-management platforms and interfaces that can impede students' success in learning, create feelings of frustration and alienation, and cause online-course enrollment to decline. As Hewitt (2003) points out, students identify the accessibility and ease of navigability of course-management platforms as one of the major factors in their overall satisfaction with learning online. They claim that enrolling in an online course, they expect to spend their time online learning rather than trying to find ways to post their responses or link their written assignments to a course-management platform. Online courses should begin with orientation sessions for students to familiarize themselves with various features and functions of CMSs. Students should be provided with ample time to test the links for discussion questions, assignment posts, course readings, audio, and video downloads.

The Community of Inquiry Model (Rourke, 2001) provides a comprehensive framework that informs the perception of relationships between interactions in online learning environments and implications for the scope and sequence of methodologies, approaches, techniques, and practices that should be considered in effective online course designs.

### 2.3.7. Course-management systems

Course-management systems (CMS) are internet-based software for design, support, and delivery of online courses and programs. They usually offer a structured set

of useful features and tools within one system, which makes online course design, maintenance, and navigation through the features user-friendly. Most CMSs are used for facilitation of teaching and learning online. The last decade has witnessed rapid development and dissemination of such CMSs like WebCT, Blackboard, Desire-to-Learn (D2L) and Moodle (See Figure 2.7).

Figure 2.8: Snapshot of the Desire-to-Learn (D2L) Content- page Layout

The screenshot shows the D2L interface for a course titled "CESL Online: Communication in Nursing (Section 2)". The page is divided into several sections:

- Course Navigation:** A top bar with links for "Course Home", "Content", "Classlist", "Discussions", "Dropbox", "Grades", "Quizzes", and "Edit Course".
- Content Areas:** A sidebar menu with options: "View Content", "Manage Content" (highlighted), "Reports", "Settings", and "Manage Files".
- Instructions:** A box providing guidance on how to manage content, such as selecting items, editing, copying, deleting, moving, and reordering topics or modules.
- Manage Content:** The main area with a search bar and a list of content items.
  - Buttons: "Manage Content", "New Module", "New Topic", "Add Multiple Topics", and "Reorder".
  - Search: "Search For:" field with a "Search" button and a link to "Show Search Options".
  - Content Items List:
 

Content Items	
CESL Online: Communication in Nursing (Section 2)	
<input type="checkbox"/>	ENGLISH FOR NURSING SYLLABUS
<input type="checkbox"/>	i. <a href="#">Welcome, students!</a>
<input type="checkbox"/>	ii. <a href="#">Program Description</a>
<input type="checkbox"/>	iii. <a href="#">Goals &amp; Requirements</a>
<input type="checkbox"/>	iv. <a href="#">Curricular Design</a>
<input type="checkbox"/>	v. <a href="#">Readings &amp; Materials</a>
<input type="checkbox"/>	vi. <a href="#">Vocabulary</a>
<input type="checkbox"/>	vii. <a href="#">Discussion Postings</a>
<input type="checkbox"/>	viii. <a href="#">Application Activities</a>
<input type="checkbox"/>	ix. <a href="#">Online Chat Session</a>
<input type="checkbox"/>	x. <a href="#">Exams &amp; Assessment</a>
<input type="checkbox"/>	xi. <a href="#">Evaluation &amp; Grading</a>

Most CMSs offer a traditional set of tools and capabilities within their social-constructionist design for establishing social, cognitive, and teaching presences (Garrison

et al., 2001) in online courses. The access to course materials is usually password-protected to ensure privacy and confidentiality of student data (e.g., grades, student IDs, etc.). Students can be enrolled into a course on CMSs at the beginning of a semester and un-enrolled at the end with a click of a button. Upon accessing materials on CMSs, students can view only their assignments, grades, and teachers' feedback to their work. Only reading/video/audio materials, web-links, discussion board materials, blog postings, and real-time text/video chats are open to view for all students enrolled in the course.

Customization of teaching materials in CMSs is fairly easy and is not time-consuming. There are multiple options for uploading files (e.g., MS Word, Text, Adobe Acrobat, PowerPoint, etc.), linking video, photo, audio files, external web-links and other teaching materials. In addition, SMCs have numerous built-in functions for online instructors to use: (1) discussion boards for posting discussion questions, responses to questions, peer feedback, and instructor feedback; (2) a dropbox for uploading student-generated files, like essays, application activities, and etc.; (3) quizzes for designing customized assessment tools, like multiple-choice and essay-type modular and final quizzes and exams; (4) grades for keeping track of students' grades and monitoring their participation and performance; (5) synchronous and asynchronous text and voice/video chats for small-group and whole-class discussions, forums, and presentations; (6) glossary and frequently-ask-questions features to make sites user-friendly and minimize site-orientation and training time at the beginning of a course; (7) internal CMS email and paging for ease of communication among course participants; (8) variable templates for customizing course colors, fonts, and overall presentation formats. All CMSs offer "roll-

over” functions when all course materials and features can be duplicated to clone the site with a click of a button.

There are also considerable differences among capabilities of CMSs that are currently available on the market. Some CMSs’ features do not work in dial-up bandwidths and slow internet speeds, which, in turn, causes major slow-downs, inability to load large files, and time outs. Some CMSs do not provide the scope of the above-outlined functions combined with simplicity of navigation and customization. The current trend in CMS development demands the ease of inter-compatibility as a means of integrating multiple systems into one multi-user interface.

Another issue that has arisen lately is that at present students are expected to navigate several different platforms at the same time as teaching material publishers frequently make available their own ones. As a result, students have trouble remembering where the materials are located and how to get to the required link in order to view or download them. It almost seems that a roadmap to various CMS platforms will be needed in the near future.

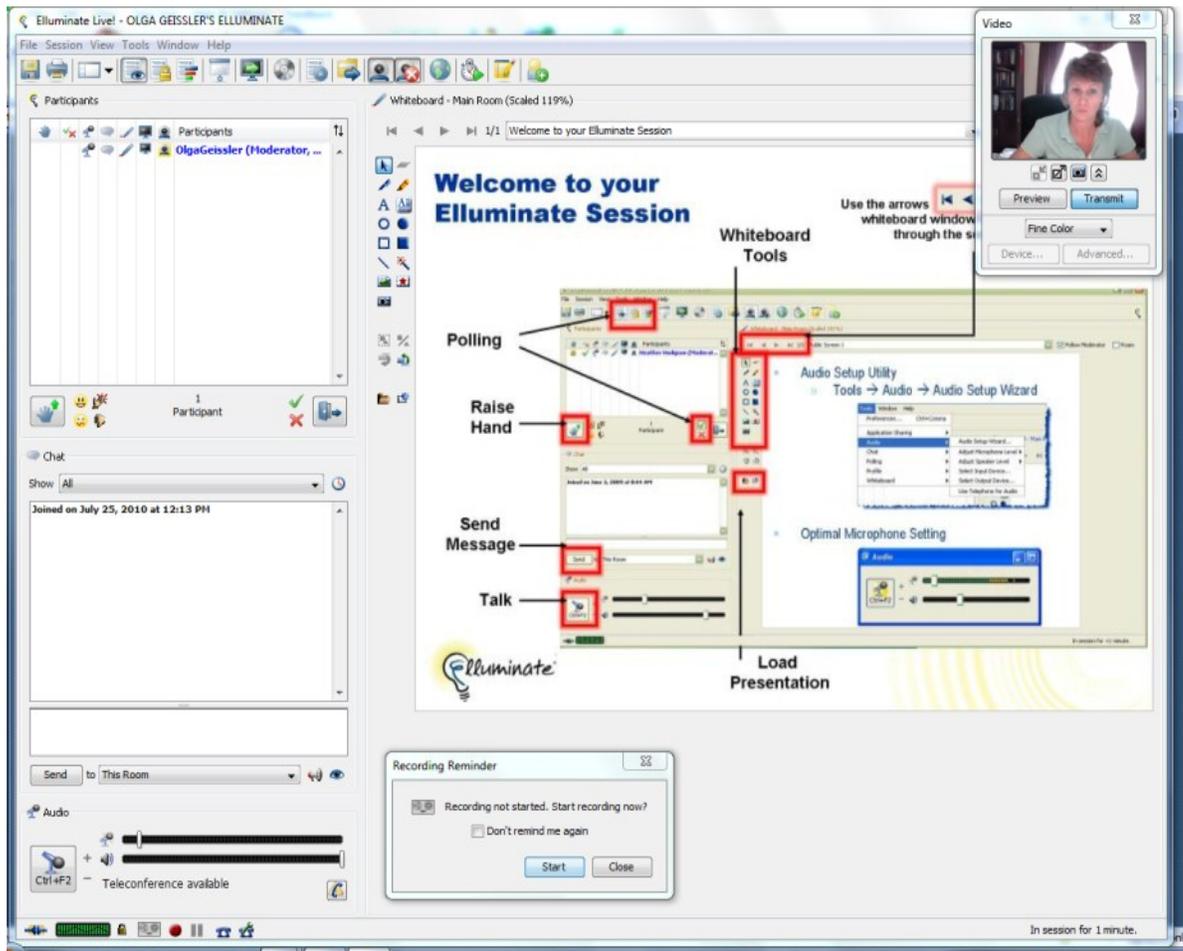
#### 2.3.8. Course-management interfaces: Elluminate

Elluminate is a unified instructional interface that provides an easy-to-use, all-inclusive environment for real-time teaching, interaction, and collaboration. Its capabilities include a synchronous text-based chat window, a whiteboard for uploading teaching materials and presentations, desk-top and application sharing options, break-up rooms for small-group activities, web-link sharing, six-webcam supported real-time

video-based interaction opportunities, audio tools, polling tool, and screen video-capture, among others.

Elluminate is frequently utilized as a means for real-time, synchronous text (through text chat) or voice (through web-cam/microphone supported video) interactions. In online learning environments, Elluminate can support up to six web-cams sustaining small-group activities and pair-work activities. Instructors can pre-set and control the number of microphones used at the same time to maximize oral interaction time for all participants. Text-chat scripts can be printed out or uploaded on the screen for their post-chat review, which, in turn, is a useful tool for instructors and NNS students to discuss their L2 errors. Voice-based interactions can be recorded and played back for instructors to provide feedback to their students' performance (See Figure 2.8).

*Figure 2.9: Screen Capture: Elluminate Live Session Layout*



Finally, the whole Elluminate session can be recorded and uploaded to a CMS as a web-link for students' reference at a later point in time.

Recently, a very successful collaboration among Blackboard, Elluminate, D2L, Wimba, WebSwami, and Turn-It-In has resulted in a number of multi-functional platforms (e.g., D2L+Elluminate Online Rooms+Turn-It-In+WebSwami) with enhanced capabilities to design online courses, conduct multi-user video/voice chats, create sound files, and upload students' written work in a secure environment that examines them for authenticity, generating an instant test and feedback for plagiarism. Every educational

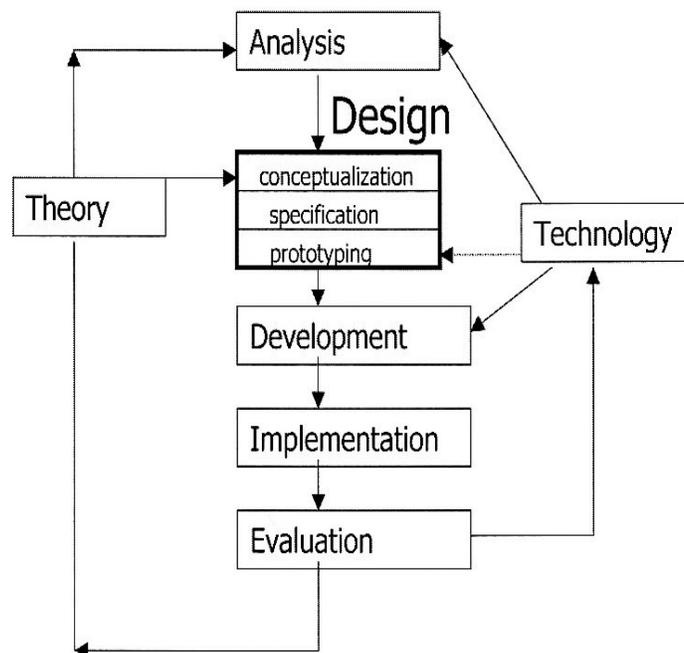
institution in the U.S. has an option of selecting and customizing their CMSs to fit its particular teaching needs and goals.

This project employs an online course design, based on the Community of Inquiry Model (Rourke, 2001), within the Desire-to-Learn CMS in conjunction with Elluminate for synchronous text-based and voice-based chats in order to answer its research questions.

### 2.3.9. Online course design through ADDIE

Several online course designs support a traditional, methodological course-design model, called the ADDIE approach (Analysis, Design, Development, Implementation, and Evaluation) (See Figure 2.9) (Colpaert, 2006).

*Figure 2.10: ADDIE Approach to Course Design (Adopted from Colpaert, 2006).*



It can be observed from Figure 2.9 that theory informs design (especially at its conceptualization stage) and contributes to analysis in the framework. However, at the same time, analysis precedes and is separated from design and development. Technology is not one of the integral parts of the concept, but it is added as one of the components in online course designs. Evaluation, naturally, comes after implementation and more research (theory) is necessary for further enhancement of the framework.

As applied to the issues examined in this project, English for Specific Purposes (ESP) course designs should be grounded in theoretical foundations and research findings on specific purposes of learning English (e.g., English for Nursing, etc.), which, in its turn, direct analyses of students' goals and needs. They determine the structure of the course design at the conceptualization, specification, and prototyping sub-stages. The course design guides its development and, at this point, engages additional components that the course designer finds essential for the course development and implementation (e.g., technology). The final stage, evaluation (which again can be accomplished with the help of technology; e.g., computerized surveys and feedback) necessitates more research (theory) for subsequent enhancement of the framework.

Within the ADDIE framework, online course designers, first, investigate current research findings on the topic and familiarize themselves with the recent developments in the field. For example, English for Nursing course designers can look into effective practices and results of studies on teaching non-native English speaking (NNS) students and professionals who pursue (or will pursue) their carriers in healthcare and nursing, in particular (the theory stage). Then, they can do market analyses and identify groups of

NNS professionals who might be interested in the course and become their potential students (e.g., NNS students of nursing programs of local colleges and universities, NNS medical residents who work in local hospitals, NNS medical professionals/students of nursing colleges abroad with emphasis on effective communicative skills in English, etc.). Then, online course designers do their prospective students' needs analyses in order to understand their goals in English learning and target them precisely (the analysis stage).

ESP designers of courses for NNS learners are usually professionals experienced in ESL/EFL teaching; however, they might lack knowledge and expertise in a particular field of ESP, for example, nursing. At this point, consultations with NS medical professionals experienced in teaching courses that address medical discourse issues can inform and guide the course development, ensure authenticity and practicality of the course materials, and align the course design with L2 learner needs and goals. After the course has been designed, it needs to be piloted, evaluated, and further improved. Finally, it is included in the higher-education institutions' course catalogue, promoted, and offered to students.

This project employs an ESP: English for Nursing online course design as a vehicle for data collection in order to answer its research questions.

## 2.4. Research-related Elements of Online Course Design

### 2.4.1. Role-plays in online courses: Experiential learning

Among the research findings on the experiential benefits of role-plays in various educational settings, they are specifically acknowledged for providing learners with an opportunity to “experience situations from various perspectives and thus assist in reducing the gap between knowing what to do and actually doing” (Pfeffer & Sutton, 2000, as quoted in Jones, 2007, p. 469). Maier (2002) defines role-plays according to their goals: (1) knowledge, (2) attitude, and (3) skill-based. He states that knowledge-based role-plays are valuable to observe and then discuss in order to gain and assimilate knowledge about situations and human behaviors depending on the situational progression. Role-plays for attitude development, as he recommended, should not be rigidly structured, but rather the participants should be able to experience their emotions spontaneously and, while experiencing and evaluating them, adjust their behaviors to achieve the desired outcomes of the situations. Finally, skill-acquisition role-plays should provide participants with ample opportunities to be exposed to multiple situations that require them to use the same skill (or a set of skills) repeatedly in order to develop their skill(s) and discuss their performance with their peers or instructors between role-play sessions.

Kneebone (2005) situates role-plays within professional contexts and affective elements of learning. He defines the following criteria for evaluating role-plays (or

simulations) in clinical environments within medical discourse and communicative encounters in healthcare-related environments:

1. Simulations should allow for sustained and deliberate practice in a safe environment and that simulations ensure skills are consolidated and aligned with other curricular activity [...];
2. Simulations should map on to real life clinical experience;
3. Simulation-based learning should provide a supportive, motivational and learner-centered environment. (Nestel & Tierney, 2007)

Nestel & Tierney (2007) further suggest that the above simulation evaluation criteria should be applied in “constructing and implementing role-plays aimed at developing clinical communication” (p. 3).

In regards to using role-plays in courses designed for NNS nursing students, the following should be mentioned. Role-plays demonstrate tasks that are similar and, thus, relevant to students’ future communicative encounters in healthcare-related settings. The content of L2 produced during those role-plays mirrors the one used in real-life clinical settings. The students’ active and conscious participation in those role-play situations, thus, is consequential to the outcomes of the course. Based on the students’ genuine interest in them and strong desire to improve their communication skills in L2, it is sufficient to underscore the authenticity of nursing students’ L2 produced during role-play situations when they are used as components of online courses, designed to improve NNS nursing students’ communicative skills. This project utilizes role-plays as a means

for data collection in order to answer the research questions and test the suggested hypotheses.

#### 2.4.2. Noticing and language learning

As it has already been mentioned in Chapter I, this project is grounded in the interactionist theory, based on the input hypothesis (Krashen, 1985), interaction hypothesis (Long, 1983; Chapelle, 1997), output hypothesis (Swain, 1985), and noticing hypothesis (Schmidt, 1990). This part of Chapter II will focus on the latter and its relationship to the proposed research questions.

In 1990, Schmidt proposed the Noticing Hypothesis which emphasizes the fact that for new language forms to be acquired and learned, they first need to be noticed in a language input. Schmidt (2001) later stated that “noticing requires of the learner a conscious apprehension and awareness of input” (p. 26). On the other hand, he warned that noticing did not automatically mean that a language item would be remembered and learned.

Tomlin and Villa (1994), Gass (1997), Robinson (2001), among others agreed that noticing is an important factor in second language acquisition. The Noticing Hypothesis has later evolved into a strong version (which states that noticing is necessary and sufficient for L2 acquisition) and a weak version (which states that noticing is necessary but not sufficient for L2 acquisition). Numerous studies have identified noticing as an important construct in L2 acquisition (Izumi, 2002; Leow, 2000 & 2001; Mackey, Gass & McDonough, 2000, among others). As the studies were not designed to test this

possibility, none of them stated that a linguistic form noticed during online chats was actually acquired by L2 learners.

Another issue that still needs research and resolution is the unit that can be accepted as a measure of L2 learners' noticing. Swain (2000, 2001) proposed to observe noticing through learners' participation in language related episodes (LRE). LREs are discussions about language use when L2 learners reflect and comment on their own (or others') language use. As learners engage in LREs, they notice a problematic language item, discuss it, and find a resolution. Used this way, LREs facilitate noticing, which, in turn, contributes to language learning, the process called focus-on-form (Blake, 2000).

On the other hand, it has been suggested that students' self-correction and/or self-repair (e.g., situations when students notice their mistakes during L2 production and self-correct them either during speech or writing) happen as a manifestation or evidence of their noticing of erroneous structures in L2 and their subsequent ability to correct them signifies learning of the structures (Swain, 1985 [Output Hypothesis]; Schmidt, 1990; Foster & Ohta, 2005; Lee, 2002; Lai & Zhao, 2006; Smith & Gorsuch, 2004; Jepson, 2005; Shekary & Tahririan, 2006; Smith, 2009, among others). Foster & Ohta (2005), for example, state that self-correction is "self-initiated, self-repair, [which] occurs when a learner corrects his or her own utterance without being prompted to do so by another person" (p. 420).

Furthermore, Swain (1985) and Smith (2009) use the term *a modified output* to identify the processes of self-correction/self-repair and suggest that it occurs when speakers detect that their L2 output is faulty or inappropriate in some way. To reiterate

Swain's (1985) and Smith's (2009) concepts, Kormos (1999) states that self-correction/self-repair are observable behaviors as an L2 "learner has engaged in some monitoring strategy or has noticed a production error." Furthermore, if self-correction and self-repair are observable behaviors, they can be measured.

Lai & Zhao (2006) reiterate the idea of L2 learners' self-correction as evidence of noticing. In their research findings and also based on their analyses of outcome, text-based transcripts of online chats, they found that the online chats were superior to F2F interaction for promoting noticing of mistakes.

The current research findings of self-correction/self-repair and CMC state that oftentimes students are engaged into the grammatical self-correction, not the lexical one (Jepson, 2005; Lee, 2000; Yuan, 2003); however, those studies tend to (1) take a rather narrow approach to various types of self-repair in their investigations and (2) fail to use modern technology in their data collection and analysis (Smith, 2009).

This project employs situations of self-correction/self-repair (i.e., noticing/observable and measurable behaviors in voice-based and text-based online chats) as a manifestation of the participants' learning to use open questions for probing in therapeutic dialogues in the ESP: Communication in Nursing online course.

#### 2.4.3. Language-skill transfer in L2 learning

The research findings about a possibility of language-skill transfer between the linguistic output generated through SCMC (text-based chat) and participants' spoken L2 ability surfaced in the early 1990s, later prompting L2 researchers to compare SCMC and

F2F conversational speech for quantity, morphological markers, and nature of language production (Beauvois, 1992; Chun, 2003; Kelm, 1992 among others). Most studies assessed linguistic outputs produced by the participants during their text-based chat sessions as compared to and F2F oral discussions. The findings of the studies suggested (1) L2 participants produce more language in text-based chats than in F2F classroom (Abrams, 2003; Warshauer, 2000); (2) L2 participants often produce more complex language in text-based chats with more accurate use of past-tense morphological markers (Bölke, 2003; Salabery, 2000; Warshauer, 2000); (3) L2 participants exhibit more positive attitude to L2 learning as a result of text-based chats used for L2 instruction (Kern, 1995; Warshauer, 2000, Smith, 2009).

Beauvois' (1997) study was among the first to examine oral proficiencies of eighty-three participants who were randomly assigned to four sections of French as a foreign language (two experimental and two control conditions) with the experimental sections' participants using text-based chats to practice their communicative activities and the participants in the control conditions practicing L2 only F2F. The research findings suggested that the participants enrolled in the experimental sections of the course showed greater improvement in oral skills during follow-up oral exams compared to those in the control groups prompting researchers to consider a possible transfer of language skills from SCMC to L2 speech.

Payne and Whitney (2002) conducted a research study to test the hypothesis that L2 production in text-based chats develops the same cognitive mechanisms as L2 speech. Fifty-eight volunteers from a fourth-semester Spanish as a foreign language course were

randomly assigned to two conditions: experimental and control. The participants in the control group completed two out of four required days of activities through text-based chats while the participants of the control group did the same thing F2F. The research findings showed greater gains in oral L2 proficiencies in the participants of the experimental group.

Kost (2004) examined oral L2 proficiency gains in the participants of the experimental group who were required to complete twelve chat sessions during their regular fifteen-week semester. Oral and written proficiencies of the participants were measured twice: at the beginning of the course and at the end of the course. The oral proficiency tests consisted of two five-ten-minute oral interviews with the instructor that were audio taped and scored; the written proficiency tests were ten-minute in-class writing samples; both of the tests were conducted at the beginning and the end of the course. The treatment consisted of a number of activities, one of which was a role-play that was performed F2F by the participants in the control condition and through the text-based chat in the experimental condition. No significant differences in development of oral and written L2 proficiencies were found between the groups.

The present research study focuses of the situations of possible language-skill transfer from text to speech and vice versa in text-based and voice-based chat conditions in the ESP: Communication in Nursing course online.

## 2.5. Chapter Summary

The first section of Chapter II focused on the differences and similarities among the terms of *distance learning (distance education)*, *open learning*, *learning online*, and *online education* and presented current research findings related to online learning in higher-education institutions of the United States from 2002 to 2010.

The second section of Chapter II outlined the research findings in medical discourse and their application to healthcare-related communicative settings through Mishler's (1984) Theory of the Voices of Medicine and the Lifeworld, grounded in Habermas's (1970) Theory of Communication Action. Also, Chapter II examined Egan's (2007) Helping Model and the use of open questions for probing in therapeutic dialogues, and their relationship to the research study of this project.

Finally, Chapter II presented the research findings on online course designs and the use of course management systems (CMSs), platforms, and interfaces for teaching and learning online. It also dealt with approaches to experiential L2 learning online through the issues of using role-plays for learning in online environments, participants' self-correction/self-repair (i.e., initial output vs. modified output) as manifestation of noticing leading to learning of L2 structures, and current research findings on language-skill transfer as some of the means for answering Research Questions #1, 2, and 3 and testing Hypotheses 1A, 1B, 2A, 2B, and 3 of this project.

