Learning English Writing via A Web Digital Platform: A Case of Taiwanese Aboriginal Nursing Students' Participation and Learning Outcomes

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ABSTRACT

This paper reports on a research study that examined the learning experience of the minority students in a predominantly social networking, web digital platform and its impact on their learning outcomes. Participants were 162 aboriginal students aged between 18 and 23 at a nursing college in southern Taiwan. Learners were asked to take compulsory English language courses and expected to pass an English Proficiency Test as an exit requirement of the university. Writing skill is a crucial element in determining the success of the test takers. Results revealed that the participants' perceptions and learning outcome to be significantly related to the chosen instructional pedagogy. This study made theoretical, methodological, as well as contextual contributions to the field of online learning and provided several teaching implications for teaching English writing using web-based technologies. It also seeks to help researchers and educators find meaningful ways that will improve the attitudes of aboriginal students in the learning environment, and continue to evaluate ways to help these students connect with the process of learning.

Keywords: Computer mediated language learning, English for academic purposes, Cultural Diversity

INTRODUCTION

Research studies on instructional technologies have been increasingly catalyzed by social and constructive perspectives on learning. When learners are placed in an environment designed based on the social constructivist theories in order to facilitate meaningful learning, collaborations and interactions between the learners occur (Lohnes & Kinzer, 2007; Salaway, Caruso & Nelson, 2007). It is then knowledge is constructed, and experiences and skills shared. The outburst of web based technology mediated learning seems to be able to stimulate learning process and produce persuasive learning outcomes (Lee & Woods, 2010). As McCarthy (2010) suggested that the widely used web 2.0 (or above) technologies have not reached their fullest potential in tertiary education, some have argued that these technologies may not always be successful or adequate tools to facilitate formal learning or learning activities (Waycott, Bennett, Kennedy, Dalgarno & Gray, 2010) In addition, some researchers have become increasingly worrisome when many do not consider the different ethnicity and cultures of students and the impact that these factors have on students' learning style and level of confidence. Literature and instructors have also failed to examine closely the potential negative effects that technology mediated learning has on students, and the ethnic and cultural aspects that may contribute to students' preference of technology mediated learning, especially the minority students. As Huang (2002) noted, "technology mediated learning could be in conflict with individual differences" (p. 32). When (web-) technologies are required to facilitate teaching/learning, the instructor may experience difficulties in taking into account individual learning preferences and capabilities (Westera, 1999).

To emphasize the importance of English as a communicative language and pursuit the goal of lifetime learning, college students in Taiwan are asked to take compulsory English courses as an integral part of the general education core curriculum (GECC). They also have to pass an English language proficiency test to meet an exit requirement maintained by the university. The most common test taken by the students is the General English Proficiency Test (GEPT) which assesses learners' listening, reading, speaking, and writing skills.

Among the four language skills, writing has been regarded by the students as one of the most difficult areas to improve on, trailed by speaking, listening, and reading, respectively. Fast growing internet technologies have been considered in order to facilitate the needs of language teaching and learning. From electronic mails, bbs, blogs, online discussion boards, e-portfolios to Flickr®, LinkedIn® , Twitter®, Facebook®, these technologies have given the consumers of the cyberspace opportunities to interact and communicate in ways they would have never thought possible years ago. These newly developed internet applications, also known as the "Web technologies," allow meaningful interactions and collaborations with each other in the virtual community through social media (McCarthy, 2010). As stated by Warschauer (1996), direct, instant and inexpensive web applications conveniently motivate students intrinsically, enable the learners to exercise reasonable control over their learning, providing them with authentic materials and allow the users to interact and communicate with real people in a cohesive way (Arslan & Sahin-Kizil, 2010). A web based learning environment is one that facilitates a learner centered approach that provides the learners opportunities to exchange knowledge and practice skills.

Issues such as how technology fits into the socialcultural framework of how people learn are seldom raised (Grasha & Yangarber-Hicks, 2000, as cited in Palma-Rivas, 2000). Even though much has been written about student diversity and technology mediated learning and/or e-learning, these two dimensions have been pursued separately (Palma-Rivas, 2000) and not many writers have attempted to piece them together. Therefore, a research study that carefully and respectfully examines the experiences of the minority students in the web technology mediated learning environments deserves serious review.

