NURSING PROFESSIONALS' EVALUATION IN INTEGRATING THE COMPUTERS IN ENGLISH FOR NURSING PURPOSES (ENP) INSTRUCTION AND LEARNING

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ABSTRCT
This study was designed to examine the pre- and in-service nursing professionals' perceptions of using computers to facilitate foreign language learning as consideration for future English for nursing purposes instruction. One hundred and ninety seven Taiwanese nursing students participated in the study. Findings revealed that (1) the participants felt benefited using computers to aid their language learning mostly in reading skills development (ex. reading medical reports, doctor's orders, and English magazines and newspapers), followed by vocabulary skills (ex. acquiring more medical terminologies), listening skills (ex. listening to English broadcast media) and writing skills (ex. writing nursing notes/reports in real situations). They also expressed the computers provide "least" help as they try to become more proficient in speaking at seminars, making presentations and participating in groups discussions using English; (2) statistical significance was noted in terms of students' perceptions of computer-mediated learning in English speaking based on their division/rank using an ANOVA test; (3) a Pearson Product-Moment Correlation analysis revealed a statistically significant, positive association between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency. Based on these results, researchers and educators could find meaningful ways that will improve the attitudes of students in the digital learning environment, and continue to evaluate ways to help these students connect with the process of learning.
Keywords: Nursing education, English for nursing purposes, Computer-mediated learning/instruction

BACKGROUND & INTRODUCTION

A Changing Climate of Global Environment

Our societies have been muddled by the new movements of globalization, digital learning and communication, and World Englishes. These appear to be several major factors associated with a changing climate facing nurse education today.

Before the emergence of a new vehicular language or *lingua franca*, English remains dominant as a globe means of communication. As countries have become more and more open to one another and more culturally diverse as a result of a push for globalization, it has become much easier and affordable for citizens of the world to travel across borders, physically and/or via "cyberspace," to attain knowledge, for traveling pleasure, and to seek ample business ventures. Interestingly but not surprisingly, the numbers have suggested that more and more people cross borders just to seek better quality in medical service (sometimes at a more equitable price). This global phenomenon has given enough concrete support for English learning by the people of the countries that are in the bid for such alluring opportunities arriving from the overseas. This is particularly true for those who live in the non-English speaking countries, in which English is used as a foreign language, or EFL. Evidently, it is also clear that people who are proficient in English are advantageous over those who speak only their mother tongue.

Challenges Facing Nursing Communities

Some could argue that a booming nursing care industry might merely be a "sub-product" of the immense, international business conglomerates, but the consequences that the globalization force has brought about to this community is not at all secondary. Let's not be mistaken, medical institutions need to generate enough income in order to stay afloat, but making money is not their primary goal; instead, to save a life and continuously provide world-class care are. Hospital nursing professionals, clinical and student nurses have been acquiring knowledge and share resources globally. They need to bundle themselves up with arrays of skills to service a wider, and more international population and to cope with an increasing complex health system. English abilities inevitably remain in focus in nursing discipline because it helps better facilitate adequate exchange of information (communication) with the physicians and the patients, which further leads to proper diagnoses and care. As good knowledge and good communication are essential, nurse education, and nursing communities are faced with several dilemmas and challenges in terms of discipline-specific language learning and pedagogy (Kimball, 1998). At school, the majority of subject-specific textbooks and professional journals are written in English, though many more have been translated into local language(s) for better comprehension. In addition, many academic lectures are delivered via the means of English. Students are urged to read and write in English as they will be expected to do so in the future. Consequently, those who

receive more adequate language education/training can be a value added readiness as soon as they enter the workforce. At the work place, nursing professionals are counted on reading and following doctors' orders, writing nursing notes, and entering records, often times in English. Nurses who are proficient in English language can better address their patients' needs via effective communication. Both the student and in-service nurses recognize the necessity of English and how unequivocal important it is for professional success, better job opportunities, and updating their medical knowledge.

In the process of acquiring abilities and knowledge of the second language (SL) or foreign language (FL), similar to many other professional disciplines, English learners in the nursing communities often have to make switches between what have been described as the goal-oriented needs (Belcher, 2009; Kimball, 1998). That is, what they need to know with their knowledge in order to succeed in their school subjects and/or professional careers. The former is known as the EAP, English for academic Purposes and the later is known as the EOP, English for Occupational Purposes (Dudley-Evans & St. John, 1998). The best fitted EOP for nursing professionals is the English for Nursing Purposes, or ENP, that can be furthermore divided into pre-experience, in-service, and post-service types. Perceived needs and perceived effectiveness of the English language by the pre- and in-service professionals seem to have been driving the current research on English for Nursing Purposes.

Educational Uses of Computer Technology

It is not uncommon to see computer uses in disciplines such as foreign languages, mathematics and sciences, just to name a few. For instance, in an English composition class the computer can be used for providing and receiving useful and just-in-time feedback that can contribute to the quality of student writing. It can also be used for facilitating the process of writing so that students and teachers or students and students can interact with the content in meaningful ways that are difficult with pencil and paper in a traditional classroom (student engagement/ skill mastery). The technology used in linguistic expression, be that speech or text, is expanding our capabilities to interpret, understand and infer ideas in other symbol system (Kozma & Johnston, 1991). Taking advantage of today's virtual reality technology, students in Asia are able to take an interactive field trip (Yu, et al., 2008) to The Franklin Institute Science Museum in Philadelphia, Pennsylvania, USA, without having had to travel one-half way around the globe. Educational uses of technology cannot go unnoticed, and the list of technology coming to classrooms can't be overstated.