## CHAPTER III

### METHODS AND DATA

#### 3.1. Synopsis of the Research Questions and Hypotheses

The methods, research protocols, framework, choice of participants, and data collection techniques are firmly grounded in and derive from the research questions of this project and hypotheses that it examines. As a result of the procedures described below, the following research questions will be answered and the following hypotheses will be tested:

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

Hypothesis 1A: If the participants were instructed via voice throughout the course of study (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-

treatment condition compared to the voice-based pre-treatment condition and voice-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 1B: If the participants were instructed via text throughout the course (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition compared to the text-based pre-treatment condition and text-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

Research Question #2: What evidence is there to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

Hypothesis 2A: If the participants were instructed via voice throughout the course (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would also produce more open questions for probing in

role-plays of therapeutic dialogues in the text-based post-treatment condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 2B: If the participants were instructed via text, throughout the course of study (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition. The observed difference between the means of scores would be statistically significant.

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

Hypothesis 3: Assuming that both interactional modes (voice-based and text-based chats) are most likely to be firmly integrated into the participants' everyday lives and activities (e.g., instant messaging with friends on Facebook and/or other social interactive media and environments; using video chats on Skype, Face Time on iPhones and

iPads, applications for face-to-face communication on Android-based cell-phones or other devices with similar features; cell-phone text-messaging features, etc.), the preference of the instructional mode– voice or text – and the perception of its effectiveness in learning would be unrelated to the mode of instruction used throughout the course; rather, it would depend on the participants’ personal preference, the level of familiarity and comfort with it, and the frequency of its use in their everyday lives.

### **3.2. ESP: Communication in Nursing Online Course Design**

To answer the above-mentioned research questions, first, an online ESP: Communication in Nursing course was designed.

#### **3.2.1. Course description**

This fifty-hour English for Specific Purposes: Communication in Nursing course aims to help non-native speakers of English (NNSs) who are prospective students of nursing programs in the U.S. and abroad, to achieve success in their future studies and to support current NNS students of nursing schools and programs through targeted enhancement of their academic and professional English-language skills. This course is also designed to help practicing NNS nurses to advance on their career paths by improving their communication skills and job-related English language proficiencies.

The course begins with two days of online orientation (e.g., usually Saturday and Sunday before the course begins on Monday), during which the participants are required to log in to their course CMS website, using their individual log-in names and passwords assigned by the course instructor. They are expected to familiarize themselves with the course description, goals, expectations, and requirements for each module, outcomes, assignments, and deadlines. They are advised to print and review the recommended course schedule and the synchronous-chat schedule (See Appendix I for a sample course schedule). In addition, they watch the introductory video clips about the features of the interfaces, used for the course design: Desire-to-Learn (D2L) and Elluminate.

*Figure 3.0: Communication in Nursing Homepage*

**CESL Online: Communication in Nursing**

THE UNIVERSITY OF ARIZONA  
Arizona's First University

Content | Classlist | Discussions | Dropbox | Grades | Quizzes | Edit Course

**Role Switch**

- My Role (Instructor) --  
Change Role

**Events**

**News**

News Item Actions

COURSE SOFTWARE Orientation videos

Orientation to D2L (course interface): [DOWNLOAD](#) Orientation to Elluminate (chat program): [DOWNLOAD](#)

Welcome, students!

**Course Description:** This course aims to help non-native speakers of English (NNSs), prospective and current students of nursing/medical programs in the U.S. and abroad, to achieve success in their studies through targeted enhancement of their academic and professional English-language skills. This course is also designed to help practicing NNS nurses to advance on their career paths by improving their oral and written communication skills and job-related English language proficiencies.

**Starting the Course:** Please select the **Content** menu item above to get access to the course materials.

**Questions:** If you have any questions about the course, please, do not hesitate to contact your instructor, Olga Geissler, via email: [geissler@email.arizona.edu](mailto:geissler@email.arizona.edu).

Finally, the participants are expected to try using the Discussion feature of the CMS by posting a brief introduction of themselves for their classmates and the instructor, as well as any questions and/or concerns they might have about the course administration at that point. The instructor responds to the introductions, answers question, and troubleshoots concerns as necessary before the first module of the course opens up and starts on Monday. These activities establish social and teacher presences in the online course before its beginning (Rourke et al., 2001).

Figure 3.1: Communication in Nursing Introductory Discussion Questions

### Forums & Topics List

Forums & Topics List
 New Forum
 New Topic
 Copy
 Reorder
 Delete

Display: All Forums and Topics

---

**Title**

[BEGINNING THE COURSE: Introductions & General Questions](#)

Please, answer the following questions. They are designed for you with three ideas in mind: (1) to introduce yourself to your classmates and the instructor; (2) to get to know your classmates; (3) to try posting your responses and respond to your classmates' postings, as well as to get used to this D2L feature.

[Introductions](#)  
0 messages - 0 unread

Please introduce yourself to your instructor & fellow participants. Tell us something about yourself, why you are taking this course and what you plan to do after the course is completed.

---

[Administrative Question #1](#)  
0 messages - 0 unread

Do you have any questions/concerns about the course administration?

### 3.2.2. Modular design

The course includes seven modules for eight weeks of intensive online instruction. Each module of the course consists of an introductory reading, which serves as a new conversation topic, discourse structure, and vocabulary introduction. Next, there is an introductory video clip that reinforces and expands on the main theme/topic of the module and introduces several sub-topics. The reading and the video serve as main discussion-topic generators and also teach the course participants a few useful points about medical discourse structures that they will later practice through role-plays in synchronous online chats. The reading and the video clip are followed by a number of comprehension and vocabulary activities for students to get comfortable using linguistic structures and healthcare-related vocabulary in order to succeed in their communicative

practices during weekly synchronous chats. The participants are expected to complete the required readings, practice new vocabulary, and watch the video clips before they proceed to other activities included in each module. They are usually given two-three days – Mondays, Tuesdays, and Wednesdays of each week – to complete these assignments (See Appendix I for a sample assignment schedule). These activities establish the participants' initial cognitive presence in an online course (Rourke et al., 2001).

After the participants read the readings, familiarize themselves with new vocabulary, and watch the video, they are required to post two responses to the two discussion questions related to the topics presented in each module. Then, they read their classmates' responses to these questions and then they are expected to respond to two of their peer responses of their choice. The instructor provides feedback to their work and ideas by posting comments to the participants' peer responses, which creates a continuous thread of online communication/discussion about the discussion topics each week.

Every week, the participants are required to participate in an hour-long synchronous voice-based chat (i.e., using their microphones or headsets with a microphone) or text-based chats (i.e., using the text-chat feature of Elluminate) in various interactive formats (e.g., student/student, student/teacher) in order to practice using linguistic structures, vocabulary, and some of the medical discourse techniques presented and discussed in each module. They also complete application activities, grammar reviews, and writing activities to improve their communicative skills in writing. Finally,

for assessment purposes, the participants are required to complete a short five essay-form-question quiz for each module of the course plus the final twenty-question quiz for the course. The cognitive, social, and teacher presences are established in the course (Rourke et al., 2001) through the use of the above-described activities.

*Figure 3.2: Sample Module of the Course*

<input type="checkbox"/>	 MODULE 2: SPEAKING BY PATIENTS
<input type="checkbox"/>	i.  <a href="#">Mod 2 Description</a>
<input type="checkbox"/>	ii.  <a href="#">Mod 2 Objectives</a>
<input type="checkbox"/>	iii.  <a href="#">Mod 2 Readings</a>
<input type="checkbox"/>	iv.  <a href="#">Mod 2 Vocabulary</a>
<input type="checkbox"/>	v.  <a href="#">Mod 2 Video Clips</a>
<input type="checkbox"/>	vi.  <a href="#">Mod 2 Discussions</a>
<input type="checkbox"/>	vii.  <a href="#">Mod 2 Online Chat</a>
<input type="checkbox"/>	viii.  <a href="#">Mod 2 Activity</a>
<input type="checkbox"/>	ix.  <a href="#">Mod 2 Final Quiz</a>

For a complete modular outline of the course, see Appendix II.

### 3.2.3. Course schedule

ESP: Communication in Nursing has been designed in a modular format that incorporates both synchronous and asynchronous instructional components. Each module of the course lasts one week, in which the module “opens” (i.e., the instructional materials become visible to the participants on D2L) on Mondays and “closes” (i.e., the instructional materials become invisible to the participants on D2L) on Sundays, and all the assignments for each week are expected to be completed by 11:59 PM on Sunday of that week. Each preceding course module must be completed before the next module begins. Thus, Module 1 must be completed before Module 2 can be started, and so on.

Each module has time-specific instructional components and targeted completion dates. However, the program has also been designed to allow participants to work ahead or behind at their own pace within a given week of instruction to a limited degree. Regardless of the participants' chosen pace, each module has one mandatory completion date when all module assignments must be completed and submitted for grading.

If students do not complete a module before the mandatory deadline, they expose themselves to a risk of failure of the course. The participants must complete at least seventy-five percent of the course assignments by the final deadline in order to get the Certificate of Completion for the course. Extensions for the final deadline of the course are only granted under exceptional circumstances.

The final exam in Module 7 cannot be completed before the completion of the required coursework. This is intended to ensure some semblance of continuity among the participants and their progress through the course materials in order to facilitate learning through dialogues and negotiation of meanings during discussions and chat components.

#### 3.2.4. Course outcomes

At the end of this course, the participants will have a clear understanding and be able to demonstrate:

1. the use and application of empathetic listening and responding techniques in therapeutic dialogues;
2. identification and application of effective probing techniques in therapeutic dialogues;
3. effective skills of summarizing and paraphrasing in therapeutic dialogues;

4. the use of self-disclosure in respect to patients' cultures in communicative encounters;
5. effective oral and written communication skills as applied to situations similar to those the participants might encounter on the job;
6. knowledge and sensitivity to nurse/patient cultural differences and communication issues in healthcare-related communicative settings.

### 3.2.5. Course requirements

In order to complete this course successfully and receive the Certificate of Completion, the participants must:

1. complete all required modular readings, assignments, and quizzes as assigned;
2. post detailed discussion responses to all assigned questions and respond to two of their classmates' postings;
3. participate in each of the Module 1-6 synchronous chat sessions with the classmates and instructor and the final-test chat session;
4. submit appropriate materials for all application activities;
5. successfully complete the formative quizzes for Modules 1-6;
6. successfully complete the final summative quiz for Module 7;
7. complete at least seventy-five percent of the above-mentioned coursework by its mandatory deadlines, as specified in the course schedule.

### 3.2.6. Articles and book excerpts

Each module requires the participants to read a selection of readings in the form of academic journal/magazine articles or excerpts from relevant textbooks. These readings have been chosen for both their focus of content and their accessibility for NNS students. Every attempt has been made to restrict the program's readings to texts that are intended for nurses and medical professionals. Nonetheless, all readings require significant and careful study. It is expected that the participants read these selections carefully. It is worth noting that, the quality of their responses to discussion questions, application activities, and each module quiz depend greatly on the participants' thoroughness in reading and reflecting upon assigned texts. Additional vocabulary practices are also included in each module and are designed for the participants to be able to expand their professional lexicon.

### 3.2.7. Video clips

All modules include a video component intended to provide the participants with a window into practical applications of the materials discussed in the modules in relationship to the nursing/medical career. These video clips are recordings of lectures on a variety of topics related to the ones discussed in each module or authentic real-life situations (or as close to authentic as possible) that the participants might have encountered on the job. The course participants are given an observation guide to use during viewing; moreover, the discussion-question topics and application activities of the course often reference materials presented in the video clips.

Figure 3.3: Sample of Video-clip Observation Protocol






**Streaming Video Clip**

**Video Clip**

You are about to view a video clip *Empathy*. It tells you about the effective empathetic skills and their importance in nursing/medical care. It teaches you about the effective ways and guidelines for using empathetic responses, showing specific examples of things to do and things to avoid while you are talking to your patients/clients. Pay close attention to the comprehension questions listed below. It is strongly recommended that you take notes as you view the video. The discussion questions and/or final quiz questions will require your knowledge and evaluation of the content featured in this video clip.

**Observational Protocol**

*During the video, pay particular attention to the following questions:*

1. What is "empathy"?
2. Why does empathizing with patients/clients seem to be so important for nursing/medical communication?
3. What is the difference between empathy and sympathy?
4. How can nurses insure that their responses to patients'/clients' comments are empathetic?
5. What is the formula of basic empathetic understanding in nursing?



[DOWNLOAD](#)

### 3.2.8. Responding to discussion questions

Within each module, the participants are expected to post at least one response to the two discussion questions. The discussion questions are intended to elucidate reflection upon the fundamental concepts and topics discussed in each of the readings and/or video clips of the modules. The discussion postings should include references to

the text or material related to the questions, and the participants should try to answer each question as clearly and comprehensively as possible. Postings are not graded solely on length, but they should contain approximately 100-150 words. All discussion postings are graded according to the rubric (See Figure 3.4.).

*Figure 3.4: Sample Discussion Question Rubric*

Online Discussion-Question Rubric (approximate points for each discussion posting)		
10 points	5 points	0 points
Excellent discussion of the reading/video material. Deep and detailed analysis is provided with multiple examples & discussion of possible application (100 words minimum)	Discussion addresses reading/video material, but does not go into any great detail. Lack of deep analysis and/or examples.	No response submitted OR Incomplete/seriously underdeveloped response submitted

### 3.2.9. Participation in synchronous online chats

In addition to discussion-question postings, the participants are required to participate in six synchronous online chats offered during the course. The online chats are accessed via the Elluminate link provided by the instructor and are used for practicing the concepts, linguistic structures, and vocabulary that are studied in each module. For these practices, the participants are required to have a webcam with a microphone or a set of headphones with a microphone. If they do not have this equipment, the participants can use the text-based chat feature of Elluminate and type their responses (See Experimental Group Set-up for more detailed explanations of the group set-up).

These synchronous discussions focus extensively on specific materials presented in the modules, but they also serve as an open forum for questions or discussions of other

issues/topics as they come up during the course of study. The main goal of the chats, though, is to provide students with sufficient practice and exposure to communicative situations similar to those that they might encounter on the job.

### 3.2.10. Modular quizzes and the Final quiz

In order to help the participants synthesize the materials from each module and the course as a whole, they are required to complete a formative module quiz after having completed all other assignments for each module, as well as the final quiz during Module 7, the last module of the course. This is the final course component for each module and the course, respectively. The quizzes can be taken only after the participants have completed all other assignments, such as the readings, videos, discussion postings, application activities, and the chat session for the module in question. The final exam cannot be taken until all coursework and activities have been completed for the preceding six modules.

*Figure 3.5: Sample Modular Quiz Layout*

Quiz Info	
<b>Olga Geissler</b> Attempt 1	<b>Question 1 (10 points)</b> Provide your definition of "empathy." Explain your answer with an example.
Questions	<input type="text"/> abc ✓
Page 1:	Save
1 2 3 4 5	
Legend	<b>Question 2 (10 points)</b> Why is empathizing with patients/clients very important in nursing/medical communication?
<input type="checkbox"/> Saved Response <input type="checkbox"/> Unsaved Response <input type="checkbox"/> Info Item	<input type="text"/> abc ✓
	Save
	<b>Question 3 (10 points)</b> What is the difference between empathy and sympathy? Provide an example to explain your answer.
	<input type="text"/> abc ✓
	Save
	<b>Question 4 (10 points)</b> How can nurses ensure that their responses to patients' concerns are empathetic?
	<input type="text"/> abc ✓
	Save
Quiz Status	
<b>Quiz Started</b>	<b>Question 5 (10 points)</b> Describe the guidelines for using empathetic responses.
	<input type="text"/> abc ✓

The final exam grading rubric looks similar to the modular quiz evaluation rubric provided in Figure 3.4 above.

### 3.2.11. Evaluation and grading

ESP: Communication in Nursing is a pass/fail course, in which passing results in a Certificate of Completion/Center for English as a Second Language, The University of Arizona, ESP Online: Communication in Nursing. In order to pass the course and receive

the certificate, the participants must successfully complete a minimum of seventy-five percent of the coursework within the time limits and deadlines indicated and according to specific assessment criteria.

### 3.2.12. Brief summaries of the modules

The first *Module: English for Nursing Syllabus* is an introductory module of the course. It contains information that the participants are expected to familiarize themselves with during the orientation days of the course: (1) welcome note from the instructor and the instructor's bio; (2) course description; (3) course goals and requirements; (4) curricular design; (5) requirements for readings and materials; (6) requirements for vocabulary practices; (7) requirements for discussion postings and the grading rubric; (8) requirements for completing application activities and instructions for submitting them into the Dropbox feature on D2L; (9) requirements for online chat sessions; (10) description of exams and assessment procedures; (11) evaluation, grading, and course completion requirements.

*Module 1: Nursing/Dare to Care* ponders the issues that nurses all over the world face every day on the job. It asks the participants to think about the fundamental roles that nurses play in today's societies as they provide care and build trust with patients, promote healthcare through prevention and maintenance, and spend their days attending to extreme cases as they "dare to care" and save lives. The module also exposes the participants to vocabulary that they need for further oral and written discussions of the topics that follow.

*Module 2: Speaking by Patients* explores the nurse's responsibility to listen carefully when patients/clients talk about their problems to ensure effective history-taking outcomes and put them at ease with the nurse and/or their healthcare provider. Having effective listening skills is very important for nurses' training and their overall success on the job, so the module explores two main issues: the meaning of "active listening" and the specific strategies to follow and rules to observe as nurses listen to their patients/clients' stories. The synchronous online chat session is devoted to finding answers to these questions and practicing active listening skills and strategies as outlined in Module 2 of this course.

*Module 3: Speaking to Patients* focuses on the skill of empathy, one of the most important ones for nurses to develop in order to be able to establish a tangible connection with their patients/clients to ensure positive outcomes during consultations and salient success during therapeutic dialogues. It will not only ensure nurses' success on the job but also earn respect and trust of their patients/clients. Module 3 of this course focuses on empathy and the role of empathetic responses in nursing/medical communicative settings.

*Module 4: Speaking with Patients* emphasizes the easiest way for nurses to collect information about patients' concerns, which is through probing. The module points out that it is extremely easy to do, but, at the same time, it might be a very challenging task. On the one hand, nurses do not want to stifle their patients' desire to talk about their issues; on the other hand, it is their responsibilities to collect important, relevant information about their patients to ensure effective, successful medical care. In this module, the participants are exposed to a subtle art of probing through asking questions.

They learn about different types of probes (verbal and nonverbal; closed questions and open questions), their effective use in various situations, and guidelines for using probes judiciously. As with other modules of this course, the participants get a chance to practice probing techniques extensively in speaking and writing during their weekly synchronous online chats with the classmates and the instructor.

In *Module 5: Speaking about Patients*, the participants learn how to communicate effectively with their colleagues and supervisors. They also review the skills of summarizing, paraphrasing, and information sharing in communicative settings similar to those that they might encounter on the job.

*Module 6: Culture and Health-Care Communication* offers an insight into being a nurse and working with people from different cultures, ethnic, religious, and socio-economic groups when it becomes the nurses' responsibility to find the most effective approach and communicative style with their patients/clients. Some nurses find it very challenging to understand other people's points of view and interpret their actions. Module 6 of this course exposes the participants to some of the issues related to cultural differences among people as related to effective communication in clinical settings. The modular readings and videos address health beliefs and practices among people of various cultures of the world as the participants learn to apply the guidelines for using self-disclosure in medical discourse.

In order to help the participants synthesize the material from each module and the course as a whole, *Module 7: Final Exam* requires them to complete a final exam during

this seventh and final week of the course. This is the final course component and is taken only after the participants have completed all other coursework.

### **3.3. Participants and Treatment Conditions**

During December 2010-January/February 2011 at the Center for English as a Second Language (CESL), the University of Arizona, the ESP: Communication in Nursing online course was offered to students of a major nursing college at one of the largest universities in the Philippines. Forty fourth-year students (i.e., seniors) – for a total of twenty-two female and sixteen male Pilipino students – were enrolled to participate in the study (See Appendix III for Participants' Demographic Data). All participants spoke Tagalog as their L1. At the time of the study, the participants were working on their remaining course required for a Bachelor of Science in Nursing degree at their college and were completing hands-on nursing practicums at major hospitals and clinics of the Philippines.

All the participants had high-intermediate to advanced EFL proficiencies; in order to verify that, they were requested to provide a copy of their recent Test of English as a Foreign Language, Internet-Based Test (TOEFL iBT) score or its equivalent in TOEFL, Paper-Based Test (PBT) score. Their scores averaged ninety points for the TOEFL iBT score and five-hundred-seventy-five points for the TOEFL PBT score.

Prior to starting the course modules, a questionnaire was conducted among the participants to identify the equipment available for their use during the course. Those students who claimed to have a webcam with a microphone and/or a set of headphones with a microphone or were able to gain access to them by the beginning of the course were placed in ESP: Communication in Nursing, Section 1 (voice-based chat condition). Those students who did not have the above-mentioned equipment and claimed to be unable to supply it by the beginning of the course were placed in ESP: Communication in Nursing, Section 2 (text-based condition) for an even split of twenty participants in each section and a somewhat uniform male/female distribution in each section (See Appendix III for Participants' Demographic Data).

The project received the Human Subject Protection Program approval at the University of Arizona in August 2010. Since the principal investigator (PI)/researcher of the project was also the instructor of the course, her project advisor met with the prospective participants online via an Elluminate-based online chat session, in which he explained the purpose and the procedures of the study, answered their questions, and collected signed disclosure forms that were kept confidentially under a lock-and-key in the advisor's office and were released to the PI only after the online course was over and the research data collection was completed.

### **3.4. Pre-treatment Stage, Instruments, and Data Collection**

In order to answer Research Question #1, test Hypotheses 1A and 1B, answer Research Question #2, and test Hypotheses 2A and 2B at the pre-treatment stage of the project, the following procedures were completed, the following instruments used, and the following data collected.

#### **3.4.1. Weekly synchronous online chats and their role in data collection**

Before the beginning of the online course, the researcher prepared a collection of situations for role-plays of therapeutic dialogues, typical for medical discourse and healthcare-related communicative settings, along with situations that usually require nurses to use probing questions (Egan, 2007) in order to elicit more information about their patients' issues and concerns and allow the Voices of the Lifeworld (Mishler, 1998) to be heard (See Appendix III for samples of the role-play situations). The purpose of the collection is twofold: (1) as the participants pair-up during weekly synchronous online chats, they use their microphones to speak for five minutes to role-play a situation provided by the instructor to practice using open questions in therapeutic dialogues; or (2) after the participants pair-up, they use the text-chat feature of Elluminate and type (i.e., participate in a written text chat) for five minutes as they role-play a situation provided by the instructor to practice using open questions in therapeutic dialogues.

As the participants take part in the role-play sessions (either voice-based or text-based), each one of them has to assume a role of either a helper or a client (Egan, 2007). These role-play sessions are used during weekly synchronous online chats with the instructor and classmates. Since the online chats are built into the online course structure as one of its strictly required components, the expected outcomes of these role-play sessions are achieved through practicing speaking (voice-based mode) or writing (text-based mode) in English and learning medical discourse techniques, linguistic structures, and vocabulary provided in each module of the course and discussed weekly as the course unfolds.

The collection of the situations was examined and assessed for its realism, gender neutrality, and ability to elicit the research item (i.e., open questions for probing) impartially. The researcher approached three ESL professionals to help with rating of the situations. All three raters had a Master's degree in Teaching English to Speakers of Other Languages (TESOL), English Language Learning (ELL) or other related area. After the researcher explained the purpose of the project and the situations were grounded in the research data-collection procedures, the raters were required to evaluate each situation on the following scale: very realistic/realistic/neutral/somewhat realistic/unrealistic. None of the situations was rated as *somewhat realistic* or *unrealistic*. The situations rated as *neutral* were discussed and suggested corrections were introduced to place the situation in the categories of *very realistic* or *realistic*. The procedure was repeated until all three raters agreed to the final versions of all twelve situations. Moreover, the raters focused on the gender neutrality of the situations – from the

medical-discourse perspective and linguistic point of view – to make sure both male and female participants of the project would feel equally comfortable role-playing the situations (See Appendix III).

### 3.4.2. Pre-treatment procedures

Before the beginning of the ESP: Communication in Nursing course, the participants were asked to meet with the instructor in a synchronous online chat session via Elluminate and to role-play Situations #1-4 from the collection prepared by the researcher to observe their use of probing/open questions (or the lack of it) during therapeutic dialogues. The purpose of the procedure was to collect the base-line/pre-treatment usage data of the research item – open questions as probes – in both conditions – voice-base and text-based – to establish the participants’ familiarity with it and their ability (or the lack of it) to use it in English.