REVIEW OF LITERATURE

Computer Mediated 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. Zha et al. (2006) examined English learners' communicative competence in a computer-mediated language learning environment. They used both qualitative and quantitative statistical methods to analyze messages posted electronic discussion by the 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. 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).

By using language learning software as the "supplementary source", students were able to practice lessons as frequently as needed. Kang (1995) conducted a study on the effectiveness of different instructional approaches on 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.

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

Cultural Sensitivity & Technology Learning

Culture is defined as "the beliefs, value systems, norms, mores, myths, and structural elements of a given organization, tribe, or society" (Watson, Ho & Raman, 1994). Individuals and groups carry the culture which manifests itself in how a group interprets and reacts to its environment (Collis 1999). The individual and organizational behavior is "affected by the values and attitudes that they hold and the societal norms that surround them. Culture as an affecting factor of the acceptance, use, and impact of online learning systems appears at different levels" (Collis, 1999). In a group, culture is the group norms, values, and attitudes. The instructors and learners who carry the culture of group norms are influenced by society. Group norms are the personal characteristics, attitudes towards information technology and computer-mediated communication, and preferred learning style. The discipline/domain is the differences in acceptance of computer-mediated communication within courses.

Little research has been conducted to detect the advantages and disadvantages of how race, gender, and ethnicity contribute to the preferred learning styles of students in an web based collaborative learning environment. Most of the research tends to focus on students as a whole or personality types, neglecting cultural and ethnic backgrounds and norms that are preferred among different groups of students. Race and ethnicity must be considered when probing into the importance of online collaborative learning environments. Du & Anderson (2006) looked at barriers that students face while learning takes place in online environments. They found that online courses are known for writing and communication, two weaker areas for minority students.

According to Witkin, Moore, Goodenough, and Cox (1977), students develop their preferred learning styles early in life. Thus, if they enter a learning environment that focuses on a style different from their own, they tend to refuse the learning environment. Hayes and Allinson (1997) found that about 60% of the time, students who continue in the negative environment will perform at a lower level. Existing experimental studies that address the general issue of the mismatch between learning preference and the instructional situation have also helped the exploration of minority students' responses to online or web based collaborative learning. According to Witkin, Moore, Goodenough, and Cox (1977), post-secondary students enter a learning situation with their learning preferences already developed. If they meet a learning environment at variance with that preference, it is likely the student will reject the learning environment.

Surely learning preferences are not the sole variable in making a learning environment engaging (Curry, 1983, 1990). However, some merits certainly should be placed on the validity of the learners' personal experiences. Knowing more about the experiences of those who may feel that their learning preference is out of synch with the dominant pedagogical tool of collaborative online learning is an important addition to the literature and a necessary preparation to a learner-centered, web based learning environment design. An examination of minority students' learning experiences in social networking, web collaborative environment will further illuminate the cultural dimensions affecting learning preference and outcome.

THE STUDY

This study was guided by the following research questions:

1. What were the aboriginal students' overall perceptions about learning English writing using a social networking, web digital platform?

2. How did learning predominantly using a social networking, web digital platform affect learners' perceptions and learning outcomes?

Research Framework

This study was designed to be a phenomenological examination of Taiwanese aboriginal students in a newly established social networking environment and followed a circular pattern to conduct English writing training for the target learners as illustrated in Figure 1 below. In alignment with a phenomenological approach, the study emphasized on the experiences of aboriginal students in the designated learning environment and not on a comparative examination of their experiences in contrast to those of other learners.
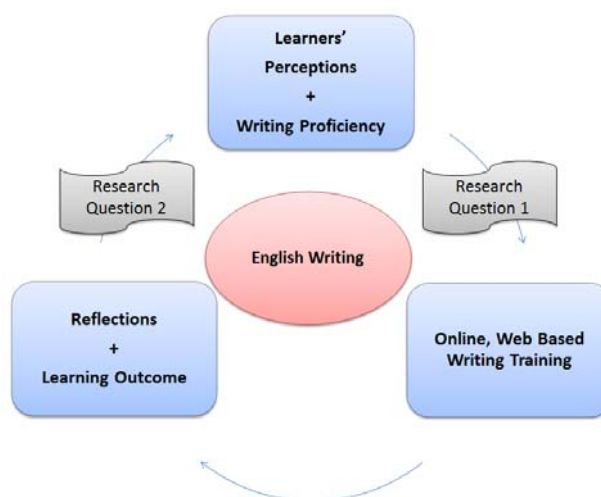