LITERATURE REVIEW

Computers and the Nature of Teaching/Learning

We stand in a period where electronic learning takes the helm of the society of knowledge, and in which computer technology has a defined impact on the direction of how teachers teach and how students learn. With a click on the mouse or a finger touch on the screen, lecture notes and instructional materials arrive in the palms of the receivers' hands. Students are getting accustomed to reading electronic texts on a e-reader or on a personal computer and have found themselves closer to home by sharing and exchanging files and scholastic ideas through familiarized instant messengers (IM), web blog, bulletin board systems (BBS), and/or, if not "the" most popular, social networks.

Because technology continues to advance in capacities and capabilities (Yu et al., 2008), the computer is gaining popularity in mainstream classrooms. Every day computers become more capable of storing, processing, and analyzing larger amounts of data faster and in a much more effective and organized manner. Teachers can easily craft and/ or edit their lesson plans and tests and can generate more complex yet meaningful student records with computers. By doing so they may even be able to cut down on the paper consumption! In addition, Yu et. al (2008) and Vogel & Klassen (2001) state that the adaptive nature of computer technology permits teachers to cater to students' learning needs, addressing a variety of learning styles and abilities. Software companies have also been striving to produce more affordable, yet high-quality programs to meet the needs in a diverse environment. Teachers who teach with technology seem to be able to better promote the emerging educational trends of collaborative (partnering) learning, cooperative learning, and autonomous (individualized) learning (Annand & Haughey, 1997; Kozma & Johnston, 1991; Vogel & Klassen, 2001; Wheeler, 2001).

Apart from providing knowledge and enabling students to explore their various interests, one of the primary purposes of school education is to strengthen students' readiness for the ever-changing world; i.e, preparing them to be proficient and knowledgeable workers upon entering the workforce. Employees of today are expected to be skilled in a world of communication that includes conferencing systems, the World Wide Web (WWW) and electronic mail (Roche, 2000). Employees are also required to exhibit on their jobs creativity and higher-level cognitive skills such as analytical, summative, and critical thinking skills (Knapper, 1995, as cited in Knapper, 2001). It is often said and heard that the "real" world outpaces the classroom with shifts in technology, paradigms and resources for learning (Vogel & Klassen, 2001). Knapper (2001) agrees with Vogel

& Klassen when he states that content knowledge and skills learned in school sometimes become obsolete even before students graduate. To combat this claim and the increased challenges faced by higher education, teachers need to think of ways to bridge and/or close the gap and to produce more capable and effective learners. One possible way of addressing this gap is the integration of technology in teaching.

Computer-Facilitated Language Learning

Computer-based language learning can be traced back to the 1970s, when a number of language teachers used computers as mechanical or language trainers to enhance students' grammar and lexical skills (Warschauer & Healey, 1998). For example, after a lesson has been taught in a writing class, language instructors might ask students to review and reinforce the knowledge they have learned in class and practice a certain rule of grammar or sentence structures of the target language alone or with their peers by using computers or other technology devices. Many researchers (Ahmad, Corbett, Rogers, & Sussex, 1985) referred to this teaching method as drill and practice method or behavioristic approach. This model was advocated at that time because proponents believe that learning occurs through reiteration and repetition. By using language learning software as the "supplementary source", students were able to practice lessons as frequently as needed. In the early 1980s, technology and personal computers became more accessible and affordable to most people; educators (e.g., Phillips, 1987 & Underwood, 1984) believed that computer-mediated language learning for instructions should be used more widely in language classrooms. According to Girard, Mandera and Marchini (2001), computer-mediated language learning can be defined as a strategy of learning combined with technology, and language application software to enhance learners' language proficiency by allowing students to manipulate utterances, encourage problem-solving skills, and create simulated learning environments through Internet service providers. Second language learning needs to be integrated with the computer because it promotes (1) learning with vast language data, (2) simulates real-life situations, (3) encourages interaction in class, and (4) promotes individualization in a large class (Warschauer & Healey, 1998). Lai and Kritsonis explained that computer-mediated language instruction can also (a) improve practices for students through experiential learning, (b) encourage learning motivation, (c) enhance student achievement, (d) increase authentic materials for study, (e) encourage greater interaction between teachers and students and students and peers, (f) emphasize individual needs, and (g) enlarge global understanding" (Lai and Kritsonis, 2006, p. 1). Jones, Fortescue and Phillips (as cited in Warschauer, 1996) suggested that when designing computer-mediated activities for language learners, teachers should "teach grammar implicitly rather than explicitly and use the target language as the primary language in class". (p. 57). Despite some of the disadvantages and challenges of using technology and computers as supplementary learning tools in teaching, educators believe that technology and computer-mediated learning instruction help language learners to discover the target language at their own pace and have the potential for promoting communication and teamwork among students (Chen, 1995; Cavalier & Klein, 1998). As technology becomes more advanced, many ESL instructors are now incorporating language lessons with multiple media into their classrooms. Yu, Williams, Lin, & Yu (2007) revealed that "the potential of multimedia is to foster the level of interactivity as a form of learning and to offer many possibilities for enriching the knowledge" (p.219). As Teririll (2000) stated "[English as a second or other language] ESOL teachers and learners across the country are integrating computers, Internet and multiple media with ESOL instruction. The world has changed because of the Internet [and other electronic devices] and ESOL has changed with it" (p. 2).Using computers and multimedia, such as Internet, web page and streaming audio, with a web-based instruction, provide a learning environment that facilitates positive interdependence and collaborative team work for students (Lee, 2000). As Bahaa El Din (1997) stated:

> Achieving the goals of development will necessitate preparation of a new cadre of professionals who are able to interact with the language of this age, and with the technology of the Information and Communications Revolution….Therefore technological training should start at an early age and should include all aspects of education (p.120-121).

Thus, to achieve the literacy of a second language, using technology in learning a language will be an important component for language learners. Internet and multimedia will be the tools to support their linguistic skill and knowledge structure (Kasper, 2002).