#### 3.4.2.1. Base-line/pre-treatment data set 1A (voice-based)

All the participants in Section 1 (voice-based condition) and Section 2 (text-based condition) of the course completed two role-play situations (Situations #1-4 from the collection, assigned randomly. See Figure 3.6). In each situation, they were required to role-play either as a helper or as a client (Egan, 2007). The same pair of students role-played two different situations as they switched roles (e.g., Situation #1: Student 1 (S1) was a helper and Student 2 (S2) was a client; Situation #2: S2 was a helper and S1 was a client). All of the course participants completed the role-play situations by speaking into

their microphones (voice data) and their performance as a helper was recorded through the record-session feature on Elluminate, which resulted in forty pre-treatment, five-minute-long voice-based files. For this procedure, the participants of Section 2 (text-based chat condition) were instructed to borrow a set of headphones with a microphone from their friends/classmates or do this chat session from an Internet café that supplied a webcam/microphone set-up for their use.

#### 3.4.2.2. Base-line/pre-treatment data set 1B (text-based)

Next, all the participants in Section 1 (voice-based chat condition) and Section 2 (text-based chat condition) completed another set of two role-play situations (Situations #1-4 from the collection assigned randomly; see Figure 3.6). A similar set-up was used for pairing-up the participants for this procedure. In each, they were required to be either a helper or a client. The same pair of students role-played two different situations as they switched roles (e.g., Situation #1: Student 1 (S1) was a helper and Student 2 (S2) was a client; Situation #2: S2 was a helper and S1 was a client). All the participants of the course completed the role-play situations by typing the exchanges of their therapeutic dialogues (text-based data) into the text-based chat window of Elluminate.

*Figure 3.6: Pre-treatment Stage: Data Collection Protocol*

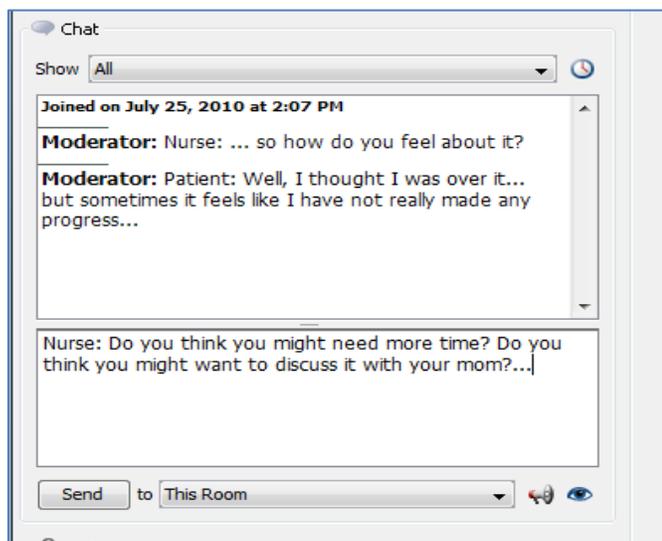
<b>PRE-TREATMENT STAGE</b>	
<b>GROUP A (Voice-based condition)</b>	<b>GROUP B (Text-based condition)</b>
VOICE: Role-play situations 1 and 2; TEXT: Role-play situations 3 and 4	TEXT: Role-play situations 1 and 2; VOICE: Role-play situations 3 and 4

The following procedure was used to record the participants' language output data in the text-based chats. Before the course, each participant was requested to install Jing, free-download screen-capture software, on their computers ([www.techsmith.com](http://www.techsmith.com)) so that their language output as a helper during the text-based chats could be recorded. Jing allows its users to record five-minute-long video files capturing all activities as they happen on the Jing users' computer screens. The web-type screen-capture window-selection feature of Jing enables users to select a small area on their computer screen and record a short video of all actions taking place in the selected portion of the computer screen. The procedure was used by the participants of this project to record only the text-chat window of Elluminate, thereby creating video-files of a manageable size.

Moreover, the participants recorded not only the window where the outcome language (i.e., role-play dialogue exchanges) appeared after they hit the "send" button and made them visible to their role-play partners and other course participants but also the window that they had used for typing their exchanges before they hit the "send" button. As a result, Jing recorded not only the static dialogue exchanges between the role-play participants as the situation was unfolding but also the processes leading to their production in the lower bottom of the text-based chat window (e.g., typing/deleting/making errors/correcting errors/changing sentences into questions/changing questions into sentences, etc.). Since these behaviors reflected the participants' mental processes while they were producing the exchanges during role-plays, this procedure was of paramount importance for the project as it allowed the researcher to look into the participants' cases of self-correction/self-repair as a

manifestation of their noticing and/or learning probing questions that they used in the role-play situations.

*Figure 3.7: Sample Static Jing-based Screen-capture of a Video-file Created during Text-based Role-plays*



All the participants of the course (Section A and Section B) were required to role-play two five-minute-long text-based situations, and they used Jing to record the one where they role-played as a helper. The files were saved and uploaded in the Dropbox on D2L of the online course after the chat session was over for the researcher to access them. This data collection procedure resulted in forty base-line, pre-treatment, five-minute-long video clips, from which the text-based research data will be generated after the files are transcribed. The specifics of the collected data distribution and data analyses are presented in Chapter IV of this paper.

### 3.5. Instruction Stage, Instruments, and Data Collection

The following procedures were completed, the following instruments used, and the following data collected in order to answer Research Question #1 and test the suggested hypotheses at the instruction stage of the project. For clarity purposes, Research Question #1 is restated below:

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

The ESP: Communication in Nursing online course participants, then, continued through the course, completing the required assignments of its modules. Each module focused on a different communicative mode typical for medical discourse (i.e., Speaking to Patients, Speaking with Patients, Speaking about Patients, Speaking by Patients (adapted from Hyden & Mishler, 1999), Culture and Healthcare Communication). In each module, practice role-plays were included, which targeted specific items, techniques, linguistic structures, vocabulary, and guidelines for their use in healthcare communication.

Each time, the participants of Section 1 (voice-based condition) were required to complete the role-play situations while speaking into their microphones, followed by lively discussions of their performance with the instructor and classmates, during which

time ample feedback was provided and points for further improvement were outlined. No file-recording/data collection was conducted during instructional weeks 1-3.

The participants of Section 2 (text-based condition) completed their weekly role-plays while typing their dialogue exchanges into the text-chat window of Elluminate, also, followed by animated discussion sessions with the instructor and classmates with lots of formative feedback provided by both parties. No file-recording/data collection was conducted during instructional weeks 1-3 in this condition, either.

*Figure 3.8: Online-course Instruction Protocol by Group and CMC Mode*

<b>INSTRUCTION STAGE</b>	
<b>GROUP A</b>	<b>GROUP B</b>
<u>ESP: Communication in Nursing</u> <u>ONLINE COURSE:</u> CMC is provided though <b>VOICE</b>	<u>ESP: Communication In Nursing</u> <u>ONLINE COURSE:</u> CMC is provided through <b>TEXT</b>

### 3.5.1. Midsession data collection and instruments

Module 4/week 4 (midsession of the course): Speaking with Patients focused on a subtle art of probing through asking questions during communicative encounters in healthcare-related settings. The participants learned about different types of probes (verbal and nonverbal; closed questions and open questions), their effective use in various situations, and guidelines for using probing questions judiciously. Each component of the module (i.e., the reading excerpt, video clip, application activity) reinforced the importance of using open questions while probing clients for more

information to let their Voices of the Lifeworld (Mishler, 1984) be heard and promote efficient communicative exchanges between a helper and a client.

During the weekly synchronous online chat for that module, the participants were required to role-play situations of therapeutic dialogues which usually called for the use of probing questions. The participants' language output during these role-play situations was recorded and the midsession set of data 2A and B was established.

#### 3.5.1.1. Midsession treatment data set 2A (voice-based) and 2B (text-based)

The participants of Section 1 (voice-based chat condition) completed two role-play situations (Situations #5 & 6 from the collection, assigned randomly). In each, they were required to role-play either as a helper or as a client. The same pair of students role-played two different situations as they switched roles (e.g., Situation #1: Student 1 (S1) was a helper and Student 2 (S2) was a client; Situation #2: S2 was a helper and S1 was a client). They completed the task by speaking into their microphones (voice data) and their performance as a helper was recorded through the record-session feature on Elluminate, which resulted in twenty midsession treatment, five-minute-long voice-based files (set 2A).

Next, the participants in Section 2 (text-based chat condition) completed another set of two role-play situations (Situations #5 & 6 from the collection, assigned randomly). A similar set-up was used for pairing-up the participants for this procedure. In each, they were required to be either a helper or a client. The same pair of students role-played two different situations as they switched roles (e.g., Situation #5: Student 1 (S1) was a helper

and Student 2 (S2) was a client; Situation #6: S2 was a helper and S1 was a client). They completed the role-play situations by typing their communicative exchanges (text-based data) into the text-based chat window of Elluminate. The participants of Section 2 were instructed to role-play two five-minute-long text-based situations, and they, once again, used Jing to record the one where they role-played as a helper. The files were saved and uploaded in the Dropbox on D2L of the online course for the researcher to acquire them. The data collection procedure resulted in twenty midsession treatment, five-minute-long video files that produced text-based data set 2B after they were transcribed. After these data collection procedures at the midsession of the course, the ESP: Communication in Nursing continued as designed for another four weeks of online instruction.

### **3.6. Post-treatment Stage, Instruments, and Data Collection**

The following procedures were completed, the following instruments used, and the following data collected at the post-treatment stage of the project in order to answer all three research questions and test all the suggested hypotheses. At this point, it seems essential to reiterate the research questions of the project:

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

Research Question #2: What evidence is there to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning how to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

### 3.6.1. Post-treatment/delayed production data collection and instruments

During eight weeks of the online course, the participants of Section 1 of the online course practiced communicative situations through role-plays only by speaking into their microphones (voice-based chat condition), while the participants of Section 2 only used the text-chat feature of Elluminate as they typed their role-play exchanges into the chat window of the interface (text-based chat condition). At the end of seven weeks of online instruction, the participants took their final written quiz (required by the course design), and the participants who had successfully completed the course requirements received their Certificates of Completion. During the final synchronous online chat with the instructor and classmates, the participants of both sections (A and B) completed the following procedures that resulted in the third set of research data (set 3A and 3B).

### 3.6.1.1. Post-treatment/delayed production data set 3A (voice-based)

All the participants of the course in Section 1 (voice-based chat condition) and Section 2 (text-based chat condition) completed two final role-play situations (Situations #7-10 from the collection, assigned randomly; see Figure 3.9). In each situation, once again, they were required to role-play either as a helper or as a client. Similar to the pre-treatment stage of the project, the same pair of students role-played two different situations as they switched roles (e.g., Situation #7: Student 1 (S1) was a helper and Student 2 (S2) was a client; Situation #8: S2 was a helper and S1 was a client). Again, all the participants of the course completed the task by speaking into their microphones (voice data) and their performance as a helper was recorded through the record-session feature on Elluminate, which resulted in forty post-treatment, five-minute-long voice-based files. For this procedure, Section 2 (text-based chat condition) was asked to borrow a set of headphones with a microphone (to be used one last time) from their friends or classmates or do the final chat session from an Internet café that supplied a webcam/microphone set-up for their use.

### 3.6.1.2. Post-treatment/delayed production data set 3B (text-based)

Finally, all the participants in Section 1 (voice-based chat condition) and Section 2 (text-based chat condition) completed another set of two role-play situations (Situations #7-10 from the collection, assigned randomly. See Figure 3.9). A similar set-up was used for pairing-up the participants for this procedure to the one used at the pre-treatment stage

of data collection. In each situation, the participants were instructed to role-play either as a helper or as a client. The same pair of students role-played two different situations as they switched roles (e.g., Situation #9: Student 1 (S1) was a helper and Student 2 (S2) was a client; Situation #10: S2 was a helper and S1 was a client). All the participants of the course completed the role-plays by typing their exchanges (text-based data) into the text-based chat window of Elluminate.

*Figure 3.9: Post-treatment Stage: Data Collection Protocol*

<b>POST-TREATMENT STAGE</b>	
<b>GROUP A (Voice-based condition)</b>	<b>GROUP B (Text-based condition)</b>
VOICE: Role-play situations 7 and 8; TEXT: Role-play situations 9 and 10	TEXT: Role-play situations 7 and 8; VOICE: Role-play situations 9 and 10

As all the participants of the course (Sections 1 and 2) were requested to role-play two five-minute-long text-based situations, they, once again, used Jing to record the one where they role-played as a helper. The files were uploaded in the Dropbox on D2L after the final chat session was over. The data collection procedures resulted in forty post-treatment, five-minute-long video files. After they were transcribed, they produced post-treatment text-based data sets.

To answer the research questions and test the suggested hypotheses, the baseline/pre-treatment, midsession treatment, and post-treatment data sets have been further subdivided into sub-sets of pairs (by mode/voice or text and by set/pre-treatment,

midsession treatment, and post-treatment) and run through Paired Samples t-test analyses to establish statistical significance of the difference between the means of scores of those pairs. The results of the analyses are presented in Chapter IV.

### **3.7. Collected Data Sets and Research Questions #2 and 3**

#### **3.7.1. Synopsis of the collected data sets**

As described above, the data collection procedures during eight weeks of the online course have supplied the researcher with three distinct sets of voice-based and text-based research data files: (1) Base-line, pre-treatment data: forty five-minute-long voice-based and forty five-minute-long text-based files of role-plays/one voice-based and one text-based pre-treatment data file for each participant; (2) Midsession treatment data/immediate production stage: twenty five-minute-long voice-based files for Section 1 (voice-based condition) and twenty five-minute-long text-based files for Section 2 (text-based condition); (3) Post-treatment data/delayed production stage: forty five-minute-long voice-based and forty five-minute-long text-based files of role-plays/one voice-based and one text-based post-treatment data file for each participant. The collected data sets allow the researcher to examine the statistical significance of difference in the mean scores for the research item (i.e., use of open questions for probing) between the pre-treatment and midsession sets, midsession and post-treatment sets, and, finally, pre-treatment and post-treatment sets in order to answer Research Questions #1 and test the

Hypotheses #1A and 1B. The results of these analyses are presented in Chapter IV of this project.

### 3.7.2. Correlation of the collected data sets to Research Question #2

The collected sets of data enable the researcher to examine statistical significance in the mean scores between the pre-treatment and post-treatment data sets in the condition opposite to the mode of instruction used in that section of the course (i.e., voice-based output for Section 2: text-based condition; text-based output for Section 1: voice-based condition) to answer Research Question #2 test the Hypotheses #2A and 2B:

Research Question #2: What evidence is there to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

The collected sets of pre-treatment data (two data files for each participant: voice-based and text-based) and post-treatment data (two data files for each participant: voice-based and text-based), once again, allow the researcher to examine the statistical significance of difference in the means of scores for the research item (i.e., use of open questions for probing) in both the pre-treatment and post-treatment sets looking for possible evidence of skill transfer (text to voice::writing to speech and/or voice to text::speech to writing) with the help of Paired Samples t-tests (See Table II). The results of these analyses are presented in Chapter IV of this project.

### 3.7.3. Correlation of the collected data sets to Research Question #3

The following procedures in data collection allow the researcher to answer Research Question #3 and test Hypothesis 3 of this project:

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

At the end of the online course, all the participants completed a questionnaire where they were requested to answer questions about their experiences with learning online, online course components, and the particular mode of instruction used in their section of the course (voice or text). They were asked to outline their prior experiences with voice-based chats and text-based chats (if any) and explain their personal preferences and feelings about the effectiveness of the mode used in their section of the course for online instruction (See Appendix IV). The data of the responses to the questionnaire are collected, analyzed qualitatively, and presented in Chapter IV of this project.

### **3.8. Chapter Summary**

Chapter III of this project presented the methods, research protocols, framework, choice of participants, and data collection techniques that lead to the collection of the research data, the analyses of which will be presented in Chapter IV. It focused on the ESL: Communication in Nursing online course design and its two sections that provided the treatment conditions for this project (voice-based and text-based). Then the data collection stages with their respective data sets were described and correlated to the research questions and hypotheses (See table II). Next, Chapter IV will focus on the results of the data analyses.

## CHAPTER IV

### DATA ANALYSES

#### 4.1. Outline of the Collected Data Sets

Chapter IV of this paper presents the results of the data analyses for the data sets collected during the research procedures described in Chapter III. The methods, choice of the participants, and data collection procedures of the project have been chosen in order to collect the following three distinct sets of data that will help to answer the research questions and test the suggested hypotheses.

##### 4.1.1. Base-line/pre-treatment data sets 1A and 1B

Before the beginning of the online course, all the participants of the project that were enrolled in two sections (Section 1: Voice-based condition and Section 2: Text-based condition) completed two situations during their regular synchronous online chat in which they were required to role-play a helper in two discrete modes: (1) voice – as they were speaking in their microphones, and (2) text – as they were typing in the text-based chat window of the course interface. The Record feature of the interface was used to record the participants' language output during the voice-based role-plays; the Jing software, on the other hand, helped to record the participants' language output and behaviors as they were typing their role-play exchanges in the text-based chat window.

As a result of these procedures, forty voice-based (set 1A) and forty text-based (set 1B) files were compiled.

#### 4.1.2. Instruction stage/midsession treatment data sets 2A and 2B

Through eight weeks of the online course, the participants enrolled in Section 1 and Section 2 took part in their required weekly synchronous chats to practice specific items of medical discourse (e.g., probing questions, empathetic responses, self-disclosure, etc.), grammar structures, and vocabulary that were included in the course modules. They did this by completing role-plays and having follow-up discussions with the instructor and their classmates. To accomplish these tasks, the participants in Section 1 used their microphones (voice-based condition), while the participants in Section 2 – used the text-chat windows of Elluminate (text-based condition). At midsession/week 4 of the course (modular focus: using open questions vs. closed questions for probing during therapeutic dialogues), the participants were requested to complete one situation when they role-played a helper. The participants of Section 1, once again, used voice as a vehicle to complete this assignment, while the participants of Section 2 utilized text. The Record function of Elluminate was used to record the voice-based files, and Jing was used to record the video-clips of the text-based dialogue. As a result of these procedures, twenty voice-based files (set 2A) and twenty text-based files (set 2B) were collected.

#### 4.1.3. Post-treatment/delayed production data sets 3A and 3B

During the final week/Week 8 of the course, the participants were required to participate in the final online synchronous chat session with the instructor and their classmates. The participants were instructed to incorporate all items discussed and practiced during the course (i.e., medical discourse structures, grammar structures, vocabulary, etc.) in order to play the part of an efficient, skillful helper engaged in a therapeutic dialogue with the client. During this session, each participant role-played two situations as a helper: first – speaking into his or her microphone (voice-based) and second – typing the exchanges of the dialogues into the text-chat window of Elluminate. The files were recorded as outlined above. As a result, forty voice-based (post-treatment/delayed production set A) and forty text-based (post-treatment/delayed production set B) files – two for each participant of the project – were created and collected. The following part of Chapter IV explicates the correlation of the three sets of collected data, Research Question #1, and Hypotheses 1A and 1B.

#### **4.2. Correlation of Research Data Sets to Research Question #1**

To establish the relationship of the collected data sets between the research questions and their role in testing the proposed hypotheses, it is necessary to discuss the treatment of the data sets, the transcription processes of the voice-based and text-based condition data files, the establishment of the research items in the transcribed data sets,

the summation of the research items, the labeling of the research items, and, finally, the compilation of the paired samples data sets for further quantitative data analyses.

#### 4.2.1. Treatment of the collected data sets

After the online course completion, it became evident that only twenty-six project participants who had signed the Disclaimer Form to participate in the study were able to complete the course requirements successfully. Moreover, only twenty of them (ten from the voice-based condition/Section 1 and ten from the text-based condition/Section 2) participated in all the data-collection-oriented synchronous online chats (before the course: base-line/pre-treatment data sets; week 4/Module 4: midsession treatment data sets; end-of-the-course/delayed production/post-treatment data sets) and also produced the required voice-based and text-based files. Only these files have been selected for further treatment and quantitative analyses; the other collected incomplete data sets have subsequently been discarded (See Table III for resulting data distribution).

#### 4.2.2. Establishing research items in voice-based and text-based data sets

As outlined earlier in Chapter II, students' self-correction and/or self-repair (e.g., situations when students noticed their mistakes during L2 production and self-corrected them either during speech or writing) demonstrate evidence of their noticing of L2 erroneous structures and their ability to correct them, which, in its turn, might suggest learning of the structures (Swain, 1985 [Output Hypothesis]; Schmidt, 1990; Foster & Ohta, 2005; Kormos, 1999; Lee, 2002; Lai & Zhao, 2006; Smith & Gorsuch, 2004;

Jepson, 2005; Shekary & Tahririan, 2006; Smith, 2009, among others). Further, Swain (1985) and Smith (2009) identified the processes of self-correction/self-repair as *a modified output*, suggesting that it occurred whenever L2 speakers detected that their language output was erroneous or inappropriate in some way. As Kormos (1999) stated, self-correction/self-repair are observable behaviors, so they can be established in L2 students' language output and subsequently measured.

In this project, the cases of self-correction/self-repair as evidence of noticing were observed when the participants produced probing questions – closed questions vs. open questions – in therapeutic dialogues as they role-played the situations during their synchronous online voice-based or text-based chats with the instructor and their classmates. Since they have been established as the research items in this project, the following cases are counted as evidence of self-repair/self-correction – noticing – in the open questions that were used by the participants for probing in the voice-based and text-based chat conditions (See Figure 4.0). In the collected data files, it was observed that the initial language output in the form of a closed question had sometimes been further replaced by the participants' modified output in the form of an open question in the voice-based condition. In the text-based condition, however, the cases of self-correction/self-repair – noticing – were observed through a careful analysis of the Jing-recorded video clips. The participants would initially type the beginning of a closed question or a complete closed question, wind up deleting it, and then replace it with an open question. These behaviors are considered cases of the participants' self-correction/self-repair as a result of noticing of closed questions' use and replacing them

with open questions in this project. Each act of self-correction/self-repair of this type has been counted as one research item (i.e., noticing, labeled N), establishing the research data that will be further used in quantitative analyses.

*Figure 4.0: Samples of Self-correction/Self-repair/Noticing as Difference between Initial Output [IO] and Modified Output [MO] in Voice-based and Text-based Conditions*

#	Open Q	Sample IO and MO in treatment conditions	
1	<b>what</b>	<b>Voice</b>	Do [IO] you really want to... I mean... what [MO] do you want to do about it?
		<b>Text</b>	Do [IO] you want to [deleted] ... [replaced with] What [MO] do you expect her to do about it?
2	<b>where</b>	<b>Voice</b>	Did [IO] you meet him... no, where [MO] did you, guys, meet?
		<b>Text</b>	Did [IO] you meet him when [deleted]... [replaced with] When did you first meet him?
3	<b>when</b>	<b>Voice</b>	Did [IO] you notice...hmmm...when [MO] did you notice that he is not being honest with you?
		<b>Text</b>	Did [IO] you notice [deleted] ...[replaced with] When [MO] did you find out that he wasn't honest with you?
4	<b>why</b>	<b>Voice</b>	Did [IO] you ask him why...I mean... why [MO] didn't you ask him if he would do that for you?
		<b>Text</b>	Did you get a chance to ask [deleted]...[replaced with] Why didn't you ask her to switch shifts with you?
5	<b>how</b>	<b>Voice</b>	Do [IO] you know if...ahhmmm... how [MO] do you know if she would agree with you or not?
		<b>Text</b>	Do [IO] you know [deleted]...[replaced with] How do you think she will react?
6	<b>could you...</b>	<b>Voice</b>	Has [IO] she really... I mean...yes, could you [MO] tell me more about her decision?
		<b>Text</b>	Do [IO] you want to [deleted]...[replaced with] Could you tell me what you want to do about it?
7	<b>can you...</b>	<b>Voice</b>	Did [IO] you talk to... Can you tell me [MO] what your nurse-supervisor said when you talked to her?
		<b>Text</b>	Is [IO] it going to [deleted]...[replaced with] Can you tell me

		how it is going to affect your career?
--	--	--

Next, all the voice-based condition files and text-based condition video-clip files have been transcribed and de-identified. The participants' personal data (e.g., first names, last names, college information, dates of birth, locations, etc. – any information that might establish their identity) have been removed from the transcribed data files and replaced with either a generic research ID (e.g., S1 for Student 1 to identify a participant) or a hash mark (i.e., to de-identify other people mentioned in the data, but unrelated and insignificant to the study).

Then the data, typed into Microsoft Word documents, were examined. The cases of the participants' open-question use were labeled as [1], and the cases of closed-question use were labeled [2]. The cases of the participants' self-correction/self-repair (as outlined above in Figure 4.0) – noticing – were labeled [1N].

*Figure 4.1: Sample Excerpt of a Transcribed, Labeled Voice-based Condition Data File*

**S15: Hey, what's with the face [1]? Have you been crying or something [2]?**

S10: ...Yeah, and no, I don't wanna talk about it.