Figure 1. Circular Pattern of Learning English Writing in A Social Networking Environment

METHODOLOGY

Population & Participants

The accessible population for the study was 250 aboriginal nursing students enrolled in a regional campus of a nursing university in southern Taiwan in fall semester, 2013. Among which, 162 students agreed to participate, accounting for 65% of the population.

The participants aged between 18 and 23, averaging 21 years of age. They varied in their educational experience prior to entering the university, experience of using computers for language learning, and were at different stages of their degree, as far as their class rank was concerned. Despite their varying backgrounds, most of the participants had never learned formal English writing due to the fact that it was not part of their curriculum. The researchers could also be fairly certain that the target students never learned English writing using a predominant web digital platform. Thus they were considered as the novice learners before training activities commenced.

The English instructor was a full-time faculty at the university, who had accumulated over 5 years of teaching experience in the universities. He specialized in teaching English writing, and had been taking all steps necessary to help the learners pass the GEPT test. He was the sole person to give writing instructions and provided feedback to ensure uniformity and consistency.

Teaching context

In connections to English writing instruction, the social networking site, Facebook, acted as a teaching/learning platform outside the language classroom. This platform recorded all writing processes, collected learners' writing works plus the teacher's teaching materials, and shared writing information with all the participants in the same class. Student writers were able to observe their peers' writing freely. Prior to the

submission of their first written work, students were provided with instructional materials, covering several key elements of successful writing from sentence to paragraph level. The instructor then stressed the importance of English grammar with emphases on the parts of speech and sentence structures. Furthermore, students were reminded of the common writing mistakes made by the foreign language learners, for instance, singulars & plurals, articles, prepositions, auxiliary verbs and etc., as observed by the previous researchers (Bitchener, Young & Cameron, 2005; Rozovskaya & Roth, 2010). A total of four writing cycles (see Figure 2) were exercised including two compositions before the midterm examination and the remaining two thereafter. Each round of the writing took three weeks in order to allow sufficient turnaround time for edits and feedback. Throughout the writing process, students were asked to strictly adhere to the rule that they needed to do their own work and the use any translation service or software was not encouraged. Moreover, weekly group chatrooms were hosted for two purposes: first was to serve as a reinforcement to resolve any questions students might have during the processes of writing. Secondly, one or more better works were selected by the instructor to demonstrate and discuss points of a good writing.

Every writing topic had its distinct teaching points on genres and grammatical features. These four topics were adopted from the mock GEPT tests so their proficiency level was consistent in terms of their validity and reliability.

This teaching context adopted, which as stated by Hyland (2002), an approach that views writing as thinking and as discovery. A process writing approach involves a number of activities, including setting goals, generating ideas, organising information, selecting appropriate language, then followed by making a draft, reading and reviewing, and finishing by final revision and edit (Grabe & Kaplan, 1996; Richards, Platt, & Platt, 1992).
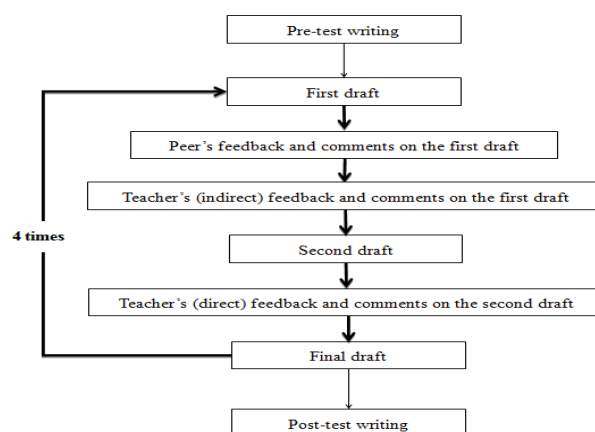

Figure 2. Writing Cycles

Both direct and indirect feedback on learner's writing errors were implemented. Direct correction, also known the mechanical error correction strategy, involves the underlining, highlighting, and giving explicit answers to the incorrect words, sentences, or violations of the general grammar rules made by the instructor. On the other hand, indirect correction, as known as meaning error correction strategy, refers to more implicit hint such as placing a question mark, inserting an arrow, or underlining places with errors/mistakes without giving the answers immediately (Hendrickson, 1978).