The usefulness of computer-mediated language learning to second language learners in education has been widely studied. In 2003, Zha et al.(2006) examine ESL learners' communicative competence in a computer-mediated language learning environment. They used both qualitative and quantitative statistical methods to analyze 956 electronic discussion messages that were posted by those elementary ESL students. The results of this study suggested that electronic discussion boards can be used to promote language learners' writing skill as well as the target language usage. Kang (1995) conducted a study on the effectiveness of different instructional approaches on Korean students' English vocabulary learning. The results indicated that students performed significantly higher in a retention test when using a computer-based context instructional approach and concluded that a computer-mediated learning environment would enhance learners' vocabulary learning.

Warschauer (1996) concluded that "electronic discussion can be a good environment for fostering use of more formal and complex language, both lexically and syntactically" (p. 22). The World Wide Web (WWW) and electronic mail (e-mail) communication media also have a tremendous impact on enhancing students' language competency. In 1996, Rosen conducted a study on how students used computers with Internet access as the language learning medium to improve their English language proficiency. The result indicated that students using the Internet as a primary tool in learning English scored slightly higher on the TOEFL test compared to students using the direct instruction method in learning English. Wang (1996) investigated the effectiveness of using e-mail as a writing tool for dialogue journaling. Fourteen students who were enrolled in intermediate level reading and writing class participated in this study. The findings indicated that students in the e-mail group generated more language functions in each writing session than students in the paper-and-pencil group and concluded that using e-mail as a language learning tool facilitates language learning.

Even if some might argue, the teaching of English for Specific Purposes is well developed in the Western countries. In non-English speaking countries, there has been a recent increase in the number of higher education institutions and in increase in the number of students attending there institutions. This increase in the number of university structures, especially of scientific and technological expertise, is not accompanied by any development in teaching programs, and in particular as pertains to the teaching of English for Specific Purposes. The current situation regarding the teaching of this specialty at vocational or technical faculties in the non-literary institution is characterized especially by a lack of human recourses and adequate teaching material (Harrabi, 2010). In a what is typically regarded as a medical/nursing science oriented academic institution, very little time is available for English courses. The primary goal of teaching/learning English is to enable students to read medical and/or scientific texts written in English. Thus, the reading skill is always the most emphasized, whereas the writing skill is ranked second, listening skill being the third, and the least attended speaking skill.

Since the nature of computer technology has granted enormous as well as exciting opportunities for health care education, it is imperative for us to investigate English learners can make effective of computer technology for their academics that further leads to much more successful careers.

Purpose of the Study

This study was designed to provide insight into how pre- and in-service nursing professionals' demographic profiles contributed to their perceptions of computer-mediated language learning, how participants' perceived effectiveness of computer-mediated learning impacted their English learning, and how self-evaluation of English proficiency impacted their perceptions of using the computer to facilitate language learning.

Research Questions

The researchers sought answers to these following questions:

1. How is computer mediated language learning perceived by the participants in terms of their demographic variables?
2. Are there any meaningful relationships between students' perceptions of computer facilitated learning and computer facilitated *language* learning?
3. Are there any significant differences in students' perceptions of computer facilitated language learning based on demographics?
4. Are there any meaningful relationships between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency?

METHODOLOGY

Research Design

This quantitative study involved a combination of descriptive and correlational research. A descriptive design was used to identify the differences in the student participants' overall perceptions of computer facilitated teaching/learning and their perceptions of using computer technology to facilitate language learning. A correlational (associational) design was also used to help investigate the possible relationships between the variables under study. In this study, the variables were: 1. participants' demographics, 2. participants' overall perceptions of computer facilitated teaching/learning, 3. participants' perceptions of using computer to facilitate language learning, and lastly, participants' self-evaluation of their macro English proficiency.

Sampling of the Participants

The accessible student population (classes) for the study was approximately 2000 nursing major students enrolled in a regional campus of Taiwanese Nursing Institute. These students were fairly evenly divided into 40 classes, 22 classes of which will be 4-year and 2-year college students and the remaining 18 classes will be continuing education students. The researchers used a random sampling technique to select a total of six (6) classes for the study. Among which, three (3) classes were selected out of the first 22-class pool and the other three (3) were from the 18-class pool. The reason for such selection was to ensure equal representations of the

two groups. The researchers visited each selected class and asked all students for their voluntary participation. In the end, 197 students participated in this study, accounting for approximately 1/10 of the overall population. The participants varied in their age, the length of their professional work experience, experience of using computers for language learning, and were at different stages of their degree, as far as their class rank was concerned.

Instrumentation

A fairly large scale self-report survey was used to collect data for this study (see Appendix A). The instrument was developed by the researcher based on information obtained from the review of literature in the area of computer-facilitated instruction/learning (Mazdayasna & Tahririan, 2008; Kenny, 2000; Kern, 2006; Kimball, 1998), using the four abovementioned research questions as a guide:

The questionnaire was made available monolinqually in student's native language, Mandarin Chinese in order to avoid receiving any false response due to misinterpretations of the item(s). It contained 47 itemized descriptions that are made up of a number of sections:

First section included a mix of multiple-choice and open-ended questions. Participants was asked to specify demographic variables such as gender, age, class rank, grade point average (GPA), employment status, their experience in computer use for learning.

The remaining questions were in five-point Likert scale format, with number 1 being Strongly Disagree (SD) , number 2 being Disagree (D), number 3 being Agree (A), number 4 being Strongly Agree (SA), and Not Applicable (NA). Subsequent sections measured the perceptions of computer-facilitated teaching/learning, the perceptions of using computer technology to facilitate language learning in the area of English Listening, Speaking, Reading, Writing, and Vocabulary learning. Last section asked the students to self-evaluate of their macro English proficiency.