**S15: C'mon. You tell me, you know...**

S10: ...OK...OK... well, I almost got sacked today.

**S15: What [1]? How did it happen [1]?**

S10: Well.... My head-nurse got mad at me for not catering to that patient of hers.

**S15: What do you mean "that patient of hers" [1]? Was it her patient that you had to cater to [2]?**

S10: Yes and no. You see we were swamped today, as usual, you know our ward,

it is like a mad house. We are always so busy and I think sometimes we get the most demanding patients in the whole hospital, you know post-op, they always complain, they always need something... so I am running among three or four of them trying to help them with what they need, and she comes and like... I want you to help Ms. XXX in 205. She needs something.

**S15: And what did you say [1]?**

S10: What was I supposed to say? Of course, I said OK.

**S15: Did you [IO] ...I mean... what did you do then [N1]?**

S10: Well, I just continued doing what I was doing because I wanted to finish that first before I moved on to that patient in 205.

**S15: So... what happened next [1]?**

S10: ...So when I was done with my stuff, it was time to go to lunch and I completely forgot about Ms. XXX.

**S15: Nooooo!!! ... and what did she do [1]?**

S10: And she went and complained to the head nurse. I don't know what she told her, but, man, it was bad. She came to me and started yelling at me and saying that I am a lousy nurse...

**S15: Did she actually say that [2]?**

S10: No.... well, yes....she said a couple of really mean things to me, and about my performance and stuff... [the situation continued]

Then, the research data were tallied and placed in Microsoft Excel spreadsheets for further quantitative analyses.

#### 4.2.3. Establishing data sets for t-test analyses

As a result of the research data collection, three distinct sets of transcribed data have been established: base-line/pre-treatment (voice-based and text-based), midsession

treatment/immediate production (voice-based and text-based), and post-treatment/delayed-production (voice-based and text-based). The following labeling procedures have been applied to the collected data (see Figure 4.2).

*Figure 4.2: Labeling of Transcribed Data Sets*

#	Transcribed Data Set	Label
1	Pre-treatment Voice-based condition Open Questions [1]	PT/V1
2	Pre-treatment Voice-based condition Closed Questions [2]	PT/V2
3	Pre-treatment Voice-based condition Noticing [1N]	PT/VN
4	Pre-treatment Text-based condition Open Questions [1]	PT/T1
5	Pre-treatment Text-based condition Closed Questions [2]	PT/T2
6	Pre-treatment Text-based condition Noticing [1N]	PT/TN
7	Midsession treatment Voice-based condition Open Questions [1]	MS/V1
8	Midsession treatment Voice-based condition Closed Questions [2]	MS/V2
9	Midsession treatment Voice-based condition Noticing [1N]	MS/VN
10	Midsession treatment Text-based condition Open Questions [1]	MS/T1
11	Midsession treatment Text-based condition Closed Questions [2]	MS/T2
12	Midsession treatment Text-based condition Noticing [1N]	MS/TN
13	Post-treatment (Final) Voice-based condition Open Questions [1]	FT/V1
14	Post-treatment (Final) Voice-based condition Closed Questions [2]	FT/V2
15	Post-treatment (Final) Voice-based condition Noticing [1N]	FT/VN
16	Post-treatment (Final) Text-based condition Open Questions [1]	FT/T1
17	Post-treatment (Final) Text-based condition Closed Questions [2]	FT/T2
18	Post-treatment (Final) Text-based condition Noticing [1N]	FT/TN

The established data sets are paired up for the Paired Samples t-test analyses as described in the following section of Chapter IV.

### 4.3. Results of Research Data Analyses to Answer Research Question #1

This section of Chapter IV presents the results of the data analyses that help to answer Research Question #1 and test Hypotheses 1A and 1B; for this reason, it seems prudent to begin with the review of Research Question #1 and Hypotheses 1A and 1B.

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

#### 4.3.1. Establishing research data pairs for Paired Samples t-test analyses to answer Research Question #1

To answer Research Question #1, the following pairs were created from the established sets of transcribed data presented in Figure 4.2.

*Figure 4.3: Paired Sets of Data for Paired Samples T-test Analyses*

<b>Pair</b>	<b>Voice-based Condition</b>		<b>Pair</b>	<b>Text-based Condition</b>
Pair 1	PT/V1 – MS/V1		Pair 1	PT/T1 – MS/T1
Pair 2	PT/V2 – MS/V2		Pair 2	PT/T2 – MS/T2
Pair 3	PT/VN – MS/VN		Pair 3	PT/TN – MS/TN
Pair 4	MS/V1 – FT/V1		Pair 4	MS/T1 – FT/T1
Pair 5	MS/V2 – FT/V2		Pair 5	MS/T2 – FT/T2
Pair 6	MS/VN – FT/VN		Pair 6	MS/TN – FT/TN

Pair 7	PT/T1 – FT/T1		Pair 7	PT/T1 - FT/T1
Pair 8	PT/T2 – FT/T2		Pair 8	PT/T2 - FT/T2
Pair 9	PT/TN - FT/TN		Pair 9	PT/TN – FT/TN
Pair 10	PT/V1 – FT/V1		Pair 10	PT/V1 – FT/V1
Pair 11	PT/V2 – FT/V2		Pair 11	PT/V2 – FT/V2
Pair 12	PT/VN – FT/VN		Pair 12	PT/VN – FT/VN

In order to answer Research Question #1, the data sets from the voice-based condition were paired up in the following way:

PT/V1 – MS/V1: the data for the pre-treatment voice-based condition/open questions, collected before the beginning of the course (pre-treatment), are compared to the data for the midsession voice-based condition/open questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production) in order to examine if the difference between these two data sets is statistically significant.

PT/V2 – MS/V2: the data for the pre-treatment voice-based condition/closed questions, collected before the beginning of the course (pre-treatment), are compared to the data for the midsession voice-based condition/closed questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production) in order to examine if the difference between these two data sets is statistically significant.

PT/VN – MS/VN: the data for the pre-treatment voice-based condition/noticing, collected before the beginning of the course (pre-treatment), are compared to the data for the

midsession voice-based condition/noticing, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production) in order to examine if the difference between these two data sets is statistically significant.

MS/V1 – FT/V1: the data for the midsession treatment voice-based condition/open questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/open questions, in order to examine if the difference between these two data sets is statistically significant.

MS/V2 – FT/V2: the data for the midsession treatment voice-based condition/closed questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/closed questions, in order to examine if the difference between these two data sets is statistically significant.

MS/VN – FT/VN: the data for the midsession treatment voice-based condition/noticing, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/noticing, in order to examine if the difference between these two data sets is statistically significant.

PT/V1 – FT/V1: the data for the pre-treatment voice-based condition/open questions, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/open questions, in order to examine if the difference between these two data sets is statistically significant.

PT/V2 – FT/V2: the data for the pre-treatment voice-based condition/closed questions, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/closed questions, in order to examine if the difference between these two data sets is statistically significant.

PT/VN – FT/VN: the data for the pre-treatment voice-based condition/noticing, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/noticing, in order to examine if the difference between these two data sets is statistically significant.

The following pairs: PT/T1 – FT/T1, PT/T2 – FT/T2, and PT/TN – FT/TN, the data for the pre-treatment voice-based condition/open questions, closed questions, and noticing in text-based chats as compared to the data for the post-treatment/final test/Week 8 (delayed production) voice-based condition/open questions, closed questions, and noticing in text-based chats, are outlined in the section of Chapter IV that explains the Paired Samples t-test analyses and their results as they pertain to answering Research Question #2 and testing Hypotheses 2A and 2B.

In order to answer Research Question #1, the data sets from the text-based condition have been paired up in the following way:

PT/T1 – MS/T1: the data for the pre-treatment text-based condition/open questions, collected before the beginning of the course (pre-treatment), are compared to the data for the midsession text-based condition/open questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), in order to examine if the difference between these two data sets is statistically significant.

PT/T2 – MS/T2: the data for the pre-treatment text-based condition/closed questions, collected before the beginning of the course (pre-treatment), are compared to the data for the midsession text-based condition/closed questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), in order to examine if the difference between these two data sets is statistically significant.

PT/TN – MS/TN: the data for the pre-treatment text-based condition/noticing, collected before the beginning of the course (pre-treatment), are compared to the data for the midsession text-based condition/noticing, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), in order to examine if the difference between these two data sets is statistically significant.

MS/T1 – FT/T1: the data for the midsession treatment text-based condition/open questions, collected at the midsession/week 4 when the use of open questions for probing

was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/open questions, in order to examine if the difference between these two data sets is statistically significant.

MS/T2 – FT/T2: the data for the midsession treatment text-based condition/closed questions, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/closed questions, in order to examine if the difference between these two data sets is statistically significant.

MS/TN – FT/TN: the data for the midsession treatment text-based condition/noticing, collected at the midsession/week 4 when the use of open questions for probing was explained, discussed, and practiced (immediate production), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/noticing, in order to examine if the difference between these two data sets is statistically significant.

PT/T1 – FT/T1: the data for the pre-treatment text-based condition/open questions, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/open questions, in order to examine if the difference between these two data sets is statistically significant.

PT/T2 – FT/T2: the data for the pre-treatment text-based condition/closed questions, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/closed questions, in order to examine if the difference between these two data sets is statistically significant.

PT/TN – FT/TN: the data for the pre-treatment text-based condition/noticing, collected before the beginning of the course (pre-treatment), are compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/noticing, in order to examine if the difference between these two data sets is statistically significant.

The following pairs: PT/V1 – FT/V1, PT/V2 – FT/V2, and PT/VN – FT/VN, the data for the pre-treatment text-based condition/open questions, closed questions, noticing in voice-based chats as compared to the data for the post-treatment/final test/Week 8 (delayed production) text-based condition/open questions, closed questions, noticing in voice-based chats, are outlined in the section of Chapter IV that explains the Paired Samples t-test analyses and their results as they pertain to answering Research Question #2 and testing Hypotheses 2A and 2B.

#### 4.3.2. Results of Paired Samples t-tests to answer Research Question #1

A series of Paired-Sampled T-tests were conducted to compare the established pairs of data sets (See Figure 4.3) for voice-based and text-based treatment conditions to examine the presence or absence of statistical significance in differences among the means if scores in the sets as outlined above. The Paired Samples T-tests were chosen for

the quantitative analyses of the collected data in this project because they calculate and compare the means of two variables by testing statistical significance of the differences between these two variables.

#### 4.3.2.1. Voice-based condition: Results of data analysis

This section of Chapter IV presents the results of the data analyses for the voice-based condition. Figure 4.4 illustrates the descriptive statistics for the voice-based condition.

*Figure 4.4: Paired Samples Statistics for the Voice-based Condition*

		Mean	N	Std. Deviation	Std. Error Mean
<b>Pair 1</b>	PT/V1	2.80	10	2.044	.646
	MS/V1	6.20	10	2.251	.712
<b>Pair 2</b>	PT/V2	3.70	10	2.669	.844
	MS/V2	3.30	10	2.627	.831
<b>Pair 3</b>	PT/VN	.20	10	.422	.133
	MS/VN	.90	10	.316	.100
<b>Pair 4</b>	MS/V1	6.20	10	2.251	.712
	FT/V1	5.70	10	3.164	1.001
<b>Pair 5</b>	MS/V2	3.30	10	2.627	.831
	FT/V2	2.60	10	1.647	.521
<b>Pair 6</b>	MS/VN	.90	10	.316	.100
	FT/VN	.80	10	.632	.200
<b>Pair 7</b>	PT/T1	2.70	10	.675	.213
	FT/T1	4.90	10	2.183	.690
<b>Pair 8</b>	PT/T2	3.40	10	1.430	.452
	FT/T2	2.30	10	1.418	.448
<b>Pair 9</b>	PT/TN	.30	10	.483	.153
	FT/TN	.60	10	.699	.221
<b>Pair 10</b>	PT/V1	2.80	10	2.044	.646
	FT/V1	5.70	10	3.164	1.001
<b>Pair 11</b>	PT/V2	3.70	10	2.669	.844
	FT/V2	2.60	10	1.647	.521
<b>Pair 12</b>	PT/VN	.20	10	.422	.133
	FT/VN	.80	10	.632	.200

Pair 1: PT/V1 – MS/V1

The midsession-treatment (immediate production)/open questions/voice chat (MS/V1) mean scores (M=6.20) are higher compared to the pre-treatment (base-line)/open questions/voice chat (PT/V1) mean scores (M=2.80).

Pair 2: PT/V2 – MS/V2

The midsession-treatment (immediate production)/closed questions/voice chat (MS/V2) mean scores (M=3.30) are lower compared to the pre-treatment (base-line)/closed questions/voice chat (PT/V2) mean scores (M=3.70).

Pair 3: PT/VN – MS/VN

The midsession-treatment (immediate production)/noticing/voice chat (MS/VN) mean scores (M=.90) are higher compared to the pre-treatment (base-line)/noticing/voice chat (PT/VN) mean scores (M=.20).

Pair 4: MS/V1 – FT/V1

The post-treatment (delayed production)/open questions/voice chat (FT/V1) mean scores (M=5.70) are slightly lower than the midsession-treatment (immediate production)/open questions/voice chat (MS/V1) mean scores (M=6.20).

Pair 5: MS/V2 – FT/V2

The post-treatment (delayed production)/closed questions/voice chat (FT/V2) mean scores (M=2.60) are lower than the midsession-treatment (immediate production)/closed questions/ voice chat (MS/V2) mean scores (M=3.30).

Pair 6: MS/VN – FT/VN

The post-treatment (delayed production)/noticing/voice chat (FT/VN) mean scores (M=.80) are slightly lower compared to the midsession-treatment (immediate production)/noticing/ voice chat (MS/VN) mean scores (M=.90).

Pair 10: PT/V1 – FT/V1

The post-treatment (delayed production)/open questions/voice chat (FT/V1) mean scores (M=5.70) for the voice-based condition are considerably higher compared to the pre-treatment (base-line)/open questions/voice chat (PT/V1) mean scores (M=2.80).

Pair 11: PT/V2 – FT/V2

The post-treatment (delayed production)/closed questions/voice chat (FT/V2) mean scores (M=2.60) for the voice-based condition are lower compared to the pre-treatment (base-line)/closed questions/voice chat (PT/V2) mean scores (M=3.70).

Pair 12: PT/VN – FT/VN

The post-treatment (delayed production)/noticing/voice chat (FT/VN) mean scores (M=.80) for the voice-based condition are considerably higher compared to the pre-treatment (base-line)/noticing/voice chat (PT/VN) mean scores (M=.20).

The results of the data analyses for Pairs 7, 8, and 9 can be found in the section of Chapter IV that deals with answering Research Question #2 and testing Hypotheses 2A and 2B. The following section of Chapter IV presents the results of the Paired Samples t-test analyses that establish if the observed differences between the means of scores in each pair of the collected data sets described above are statistically significant. Figure 4.5 presents the Paired Samples correlations among the means of scores for the data pairs in the voice-based condition.

Figure 4.5: Paired Samples Correlations for the Voice-based Condition

		N	Correlation	Sig.
Pair 1	PT/V1 & MS/V1	10	-.184	.612
Pair 2	PT/V2 & MS/V2	10	.379	.280
Pair 3	PT/VN & MS/VN	10	<b>-.667</b>	<b>.035</b>
Pair 4	MSV1 & FT/V1	10	-.256	.476
Pair 5	MSV2 & FT/V2	10	.288	.420
Pair 6	MSVN & FT/VN	10	-.111	.760
Pair 7	PT/T1 & FT/T1	10	.128	.724
Pair 8	PT/T2 & FT/T2	10	-.449	.193
Pair 9	PT/TN & FT/TN	10	-.592	.071
Pair 10	PT/V1 & FT/V1	10	.265	.460
Pair 11	PT/V2 & FT/V2	10	-.283	.428
Pair 12	PT/VN & FT/VN	10	.167	.645

It can be observed from Figure 4.5 that there is a significant correlation in only one pair of research data (Pair 3) for pre-treatment/noticing PT/VN ( $M=.20$ ,  $SD=.422$ ) and midsession-treatment/noticing MS/VN ( $M=.90$ ,  $SD=.316$ ) data in the voice-based condition ( $Sig=.035$ ).

Furthermore, the Paired Samples T-test analyses reveal the following results (See Figure 4.6).

Figure 4.6: Paired Samples T-test Results for the Voice-based Condition

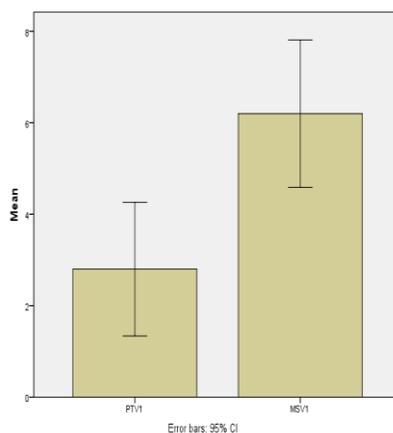
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PT/V1 – MS/V1	<b>-3.400</b>	<b>3.307</b>	<b>1.046</b>	<b>-5.765</b>	<b>-1.035</b>	<b>-3.252</b>	<b>9</b>	<b>.010</b>
Pair 2	PT/V2 – MS/V2	.400	2.951	.933	-1.711	2.511	.429	9	.678
Pair 3	PT/VN – MS/VN	<b>-.700</b>	<b>.675</b>	<b>.213</b>	<b>-1.183</b>	<b>-.217</b>	<b>-3.280</b>	<b>9</b>	<b>.010</b>
Pair 4	MSV1 - FT/V1	.500	4.327	1.368	-2.595	3.595	.365	9	.723
Pair 5	MSV2 - FT/V2	.700	2.669	.844	-1.209	2.609	.829	9	.428
Pair 6	MSVN - FT/VN	.100	.738	.233	-.428	.628	.429	9	.678
Pair 7	PT/T1 - FT/T1	<b>-2.200</b>	<b>2.201</b>	<b>.696</b>	<b>-3.775</b>	<b>-.625</b>	<b>-3.161</b>	<b>9</b>	<b>.012</b>
Pair 8	PT/T2 - FT/T2	1.100	2.424	.767	-.634	2.834	1.435	9	.185
Pair 9	PT/TN - FT/TN	-.300	1.059	.335	-1.058	.458	-.896	9	.394
Pair 10	PT/V1 - FT/V1	<b>-2.900</b>	<b>3.281</b>	<b>1.038</b>	<b>-5.247</b>	<b>-.553</b>	<b>-2.795</b>	<b>9</b>	<b>.021</b>
Pair 11	PT/V2 - FT/V2	1.100	3.510	1.110	-1.411	3.611	.991	9	.348
Pair 12	PT/VN - FT/VN	<b>-.600</b>	<b>.699</b>	<b>.221</b>	<b>-1.100</b>	<b>-.100</b>	<b>-2.714</b>	<b>9</b>	<b>.024</b>

The difference between variables in the following pairs of data sets shows statistical significance:

Pair 1: PT/V1 – MS/V1

There is a significant difference between the means of scores in the data sets for Pair 1 (PT/V1 – MS/V1) pre-treatment/open questions in voice PT/V1 (M=2.80, SD=2.044) and midsession-treatment/open questions in voice MS/V1 (M=6.20, SD=2.251) for the voice-based condition;  $t(9)=-3.252$ ,  $p=.010$  (See Figure 4.7 for graphic representation of the data analysis).

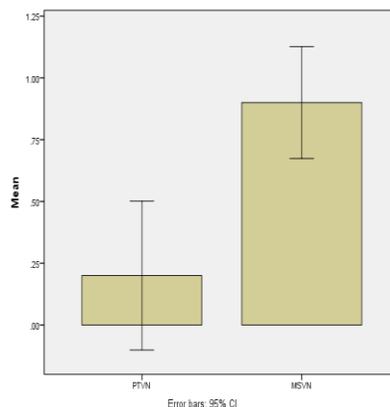
*Figure 4.7: PT/V1 – MS/V1 Pre-treatment/Open Questions in Voice and Midsession Treatment/Open Questions in Voice (Immediate Production) in the Voice-based Condition*



Pair 3: PT/VN – MS/VN

There is a significant difference between the means of scores in the data sets for Pair 3 (PT/VN – MS/VN) pre-treatment/noticing in voice PT/VN (M=.20, SD=.422) and midsession-treatment/noticing in voice MS/VN (M=.90, SD=.316) for the voice-based condition;  $t(9)=-3.280$ ,  $p=.010$  (See Figure 4.8 for graphic representation of the data analysis).

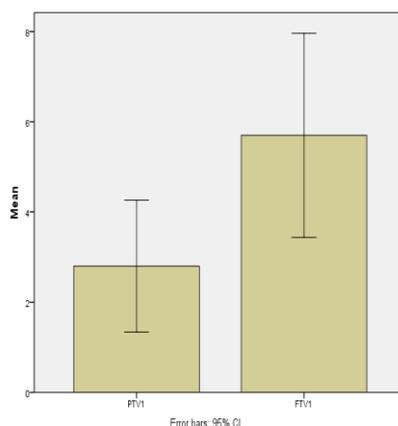
*Figure 4.8: PT/VN – MS/VN Pre-treatment/Noticing in Voice and Midsession Treatment /Noticing in Voice (Immediate Production) in the Voice-based Condition*



#### Pair 10: PT/V1 – FT/V1

There is a significant difference between the means of scores in the data sets for Pair 10 (PT/V1 – FT/V1) pre-treatment/open questions in voice PT/V1 (M=2.80, SD=2.044) and post-treatment/final test/open questions in voice FT/V1 (M=5.70, SD=3.164) for the voice-based condition;  $t(9)=-2.795$ ,  $p=.021$  (See Figure 4.9 for graphic representation of the data analysis).

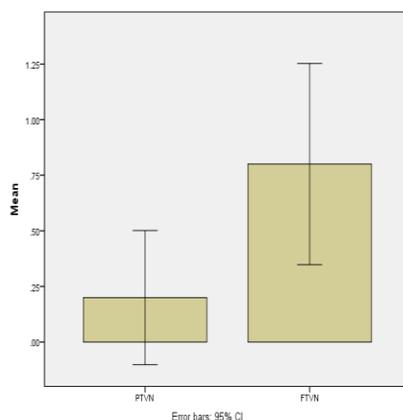
*Figure 4.9: PT/V1 – FT/V1 Pre-treatment/Open Questions in Voice and Post-treatment/Final Test Open Questions in Voice (Delayed Production) in the Voice-based Condition*



Pair 12: PT/VN – FT/VN

There is a significant difference between the means of scores in the data sets for Pair 12 (PT/VN – FT/VN) pre-treatment/noticing in voice PT/VN (M=.20, SD=.422) and post-treatment/final test/noticing in voice FT/VN (M=.80, SD=.632) for the voice-based condition;  $t(9)=-2.714$ ,  $p=.024$  (See Figure 4.10 for graphic representation of the data analysis).

*Figure 4.10: PT/VN – FT/VN Pre-treatment/Noticing in Voice and Post-treatment/Final Test Noticing in Voice (Delayed Production) in the Voice-based Condition*

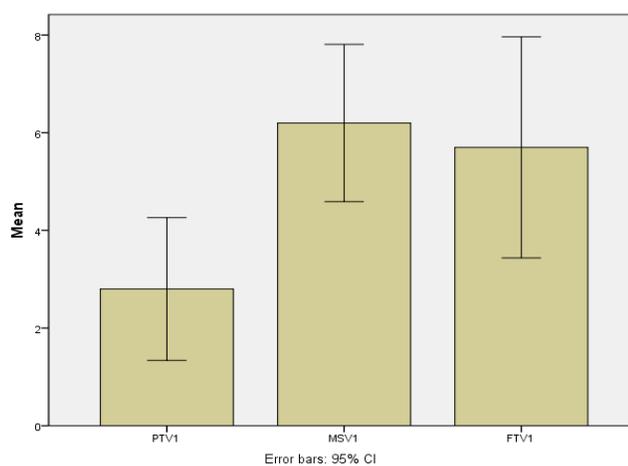


The difference between the means of scores in the remaining data sets (PT/V2 – MS/V2, MS/V1 – FT/V1, MS/V2 – FT/V2, MS/VN – FT/VN, and PT/V2 – FT/V2) is not statistically significant. The results of the data analyses for Pairs 7, 8, and 9 can be found in the section of Chapter IV that deals with Research Question #2 and Hypotheses 2A and 2B.

In summary, for the open-question production in the voice-based chats, the t-test analyses of the data sets for the participants in the voice-based condition (Section 1 of the

course) show a significant difference between the means of scores in the pre-treatment (PT/V1) and immediate-production (MS/V1) data sets; the difference is not significant between the means in the immediate production (MS/V1) and the delayed-production (FT/V1) data sets; however, there is a significant difference between the means in the pre-treatment (PT/V1) and the final test/delayed production (FT/V1) data sets, which is represented in the graph below.