In this study, the learning goal was to equip students with the ability to write a short composition which confers to the standards set by the GEPT. Each learner was asked to complete 2 versions of compositions - initial draft and subsequent draft, before they submitted the final copy for evaluation. This is a strategy called the multiple-revision that is also a feature usually accompanies the process writing approach. As Figure 2 indicates, each learner received feedbacks both from their peers and the teacher himself. The instructor gave indirect comments on the first draft, and the students will make revisions and submit the second drafts. Direct feedback was provided on students' second drafts so the learners could modify their works before the submission of their final drafts (Hendrickson, 1978).

Data collection instruments

Perceptions of Online Writing Instruction/Learning

A self-reported questionnaire, containing 13 five-point Likert scale items was distributed to investigate the learners' perceptions about the effectiveness of online, web based writing instruction (see Figure 3 below). This instrument was developed by the researchers based on information obtained from the review of literature in the areas of computer facilitated English writing and computer mediated language learning. It was made available monolinqually in Mandarin Chinese in order to avoid receiving any false response due to misinterpretations of the item(s). The participants responded the questionnaire twice, once before and the other after the training. The two questionnaires were identical in terms of their content and number of questions.

No.	Items	SD	D	N	A	SA
1	I think the online English writing instruction (using a social networking, web digital platform) can fully replace the conventional face-to-face instruction.	1	2	3	4	5
2	I think that I am more motivated to learn English writing using a social networking, web digital platform.	1	2	3	4	5
3	I think I can be more satisfied with this course arrangement and the designated teaching method.	1	2	3	4	5
4	I think learning by using a social network, web digital platform enables me to be an active learner.	1	2	3	4	5
5	I think the features of a social networking, web digital platform stimulates my learning interest.	1	2	3	4	5
6	I think my interaction with the peer students is greater in a social networking, web digital platform.	1	2	3	4	5
7	I think I can achieve more when learning via a social networking, web digital platform.	1	2	3	4	5
8	With the help of computer, I think I can develop more necessary English writing skills required by my future work	1	2	3	4	5
9	I think I am more confident to write English compositions in a social networking, web digital platform.	1	2	3	4	5
10	I think I am more at ease to write English compositions in a social networking, web digital platform.	1	2	3	4	5
11	I think providing and receiving peer feedback on a social networking, web digital platform is more effective than in other formats.	1	2	3	4	5
12	I think my attitude toward learning the given subject is more serious on a social networking, web digital platform.	1	2	3	4	5
13	I think a social networking, web digital platform encourages learning through collaboration.	1	2	3	4	5

Figure 3. Perception Survey of Online English Writing Instruction/Learning

Writing Performance Grading Rubric

The Scale for Rating Composition Tasks developed by CEEC (College Entrance Examination Centre) was utilized to evaluate the learners' writing outcomes from more dimensions than just a holistic score (see Figure 4 below). It included five equally weighted criteria: (1) organisation; (2) content; (3) grammar; (4) diction (vocabulary and spelling); and (5) mechanics (Chou, 2009). The organization refers to the introduction part such as the draft of topical sentence(s), the main body - developing sentences, and conclusion, especially the adequacy of writing concluding sentence(s). The content section evaluates writers' logical development of his/ her ideas; and the grammar criterion sees whether the students can handle the grammatical rules, for example, tense or parts of speech successfully. The fourth (diction) part assesses learners' competence in managing mechanics, for instance, punctuation, words spelling and so on; and the style examines the writing genres, styles, and quality of

expressions. These two writing papers were all evaluated by the same writing assessor, who was an experienced language teacher familiarized with the GEPT requirements and learners' characteristics in this teaching context, before and after the semester.