Validity and Reliability of the Instrument

In order to establish the content (face) validity of the instrument, which was stated by Gay, Mills, & Airasian (2006) as the instrument measuring what it is intended or what it claims to measure, the researchers presented it to a panel of experts, who were asked to validate the content of the survey instrument by ensuring the overall inclusiveness of all the variables under investigation and to verify that it addressed all the research questions. The experts were also asked to review the survey for things such as unclear instructions, confusing, ambiguous or repetitive items, and overly complex or difficult sentence structure. The researchers then revised the instrument based on the constructive feedback received from the reviewers.

To establish the reliability of the survey instrument used, the researchers employed a test/retest method using 25 students, the number of students in a regular class size. These students were not the subjects for this reported study. The identical survey was completed by the participants twice. There was a waiting window of one week between the first and second administration of the instrument. In addition to the test/retest method, the researchers also performed Cronbach's Alpha reliability test. Cronbach's Alpha values for various sections of the instrument ranged from 0.82 to 0.91.

Data Collection, Procedures & Analyses

The researchers asked students in the selected classes to participate in the study. Upon arrival to each class, the researchers introduced themselves, explained the purpose of the visit, emphasized that participation was totally voluntary, and then administered the questionnaire to the participants. Voluntary participation was ensured both through explicit verbal and written explanations. The participants could withdraw from the study at any time and that their participation would in no way influence their academic standing in the class where the questionnaires were distributed. Participants were informed verbally and in writing that they could decline to answer any items on the questionnaire. The subjects gave their consent by completing and returning the questionnaire. Data analyses included the used of summary descriptive statistics, cross tabulations, test for equality of variance, t tests, correlations, ANOVA and post hoc tests.

FINDINGS

Survey Responses

A total of 240 students were enrolled in the selected classes. Among which, 197 students participated in the time of the study, resulting in a participation rate of 82%.

Description and Computation of Scores for the Scale

The researcher used a five-point Likert scale to collect participants' responses for a number of sections in the survey instrument (Appendix A). A Likert scale was used to allow the participants to express their perceptions in the areas under investigation. The Likert scale used in the study is shown in Table 1.

Table 1. The Five-Point Likert Scale Used for College Students' Perceptions of Computer-Mediated Instruction/Learning

Five-Point Likert Scale	
Scale	Description
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree
-	Not Applicable (response ignored)

In this study, the means for Likert scale items were interpreted using the scale shown in Table 2.

Table 2. Interpretation of Likert Scale Mean Score Values

Interpretation of Mean Score Values	
Scale	Description
1.00-1.49	Strongly Disagree
1.50-2.49	Disagree
2.50-3.49	Agree
3.50-4.00	Strongly Agree

Demographic Information

Gender

As shown in Table 3, mass majority of the participants were female nursing students, accounting for nearly 93% and as shown in Figure 1; the majority of the participants were less than 23 years old.

Table 3. Frequency and Percentage Analysis of the Participants by Gender

Gender	**Frequency**	**Percentage (%)**
Male	14	7.10
Female	183	92.90
Total	197	

Age

As shown in the Table 4, the youngest participant was 18 years old, with the oldest participant being 32. The mean age of the students in this study was 20.56 years with a standard deviation of 0.55 years. Figure 1 illustrates the number of students grouped by age.

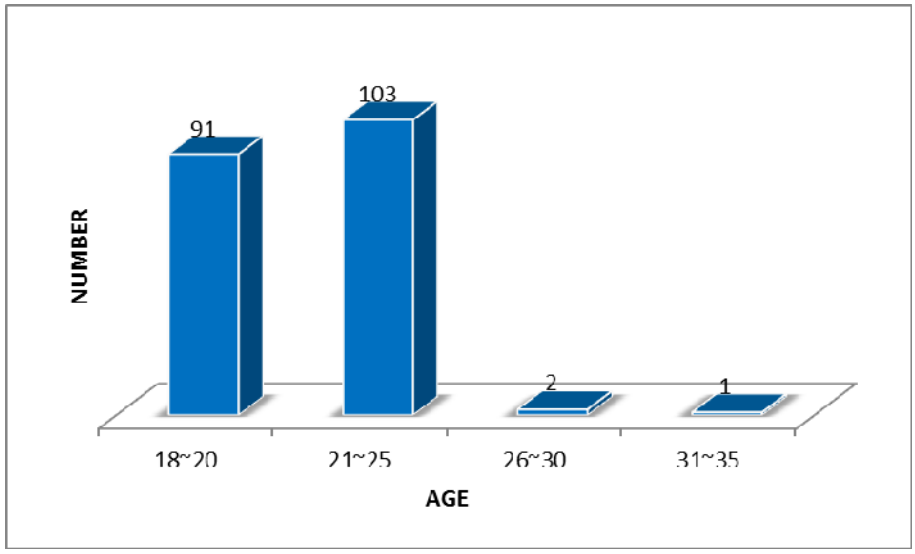

Figure 1. Number of Participants Grouped by Age

Table 4. Descriptive Statistics Based on Age

N	Minimum	Maximum	Mean	Std. Deviation
197	18	32	20.56	0.55

As shown in Table 5, three quarters of the participants were 4-year college students, and less than a quarter of them were continued education students. Most of the participants as shown in Table 6, maintained cumulative grade point average (CGPA) of As or Bs.