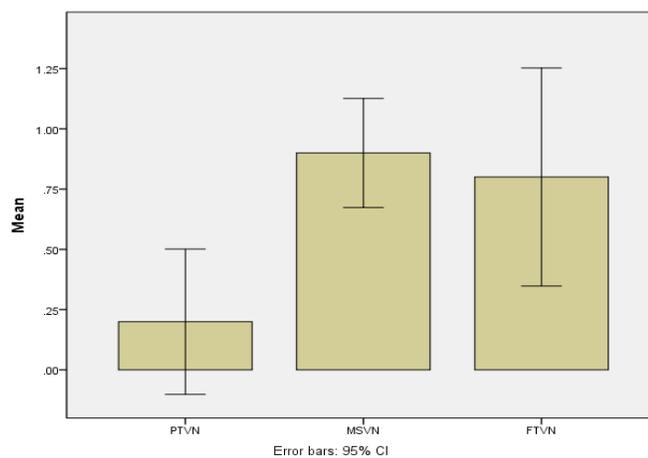
*Figure 4.11: PT/V1 – MS/V1 – FT/V1: Differences between the Means in the Pre-treatment/Immediate Production/Delayed Production Data Sets for Open Questions in Voice Chats for the Voice-based Condition*



For noticing of the open-question use in the voice-based chats, the analyses of the data sets for the participants in the voice-based condition (Section 1 of the course) seem to replicate the pattern for the open-question t-test analyses described above and show a significant difference between the means of scores in the pre-treatment (PT/VN) and immediate-production (MS/VN) data sets; the difference is not significant between the means of scores in the immediate production (MS/VN) and the delayed-production (FT/VN) pair; however, there is a statistically significant difference between the means of

scores in the pre-treatment (PT/VN) and the final test/delayed production (FT/VN) data sets, which is represented in the graph below.

*Figure 4.12: PT/VN – MS/VN – FT/VN: Differences between the Means in the Pre-treatment/Immediate Production/Delayed Production Data Sets for Noticing in Voice Chats for the Voice-based Condition*



For the closed-question production, the t-test analyses of the data sets for the participants in the voice-based condition (Section 1 of the course) do not show a statistically significant difference among the means of scores in the data pairs (PT/V2 – MS/V2 – FT/V2) for the pre-treatment, immediate production, and delayed production stages.

The following section of Chapter IV focuses on the results of the data-set t-test analyses for the text-based condition (Section 2 of the course) of the research project.

#### 4.3.2.2. Text-based condition: Results of data analysis

This section of Chapter IV presents the results of t-test data analyses for the text-based condition. Figure 4.13 illustrates the descriptive statistics for the text-based condition of the project.

*Figure 4.13: Paired Samples Statistics for the Text-based Condition*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PT/T1	2.40	10	1.350	.427
	MS/T1	3.80	10	2.486	.786
Pair 2	PT/T2	3.30	10	1.418	.448
	MS/T2	2.00	10	1.764	.558
Pair 3	PT/TN	.20	10	.422	.133
	MS/TN	1.20	10	.632	.200
Pair 4	MS/T1	3.80	10	2.486	.786
	FT/T1	3.20	10	1.814	.573
Pair 5	MS/T2	2.00	10	1.764	.558
	FT/T2	1.90	10	1.197	.379
Pair 6	MS/TN	1.20	10	.632	.200
	FT/TN	.80	10	.919	.291
Pair 7	PT/T1	2.40	10	1.350	.427
	FT/T1	3.20	10	1.814	.573
Pair 8	PT/T2	3.30	10	1.418	.448
	FT/T2	1.90	10	1.197	.379
Pair 9	PT/TN	.20	10	.422	.133
	FT/TN	.80	10	.919	.291
Pair 10	PT/V1	2.00	10	2.309	.730
	FT/V1	5.00	10	2.539	.803
Pair 11	PT/V2	4.40	10	1.838	.581
	FT/V2	3.60	10	1.897	.600
Pair 12	PT/VN	.30	10	.483	.153
	FT/VN	.90	10	.876	.277

#### Pair 1: PT/T1 – MS/T1

The midsession-treatment (immediate production)/open questions/text chat (MS/T1) for the text-based condition mean scores (M=3.80) are higher compared to the pre-treatment (base-line)/open questions/text chat (PT/T1) data set mean scores (M=2.40).

Pair 2: PT/T2 – MS/T2

The midsession-treatment (immediate production)/closed questions/text chat (MS/T2) mean scores (M=2.00) are lower compared to the pre-treatment (base-line)/closed questions/text chat (PT/T2) mean scores (M=3.30).

Pair 3: PT/TN – MS/TN

The midsession-treatment (immediate production)/noticing/text chat (MS/TN) mean scores (M=1.20) are considerably higher compared to the pre-treatment (base-line)/noticing/text chat data set (PT/TN) mean scores (M=.20).

Pair 4: MS/T1 – FT/T1

The post-treatment (delayed production)/open questions/text chat (FT/T1) mean scores (M=3.20) are slightly lower than the midsession-treatment (immediate production)/open questions/text chat (MS/T1) mean scores (M=3.80).

Pair 5: MS/T2 – FT/T2

The post-treatment (delayed production)/closed questions/text chat data set (FT/T2) mean scores (M=1.90) are slightly lower than the midsession-treatment (immediate production)/closed questions/text chat (MS/T2) mean scores (M=2.00).

Pair 6: MS/TN – FT/TN

The post-treatment (delayed production)/noticing/text chat (FT/TN) mean scores (M=.80) are lower compared to the midsession-treatment (immediate production)/noticing/text chat (MS/VN) mean scores (M=1.20).

Pair 7: PT/T1 – FT/T1

The post-treatment (delayed production)/open questions/text chat (FT/T1) for the text-based condition mean scores (M=3.20) are higher compared to the pre-treatment (base-line)/open questions/text chat (PT/T1) mean scores (M=2.40).

Pair 8: PT/T2 – FT/T2

The post-treatment (delayed production)/closed questions/text chat (FT/T2) mean scores (M=1.90) for the text-based condition are considerably lower compared to the pre-treatment (base-line)/closed questions/text chat (PT/T2) mean scores (M=3.30).

Pair 9: PT/TN – FT/TN

The post-treatment (delayed production)/noticing/text chat (FT/TN) mean scores (M=.80) for the text-based condition are considerably higher compared to the pre-treatment (base-line)/noticing/text chat (PT/TN) mean scores (M=.20).

The results of the data analyses for Pairs 10, 11, and 12 can be found in the section of Chapter IV that deals with answering Research Question #2 and testing Hypotheses 2A and 2B.

The following section of Chapter IV presents the results of the Paired Samples t-test analyses that establish if the observed differences between the means of scores in each pair of the collected data sets described above are statistically significant. The Paired Samples correlations among the data pairs in the text-based condition pairs are presented in Figure 4.14.

*Figure 4.14: Paired Samples Correlations for the Text-based Condition*

		N	Correlation	Sig.
<b>Pair 1</b>	PT/T1 & MS/T1	10	.060	.870
<b>Pair 2</b>	PT/T2 & MS/T2	10	.222	.537
<b>Pair 3</b>	PT/TN & MS/TN	10	.250	.486
<b>Pair 4</b>	MS/T1 & FT/T1	10	.528	.117
<b>Pair 5</b>	MS/T2 & FT/T2	10	-.316	.374
<b>Pair 6</b>	MS/TN & FT/TN	10	-.306	.390
<b>Pair 7</b>	PT/T1 & FT/T1	10	.100	.784
<b>Pair 8</b>	PT/T2 & FT/T2	10	-.046	.900
<b>Pair 9</b>	PT/TN & FT/TN	10	-.172	.635
<b>Pair 10</b>	PT/V1 & FT/V1	10	.133	.715
<b>Pair 11</b>	PT/V2 & FT/V2	10	-.204	.572
<b>Pair 12</b>	PT/VN & FT/VN	10	.079	.829

It can be observed from Figure 4.14 that there is not a significant correlation in any of the research data pairs in the text-based condition. Furthermore, the Paired Samples T-test analyses reveal the following results (See Figure 4.15).

*Figure 4.15: Paired Samples T-test Results for the Text-based Condition*

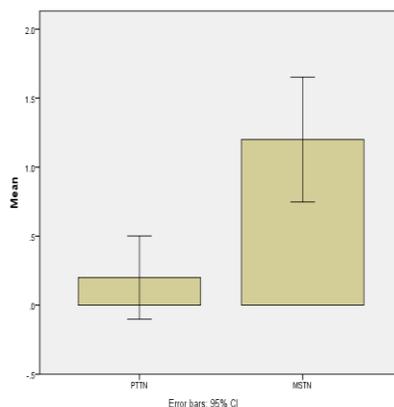
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
<b>Pair 1</b>	PT/T1 – MS/T1	-1.400	2.757	.872	-3.372	.572	-1.606	9	.143
<b>Pair 2</b>	PT/T2 – MS/T2	1.300	2.003	.633	-.133	2.733	2.053	9	.070
<b>Pair 3</b>	<b>PT/TN – MS/TN</b>	<b>-1.000</b>	<b>.667</b>	<b>.211</b>	<b>-1.477</b>	<b>-.523</b>	<b>-4.743</b>	<b>9</b>	<b>.001</b>
<b>Pair 4</b>	MS/T1 – FT/T1	.600	2.171	.686	-.953	2.153	.874	9	.405
<b>Pair 5</b>	MS/T2 – FT/T2	.100	2.424	.767	-1.634	1.834	.130	9	.899
<b>Pair 6</b>	MS/TN – FT/TN	.400	1.265	.400	-.505	1.305	1.000	9	.343
<b>Pair 7</b>	PT/T1 – FT/T1	-.800	2.150	.680	-2.338	.738	-1.177	9	.269
<b>Pair 8</b>	<b>PT/T2 – FT/T2</b>	<b>1.400</b>	<b>1.897</b>	<b>.600</b>	<b>.043</b>	<b>2.757</b>	<b>2.333</b>	<b>9</b>	<b>.045</b>
<b>Pair 9</b>	PT/TN – FT/TN	-.600	1.075	.340	-1.369	.169	-1.765	9	.111
<b>Pair 10</b>	<b>PT/V1 – FT/V1</b>	<b>-3.000</b>	<b>3.197</b>	<b>1.011</b>	<b>-5.287</b>	<b>-.713</b>	<b>-2.967</b>	<b>9</b>	<b>.016</b>
<b>Pair 11</b>	PT/V2 – FT/V2	.800	2.898	.917	-1.273	2.873	.873	9	.405
<b>Pair 12</b>	PT/VN – FT/VN	-.600	.966	.306	-1.291	.091	-1.964	9	.081

The difference between variables in the following pairs of the data sets shows statistical significance:

Pair 3: PT/TN – MS/TN

There is a significant difference between the means of scores in the data sets for Pair 3 (PT/TN – MS/TN) pre-treatment/noticing in text PT/TN ( $M=.20$ ,  $SD=.422$ ) and midsession-treatment/noticing in text MS/TN ( $M=1.20$ ,  $SD=.632$ ) for the text-based condition;  $t(9)=-4.743$ ,  $p=.001$  (See Figure 4.16 for graphic representation of the data analysis).

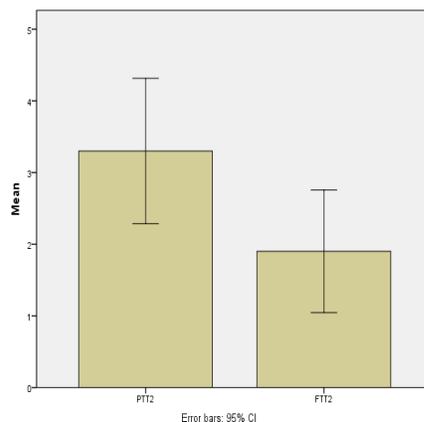
*Figure 4.16: PT/TN – MS/TN Pre-treatment/Noticing in Text and Midsession Treatment/Noticing in Text (Immediate Production) in the Text-based Condition*



Pair 8: PT/T2 – FT/T2

There is a significant difference between the means of scores in the data sets for Pair 8 (PT/T2 – FT/T2) pre-treatment/closed questions in text PT/T2 ( $M=3.30$ ,  $SD=1.418$ ) and post-treatment/final test/closed questions in text FT/T2 ( $M=1.90$ ,  $SD=1.197$ ) for the text-based condition;  $t(9)=2.333$ ,  $p=.045$  (See Figure 4.17 for graphic representation of the data analysis).

*Figure 4.17: PT/T2 – FT/T2 Pre-treatment/Closed Questions in Text and Post-treatment/Final Test Closed Questions in Text (Delayed Production) in the Text-based Condition*



The difference between the means of scores in the remaining data sets (PT/T1 – MS/T1, PT/T2 – MS/T2, MS/T1 – FT/T1, MS/T2 – FT/T2, MS/TN – FT/TN, PT/T1 – FT/T1, and PT/TN – FT/TN) is not statistically significant.

In summary, for the open-question production in text-based chats, the t-test analyses of the data sets for the participants in the text-based condition (Section 2/Group B of the ESP: Communication in Nursing online) do not show a significant difference between the means of scores in the pre-treatment (PT/T1) and immediate-production (MS/T1) data sets; the difference is not significant between the means of scores in the immediate production (MS/T1) and the delayed-production (FT/T1) data sets; moreover, there is not a significant difference between the means of scores in the pre-treatment (PT/T1) and the final test/delayed production (FT/T1) data sets.

For noticing of the open questions in the text-based chats, the analyses of the data sets for the participants in the text-based condition (Section 2 of the course) show a significant difference between the means of scores in the pre-treatment (PT/TN) and immediate-production (MS/TN) data sets; the difference is not significant between the means of scores in the immediate production (MS/TN) and the delayed-production

(FT/TN) pair; moreover, there is not a statistically significant difference between the means of scores in the pre-treatment/noticing (PT/TN) and the final test/delayed production/noticing in text (FT/TN) for the text-based condition data sets.

For the closed-question production, the t-test analyses of the data sets for the participants in the text-based condition (Section 2 of the course) show a statistically significant difference only between the means of scores in the data pair (PT/T2 – FT/T2) for the pre-treatment/closed questions in text and final test/delayed production/closed questions in text; however, there is not a statistically significant difference between the means of scores in the PT/T2 – MS/T2 (pre-treatment/closed questions in text and midsession/immediate production/closed questions in text) and MS/T2 – FT/T2 (midsession/immediate production/closed questions in text and final test/delayed production/closed questions in text) pairs.

The results of the research findings are further discussed in the following section of Chapter IV that deals with the results of the performed data analyses in order to answer Research Question #2.

#### **4.4. Results of Research Data Analyses to Answer Research Question #2**

This section of Chapter IV presents the results of the data analyses to help answer Research Question #2 and test Hypotheses 2A and 2B; for this reason, it seems prudent,

once again, to begin this section with the review of Research Question #2 and Hypotheses 2A and 2B.

Research Question #2: Is there evidence to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

#### 4.4.1. Research data pairs for Paired Samples t-test data analyses to answer Research Question #2

To answer Research Question #2, the following pairs were used from the established sets of transcribed data presented in Figure 4.2.

*Figure 4.18: Paired Sets of Data for Paired Samples T-test Analyses to Answer Research Question #2*

<b>Pair</b>	<b>Voice-based Condition</b>		<b>Pair</b>	<b>Text-based Condition</b>
Pair 7	PT/T1 – FT/T1		Pair 10	PT/V1 – FT/V1
Pair 9	PT/TN - FT/TN		Pair 12	PT/VN – FT/VN

The choice of the data pairs in presented in Figure 4.18 was determined by the following considerations.

##### 4.4.1.1. Voice-based condition

The participants in the voice-based condition (Section 1 of the course) were required to complete the role-play situations while speaking into their microphones,

followed by the discussions of their performance with the instructor and classmates, who were also using their microphones. Voice was the mode of communication and instruction for this group of the participants. To answer Research Question #2 and test Hypotheses 2A and 2B that deal with language-skill transfer modes, it is imperative to examine if there was a significant difference in the means of scores in the text-based pre-treatment and final-test/post-treatment/delayed production data sets for the voice-based condition, i.e., the statistical difference in the means of scores between PT/T1 and FT/T1. Moreover, noticing of open-question use has been established as a research item because it relates to learning open questions as a means of probing techniques during therapeutic dialogues by the participants of the course. Thus, it is important to examine if there is statistically significant difference between the means of scores in noticing for the text-based PT/TN and FT/TN (pre-treatment/noticing in text and final test/post-treatment/delayed production noticing in text) in the voice-based condition.

#### 4.4.1.2. Text-based condition

The participants in the text-based condition (Section 2 of the course) were required to complete the role-play situations while typing the exchanges of their dialogues in the text-based chat window of Elluminate. At the same time, they were using Jing, a free screen-capture software, to make video-recordings of their language output and behaviors as they appeared on their computer screens while they were participating in the role-plays. Thus, Jing recorded not only the static phrases/dialogue exchanges between the role-play participants as the situation was unfolding but also the processes

leading to their production as they appeared in the lower bottom of the text-based chat window (e.g., typing/deleting/making errors/correcting errors/changing sentences into questions/changing questions into sentences, etc.). These behaviors reflected the participants' mental processes leading to self-correction/self-repair as a manifestation of noticing and/or learning probing questions that they used in the role-play dialogue exchanges. Text was the mode of instruction and communication in this group of the participants. To answer Research Question #2 and test Hypotheses 2A and 2B that deal with language-skill transfer modes, it is of paramount importance to examine if there was a significant difference in the means of scores in the voice-based pre-treatment and final-test/post-treatment production data sets for the text-based condition, i.e., the statistical difference between PT/V1 and FT/V1. Since noticing of open-question use has been established as a research item for this project, it is essential to examine if there was statistically significant difference between the means of scores in noticing for the voice-based PT/VN and FT/VN (pre-treatment/noticing in voice and final test/post-treatment/noticing in voice) for the text-based condition. The following section of Chapter IV presents the results of the data analyses related to Research Question #2 and Hypotheses 2A and 2B as established above.

#### 4.4.2. Voice-based condition: Data analysis results to answer Research Question #2

This section of Chapter IV presents the results of data analyses pertaining to answering Research Question #2 for the voice-based condition. The differences in the data for the following pairs are outlined: Pair 7 PT/T1 – FT/T1 (pre-treatment/open

questions in text and final exam/post-treatment/delayed production open questions in text for the voice-based condition) and Pair 9 PT/TN – FT/TN (pre-treatment/noticing in text and final exam/post-treatment/noticing in text for the voice-based condition). As it can be observed from Figure 4.4:

Pair 7: PT/T1 – FT/T1

The post-treatment (delayed production)/open questions/text chat (FT/T1) mean scores (M=4.90) for the voice-based condition are higher compared to the pre-treatment (base-line)/open questions/text chat (PT/T1) mean scores (M=2.70) for the participants in the voice-based condition.

Pair 9: PT/TN – FT/TN

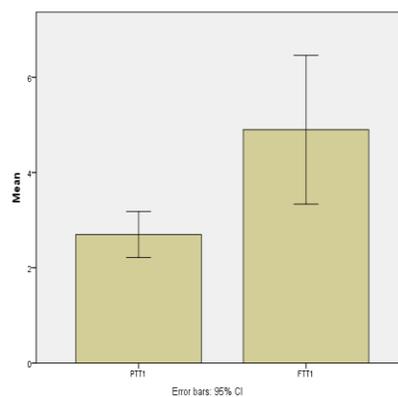
The post-treatment (delayed production)/noticing/text chat (FT/TN) mean scores (M=.60) are higher compared to the pre-treatment (base-line)/noticing/text chat (PT/TN) mean scores (M=.30) for the participants in the voice-based condition.

There was no significant Paired Samples correlation established in these pairs as presented in Figure 4.5. The Paired Samples T-test results for the data Pairs 7 and 9 in the voice-based condition, presented in Figure 4.6, are as follows:

Pair 7: PT/T1 – FT/T1

There is a significant difference in the means of scores for Pair 7 (PT/T1 – FT/T1) pre-treatment/open questions in text PT/T1 (M=2.70, SD=.675) and post-treatment/final test/open questions in text FT/T1 (M=4.90, SD=2.183) for the voice-based condition;  $t(9)=-3.161$ ,  $p=.012$  (See Figure 4.19 for graphic representation of the data analysis).

*Figure 4.19: PT/T1 – FT/T1 Pre-treatment/Open Questions in Text and Post-treatment/Final Test Open Questions in Text (Delayed Production) in the Voice-based Condition*



There is not a significant difference in the means of scores for Pair 9 (PT/TN – FT/TN) pre-treatment/noticing in text and post-treatment/final test/noticing in text) for the voice-based condition.

In summary, the t-test analyses of data sets for the participants in the voice-based condition show a statistically significant difference between the means of scores in the data pair PT/T1 – FT/T1: pre-treatment/open questions in text and final test/delayed production/open questions in text. The significance of these findings is further discussed in Chapter V of this project.

#### 4.4.3. Text-based condition: Data analysis results to answer Research Question #2

This section of Chapter IV presents the results of data analyses related to Research Question #2 for the text-based condition of the project. The differences in the data for the following pairs are outlined: Pair 10 PT/V1 – FT/V1 (pre-treatment/open questions in voice and final-test/post-treatment/delayed production open questions in

voice for the text-based condition) and Pair 12 PT/VN– FT/VN (pre-treatment/noticing in voice and final-test/post-treatment/delayed production/noticing in voice for the text-based condition). As it can be observed from Figure 4.13:

Pair 10: PT/V1 – FT/V1

The post-treatment (delayed production)/open questions/voice chat (FT/V1) mean scores (M=5.00) for the text-based condition are considerably higher compared to the pre-treatment (base-line)/open questions/voice chat (PT/V1) mean scores (M=2.00).

Pair 12: PT/VN – FT/VN

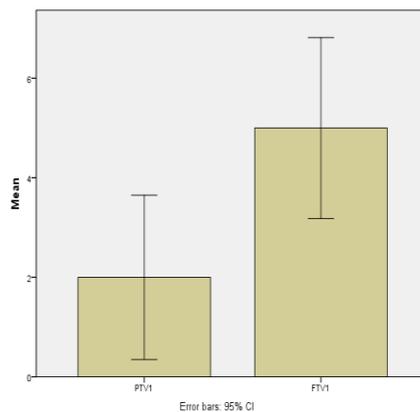
The post-treatment (delayed production)/noticing/voice chat (FT/VN) mean scores (M=.90) for the text-based condition are considerably higher compared to the pre-treatment (base-line)/noticing/voice chat (PT/VN) mean scores (M=.30).

There was no significant Paired Samples correlation established in these pairs as presented in Figure 4.14. The Paired Samples T-test results for the data Pairs 10 and 12 in the text-based condition, presented in Figure 4.15, are as follows:

Pair 10: PT/V1 – FT/V1

There is a significant difference between the means of scores in the data sets for Pair 10 (PT/V1 – FT/V1) pre-treatment/open questions in voice PT/V1 (M=2.00, SD=2.309) and post-treatment/final test/delayed production/open questions in voice FT/V1 (M=5.00, SD=2.539) for the text-based condition;  $t(9)=-2.968$ ,  $p=.016$  (See Figure 4.20 for graphic representation of the data analysis).

*Figure 4.20: PT/V1 – FT/V1 Pre-treatment/Open Questions in Voice and Post-treatment/Final Test Open Questions in Voice (Delayed Production) in the Text-based Condition*



There is not a significant difference in the means of scores for Pair 12 (PT/VN – FT/VN) pre-treatment/noticing in voice and post-treatment/final test/noticing in voice) for the text-based condition.

In summary, the t-test analyses of the data sets for the participants in the text-based condition show a statistically significant difference between the means of scores in the data pair PT/V1 – FT/V1: pre-treatment/open questions in voice and final test/delayed production/open questions in voice. The significance of these findings is further discussed in Chapter V of this project.

#### **4.5. Results of Research Data Analyses to Answer Research Question #3**

This section of Chapter IV presents the results of data analyses that help to answer Research Question #3 and test Hypothesis 3; for this reason, it seems practical to begin this section with their review.

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning how to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

#### 4.5.1. Results of the participants' responses to Question #7 of the end-of-the-course questionnaire

Eighty percent of the online-course participants completed the end-of-the-course questionnaire, in which one of the fifteen questions referred specifically to the participants' preferences of the mode used for communication and instruction in their section of the course. Question #7 asked: Which form of live chats do you prefer: text chats or voice chats? Explain your choice.

Again, since the participants most likely had been exposed to both forms of chats – voice and text – in their lives, the question did not ask them to choose one mode of communication and instruction over the other since each participant had been using only one of them during the online course. The results of the responses to the question are as follows:

1. Out of all respondents to the questionnaire, sixty-three percent chose *voice* as their preferred mode of communication and instruction in online courses. They believed that voice-based chats promoted learning in online courses better than text-based chats.