ITEM	SCORE	CRITERIA	LEVEL
CONTENT	5	relevant to topic; complete development of thesis	Excellent
	3-4	mostly relevant to topic; incomplete development of thesis	Good
	1-2	slightly relevant to topic; inadequate development of thesis	Fair
	0	irrelevant to topic; no words on the paper	Poor
ORGANIZATION	5	well-organized; logical sequence; cohesive	Excellent
	3-4	loosely-organized; incomplete sequence;	Good
	1-2	disconnected; lack logical sequence	Fair
	0	no organization in the whole essay	Poor
GRAMMAR	5	fewer errors of agreement, tense, number, preposition	Excellent
	3-4	several errors of agreement, tense, number, preposition	Good
	1-2	frequent errors of agreement, tense, number, preposition	Fair
	0	severe errors of agreement, tense, number, preposition	Poor
DICTION	5	effective word/idiom choice, usage	Excellent
	3-4	occasional errors of word/idiom choice, usage	Good
	1-2	frequent errors of word/idiom choice, usage	Fair
	0	no other word except for the title written	Poor
MECHANICS	5	no or fewer errors of spelling, punctuation, capitalization	Excellent
	3-4	occasional errors of spelling, punctuation, capitalization	Good
	1-2	frequent errors of spelling, punctuation, capitalization	Fair
	0	severe errors of spelling, punctuation, capitalization	Poor
Total Points			

*Scale for Rating Composition Tasks (Adapted from CEEC, 1994)

Figure 4. CEEC Writing Performance Grading Rubric

Validity and Reliability of the Instrument

In order to establish the content (face) validity of the instrument, the researchers presented it to a panel of experts. This three-member panel of experts consisted of professors from the Departments of Nursing, Applied Foreign Language and Center for General Education. They were asked to validate the content of the survey instrument as well as the interview protocols by ensuring the overall inclusiveness of all the variables under investigation and to verify that it addressed 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 researcher revised the instrument based on the constructive feedback received from the reviewers.

To establish the reliability of the survey instrument used, the researcher employed a test/ retest method using 15 students who agreed to participate. This same group of students was not included as part of the study. The same survey was completed by the same participants twice. There was a waiting window of approximately one week between the first and second administration of the instrument. The researcher performed a correlation test to determine the correlation coefficient between the two test administrations, thus identifying the correlation

coefficient, r, and the reliability of the instrument, resulting a Cronbach's alpha value of .83.

Data Collection and Procedures

All aboriginal students enrolling in fall semester 2013 were contacted via phone or e-mail to ask for their participation in the study. The researchers then set up initial face-to-face meetings in a computer lab with interested individuals in which the administration of the questionnaire and a writing (pre-) test took place. The participants were asked to type their essays on the computer. Students were informed that they could withdraw from the study at any time and that their participation would in no way influence their academic standing in school. Voluntary participation was ensured both through explicit verbal and written explanations. Students read the informed consent letter prior to completing the questionnaire and retained a copy of the letter for their records. The researchers interacted with the students up to two times during the course of the study. The initial interaction was on the day that the survey and pre-test were conducted. The second and last interaction occurred at the end of the term, during which time the identical survey and the other writing (post-) test were administered.

FINDINGS

The researchers used a five-point Likert scale to collect participants' responses for statements in the with number 1 being Strongly Disagree (SD) , number 2 being Disagree (D), number 3 being Neutral (N), number 4 being Agree (A), and number 5 being Strongly Agree (SA).

In this study, the means for Likert scale items were interpreted using the scale shown in Table 1.