Table 5. Frequency and Percentage Analysis of the Participants by Division/Rank

Division/Rank	Frequency	Percentage
4-yr College Freshmen	49	24.90
4-yr College Sophomores	36	18.30
4-yr College Juniors	34	17.30
4-yr College Seniors	32	16.20
Continued Education	46	23.40
Total	197	

Table 6. Frequency and Percentage Analysis of the Participants by CGPA

CGPA	Frequency	Percentage
A- 80 and up	137	69.50
B- 70~79	54	27.40
C- 60~69	6	3.10
Total	197	

Figure 2 shows that nearly all of the participants were full time students and one tenth of the participants were employed either full-time or part-time as nurses. Most of them had worked in the range of 0~5 years (see Table 7). More than greater half of the participants indicated that they had experience using computers in a teacher/learning environment (Table 8).

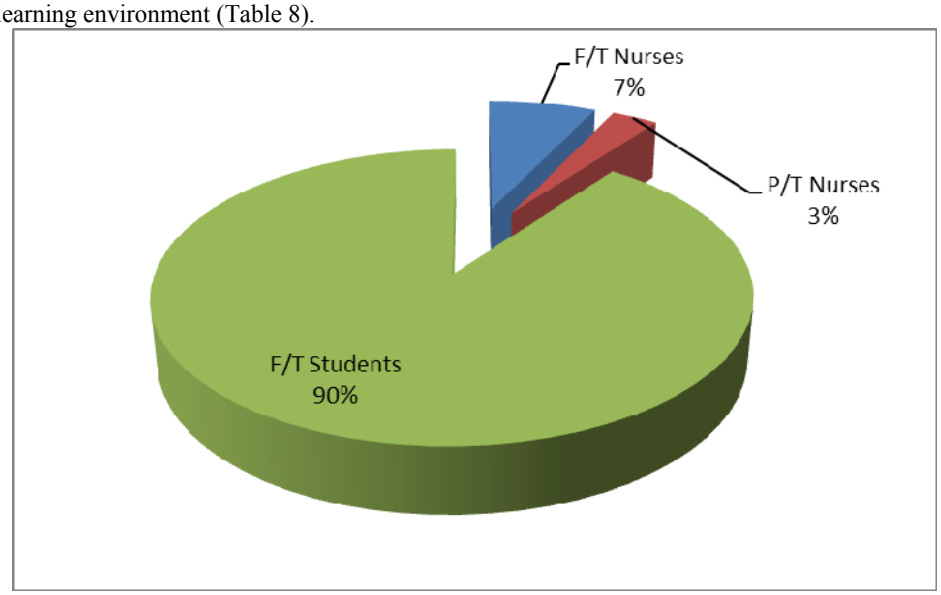

Figure 2. Frequency and Percentage Analysis of the Participants by Employment as Nurses

Table 7. Frequency and Percentage Analysis of the Participants by Length as Nurses

Length as Nurses	Frequency	Percentage
0~5 years	195	99.00
6~10 years	1	0.50
11~15 years	1	0.50
Total	197	

Table 8. Frequency and Percentage Analysis of the Participants by Length Using Computers for Learning

Length Using Computers	Frequency	Percentage

0~5 years	43	21.80
6~10 years	105	53.30
11~15 years	38	19.30
16~20 years	10	5.10
20+ years	1	0.50
Total	197	

Research Question 1: How is computer mediated learning perceived by the participants in terms of their demographic variables?

Table 9 shows the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on gender. The mean scores were 3.20 (male) and 3.21 (female), indicating the participants in the study "agreed" that overall computer-mediated learning was effective.

Table 9. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Gender

Gender	N	Mean	SD	Min.	Max.
Male	14	3.20	.38	2.50	4.00
Female	183	3.21	.45	1.00	4.00
Total	197				

Table 10 shows the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on age. The mean scores ranged from a low of 3.18, to a high of 3.83, indicating the participants of all age groups in the study "agreed" to "strongly agreed" that overall computer-mediated learning was effective.

Table 10. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Age

Age	N	Mean	SD	Min.	Max.
18~20	91	3.18	.38	2.33	4.00
21~25	103	3.23	.50	1.00	4.00
26~30	2	3.83	.24	3.67	4.00
31~35	1	3.50	-	3.50	4.00
Total	197				

Tables 11 to 13 show the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on rank, CGPA and employment as nurses. The mean scores ranged from a low of 3.12, to a high of 3.33, indicating the participants in the study "agreed" that overall computer-mediated learning was effective.

Table 11. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Division/Rank

Rank	N	Mean	SD	Min.	Max.
Freshmen	49	3.19	.38	2.50	4.00
Sophomore	36	3.12	.39	2.33	4.00
Junior	34	3.33	.58	1.00	4.00
Senior	32	3.26	.47	2.17	4.00
Continued Education	46	3.20	.42	2.33	
Total	197				

Table 12. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Cumulative Grade Point Average (CGPA)

CGPA	N	Mean	SD	Min.	Max.
A- 80 and up	137	3.22	.44	2.17	4.00
B- 70~79	54	3.20	.49	1.00	4.00
C- 60~69	6	3.19	.25	2.83	3.50
Total	197				

Table 13. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Employment as Nurses

Employment	N	Mean	SD	Min.	Max.
Full-Time Nurses	14	3.21	.39	2.67	4.00
Part-Time Nurses	6	3.30	.48	3.00	4.00
Full-Time Students	177	3.21	.45	1.00	4.00
Total	197				

Table 14 shows the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on length working as nurses. The mean scores ranged from a low of 3.21, to a high of 3.67, indicating the participants of all GPA groups in the study "agreed" to "strongly agreed" that overall computer-mediated learning was effective.

Table 14. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Length as Nurses

Length	N	Mean	SD	Min.	Max.
0~5 years	195	3.21	.45	1.00	4.00
6~10 years	1	3.67	-	3.67	3.67
11~15 years	1	3.50	-	3.50	3.50
Total	197				

Table 15 shows the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on length of using computers for learning. The mean scores ranged from a low of 2.92, to a high of 3.25, indicating the participants in the study "agreed" that overall computer-mediated learning was effective.