2. Thirty-seven percent of the respondents selected text as their preferred mode of communication and instruction in online courses. They claimed that text-based chats produced better results of learning online than voice-based chats.

*Figure 4.21: Respondents' Distribution in Response to Research Question #7*

	<b>VOICE</b>	<b>TEXT</b>
<b>% of total respondents</b>	63%	37%

Figure 4.22 below presents the reasons given by the course participants to support their choice of the mode for communication and instruction for learning online.

*Figure 4.22: Reasons Given by the Participants to Support their Choice of Preferred Mode of Communication and Instruction in Online Courses*

#	<b>Voice</b>	<b>%</b>	<b>Text</b>	<b>%</b>
<b>1</b>	Enhances my speaking skills	50%	Less challenging than voice-based communication	15%
<b>2</b>	Promotes direct interaction between the participants and the instructor	10%	Provides more time to focus/concentrate/time to think about what you are going to say	35%
<b>3</b>	Takes less time to respond/goes very fast	30%	Less embarrassing than voice-based communication	15%
<b>4</b>	More challenging than text-based communication	10%	Have fewer technical difficulties with typing than with setting up a microphone	25%
<b>5</b>			I am not good at speaking	15%

The implications of these research findings are discussed in Chapter V of this project.

#### **4.6. Chapter Summary**

Chapter IV of this project presented the results of the data analyses for the data sets collected during the research procedures described in Chapter III. The significance and the implications of these research findings are further discussed in Chapter V.

## CHAPTER V

### DISCUSSIONS, IMPLICATIONS, AND CONCLUSIONS

#### 5. Summary of the Research Study

Chapter V of this paper summarizes the results of the research data analyses presented in Chapter IV. Furthermore, it focuses on the unique features, as well as limitations, of the present research study. Finally, it presents prospective implications of the research findings and their pedagogical applications to the areas of (1) online education; (2) online course designs, in general, and English-for-Specific-Purposes (ESP) course designs, in particular; (3) text-based vs. voice-based synchronous chats and their place in learning online; (4) the efficacy and application of text-based and voice-based communicative practices in learning specific discourse items in online ESP courses designed for NNS students; (5) issues related to medical discourse and communication in healthcare-related fields, humanization, and patient-centeredness of healthcare communicative encounters (e.g., between nurse/provider and patient/client).

Through an online course (ESP: Communication in Nursing online) specifically designed and delivered for a group of non-native speaking students of a nursing college at a major university in the Philippines, this project examined the use of two distinct modes of online CMC – voice-based and text-based chats – and their efficacy in the participants’

learning open questions used for probing in therapeutic dialogues and other situations related to medical discourse and healthcare communicative encounters. In pursuit of finding answers to the research questions, the project has been extensively grounded in the issues of online education, online course designs, text-based vs. voice-based synchronous chats and their place in learning online, and the efficacy and application of text-based and voice-based communicative practices in learning specific linguistic items in online ESP courses designed for NNS students.

As a result of the selected research methods, development of the research protocols, choice of the research location and participants, and data collection techniques, the research questions have been answered and hypotheses tested through the collection and extensive analyses of the following research data sets: base-line/pre-treatment, midsession (immediate production) treatment, post-treatment (delayed production) for the differences among the means of scores in the voice-based and text-based conditions, and set of the participants' end-of-the-course questionnaire results.

### **5.1. Synopsis and Interpretations of the Research Findings**

The following section reiterates each research question with its corresponding hypotheses followed by a comprehensive summary and interpretation of the research findings that are the results of the data-set analyses presented in Chapter IV.

5.1.1. Research Question #1 and Hypotheses 1A and 1B: Interpretation of research findings

Research Question #1: Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in therapeutic dialogues and situations typical for healthcare-related communicative settings in an online course?

Hypothesis 1A: If the participants were instructed via voice throughout the course of study (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition and voice-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 1B: If the participants were instructed via text throughout the course (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition compared to the text-based pre-treatment condition

and text-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

To answer Research Question #1 and test Hypotheses 1A and 1B, the three data sets were analyzed through the formation of the data pairs and application of the Paired Samples T-tests. The results of the tests revealed the statistical significance of the difference between the mean scores in some of the established data pairs, which suggests the following interpretations of the results.

#### 5.1.1.1. Voice-based condition: Interpretation of the research findings related to Research Question #1

The Paired Samples T-test analyses of the voice-based-condition data pairs revealed the results that are presented in Figure 5.1. The difference between the means in Pairs 1 (PT/V1 – MS/V1), 3 (PT/VN – MS/VN), 10 (PT/V1 – FT/V1), and 12 (PT/VN – FT/VN) of the data sets showed statistical significance.

Figure 5.1: Paired Samples T-test Results for the Voice-based Condition

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
<b>Pair 1</b>	<b>PT/V1 – MS/V1</b>	<b>-3.400</b>	<b>3.307</b>	<b>1.046</b>	<b>-5.765</b>	<b>-1.035</b>	<b>-3.252</b>	<b>9</b>	<b>.010</b>
Pair 2	PT/V2 – MS/V2	.400	2.951	.933	-1.711	2.511	.429	9	.678
<b>Pair 3</b>	<b>PT/VN – MS/VN</b>	<b>-.700</b>	<b>.675</b>	<b>.213</b>	<b>-1.183</b>	<b>-.217</b>	<b>-3.280</b>	<b>9</b>	<b>.010</b>
Pair 4	MSV1 - FT/V1	.500	4.327	1.368	-2.595	3.595	.365	9	.723
Pair 5	MSV2 - FT/V2	.700	2.669	.844	-1.209	2.609	.829	9	.428
Pair 6	MSVN - FT/VN	.100	.738	.233	-.428	.628	.429	9	.678
<b>Pair 7</b>	<b>PT/T1 – FT/T1</b>	<b>-2.200</b>	<b>2.201</b>	<b>.696</b>	<b>-3.775</b>	<b>-.625</b>	<b>-3.161</b>	<b>9</b>	<b>.012</b>
Pair 8	PT/T2 - FT/T2	1.100	2.424	.767	-.634	2.834	1.435	9	.185
Pair 9	PT/TN - FT/TN	-.300	1.059	.335	-1.058	.458	-.896	9	.394
<b>Pair 10</b>	<b>PT/V1 - FT/V1</b>	<b>-2.900</b>	<b>3.281</b>	<b>1.038</b>	<b>-5.247</b>	<b>-.553</b>	<b>-2.795</b>	<b>9</b>	<b>.021</b>
Pair 11	PT/V2 - FT/V2	1.100	3.510	1.110	-1.411	3.611	.991	9	.348
<b>Pair 12</b>	<b>PT/VN - FT/VN</b>	<b>-.600</b>	<b>.699</b>	<b>.221</b>	<b>-1.100</b>	<b>-.100</b>	<b>-2.714</b>	<b>9</b>	<b>.024</b>

#### Pair 1: PT/V1 – MS/V1

The data analyses demonstrated that there was a significant difference between the means of scores in the data sets for Pair 1 (PT/V1 – MS/V1): pre-treatment/open questions in voice (PT/V1) and midsession-treatment/immediate production/open questions in voice (MS/V1) for the voice-based condition.

The above findings indicate that the participants in Section 1 of the online course who received their instruction in voice (i.e., they used their microphones to communicate with their classmates and the instructor and to complete the required role-play situations during their synchronous weekly chat sessions) produced more open questions when they role-played the situations during the chat session in Week 4 than they did when they completed the role-plays before the beginning of the course.

*Module 4: Speaking with Patients* of the online course focused on the use of questions as probing techniques for nurses to collect information about their patients'

concerns. To ensure desired positive outcomes of therapeutic dialogues, in particular, and successful medical care, in general, nurses are responsible for collecting important, relevant information about their patients as a result, during the fourth week of the course, the participants learned about different types of probes (verbal and nonverbal; closed questions and open questions), their effective use in health-related communicative encounters and settings, and the significance of using open questions for probing during therapeutic dialogues. The participants of Section 1 of the course practiced using open questions extensively in speaking during their weekly synchronous voice-based online chats with the classmates and the instructor. Their voice-based exchanges during role-plays were recorded and transcribed, the data for open question vs. closed question use was collected and the cases of self-correction and self-repair (i.e., noticing) were identified.

As the results of the collected data analyses showed, the difference between the mean scores in PT/V1 – MS/V1 was statistically significant, which indicates that the participants produced more open questions during the role-plays at midsession of the online course compared to their data collected before the beginning of the course.

### Pair 3: PT/VN – MS/VN

The research data analyses demonstrated that there was a significant difference between the means of scores in the data sets for Pair 3 (PT/VN – MS/VN): pre-treatment/noticing in voice (PT/VN) and midsession-treatment/noticing in voice (MS/VN) for the voice-based condition.

The above findings suggest that the participants in Section 1 of the online course who received their instruction in voice produced more self-correction/self-repair cases through noticing of their use of open questions when they role-played situations during the chat session in week 4 than they did before the beginning of the course. Again, as *Module 4: Speaking with Patients* of the online course focused on the use of open questions vs. closed questions for probing in therapeutic dialogues and situations typical for healthcare environments and settings, the participants of Section 1 of the course practiced using open questions in speech during their weekly synchronous voice-based online chats with the classmates and the instructor.

The results of the data analyses in Pair 3 showed that during their role-plays at midsession (immediate production stage), the participants corrected their language production for open-question use more frequently compared to their data collected before the beginning of the course. Figure 5.2 below presents examples of the participants' self-correction and self-repair cases through their noticing of erroneous initial output (i.e., questions other than open ones), which was further replaced by their modified output in the form of an open question (Swain, 1985; Smith, 2009).

*Figure 5.2: Samples of Self-correction/Self-repair/Noticing as Difference between Initial Output [IO] and Modified Output [MO] in the Voice-based Condition*

#	Open Q	Sample IO and MO in the voice-based condition	
1	<b>what</b>	<b>Voice</b>	Do [IO] you really want to... I mean... what [MO] do you want to do about it?
2	<b>where</b>	<b>Voice</b>	Did [IO] you meet him... no, where [MO] did you, guys, meet?
3	<b>when</b>	<b>Voice</b>	Did [IO] you notice...hmmm...when [MO] did you notice

			that he is not being honest with you?
4	<b>why</b>	<b>Voice</b>	Did [IO] you ask him why...I mean... why [MO] didn't you ask him if he would do that for you?
5	<b>how</b>	<b>Voice</b>	Do [IO] you know if...ahhmmm... how [MO] do you know if she would agree with you or not?
6	<b>could you...</b>	<b>Voice</b>	Has [IO] she really... I mean...yes, could you [MO] tell me more about her decision?
7	<b>can you...</b>	<b>Voice</b>	Did [IO] you talk to... Can you tell me [MO] what your nurse-supervisor said when you talked to her?

The difference between the means of scores in Pair 3 was statistically significant.

Pair 10: PT/V1 – FT/V1

The research data analyses demonstrated that there was a significant difference between the means of scores in the data sets for Pair 10 (PT/V1 – FT/V1): pre-treatment/open questions in voice (PT/V1) and post-treatment/final test/open questions in voice (FT/V1) for the voice-based condition.

The above findings indicate that the participants in Section 1 of the online course (i.e., the voice-based condition of the research project) produced more open questions during their voice-based chats when they role-played situations during the final week of the course (delayed production) than they did before the beginning of the course (pre-treatment condition). During eight weeks of the online course, the participants of Section 1 practiced the communicative situations through role-plays by speaking into their microphones. Voice was the only mode of instruction and communication in this group of the participants, so at the end of the course when they were expected to complete role-play situations during the final voice-based chat session to demonstrate their knowledge and skills acquired during the online course, the participants of this section produced

more open questions than they did during a similar voice-based chat session before the beginning of the course, and the difference between their mean scores was statistically significant.

#### Pair 12: PT/VN – FT/VN

There was also a significant difference between the means of scores in the data sets for Pair 12 (PT/VN – FT/VN): pre-treatment/noticing in voice and post-treatment/final test/noticing in voice for the voice-based condition.

The above findings suggest that the participants in Section 1 of the online course who received their instruction in voice corrected their language production for open questions during their role-plays in the final synchronous voice-based chat more frequently compared to their self-correction/self-repair/noticing data collected before the beginning of the course. Again, Figure 5.2 above presents examples of the participants' self-correction and self-repair cases through noticing of their initial output, which was further replaced by their modified output in the form of an open question (Swain, 1985; Smith, 2009), and the difference between the mean scores in PT/VN – FT/VN was statistically significant.

#### 5.1.1.2. Voice-based condition: Summary of the research findings related to Research Question #1 and Hypothesis 1A

It seems essential at this point to restate Hypothesis 1A:

Hypothesis 1A: If the participants were instructed via voice throughout the course of study (i.e., they completed their communicative practices through synchronous

voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition and voice-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

During eight weeks of online instruction, the participants of Section 1 (voice-based condition) of the online course used their microphones to communicate with their classmates and the instructor during synchronous online chat sessions. They also had to speak into their microphones to complete the required practices and role-plays during every weekly chat of the course. During their role-play sessions, they practiced the linguistic structures and vocabulary presented in each module of the course as they appeared in various forms of communicative encounters typical for medical discourse and healthcare-related settings (e.g., open questions for probing in therapeutic dialogues, summarizing as a form of empathetic responses, self-disclosure as a way to relate to patients' issues, etc.). Their role-play dialogues were recorded at three distinct points of the online course: (1) before the beginning of the course; (2) at midsession of the course, and (3) at the end of the course. Thus, three research data sets were established.

The findings of the data-set analyses for the open-question production and noticing in the voice-based condition, suggest that the participants in the voice-based condition used more open questions during the voice-based role-plays of therapeutic

dialogues at the end of the online course than they did at the beginning of the course. Also, it seems that the participants' noticing of their initial erroneous output – questions other than open ones – and their successive self-correction/self-repair moves to modify their output – replace them with open questions – played a major role in the observed difference in the open question use before the beginning of the course and at the end of the course. The data sets for both items (open question use and noticing) showed statistical significance in the differences between the mean scores collected before the beginning of the course and at the end of the course.

Moreover, as it relates to testing Hypothesis 1A, it is noteworthy that the observed difference in the mean scores was significant in both – the open-question and noticing – data sets collected at the midsession point of the course. It seems that the participants of Section 1 of the course (voice-based condition) learned the use of open questions through the materials presented in Module 4/Week 4 of the course/*Speaking with Patients*, and it was reflected in their immediate production of open questions, noticing of their erroneous use in the initial output, and self-correction/self-repair cases that followed during the synchronous voice-based chat session of that week. As the statistical difference between the mean scores for open-question use and noticing in the data sets collected before the beginning of the course and at the end of the course was significant, the participants seemed to retain their skill of open question use in therapeutic dialogues all the way to the end of the course since they used more open questions and self-corrected/noticed more of their misuse of open questions during their final synchronous voice-based role-play session compared to the one conducted before the beginning of the course.

5.1.1.3. Text-based condition: Interpretation of the research findings as related to Research Question #1

Hypothesis 1B is restated below to introduce this section of Chapter V that interprets the research findings of the text-based data-set analyses and their relationship to Research Question #1.

Hypothesis 1B: If the participants were instructed via text throughout the course (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition compared to the text-based pre-treatment condition and text-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

The Paired Samples T-test analyses of the text-based-condition data pairs revealed the results that are presented in Figure 5.3. The difference between the means of scores in Pairs 3 (PT/TN – MS/TN) and 8 (PT/T2 – FT/T2) of the data sets showed statistical significance.

Figure 5.3: Paired Samples T-test Results for the Text-based Condition

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PT/T1 – MS/T1	-1.400	2.757	.872	-3.372	.572	-1.606	9	.143
Pair 2	PT/T2 – MS/T2	1.300	2.003	.633	-.133	2.733	2.053	9	.070
Pair 3	PT/TN – MS/TN	<b>-1.000</b>	<b>.667</b>	<b>.211</b>	<b>-1.477</b>	<b>-.523</b>	<b>-4.743</b>	<b>9</b>	<b>.001</b>
Pair 4	MS/T1 – FT/T1	.600	2.171	.686	-.953	2.153	.874	9	.405
Pair 5	MS/T2 – FT/T2	.100	2.424	.767	-1.634	1.834	.130	9	.899
Pair 6	MS/TN – FT/TN	.400	1.265	.400	-.505	1.305	1.000	9	.343
Pair 7	PT/T1 – FT/T1	-.800	2.150	.680	-2.338	.738	-1.177	9	.269
Pair 8	PT/T2 – FT/T2	<b>1.400</b>	<b>1.897</b>	<b>.600</b>	<b>.043</b>	<b>2.757</b>	<b>2.333</b>	<b>9</b>	<b>.045</b>
Pair 9	PT/TN – FT/TN	-.600	1.075	.340	-1.369	.169	-1.765	9	.111
Pair 10	PT/V1 – FT/V1	<b>-3.000</b>	<b>3.197</b>	<b>1.011</b>	<b>-5.287</b>	<b>-.713</b>	<b>-2.967</b>	<b>9</b>	<b>.016</b>
Pair 11	PT/V2 – FT/V2	.800	2.898	.917	-1.273	2.873	.873	9	.405
Pair 12	PT/VN – FT/VN	-.600	.966	.306	-1.291	.091	-1.964	9	.081

The difference between variables in the following pairs of the data sets shows statistical significance:

Pair 3: PT/TN – MS/TN

The data analyses demonstrated that there was a significant difference in the means of scores in the data sets for Pair 3 (PT/TN – MS/TN): pre-treatment/noticing in text (PT/TN) and midsession-treatment/immediate production/noticing in text (MS/TN) for the text-based condition.

The above findings suggest that the participants in Section 2 of the online course who received their instruction in text produced more self-correction/self-repair cases through noticing of their use of open questions when they role-played situations during the chat session in week 4 than they did before the beginning of the course. As Module 4: *Speaking with Patients* of the online course focused on the use of open questions for probing in therapeutic dialogues, the participants of Section 2 of the online course

practiced using open questions in text/writing as they typed the exchanges of their role-play situations in the text-based chat window of Elluminate, the platform that was used to deliver weekly synchronous online chat sessions with the classmates and the instructor.

The results of the data analyses in text-based Pair 3 showed that at mid-point of the course/week 4 (immediate production stage), the participants corrected their open-question production during text-based role-plays more frequently compared to their data collected before the beginning of the course. Figure 5.4 below presents examples of the participants' self-correction/self-repair cases through their noticing of the initial output (i.e., questions other than open ones), which was further deleted and replaced by their modified output in the form of an open question (Swain, 1985; Smith, 2009).

*Figure 5.4: Samples of Self-correction/Self-repair/Noticing as Difference between Initial Output [IO] and Modified Output [MO] in the Voice-based Condition*

#	Open Q	Sample IO and MO in treatment conditions	
1	<b>what</b>	<b>Text</b>	Do [IO] you want to [deleted] ... [replaced with] What [MO] do you expect her to do about it?
2	<b>where</b>	<b>Text</b>	Did [IO] you meet him when [deleted]... [replaced with] When did you first meet him?
3	<b>when</b>	<b>Text</b>	Did [IO] you notice [deleted] ...[replaced with] When [MO] did you find out that he wasn't honest with you?
4	<b>why</b>	<b>Text</b>	Did you get a chance to ask [deleted]...[replaced with] Why didn't you ask her to switch shifts with you?
5	<b>how</b>	<b>Text</b>	Do [IO] you know how [deleted]...[replaced with] How do you think she will react?
6	<b>could you...</b>	<b>Text</b>	Do [IO] you want to [deleted]...[replaced with] Could you tell me what you want to do about it?
7	<b>can you...</b>	<b>Text</b>	Is [IO] it going to [deleted]...[replaced with] Can you tell me how it is going to affect your career?

The difference between the mean scores in Pair 3 was statistically significant.

#### Pair 8: PT/T2 – FT/T2

There is a significant difference in the means of scores in the data sets for Pair 8 (PT/T2 – FT/T2) pre-treatment/closed questions in text and post-treatment/final test/closed questions in text for the text-based condition.

The above findings indicate that the participants in Section 2 of the online course (the text-based condition of the research project) produced fewer closed questions during their text-based chats when they role-played situations during the final week of the course (delayed production) than they did before the beginning of the course (pre-treatment condition). During eight weeks of the online course, the participants of Section 2 practiced the communicative situations through role-plays by typing their dialogue exchanges into the text-based chat window of Elluminate. Text was the only mode of instruction and communication in this group of the participants. At the end of the course, they were expected to complete role-play situations during the final text-based chat session to demonstrate their knowledge and skills acquired during the online course. Instead of producing more open questions (as Hypothesis 2B predicted), the participants of this section produced fewer closed questions than they did during a similar text-based chat session before the beginning of the course, and the difference between their mean scores was statistically significant.

#### 5.1.1.4. Text-based condition: Summary of the research findings as related to Research Question #1 and Hypothesis 1B

It seems essential at this point to restate Hypothesis 1B:

Hypothesis 1B: If the participants were instructed via text throughout the course (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition compared to the text-based pre-treatment condition and text-based midsession treatment condition. The observed difference between the means of scores would be statistically significant.

During eight weeks of the online course, the participants of Section 2 (text-based condition) of the online course communicated with the classmates and the instructor by typing their questions and concerns into the text-based chat window of Elluminate. They also used this mode of interaction during weekly synchronous online chat sessions when they were expected to complete the required practices and role-plays. Similar to the participants in the voice-based condition (Section 1), during their text-based role-play sessions, they practiced the linguistic structures and vocabulary presented in the course modules, and various forms of medical discourse typical for healthcare-related settings and communicative encounters (e.g., open questions for probing in therapeutic dialogues, summarizing as a form of empathetic responses, self-disclosure as a way to relate to patients' issues, etc.). The participants used Jing (free-download screen-capture software) to record five-minute-long video clips to capture their actions as they appeared in the text-based chat windows of Elluminate: (1) the top part of the window, which displayed

the participants' dialogue exchanges after the "send" button was hit and (2) the bottom part of the window, which displayed the participants' actions during the process of typing as they appeared on their computer screens (e.g., typing/ deleting, making mistakes/correcting mistakes, choosing words/replacing words, scrolling, etc.). These video clips were recorded at three distinct points of the online course: (1) before the beginning of the course; (2) at the midsession of the course, and (3) at the end of the course. Thus, three research data sets were established for the text-based condition.

None of the data sets for the open-question production and noticing in the text-based condition showed any statistical significance in the difference of the mean scores between the pre-production – midsession/immediate production data sets and midsession/immediate production – final test/delayed production data sets, which seems contrary to what Hypotheses 1B was set to test.

At this point, it would be worth noting that the t-test analyses of the closed-question use of the data sets for the participants in the text-based condition (Section 2 of the online course) show a statistically significant difference between the means of scores in the data pair (PT/T2 – FT/T2) for the pre-treatment/closed questions in text and final test/delayed production/closed questions in text even though there is not a statistically significant difference between the means in the PT/T2 – MS/T2 (pre-treatment/closed questions in text and midsession/immediate production/closed questions in text) and MS/T2 – FT/T2 (midsession/immediate production/closed questions in text and final test/delayed production/closed questions in text) pairs.

It seems significant to note that this difference (PT/T2 – FT/T2) in the text-based condition still indicates an important achievement in the learning outcomes of the online course. On the one hand, the participants in the text-based condition/Section 1 B did not produce more open questions during their final text-based role-plays when compared to the ones before the beginning of the course. On the other hand, they did produce fewer closed questions during their final text-based role-play situations, again, when compared to the results of the chat that they did before the beginning of the course, and the t-test analyses showed a significant difference between the mean scores in the text-based pairs of the pre-test – final test/delayed production data sets. Assuming that one of the main objectives for the participants of the online course was to learn how to use questions for probing during therapeutic dialogues with their clients effectively so that the Voices of the Lifeworlds are not stifled by the Voices of Medicine (Mishler, 1984), it seems that the goal was reached.

In summary, the research findings support the predictions of Hypothesis 1A, but they have failed to support the predictions of Hypothesis 1B in Research Question #1.

#### 5.1.2. Research Question #2 and Hypotheses 2A and 2B: Interpretation of the research findings.

This section of Chapter V begins with a review of Research Question #2 and Hypotheses 2A and 2B.

Research Question #2: Is there evidence to suggest that the skill to use open questions for probing in role-plays of therapeutic dialogues by NNS medical

professionals developed through text-based practices in an online course might transfer to their speech and vice versa?

Hypothesis 2A: If the participants were instructed via voice throughout the course (i.e., they completed their communicative practices through synchronous voice-based chats during eight weeks of the course; that is, they used their microphones or headsets with microphones to accomplish this task), they would also produce more open questions for probing in role-plays of therapeutic dialogues in the text-based post-treatment condition. The observed difference between the means of scores would be statistically significant.