Table 15. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Learning Based on Length Using Computers for Learning

Length Using Computers	N	Mean	SD	Min.	Max.
0~5 years	43	3.23	.42	2.50	4.00
6~10 years	105	3.25	.41	2.17	4.00
11~15 years	38	3.17	.49	2.33	4.00
16~20 years	10	2.92	.72	1.00	3.50
20+ years	1	3.00	-	3.00	3.00
Total	197				

Research Question 2: Are there any meaningful relationships between students' perceptions of computer facilitated learning and computer facilitated language learning?

Perceived Effectiveness of Computer-Mediated Learning

Table 16 shows the overall mean score of students' responses for item Nos. 8 through 13 in the Appendix A, which were used to assess the participants' perceived effectiveness of computer-mediated learning. As shown in the table, students in general held an "agreed" (M = 3.21, SD = .45) view of the overall effectiveness of computer-mediated learning.

Table 16. Overall Mean Score of the Participants' Perceived Effectiveness of Computer-Mediated Learning

	N	Mean	SD	Min.	Max.
Perceived Effectiveness of Computer-Mediated Learning	197	3.21	.45	1.00	4.00

Perceived Effectiveness of Computer-Mediated Language Learning

Table 17 shows the overall mean score of students' perceived effectiveness of computer mediated language learning. As shown in the table, students in general held an "agreed" (M = 3.23, SD = .40) view of the overall effectiveness of computer-mediated learning.

Table 17. Overall Mean Score of the Participants' Perceived Effectiveness of Computer-Mediated Language Learning

	N	Mean	SD	Min.	Max.
Perceived Effectiveness of Computer-Mediated Language Learning	197	3.23	.40	1.00	4.00

Table 18 shows the Pearson Product- Moment Correlation of students' perceived effectiveness in the area of computer-mediated learning and computer mediated language learning (r = .55, p. < .01). The result revealed that there was a statistical significant, *moderate* positive association between the two variables.

Table 18. Pearson Product-Moment Correlation of Students' Perceived Effectiveness of Computer-Mediated Learning and Computer-Mediated Language Learning

Variables	Computer Mediated Learning
Computer-Mediated Language Learning	.55*

* Correlation is significant at the .01 level (2-tailed).

Research Question 3: Are there any significant differences in students' perceptions of computer facilitated language learning based on demographics?

An independent sample T-test did not reveal a statistical significant difference between male students and female student, $t(197) = 0.116$, $p > .05$, for survey Items intended to solicit male and female students' perceptions about computer facilitated language learning. Their mean scores nearly stood identical (Male=3.24 vs. Female=3.23).

Table 9 shows the descriptive statistics of the participants' perceived effectiveness of computer-mediated learning based on their grade point average (GPA). The mean scores ranged from a low of 2.83, to a high of 3.38, indicating the participants of all GPA groups in the study agreed that overall computer-mediated learning was effective.

Table 19. Descriptive Statistics of the Participants' Perceived Effectiveness of Computer-Mediated Language Learning Based on Division/Rank

Division/Rank	**N**	**Mean**	**SD**	**Min.**	**Max.**
4-yr College Freshmen	49	3.01	.40	2.00	4.00
4-yr College Sophomores	36	3.04	.42	2.20	4.00
4-yr College Juniors	34	3.33	.61	1.00	4.00
4-yr College Seniors	32	3.25	.52	2.00	4.00
Continued Education	46	3.07	.49	1.00	4.00
Total	197				

Table 20 shows the result of the homogeneity of variance assumption for the participants' perceived effectiveness of computer-mediated learning in English *speaking* based on division/rank. The test score indicated that the assumption was not violated with $p. > .05$.

Table 20. Test Score for the Homogeneity of Variance Assumption of the Participants' Perceived Effectiveness of Computer-Mediated Learning in English Speaking Based on Division/ Rank

Levene's Test Statistic Based on GPA	***p***
1.49	.208

As illustrated in Table 21, a one-way analysis of variance (ANOVA) was used to examine if there were significant differences of participants' perceived effectiveness in computer-mediated learning in English speaking among groups based on their division/rank. The results indicated that there was a significant difference among groups F (4, 192) = 3.08, $p. < .05$.

Table 21. ANOVA Test of Participants' Perceived Effectiveness of Computer-Mediated Learning in English Speaking Based on Division/Rank

Source of Variation	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	2.94	4	.74	3.08	.02*
Within Groups	45.95	192	.24		
Total	48.89				

*p ≤ .05.

In order to identify where the difference identified by the ANOVA occurred, the researcher performed a Tukey HSD post hoc test shown in Table 22. The test revealed that freshman students were significantly different (M = 3.01), from junior students (M = 3.33). Students with higher rank tended to perceive higher the overall effectiveness of Computer Mediated Learning in English speaking than students with lower rank.

Table 22. Post Hoc Test (Tukey HSD) of Participants' Perceived Effectiveness in Computer-Mediated Learning in English Speaking Based on Division/Rank

Base Group	Base Group Mean	Compare Group	Compare Group Mean	Mean Difference	*p*
Junior	3.33	Freshman	3.11	.22*	.03

*p. ≤ .05.

Research Question 4: Are there any meaningful relationships between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency?

Perceptions of Using Computers to Facilitate Language Learning

Table 17 above illustrates the mean score of students' responses items that were used to assess their perceptions of using computers to facilitate language learning.

Self-Evaluation of Macro English Proficiency

Table 23 shows the overall mean score of students' responses for item that asked students to self-evaluate their macro (Listening, Speaking, Reading, Writing & Vocabulary skills) English proficiency. As shown in the table, students in general held a "Disagreed" or "Conservative" view (M = 2.45, SD = .68).

Table 23. Overall Mean Score of Students' Self Evaluation of Their Macro English Proficiency

Variable	N	Mean	SD	Min.	Max.
Self-Evaluation of Their Macro English Proficiency	197	2.45	.68	1.00	4.00

Table 24 shows the Pearson Product- Moment Correlation between each question item of the two variables (r = .28, p. < .01). The result revealed that there was a statistical significant, *low* positive association between the two variables.

Table 24. Pearson Product-Moment Correlation of the Perceptions of Using Computers to Facilitate Language Learning and Self Evaluation of Macro English Proficiency

Variables	*Perceptions of Using Computers to Facilitate Language Learning*
Self-Evaluation of Macro English Proficiency	.28*

*Correlation is significant at the .01 level (2-tailed)

DISCUSSION & CONCLUSIONS

This study adds to the literature that the results showed that the participants agreed that communication is enhanced in a computer-mediated instruction/learning environment. In terms of their perceived effectiveness of computer-mediated learning, the participants overall agreed that effective computer-mediated learning requires students to become encourages collaborative learning, as well as enables effective communication with the teacher and peers.

ANOVA analyses did not reveal any significant differences based on gender. It might be interpreted that there were no variant views about the effectiveness of computer-mediated teaching/learning among the participants in this female predominant (93%) industry. No significant differences were found among groups of employment as nurses and length working as nurses may have suggested that the great majority (90%) of the participants were full time students in school. Even the remaining had been employed as either full-time or part-time nursing workers, almost all had accumulated experience of less than 5 years.

It is worth noting that ANOVA analyses showed statistically significant differences on students' perceptions of computer mediated learning in *English Writing* based on their Division/Rank, F (11, 185) = 1.73, $p.$ < .05). Differences were also recorded of their views of computer mediated learning in *English Speaking* based on GPA, F (11, 185) = 1.86, $p.$ < .05). However, post hoc tests were not carried out after the results of the homogeneity of variance indicated that such the assumption was violated $p.$ < .05.

This study also supports researchers' claims that conducting classes in a computer-mediated learning environment can effectively facilitate students' knowledge construction (Bentley, 2003) and that adequate use of computer technology can strengthen learners' higher cognitive skills and complex thinking skills (Rakes,

Fields & Cox, 2006) by providing significant evidence via students' responses agreeing that effective computer-mediated learning allows knowledge building (that helps relate facts to reality) and promotes in-depth and advanced learning. This finding also supports Cooper & Hirtle's (1999) observation as they reported that through a constructivist pedagogical approach, students could not only obtain the intended skills but in addition, acquire other skills necessary to solve the real world problems.

This study adds to the literature that there was a statistically significant, moderate positive association between students' perceived effectiveness of computer-mediated learning and computer mediated language learning. Correlational analyses between individual items of the two variables revealed that this association especially holds true between students' views of computer mediated learning and their believing that effective computer-mediated learning provides best help in the area of *English Listening*.

More specifically, itemized correlational analyses indicated a statistically significant positive association between "Computer mediated teaching/learning enhances the conventional face-to-face classroom experience" and "With the help of the computer technology, I think I can become more proficient in English in listening to instructions in real situations (hospitals/clinics)." Similarly, the study found a significant positive association between "Computer mediated teaching/learning enables effective communication with the teacher and peers" and "With the help of the computer, I think I can become more proficient in English in listening to patients, colleagues, and fellow students." The possible explanations for the findings could be that the computers help stretch teaching/learning as well as communications beyond conventional classrooms. Aside from acquiring additional benefits and skills which were not intended for the purpose of the class(es), students are likely to choose more authentic learning tasks that are especially related to academics and practices.

Statistically significant, positive relationships were found between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency. Further correlational analyses revealed that computer mediated learning in English *writing* received the highest correlational scores whereas computer mediated learning in English *reading* had the lowest score, suggesting that the higher the participants' rated their own English abilities, the more they believe that the computer can facilitate more successful English learning in writing. The likelihood shifted downward in the case of English reading.

The mean score (M=2.45, "Disagree") for students' self-evaluation of their macro English proficiency was quite significantly lower than that in other categories, perceptions of computer mediated learning (M=3.21) and perceived effectiveness of computer mediated language learning (M=3.23), respectively. One possible explanation for this tangible finding was that students in Southeast Asia have always been taught to be humble or not to be overly confident. On the flip side of the coin, it might well be that students were simply too unconfident to manifest their true English abilities.

In summary, many factors other than those presented in this study might and could influence students' perceptions, as well as their perceived effectiveness of computer-mediated instruction/learning. It takes explicit knowledge, support and cooperative efforts among administrators, teachers and students to ensure teaching and learning are indeed benefitting from the computer technology.

LIMITATIONS

The findings of this research are limited in the following ways:

1. The study procedures involved the self-reporting technique. Thus findings may be affected by participants' physical and emotional state, honesty, accuracy and thoroughness in completing the survey.
2. The findings of this study are limited by both students' and teachers' unique computer background, their direct access to and the availability of the computer technology in their respective major program areas, including computer hardware and software, and peripheral equipment.
3. Students' perceptions are limited to the information obtained from the instrument used in this study and the validity and reliability of the instrument.
4. Interviews with the English instructors allows the interviewees to more openly and freely express their perspectives concerning the benefits and disadvantages of computer facilitated language learning, the role(s) of the teacher and the student in a computer technology mediated teaching/learning environment as well as exploring the attitude and expectations of the participants regarding future trend of English instruction.
5. Interview questions are prepared to personally elicit information regarding interviewees' perspectives concerning the benefits and disadvantages of computer facilitated language learning, the role(s) of the teacher and the student in a computer technology mediated teaching/learning environment as well as exploring the attitude and expectations of the participants regarding future English for Specific Purpose (ESP), most specifically, English for Nursing Purposes (ENP) instruction.