Hypothesis 2B: If the participants were instructed via text, throughout the course of study (i.e., they completed their communicative practices through synchronous text-based chats during eight weeks of the course; that is, they used the text-chat feature of the course-management system (CMS) to accomplish this task), they would produce more open questions for probing in role-plays of therapeutic dialogues in the voice-based post-treatment condition compared to the voice-based pre-treatment condition. The observed difference between the means of scores would be statistically significant.

To address Research Question #2 and test Hypotheses 2A and 2B, it is imperative to focus on the results of the t-test analyses for two data pairs in voice-based and text-based conditions (See Figure 5.5).

*Figure 5.5: Paired Sets of Data in the Voice-based and Text-based Conditions for T-test Analyses to Answer Research Question #2*

<b>Pair</b>	<b>Voice-based Condition</b>		<b>Pair</b>	<b>Text-based Condition</b>
Pair 7	PT/T1 – FT/T1		Pair 10	PT/V1 – FT/V1

5.1.2.1. Voice-based condition: Interpretation and summary of the research findings related to Research Question #2

The participants in the voice-based condition (Section 1 of the online course) were required to complete two role-play situations while speaking into their microphones: one – before the beginning of the course (pre-treatment condition) and the other one – at the end of the course (post-treatment condition). During both synchronous voice-based chat sessions, the participant’s dialogue exchanges were recorded and later transcribed. The data was marked for open question, closed question use and cases of self-correction and self-repair/noticing.

To answer Research Question #2 and test Hypothesis 2A regarding the language-skill transfer modes, the mean scores of the research data pair (PT/T1) pre-treatment/open questions in text and (FT/T1) final test/post-treatment/open questions in text were compared through the t-test analysis, which showed that there was a significant difference between the means of scores in those sets of data. It indicates that the participants in the voice-based condition used more open questions for probing when they role-played the situations during their text-based chats, and the difference between the means of scores in this data pair showed statistical significance. It seems that practicing

the use of open questions for probing and other structures of medical discourse in situations typical for healthcare-related settings through voice-based chats on a weekly basis also triggered their use in the text-based role-plays by the participants of the online course, the way it had been suggested by Hypothesis 2A.

#### 5.1.2.2. Text-based condition: Interpretation and summary of the research findings as related to Research Question #2

In contrast to the participants in the voice-based condition, the participants in the text-based condition (Section 2 of the online course) were expected to complete the role-play situations while typing the exchanges of their therapeutic dialogues in the text-based chat window of Elluminate. They used Jing, a free screen-capture software, to make five-minute-long video-recordings of their computer screens while they were participating in the role-plays; as a result, the recorded video files showed their actions appearing in the bottom part of the text-based chat window as the situations were unfolding (e.g., typing/deleting/making errors/correcting errors/changing sentences into questions/changing questions into sentences, etc.).

To answer Research Question #2 and test Hypothesis 2B, which suggests the possibility of language transfer from text-condition to voice-condition, it is important to observe that there was a significant difference in the means of scores in the (PT/V1 – FT/V1): pre-treatment/open questions in voice and final-test/post-treatment/open questions in voice data sets for the text-based condition. It indicates that the participants

of the text-based condition also used more open questions for probing when they role-played their situations in the final voice-based chat.

In summary, in both treatment conditions – voice-based and text-based – the participants also used more open questions for probing in the role-plays of therapeutic dialogues during their final/end-of-the-course chat in the mode opposite to the one used for instruction and communication in their respective sections of the course: the participants of the voice-based condition used more open questions in the text-based chats and the participants of the text-based condition used more open questions when they used their microphones and chatted in voice. These findings seem to support the predictions of Hypotheses 2A and 2B in Research Question #2.

### 5.1.3. Research Question #3 and Hypothesis 3: Interpretation and summary of the research findings.

This section of Chapter V will recap Research Question #3 and Hypothesis 3 and then proceed with interpretation and summary of the research findings for the data sets related to Research Question #3.

Research Question #3: Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning how to use probing questions in therapeutic dialogues and healthcare-related communicative encounters?

Hypothesis 3: Assuming that both interactional modes (voice-based and text-based chats) are most likely to be firmly integrated into the

participants' everyday lives and activities (e.g., instant messaging with friends on Facebook and/or other social interactive media and environments; using video chats on Skype, Face Time on iPhones and iPads, applications for face-to-face communication on Android-based cell-phones or other devices with similar features; cell-phone text-messaging features, etc.), the preference of the instructional mode— voice or text — and the perception of its effectiveness in learning would be unrelated to the mode of instruction used throughout the course; rather, it would depend on the participants' personal preference, the level of familiarity and comfort with it, and the frequency of its use in their everyday lives.

During the final week of the online course, all the participants were requested to complete a questionnaire and provide feedback about their (1) experiences with learning online, (2) the effectiveness of the online course components, (3) practices used in developing their communicative skills, (4) the mode of instruction and communication (voice or text) used in their section of the course, and (5) their overall satisfaction with their learning outcomes (See Appendix IV for a complete list of questions).

Eighty percent of the participants of the course completed the questionnaire, and the responses were anonymous. All of them admitted that they had never taken an online course before and even though they had used text-based and voice-based chats (i.e., through webcams) before, it was their first experience with using them in an instructional setting.

Overall, half of the respondents (50%) strongly agreed (37.5% agreed and 12.5% were neutral) that online courses were an effective way to improve their communicative skills for nursing. The participants' overall experiences with the weekly synchronous online chats were positive as the questionnaire revealed the following responses (See Figure 5.6).

*Figure 5.6: The participants' Feedback about Their Weekly Synchronous Chat Sessions in Voice and in Text*

- “The weekly live chat sessions are good ways in enhancing our skills more, especially in communicating. Also, it enables us to recall and synthesize the topic that we just had. For me, the chat sessions have been doing great.”
- “The live chat is actually the reason why I’m very interested about this program.”
- “Chats are great because it can really improve your skills in impromptu speaking. Since we are given sample situations during our live chats, it is like a simulation teaching strategy which can determine, assess and measure the student’s ability to communicate if placed in the real situation. I can recommend more chats for more practice thus increasing the student’s competency.”
- “I think that weekly chat sessions are really a good way to improve our communication skills. This [sic] chat sessions also help us apply what we’ve learned from our module.”
- “I think that weekly chat sessions are just enough to supplement and assess what we have learned from the readings and clips. Plus I have so much fun interacting with everyone. It’s a fun learning experience.”
- “Weekly live chat sessions are particularly interesting. It just indicates that long distance learning is not impossible.”

Question #7 of the questionnaire specifically asked the participants to identify which form of live chats they preferred: text chats or voice chats. As the participants admitted in their responses, some of them had been exposed to both forms of chats – voice and text – in their lives through their participation in social interactive communities online, environments, and social media, such as MySpace, Facebook, Skype, etc. Moreover, the question did not prompt them to choose one mode of instruction over the other (i.e., voice over text or vice versa) since each participant had been using only one of them during the online course. The question asked the participants to express their opinions about the effectiveness of voice-based and text-based chats in online courses regardless of the instructional mode (voice or text) used in their section of the course. Even though there was a somewhat even split among the respondents to the questionnaire – half of them were enrolled in Section 1 (voice-based) and half of them were enrolled in Section 2 (text-based) of the course – sixty-three percent of the respondents chose *voice* as their preferred mode of instruction and communication online. They believed that voice-based chats promoted learning in online courses better than the text-based chats. Figure 5.7 below presents some of the responses.

*Figure 5.7: Responses to Question #7 (Voice or Text) in Support of Voice-based Chats*

- “I prefer the voice chats for it enhances our English speaking skills.”
- “Voice chats. Because it seems like the teacher and the student re interacting directly.”
- “Voice chats because my speaking skills is [sic] also enhanced.”
- “Voice chats. Although I’m a bit shy to speak and be heard by my fellow

classmates, voice chats are more convenient. It helps me improve my oral skills, makes me think fast and of course, less hassle (typing consumes time).”

- “Well, I prefer voice chats since it’s more easier [sic] and lessens the amount of time one would have to wait to have an answer or rather interact.”
- “Voice chats because they just come spontaneous and instant. I am more comfortable talking since I get a chance to be heard.”
- “Voice chats. In text chats we make corrections that may improve our grades. In voice chats however, not only that our oral skills are being put to the test, but our minds have to immediately finalize our answers to have a correct response.”

Thirty-seven percent of the respondents, however, chose text as their preferred mode of instruction and communication in online courses. They claimed that text-based chats produced better results of learning online compared to voice-based chats. Figure 5.8 below presents some of the responses.

*Figure 5.8: Responses to Question #7 (Voice or Text) in Support of Text-based Chats*

- “Text chats. I admit that I myself is [sic] not that really good in talking.”
- “Honestly, I prefer text chats because I can focus and concentrate more.”
- “Text chats. Because I can articulate my ideas compared to voice chats.”
- “I prefer text chats because I can have more time to think on how to respond to the questions and it is less embarrassing.”
- “Text. Because there are times that [sic] the internet connection is slow and the audio don’t [sic] work well with that.”

In summary, the responses to the end-of-the-course questionnaire seemed to support the predictions of Hypotheses 3 since the participants of both sections of the online course (voice-based and text-based) selected either voice or text as their preferred,

effective mode of instruction and communication in online course and their choice was not determined by the instructional mode used in their section of the course. Rather, the selection was influenced by the respondents' personal level of comfort and the amount of exposure they had had in their lives to either text-based or voice-based chats.

This section of Chapter V presented the synopsis and interpretation of the research findings as they related to Research Questions # 1, 2, and 3 and test Hypotheses 1A, 1B, 2A, 2B, and 3.

## 5.2. Summative Findings

In summation, the data set analyses conducted during this research study produced the following results and findings.

### 5.2.1. Voice-based condition

As it has been predicted by Hypothesis 1A of Research Question #1, the participants of Section 1 of the online course, who had been instructed via the voice-based chats and used their microphones to communicate with their classmates and the instructor, produced considerably more open questions for probing during their voice-based role-plays of therapeutic dialogues at the end of the course than they did during similar voice-based role-plays before the beginning of the course, which seems to support the recent research findings on the efficacy of voice-based chats for speaking skill enhancement in L2 learning through CMC (see Satar & Ozdener, 2008; Gutierrez, 2003, Chapelle, 2004 among others).

Moreover, the observed statistically-significant difference in open-question production before the course vs. at the end of the course seems to be linked to the participants' noticing of these structures in their language production as they modified their inaccurate initial output (i.e., other than open questions) in probing to open questions significantly more often during the voice-based role-plays at the end of the course compared to the ones at the beginning of the course (in line with Shekary & Tahririan, 2006 and Smith, 2009 findings).

In addition, it seems appropriate here to establish the cause-and-effect relationship between the mode of instruction used in Section 1 – voice-based chats – and the participants' learning the open-question use for probing in therapeutic dialogues and situations related to healthcare communicative settings (in line with Mishler, 1984; Wester, 2005; Egan, 2007) . Thus, it is essential to underscore the salient efficacy of the voice-based chats in learning successful probing techniques by the participants of the voice-based condition of the online course.

Furthermore, it is imperative to comment on the statistically significant difference observed in the participants' use of open questions during their role-plays in the text-based chats before the beginning of the course and at the end of the course, which seems to contradict the current research findings on L2 skill transfer processes in which a one-way skill transfer was observed: from text to voice (see Abrams, 2003, Payne & Whitney, 2002; Kost, 2004, among others). In the current study, however, the participants used considerably more open questions in their role-plays of therapeutic dialogues and were able to sustain the flow of the conversations with their clients while maintaining a balanced, two-way interactive mode in their dialogues (in line with Krashen's (1985) input hypothesis and Long's (1983) & Chappelle's (2004) interaction hypothesis) and allowing for the clients' Voices of the Lifeworld (Mishler, 1984) to be heard in the text-based role-plays, as well as the voice-based ones. It is warranted to point out here that there seems to be, once again, a causal relationship between the participants' increased use of open questions for probing during their voice-based role-plays and during their text-based role-plays that might result from the observed language-skill transfer processes

(from voice to text) since the participants of Section 1 of the online course had been instructed only via voice.

### 5.2.2. Text-based condition

The participants of Section 2 of the online course, who had been instructed via text and used the text-based chat feature of Elluminate to communicate with their classmates and the instructor, did not produce more open questions for probing during their text-based role-plays of therapeutic dialogues at the end of the course than they did during their text-based role-plays before the beginning of the course.

The results of the research study did not find a statistically-significant difference in the participants' open-question production before the beginning of the course vs. at the end of the course in the text-based chats. Moreover, there was no significant difference in the participants' noticing of these structures in their language production except in the results between the data sets collected at the beginning of the course and the midsession of the course (immediate production) when the participants modified their initial output (i.e., structures other than open questions) to open questions significantly more in text-based role-plays.

At this point, it seems premature to dismiss the existence of the cause-and-effect relationship between the mode of instruction used in Section 2 – text-based chats – and the participants' learning effective probing techniques in therapeutic dialogues and situations related to healthcare communicative settings as there was a statistically significant difference observed in the participants' use of closed questions during their

text-based role-plays before the beginning of the course and at the end of the course. The participants used considerably fewer closed questions in their role-plays of therapeutic dialogues at the end of the course. They were able to maintain balanced, two-way interactive conversations with their clients (in line with Krashen's (1985) input hypothesis and Long's (1983) & Chapelle's (2004) interaction hypothesis) in the text-based chats, once again, allowing for the clients' Voices of the Lifeworld (Mishler, 1984) to be heard. Learning effective probing techniques has been specified as one of the main learning outcomes for the online course even though the mode through which the outcome has been reached does not support the predictions of Hypotheses 1B. Instead of using more open questions for probing during their text-based role-plays at the end of the online course – as Hypothesis 1B has predicted – the participants of Section 2 used fewer closed questions for probing during their text-based role-plays at the end of the course as compared to the ones before the beginning of the course.

A likely explanation to the observed findings may be the fact that the participants' language production during text-based chats is naturally slower (see also Warshauer, 2000; Kitade, 2000; Neuage, 2004; Salaberry, 2000; Pellettieri, 2000 among others). It takes more time to type a dialogue exchange during text-based chats than to produce it in voice during voice-based chats. It was also noted during the data transcription stage of the project that the transcribed text-based role-play files came to be considerably shorter with fewer exchange turns compared to the transcribed voice-based-chat files, so it seems warranted to observe that during the text-based chats, the participants had more time to think about their language output as they typed their responses/exchanges in therapeutic

dialogues, which resulted in their use of fewer closed questions during their text-based role-plays instead of more open questions used as it had been predicted by Hypothesis 2B.

In other words, it seems that instead of typing closed questions, noticing their erroneous linguistic output, and self-correcting it to open questions in text-based chats (Salaberry, 2000; Pellettieri, 2000; Izumi, 2002), the participants used fewer closed questions right from the beginning as they had time to think about their closed vs. open question production while typing the exchanges of the therapeutic dialogues and self-correction/self-repair occurred implicitly rather than explicitly as it was observed in voice-based chats (also in Ellis, Basturkmen, & Loewen, 2001). Thus, the participants had noticed their possible erroneous closed-question output before it occurred, and, as a result, used fewer closed questions in their text-based exchanges instead of using more open questions. Even though it contradicts the predictions of Hypothesis 1B of Research Question #1, the finding bares a considerable significance as it constitutes a substantial positive achievement in learning probing questions by the NNS participants of the online course which, moreover, seems to be in line with some of the recent research findings on negotiation of meaning and noticing in text-based online chats (Shekary & Tahririan, 2006; Lai & Zhao, 2006, Thorne, 2007).

In response to Hypothesis 2B of Research Question #2 predictions, it is also critical to note that the participants of Section 2 (text-based condition) used more open questions for probing during their voice-based role-plays at the end of the course than during their voice-based chats before the beginning of the course that might indicate the

presence of language-skill transfer processes since the participants in the text-based section of the online course had been instructed only via text. The findings of this project echo numerous recent research findings on modality transfer (from text to voice) in SCMC (Payne & Whitney, 2002; Kost, 2004; Warshauer, 2000 among others).

In response to the use of text chats in a communicative course designed for NNS nursing students, it should be noted that in terms of SLA theories (Krashen, 1985; Long, 1983; Chapelle, 2004; Swain, 1985; Schmidt, 1990 among others), it does not seem appropriate to disregard one of the language skills (writing) while teaching ESL; on the contrary, all four language skills should be equally addressed and represented in a comprehensive ESL course design. Moreover, in terms of language-skill transfer in L2 learning (Abrams, 2003; Warshauer, 2000; Payne and Whitney (2002); Bölke, 2003; Salabery, 2000; Kost, 2004 among others), excluding text-based chats from ESP course designs would be detrimental to L2 learning as the above-mentioned studies found salient evidence for language-skill transfer from text to voice.

Finally, the research study findings have confirmed the predictions of Hypothesis #3 for both conditions: text-based and voice-based. There was no well-defined pattern observed in (1) the participants' preference of the mode of instruction and communication, (2) their perception of its effectiveness in learning how to use probing questions, and (3) its relationship to the mode actually used in their respective sections of the online course. Sixty-three percent of the respondents to the end-of-the-course questionnaire chose voice-based chats while thirty-seven percent chose text-based chats. The participants seemed to make their choices based on their existing experiences (i.e.,

related to the mode used in their section of the course), as well as their prior exposure to text-based and/or voice-based chats (e.g., social media chats, cell-phone text, etc.) which appeared to be defined by various linguistic (e.g., faster responses, improvement of speaking skills – for voice-based chats, slower pace/time to think about the response, less embarrassing – for text-based chats) and extraneous factors (e.g., slow Internet connection, absence of a microphone/webcam, etc.).

To sum up, in terms of the interactionist theory in SLA (see (1) Krashen's (1985) input hypothesis; (2) Long's (1983) and Chapelle's (2004) interaction hypothesis; (3) Swain's (1985) output hypothesis, and (4) Schmidt's (1990) noticing hypothesis) and L2 learning, the research findings of this project suggest that text-based and voice-based CMCs in online environments contribute greatly to NNS students' noticing of linguistic structures in various communicative discourses through the processes that lead to negotiation of meaning (e.g., modified language output), which promote L2 learning through enhanced comprehension and achievement of positive learning outcomes (Pellettieri, 2000; Block, 2003). Moreover, social interaction and effective collaboration with peers (Vygotski, 1997; Wang, 2005) through text-based and voice-based modalities in online learning environments (Luppigni, 2003) promote effective knowledge co-construction which, in its turn, leads to learning.

### **5.3. Unique Features of the Present Research Study**

The present research study sets itself apart from other research studies of a similar scope in a number of ways.

First and foremost, one of the unique features of this project lies in the delivery means of its online instruction and communication: the English for Specific Purposes (ESP) online course, the design of which employs a course-management platform that combines Desire-to-Learn (D2L) CMS and Elluminate, as a carrier for its synchronous voice-based and text-based chats. The platform was used to deliver the course content, text-based and video-based materials, assignments, and assessment tools to its participants in the Philippines.

Second, one of the major strengths of the project was its English for Specific Purposes: Communication in Nursing course design that effectively combined the current research findings in the area (see Sarangi, 2004; Boshier & Smalkoski, 2002, among others) to deliver its content to the participants. The focus of the course design was grounded in the NNS nursing students' development of such indispensable skills as communicating clearly and effectively on the job, being assertive with clients and colleagues in communicative situations related to various clinical settings, using appropriate paralinguistic and linguistic features of communication, using appropriate non-verbal and verbal communicative skills, being self-confident and comfortable asking other nurses and their supervisors for assistance, understanding how their cultural values

influence effectiveness of their interaction with clients from cultural backgrounds other than their own (Bosher & Smalkoski, 2002).

Next, it is worth noting that the present research study focused on both communicative modes in online learning environments – text-based and voice-based chats – and their efficacy in learning one particular item of medical discourse (i.e., use of open questions for probing during therapeutic dialogues) by non-native speaking participants of the online course, which sets the present project apart from other similar studies in which only one communicative mode has been researched for its effectiveness (text or voice) or the efficacy of one mode of online course delivery (text or voice) has been compared to F2F modes and learning outcomes.

Another distinctive feature that makes the present research study stand out is the complete absence of F2F (i.e., in-class) contact of the researcher with the participants of her study. The study was conducted solely online through two distinct modes of communication – text-based chats and voice-based chats – between the participants in the Philippines and the researcher in the United States. This framework of the online course delivery and data collection had to address the time-zone differences between the countries and personal availability of its participants who were fourth-year students of one of the largest nursing colleges in the Philippines and spent the majority of their time in clinical practica in hospitals, oftentimes traveling to remote areas of the country where the shortage of nurses was particularly prevalent.

Finally, the present research study sets itself apart by employing video recording of the participants language production alongside other behaviors accompanying their

language output (e.g., typing/ deleting, making mistakes/correcting mistakes, choosing words/replacing words, scrolling, etc.) through the use of Jing (free-download screen-capture software) to capture these actions as they appeared in the text-based chat windows of Elluminate: (1) the top part of the window with the participants' dialogue exchanges after they hit the "send" button and (2) the bottom part of the window with the participants' actions during the process of typing as they appeared on their computer. These video clips were recorded at three distinct points of the online course: (1) before the beginning of the course; (2) at the midsession of the course, and (3) at the end of the course that established the three research data sets for the text-based condition. The approach provided the researcher with important observations that helped her test the hypotheses in Research Questions #1 and 2 through the observation of the participants' self-correction/self-repair processes that resulted from noticing of their erroneous initial output (i.e., questions other than open) during therapeutic dialogues. Without those video-recorded files, it would be impossible to make the observations and test the suggested hypotheses by only examining the final static transcripts of the participants' text-based chats.

#### **5.4. Limitations of the Present Research Study**

The findings of the present research study should be interpreted to include the following limitations of the project.

First, even though a great deal of effort was expended to ensure random distribution of the participants in their respective sections of the online course (i.e., Section 1 – voice-based condition; Section 2 – text-based condition), it should be pointed out as a limitation of the present study that the availability of technology – a webcam with a built-in microphone, a stand-alone microphone or a set of headphones with a microphone for the voice-based chats – influenced the decision-making processes; in the end, though, two sections of twenty participants each were established and the course proceeded successfully. On the one hand, it can be concluded here that if those participants had the required technological means (i.e., a webcam with a built-in microphone, a microphone or a set of headphones with a microphone) to be enrolled in the voice-based condition, they would probably use it regularly and, thus, feel more comfortable using voice-based chats in the online course, which might be a confounding factor in this project as those participants would prefer voice over text because of their familiarity with its use and high level of comfort using it. On the other hand, the above-mentioned observation is not warranted because many of the course participants did not have the required technological means to be enrolled in the voice-based condition/Section 1 of the course; instead, they were willing to acquire them in order to try the voice-based approach to instruction and communication in online courses. Of course, more research is necessary on the relationship between the participants' level of comfort and familiarity with a particular online mode of instruction and communication (voice or text) and their perception of its efficacy in learning online.

Second, it is necessary to point out that out of 40 initially enrolled participants of the online course, only 20 were able to provide complete data sets for analyses of the research items (pre-treatment, midsession-treatment, and final post-treatment). With the availability of more data sets, the research findings could have been more conclusive as a more even distribution of research data could have been achieved.

Another point that needs to be brought up in relationship to the above-mentioned limitation is that it would be more beneficial, also, to relativize the research findings on the open-question use against the number of exchange turns and role-play word counts for both modes – text and voice – and in all test conditions – pre-treatment, midsession-treatment, and final post-treatment. Accounting for the number of open-ended question uses against the number of words and/or dialogue exchange turns during chats might have modified the significance of the results.

Next, even though the course participants claimed that they had a lot of positive and highly rewarding experiences interacting with the CMS (D2L and Elluminate), they also noted that their overall success utilizing the platform for online learning and communicative purposes depended on the technical specifications of their computers (i.e., OS reliability and speed of data processing, hardware and software stability, etc.) and the speed of their Internet connection, which sometimes hindered their effective participation in the online course. Although no major location-specific, technology-related incompatibility issues were mentioned by the participants of the online course, future success of studies that focus on delivering ESP online courses to their students

abroad should consider completing a comprehensive technical-needs assessment in geographical locations/areas of their prospective research participants.

Finally, the study's participants were all native speakers of one L1 (i.e., Tagalog) while more research is necessary to examine L2 learning processes in online environments of native speakers of other languages in a variety of other ESP discourse areas (e.g., business, law, accounting, tourism, computer sciences, etc.).

### **5.5. Pedagogical Applications and Future Research Opportunities**

With the rapid proliferation of distance learning and online education, the need for effective tools to be used for teaching and learning in online environments is especially critical. On the one hand, research studies similar to the one presented in this project enrich our knowledge of computer applications, software, systems and platforms that make online courses accessible to language learners; on the other hand, they also enhance our understanding of instrumental approaches and techniques that help students achieve their goals and meet their needs in language learning online. In light of the results and findings of the present research study, the following pedagogical applications can be proposed.

First, language learning online can benefit greatly from effective designs of English for specific purposes (ESP) courses. There is an ever-increasing demand world-wide for language courses that target non-native speaking students of business and law

schools, accounting programs, nursing/pharmacy/medical schools, computer science programs and other areas of human expertise where success is defined by and is rested on effective communicative language skills. This research study utilized a modular approach to its online course design that included multiple assignments for its participants to complete in order to achieve their goals in enhancing their English language skills in their area of study (i.e., nursing). It is, understandably, only one of the multiple ways an online course can be designed and offered to students. More research is necessary on efficacy of various online course designs, in general, and ESP course designs, in particular.

Second, among the many techniques that were used in the ESP: Communication in Nursing online course, two were of a particular importance: text-based chats and voice-based chats. Both modes of instruction and communication were commended highly for their efficacy in online learning by the course participants. It goes without saying that as technology continues to develop at an exponential rate, various online modes of communication and interaction will be the way of the future; thus, their role and application in online education needs to be further examined. The present research study focused on the application of voice-based and text-based chats as related to their efficacy in learning one specific structure of medical discourse: open questions used for probing in therapeutic dialogues between nurses/helpers and their patients/clients. Both modes – voice and text – played a significant role in its learning as reflected in the research findings of this study, which places voice-based and text-based chats at the forefront of effective teaching and learning online tools.

It is justified to claim that both modes – voice and text – can be and should be effectively used for teaching and learning online since they bring positive results in L2 learning in online courses. The research findings of the present study suggest that the online course participants, non-native speaking students of a nursing college at a major university in the Philippines, who were instructed via voice (i.e., through voice-based chats), used more open questions for probing in therapeutic dialogues when they role-played helpers in voice-based chats at the end of the online course compared to the results of their performance during the role-plays before the beginning of the course. Moreover, the same results were observed when they used text-based chats to accomplish the same task: the participants of the voice-based section of the online course used more open questions for probing during text-based role-plays at the end of the course than before the beginning of the course.

The participants, who were instructed via text (i.e., through text-based chats), did not produce more open questions, but they produced fewer closed questions for probing in therapeutic dialogues when they role-played helpers in text-based chats at the end of the course compared to their results before the beginning of the course. From a pedagogical perspective, finding no significant difference in a research item (e.g., use of open questions for probing) does not necessarily constitute a negative result. Successfully achieving learning outcomes through a means other than the one proposed in the research study (i.e., fewer closed questions used in therapeutic dialogues) should still be considered a positive result. Future research studies might employ other modes of self-correction/self-repair observation (e.g., think-aloud protocol) to examine further the

fact that noticing can happen covertly and self-repair/self-correction might occur implicitly before the production of visible (typed) language output in text-based chats.

Moreover, the participants of the text-based section of the course produced more open questions for probing when they role-played during voice-based chats at the end of the course than when they performed the same voice-based task at the beginning of the course, which suggests possible language-skill transfer from L2 text to L2 communicative oral skills. Even though the achievement of the learning outcomes in both conditions of this research study was undeniable, more comparative research studies are necessary on the efficacy of using voice-based and text-based chats for L2 learning online and the directions of L2 language-skill transfer (voice-to-text and text-to-voice) in relationship to the mode used for online instruction and communication.

Based on the present research findings of the participants' perception of the efficacy of voice-based and text-based chats for learning online, it can be observed that both modes had their supporters and detractors, and the choice of the side was not defined by the mode of instruction and communication used in the participants' section of the online course; rather, it was determined by their personal preference and their level of comfort using text or voice in synchronous online chats. Thus, it seems warranted to note that both modes should be included in online course designs to give participants a choice and maximize the achievement of learning outcomes and to meet the participants' needs and goals in online education.

## 5.6. Chapter and Dissertation Summary

Chapter V of this project presented a summative overview of the results of the research data analyses presented in Chapter IV for both conditions: voice-based and text-based. It further focused on the unique features and limitations of the present study, presented possible implications of the research findings, and suggested their pedagogical applications to the areas of online education. Moreover, it situated the research findings within the contexts of online course designs, in general, and English-for-Specific-Purposes (ESP) course designs, in particular; the modes of instruction and communication in online courses (i.e., text-based vs. voice-based synchronous chats); the efficacy of text-based and voice-based communicative practices in learning discourse items in ESP online courses designed for L2 professionals; issues related to medical discourse and communication in healthcare-related settings.

Overall, employing an ESP online course design, the research study examined the efficacy of voice-based and text-based instructional and communicative modes in learning to use open questions for probing during role-plays of therapeutic dialogues in synchronous online chats by non-native speaking research study participants, the students of a nursing college of a major university in the Philippines. Through qualitative and quantitative data analysis procedures, the research questions were answered and research hypotheses tested. The results of the analyses supported many of the proposed hypotheses for both research conditions: voice-based and text-based. More specifically, the results supported the predicted efficacy of both forms of online instruction and communication

(i.e., voice-based and text-based chats) in learning probing techniques by the online course participants; furthermore, a possibility of the two-way language-skill transfer modes was suggested in L2 learning online through the application of synchronous chats in text and voice: from text-to-speech and from speech-to-text.

Although more research is necessary in these areas of L2 learning in the context of online education, the research findings of the present research study are highly suggestive of effective implementations of voice-based and text-based synchronous chats in ESP online courses for non-native speaking students. The researcher also anticipates that the research findings of her study will rouse further research endeavors to benefit second-language learning in online environments.

## APPENDIX A

## SAMPLE ESP: COMMUNICATION IN NURSING

## ONLINE COURSE SCHEDULE

## Online Communication in Nursing: Course &amp; Assignment Schedule

The schedule below indicates targeted module deadlines alongside a *suggested* schedule for the completion of coursework components. Although all students are beholden to the established module deadlines every seven days, they are free to complete coursework at *any time* during that seven day period.

<i>Saturday &amp; Sunday ORIENTATION</i>	<i>Monday WEEK 1</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<b>2-DAY COURSE INTRODUCTION</b> ~ <i>Participate in the Orientation with discussion postings</i>	<b>Day 1</b> <i>MODULE 1: Dare to Care</i> ~ <i>Review Content &amp; Objectives</i>	<b>Day 2</b> <i>MODULE 1: Dare to Care</i> ~ <i>Complete Readings &amp; Materials</i>	<b>Day 3</b> <i>MODULE 1: Dare to Care</i> ~ <i>Watch the Video and Do the Vocabulary Practice</i>	<b>Day 4</b> <i>MODULE 1: Dare to Care</i> ~ <i>Respond to Discussion Questions</i>	<b>Day 5</b> <i>MODULE 1: Dare to Care</i> ~ <i>Complete the Application Activity</i>	<b>Day 6</b> <i>MODULE 1: Dare to Care</i> ~ <i>Complete the Module Quiz/ Online Chat (Group A)</i>

<i>Sunday</i>	<i>Monday WEEK 2</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<b>Day 7</b> <i>MODULE 1: Dare to Care</i> ~ <i>Complete the Module Quiz/ Online Chat (Group B)</i>	<b>Day 1</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Review Content &amp; Objectives</i>	<b>Day 2</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Complete Readings &amp; Materials</i>	<b>Day 3</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Watch the Video and Do the Vocabulary Practice</i>	<b>Day 4</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Respond to Discussion Questions</i>	<b>Day 5</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Complete the Application Activity</i>	<b>Day 6</b> <i>MODULE 2: Speaking by Patients</i> ~ <i>Complete the Module Quiz/ Online Chat (Group A)</i>

## Online Communication in Nursing: Course &amp; Assignment Schedule – Continued

<i>Sunday</i>	<i>Monday</i> <i>WEEK 3</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<b><u>Day 7</u></b>	<b><u>Day 1</u></b>	<b><u>Day 2</u></b>	<b><u>Day 3</u></b>	<b><u>Day 4</u></b>	<b><u>Day 5</u></b>	<b><u>Day 6</u></b>
<b>MODULE 2: Speaking by Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group B)</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Review Content &amp; Objectives</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Complete Readings &amp; Materials</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Watch the Video and Do the Vocabulary Practice</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Respond to Discussion Questions</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Complete the Application Activity</b>	<b>MODULE 3: Speaking to Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group A)</b>

<i>Sunday</i>	<i>Monday</i> <i>WEEK 4</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<b><u>Day 7</u></b>	<b><u>Day 1</u></b>	<b><u>Day 2</u></b>	<b><u>Day 3</u></b>	<b><u>Day 4</u></b>	<b><u>Day 5</u></b>	<b><u>Day 6</u></b>
<b>MODULE 3: Speaking to Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group B)</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Review Content &amp; Objectives</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Complete Readings &amp; Materials</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Watch the Video and Do the Vocabulary Practice</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Respond to Discussion Questions</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Complete the Application Activity</b>	<b>MODULE 4: Speaking with Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group A)</b>

<i>Sunday</i>	<i>Monday</i> <i>WEEK 5</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<b><u>Day 7</u></b>	<b><u>Day 1</u></b>	<b><u>Day 2</u></b>	<b><u>Day 3</u></b>	<b><u>Day 4</u></b>	<b><u>Day 5</u></b>	<b><u>Day 6</u></b>
<b>MODULE 4: Speaking with Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group B)</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Review Content &amp; Objectives</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Complete Readings &amp; Materials</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Watch the Video and Do the Vocabulary Practice</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Respond to Discussion Questions</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Complete the Application Activity</b>	<b>MODULE 5: Speaking about Patients</b> ~ <b>Complete the Module Quiz/ Online Chat (Group A)</b>

## Online Communication in Nursing: Course &amp; Assignment Schedule – Continued

<i>Sunday</i>	<i>Monday</i> <i>WEEK 6</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<u>Day 7</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Day 4</u>	<u>Day 5</u>	<u>Day 6</u>
<b>MODULE 5:</b> <i>Speaking about Patients</i> ~ <i>Complete the Module Quiz/ Online Chat (Group B)</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Review Content &amp; Objectives</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Complete Readings &amp; Materials</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Watch the Video and Do the Vocabulary Practice</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Respond to Discussion Questions</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Complete the Application Activity</i>	<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Complete the Module Quiz/ Online Chat (Group A)</i>

<i>Sunday</i>	<i>Monday</i> <i>WEEK 7</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
<u>Day 7</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Day 4</u>	<u>Day 5</u>	<u>Day 6</u>
<b>MODULE 6:</b> <i>Culture and Communication</i> ~ <i>Complete the Module Quiz/ Online Chat (Group B)</i>	<b>MODULE 7:</b> <i>Final Exam</i> ~	<b>MODULE 7:</b> <i>Final Exam</i> ~ <i>Chat: Exit Test Group A</i>				

<i>Sunday</i>	<i>Monday</i> <i>WEEK 8</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	
<u>Day 7</u>						
<b>MODULE 7:</b> <i>Final Exam</i> ~ <i>Chat: Exit Test Group B</i>	<b>COURSE SUMMATION</b> ~ <i>Coursework Make-up &amp; Administration</i>	<b>COURSE SUMMATION</b> ~ <i>Coursework Make-up &amp; Administration</i>	<b>COURSE SUMMATION</b> ~ <i>Coursework Make-up &amp; Administration</i>	<b>COURSE COMPLETION</b> ~ <i>Deadline for all Coursework Materials</i>	<b>FINAL GRADES &amp; SURVEYS</b> ~ <i>Deadline for all Surveys</i>	<i>Certificates of Completion mailed</i>

## APPENDIX B

### ESP: COMMUNICATION IN NURSING/COURSE MODULES

<p style="text-align: center;"><b>ENGLISH FOR NURSING SYLLABUS</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Welcome, students!</li> <li><b>ii.</b> Program Description</li> <li><b>iii.</b> Goals &amp; Requirements</li> <li><b>iv.</b> Curricular Design</li> <li><b>v.</b> Readings &amp; Materials</li> <li><b>vi.</b> Vocabulary</li> <li><b>vii.</b> Discussion Postings</li> <li><b>viii.</b> Application Activities</li> <li><b>ix.</b> Online Chat Session</li> <li><b>x.</b> Exams &amp; Assessment</li> <li><b>xi.</b> Evaluation &amp; Grading</li> </ul>	<p style="text-align: center;"><b>MODULE 4: SPEAKING WITH PATIENTS</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Mod 4 Description</li> <li><b>ii.</b> Mod 4 Objectives</li> <li><b>iii.</b> Mod 4 Readings</li> <li><b>iv.</b> Mod 4 Vocabulary</li> <li><b>v.</b> Mod 4 Video Clips</li> <li><b>vi.</b> Mod 4 Discussions</li> <li><b>vii.</b> Mod 4 Online Chat</li> <li><b>viii.</b> Mod 4 Activity</li> <li><b>ix.</b> Mod 4 Final Quiz</li> </ul>
<p style="text-align: center;"><b>MODULE 1: NURSING: DARE TO CARE</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Mod 1 Description</li> <li><b>ii.</b> Mod 1 Objectives</li> <li><b>iii.</b> Mod 1 Readings</li> <li><b>iv.</b> Mod 1 Vocabulary</li> <li><b>v.</b> Mod 1 Video Clips</li> <li><b>vi.</b> Mod 1 Discussions</li> <li><b>vii.</b> Mod 1 Online Chat</li> <li><b>viii.</b> Mod 1 Activity</li> <li><b>ix.</b> Mod 1 Final Quiz</li> </ul>	<p style="text-align: center;"><b>MODULE 5: SPEAKING ABOUT PATIENTS</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Mod 5 Description</li> <li><b>ii.</b> Mod 5 Objectives</li> <li><b>iii.</b> Mod 5 Readings</li> <li><b>iv.</b> Mod 5 Vocabulary</li> <li><b>v.</b> Mod 5 Video Clips</li> <li><b>vi.</b> Mod 5 Discussions</li> <li><b>vii.</b> Mod 5 Online Chat</li> <li><b>viii.</b> Mod 5 Activity</li> <li><b>ix.</b> Mod 5 Final Quiz</li> </ul>
<p style="text-align: center;"><b>MODULE 2: SPEAKING BY PATIENTS</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Mod 2 Description</li> <li><b>ii.</b> Mod 2 Objectives</li> <li><b>iii.</b> Mod 2 Readings</li> <li><b>iv.</b> Mod 2 Vocabulary</li> <li><b>v.</b> Mod 2 Video Clips</li> <li><b>vi.</b> Mod 2 Discussions</li> <li><b>vii.</b> Mod 2 Online Chat</li> <li><b>viii.</b> Mod 2 Activity</li> <li><b>ix.</b> Mod 2 Final Quiz</li> </ul>	<p style="text-align: center;"><b>MODULE 6: CULTURE AND HEALTH-CARE COMMUNICATION</b></p> <ul style="list-style-type: none"> <li><b>i.</b> Mod 6 Description</li> <li><b>ii.</b> Mod 6 Objectives</li> <li><b>iii.</b> Mod 6 Readings</li> <li><b>iv.</b> Mod 6 Vocabulary</li> <li><b>v.</b> Mod 6 Video Clips</li> <li><b>vi.</b> Mod 6 Discussions</li> <li><b>vii.</b> Mod 6 Online Chat</li> <li><b>viii.</b> Mod 6 Activity</li> <li><b>ix.</b> Mod 6 Final Quiz</li> </ul>

**ESP: COMMUNICATION IN NURSING/COURSE MODULES –**

Continued

<b>MODULE 3: SPEAKING TO PATIENTS</b>	<b>MODULE 7: FINAL EXAM</b>
<ul style="list-style-type: none"><li><b>i.</b> Mod 3 Description</li><li><b>ii.</b> Mod 3 Objectives</li><li><b>iii.</b> Mod 3 Readings</li><li><b>iv.</b> Mod 3 Vocabulary</li><li><b>v.</b> Mod 3 Video Clips</li><li><b>vi.</b> Mod 3 Discussions</li><li><b>vii.</b> Mod 3 Online Chat</li><li><b>viii.</b> Mod 3 Activity</li><li><b>ix.</b> Mod 3 Final Quiz</li></ul>	<ul style="list-style-type: none"><li><b>i.</b> Final Exam Description</li></ul>

## APPENDIX C

### PRE-TREATMENT, MIDSESSION, POST-TREATMENT DATA COLLECTION: ROLE-PLAY SITUATIONS FOR ELICITING PROBING QUESTIONS

#### Situation #1

**CLIENT:** At work, your direct supervisor constantly asks you to do things that can put you in serious trouble. At the same time, you are afraid that if you do not do them, you might get fired. You understand that it will be very hard for you to find another job. The situation makes you really depressed. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

#### Situation #2

**CLIENT:** You have lost your wallet. Your best friend got in a car accident and almost died. Your sister got seriously sick and needed hospitalization. You feel that you have had a string of bad luck lately, and you feel really frustrated. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

#### Situation #3

**CLIENT:** Your co-worker constantly asks you to switch shifts with her, so instead of working during the day (your regular shift), you have to work at night. You are unhappy about it but cannot say “no” to her because she has to take care of her small child. The situation is draining you out. You start having bad headaches and have trouble sleeping. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

#### Situation #4

**CLIENT:** You have just lost your job in a small, private practice and have been offered a good job at a very large hospital. You would like to accept it, but you do not like the idea of being “lost” among so many nurses working there, and you think it will be very stressful because at your previous work-place, everybody (personnel and patients) had very close, friendly relationships and knew one another very well. You do not know what to do. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #5**

**CLIENT:** Your mom lives and works abroad, so you visit her whenever you get a chance. Last time you visited her, she started saying that you had not visited her often enough and that you did not care for her anymore. Her words hurt your feelings. You got really angry, could not control your emotions, started screaming at her, and said a lot of things you did not really mean. Now you feel horrible about it; you are sorry for your behavior and your words. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #6**

**CLIENT:** You do volunteer work at your church and help at-risk high-school kids who struggle with their school and homework. You are helping a 16-year-old boy, Sam. Recently, during your homework-help sessions with you, he started talking about peer pressure and his friends, most of whom are members of a local gang. He told you that the gang was selling drugs to local kids. When you heard about it, you felt really uncomfortable. You think you should let the authorities know about it, but you are afraid that it might put your life in a serious danger. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #7**

**CLIENT:** One of your friends has just stopped talking to you. You have no idea what happened but think that the reason is because you have recently made some negative

comments about him/her behind his/her back. You feel really ashamed of yourself and your actions. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #8**

**CLIENT:** You have just been told that one of your high-school friends had been diagnosed with terminal cancer and will probably have 3-4 months left to live. You are very confused; you do not want to lose your friend, but you understand that it is inevitable. You are also very depressed because you do not know what to do, what to say, and how to act around him/her during the remaining time. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #9**

**CLIENT:** Yesterday your head-nurse (your supervisor) told you to check on one of your patients who needed immediate help. However, you were in the middle of helping another patient of yours, so by the time you had your current task completed, you forgot about the patient who had been waiting your help. The patient got very angry and complained to the head-nurse (your supervisor). You know that this situation can mean serious trouble for you. You are very scared and confused. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #10**

**CLIENT:** After your graduation from the nursing program, you have got a great job and you are very happy about it. The only problem is that it requires regular trips to help in areas/hospitals that do not have enough nurses. Your trips sometimes last for two/three weeks almost every month, and your partner (i.e., girlfriend, boyfriend, husband, wife) is getting really upset about it. He/She complains that you do spend enough quality time as a couple anymore since you are away so often. You are really upset and confused. You do not want to lose the job that you really like; at the same time, you do not want to lose your partner. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #11**

**CLIENT:** One of your friends has recently been losing a lot of weight. He/She has also complained of being tired all the time and having no energy to complete tasks at work. You are concerned. You think that something is going on that affects his/her health so much. You would like to find out what the problem is so that you can help, but you do not know how to approach the situation. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

### **Situation #12**

**CLIENT:** You are the youngest of five siblings in the family. You are an adult. You have completed a nursing program and got a really good job in a hospital; however, your mom still treats you and talks to you like you are her little child. You find it especially embarrassing when she does it in front of your friends. You understand that she is your mother and that she loves you, but you also want her to treat you like an adult not a child. You do not know how to start a conversation with her about the issue. You have decided to talk to your best friend about it.

**HELPER:** Help your friend talk about his or her problem/conduct a therapeutic dialogue.

**APPENDIX D****COURSE COMPLETION QUESTIONNAIRE**

ESP: Communication in Nursing Online

Course Evaluation Survey 2011

1. How many times have you taken an online course before?
  - a. My first course
  - b. One
  - c. Two
  - d. Three
  - e. More than three
  
2. Overall, I think taking online courses is an effective way to improve my communication skills for nursing:
  - a. Strongly agree
  - b. Agree
  - c. Neutral
  - d. Disagree
  - e. Strongly disagree
  
3. I think the amount of work in my online course was:
  - a. Way too much
  - b. Too much

- c. Just right
  - d. Not enough
4. Please, rate the effectiveness of the following in your learning and understanding of the course material (very poor, poor, average, good, very good):
- a. The course format and design as a whole
  - b. The weekly quizzes
  - c. The discussion questions
  - d. The chat sessions
  - e. The video clips
  - f. The readings
  - g. Communication with your instructor
5. What kinds of practices do you think were most effective for your communication skills in nursing?
- a. Answering discussion questions and communicating with my classmates
  - b. Chatting with the instructor and my classmates
  - c. Practicing reading
  - d. Watching video clips
  - e. Doing application activities
  - f. Doing weekly quizzes
6. What do you think about weekly live chat sessions?
7. Which form of live chats do you prefer: text chats or voice chats? Explain your choice.

8. What do you think about our course website (Desire-to-Learn=D2L)? How easy is it to navigate?
9. Comment on the reading selections and video clips included in the course. How helpful were they in improving your communication skills for nursing?
10. Please, rate the effectiveness of your instructor (strongly disagree, disagree, neutral, agree, strongly agree):
  - a. The instructor was there for me every step of the way and supported me through the online course
  - b. The instructor answered my questions quickly and clearly
  - c. The instructor provided helpful feedback on my assignments
  - d. The instructor reminded me (e.g., via emails) about the chats, deadlines, and due dates every week
11. The difficulty of the course was:
  - a. Very hard
  - b. Hard
  - c. Average
  - d. Easy
  - e. Very easy
12. In your own estimation, how much did you learn in this course:
  - a. Very little
  - b. Little
  - c. Some

- d. A lot
- e. A significant amount

13. Was there anything about the course that you found particularly helpful?

14. Please, add any other comments or suggestions you might have concerning the course and your instructor.

15. What other ESL courses would you like to see offered ONLINE in the future?

What courses would you like to take ONLINE?

TABLE I

## PARTICIPANTS' DEMOGRAPHIC DATA

SECTION	Mean AGE	GENDER distribution		
			# of participants	% of participants
Section I/ Group A (Voice-based condition)	21.3	MALE	9	45%
		FEMALE	11	55%
Section II/ Group B (Text-based condition)	21.9	MALE	7	35%
		FEMALE	13	65%

**TABLE II**  
**RESEARCH QUESTIONS/DATA COLLECTION/ANALYSIS INSTRUMENTS**

#	RQ	Data	Instruments
1	<b>Research Question #1:</b> Which CMC interactional mode – voice or text – provides for better learning of probing questions by NNS medical professionals through noticing of their use in situations typical for everyday health-care-related communicative encounters in an online course?	<ul style="list-style-type: none"> <li>• Base-line/Pre-treatment data sets 1A and 1B;</li> <li>• Production Midsession data sets 1A and 1B;</li> <li>• Delayed Production/Post-treatment data sets 1A and 1B.</li> </ul>	Paired Samples t-Tests with 95% confidence interval of the difference ( $p < .05$ )
2	<b>Research Question #2:</b> Is there evidence that the skill to use probing questions by NNS medical professionals developed through text-based practices in an online course might transfer to their speech and vice versa?	<ul style="list-style-type: none"> <li>• Base-line/Pre-treatment data sets 1A and 1B;</li> <li>• Production Midsession data sets 1A and 1B;</li> <li>• Delayed Production/Post-treatment data sets 1A and 1B.</li> </ul>	Paired Samples t-Tests with 95% confidence interval of the difference ( $p < .05$ )
3	<b>Research Question #3:</b> Which CMC interactional mode – voice or text – is perceived by the online-course participants as more effective for learning how to use probing questions in health-care-related communicative encounters?	<ul style="list-style-type: none"> <li>• End-of-the-course questionnaire</li> </ul>	Qualitative analysis tools

**TABLE III**  
**DATA DISTRIBUTION AFTER THE END-OF-THE-COURSE**  
**TREATMENT**

	<b>GENDER distribution</b>		
		<b># of participants</b>	<b>% of participants</b>
<b>Section I/ Group A (Voice-based condition)</b>	<b>MALE</b>	4	40%
	<b>FEMALE</b>	6	60%
<b>Section II/ Group B (Text-based condition)</b>	<b>MALE</b>	3	30%
	<b>FEMALE</b>	7	70%

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