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Appendix A: Students' Questionnaire

Dear Participants:

Please read the following description for each item and provide your response by checking (✓) the box that best reflects your opinion and/ or writing down your response in the space provided.

Section A: Demographic Information

1. What is your gender?

   ☐ Male ☐ Female

2. What is your age? (Please specify) _____
3. What is your class rank and what primary academic division do you belong?

   ☐ 4-Yr College Freshman ☐ 4-Yr College Sophomore ☐ 4-Yr College Junior

   ☐ 4-Yr College Senior ☐ 2-Yr College 1st year ☐ 2-Yr College 2nd year

   ☐ Continued Education – 1st year ☐ Continued Education – 2nd year

   ☐ Continued Education – 3rd year ☐ Graduate – Master's

   ☐ Non-Degree

4. What is your cumulative Grade Point Average (GPA)? _____
5. Are you currently employed as a nurse?

   ☐ Yes, full time ☐ Yes, part time ☐ No

6. How long you have been working as a nurse? (check 0-5 years if answered "No" in item 7)

   ☐ 0 - 5 years ☐ 6 - 10 years ☐ 11 - 15 years

   ☐ 16 - 20 years ☐ 20 years +

7. In general, what is your experience (number of years) of using computer for learning?

   ☐ 0 - 5 years ☐ 6 - 10 years ☐ 11 - 15 years

   ☐ 16 - 20 years ☐ 20 years +

Instructions for Section B through D:

Please read the following description for each item and provide your response by *circling* the number that best reflects your opinion from **1- Strongly Disagree (SD)**, **2- Disagree (D)**, **3- Agree (A)**, **4- Strongly Agree (SA).** *Check* **(✓) "Not Applicable (NA)"** if any of the statements does not apply to you. Limit ONLY ONE response to each question please.

Section B: Perceptions of Computer Facilitated Teaching/Learning

No.	Items	SD	D	A	SA	NA
8	To me, computer facilitated teaching/learning is the use of the computer technology to enhance the conventional face-to-face classroom experience.	1	2	3	4	
9	To me, a computer facilitated teaching/learning environment requires students to be active participants.	1	2	3	4	

10	To me, I think effective computer facilitated teaching/learning enables effective communication with the teacher and peers.	1	2	3	4	
11	I think effective computer facilitated teaching/learning encourages collaborative (group) learning.	1	2	3	4	
12	I think effective computer facilitated teaching/learning allows knowledge building (that helps relate facts to reality).	1	2	3	4	
13	I think effective computer facilitated teaching/learning ensures that students are engaged and motivated in learning (the given subject).	1	2	3	4	

Section C: Perceptions of Using Computer Technology to Facilitate Language Learning

Listening Skills

With the help of the computer technology, I think I can become more proficient in English in:						
No.	Items	SD	D	A	SA	NA
14	listening to lectures	1	2	3	4	
15	listening to conversations on general topics	1	2	3	4	
16	listening to group presentations in class	1	2	3	4	
17	listening to instructions in real situations (hospitals/clinics)	1	2	3	4	
18	listening to patients, colleagues, and fellow students	1	2	3	4	
19	listening to English broadcast media	1	2	3	4	

Speaking Skills

With the help of the computer technology, I think I can become more proficient in English in:						
No.	Items	SD	D	A	SA	NA
20	questioning and answering in class	1	2	3	4	
21	participating in group discussions	1	2	3	4	
22	speaking at seminars, meetings and presentations	1	2	3	4	
23	talking with professionals in real situations	1	2	3	4	
24	speaking with patients, co-workers and fellow students	1	2	3	4	

Reading Skills

With the help of the computer technology, I think I can develop English reading skills in:						
No.	Items	SD	D	A	SA	NA
25	reading articles in professional journals	1	2	3	4	
26	reading medical reports	1	2	3	4	
27	reading medical textbooks	1	2	3	4	
28	reading English magazines and newspapers	1	2	3	4	
29	reading texts on the World Wide Web	1	2	3	4	
30	reading instructions for patient care	1	2	3	4	
31	reading doctor's orders	1	2	3	4	

Writing Skills

With the help of the computer technology, I think I can develop English writing skills in:						
No.	Items	SD	D	A	SA	NA
32	taking lecture notes in class	1	2	3	4	
33	writing nursing notes/ reports in real situations, ex. hospitals and clinics	1	2	3	4	
34	writing term papers for the classes	1	2	3	4	
35	writing articles for publication in medical journals	1	2	3	4	
36	writing medical case reports	1	2	3	4	
37	writing instructions to patients	1	2	3	4	

Vocabulary Skills

In terms of English Vocabulary, with the help of the computer technology, I think I can:						
No.	Items	SD	D	A	SA	NA
38	acquire more common core vocabulary	1	2	3	4	
39	acquire more medical terminologies	1	2	3	4	
40	gain more vocabulary knowledge in terms of meanings, usages, synonyms, antonyms and etc.	1	2	3	4	
41	better use vocabulary in various (including real) settings	1	2	3	4	

Section D: Self-Evaluation of Macro English Proficiency

No.	Items	SD	D	A	SA	NA
42	Overall, I think I have sufficient common core vocabulary.	1	2	3	4	
43	Overall, I think I have sufficient vocabulary for work.	1	2	3	4	
44	Overall, I think I am proficient in English listening.	1	2	3	4	
45	Overall, I think I am proficient in English speaking.	1	2	3	4	
46	Overall, I think I am proficient in English reading.	1	2	3	4	
47	Overall, I think I am proficient in English writing.	1	2	3	4	