Table 1. 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	Neutral
3.50-4.49	Agree
4.50-5.00	Strongly Agree

Demographic Statistics

This study called for completely voluntary participation. In sum, among 162 participants, 152 were female students and 10 were male students. All were full-time undergraduate students majoring in Nursing and aged between 18 and 23. As far their classification was concerned, forty three were freshmen, ten were sophomore, fifty were juniors, twenty six were seniors and the remaining thirty three were continuing education students. Figure 5 illustrates the tribal representation of the participants.
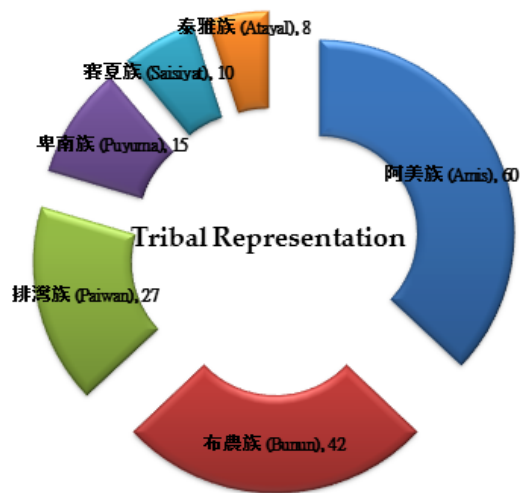
Figure 5. Tribal Representation

Research Question 1

First research question provided a basis of knowing the learners' initially overall perceptions and preferences about learning English writing in an online social networking environment.

Table 2 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on ethnicity. The mean scores ranged from a low of 3.43, to a high of 4.36, indicating the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective.

Table 2. Learning English writing on a web-based digital platform based on ethnicity

Ethnicity/ Tribe	N	Mean	SD	Sn	Min	Max
Bunun	42	3.59	.47	.48	3.00	4.00
Amis	60	3.43	.77	.74	2.58	4.3
Puyuma	15	3.54	-	4	3.54	3.54
Paiwan	27	4.36	.46	.42	3.95	4.8
Saisiyat	10	4.31	-	1	4.31	4.31
Atayal	8	3.85	-	5	3.85	3.85

Table 3 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on class rank. The mean scores ranged from a low of 2.77, to a high of 4.31, indicating the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective.

Table 3. Learning English writing on a web-based digital platform based on class rank

Class Rank	N	Mean	SD	Min	Max
Freshman	43	3.79	.55	3.08	4.38
Sophomore	10	2.77	.69	2.17	3.7
Junior	50	3.54	.64	3.54	3.5
Senior	26	4.31	.38	3.99	4.51
Cont'd Education	33	4.11	.72	3.92	4.31

Table 4 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on grade point average (GPA). The mean scores ranged from a low of 3.33, to a high of 4.31, indicating the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective.

Table 4. Learning English writing on a web-based digital platform based on GPA

GPA	N	Mean	SD	Min	Max
A (80 and up)	80	4.05	.55	3.08	4.85
B (70 ~ 79)	68	3.33	.55	2.54	3.92
C (60 ~ 69)	14	4.31	.49	4.20	4.50

Table 5 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on the years of using the computer in English learning. The mean scores ranged from a low of 3.68, to a high of 4.85, indicating the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective.

Table 5. Learning English writing on a web-based digital platform based on experience of using computer in *English learning*

Comp_Eng_Learn	N	Mean	SD	Min	Max
0 ~ 5 years	158	3.68	.58	2.58	4.38
6 ~ 10 years	4	4.75	.405	4.65	4.85

Research Question 2

Research Question 2 investigated examined the possible impact that the chosen technique had on learners' learning outcome and perceptions. Table 6 shows the scale, adopted from Du, Ke & Olinzock (2008), for the purpose of interpretation of the correlation coefficients, r.

Table 6. Interpretation of correlation coefficients

Correlation Value	Description
.80 – 1.00	Very Strong Association
.60 – .79	Strong Association
.40 – .59	Moderate Association
.20 – .39	Low Association
.00 – .19	Very Low Association

Table 7 shows the paired samples test between the pretest and posttest scores of students' perceptions of learning English writing on a social networking, web based digital platform ($r = .36$, p. $< .05$). The result revealed that overall there was a statistical significant, *low* positive association between the two variables. More significantly, No. 3 "I think I can be more satisfied with this course arrangement and the designated teaching method" & No. 12 "I think my attitude toward learning the given subject is more serious on a social networking, web digital platform" resulted in $r = .52$ & $r = .56$, p. $< .05$, respectively, indicating a statistical significant, *moderate* positive association between the two variables.

Table 7. Paired samples test of students' perceptions of learning English writing on a social networking, web based digital platform (pretest & posttest)

Variables	Perceived Effectiveness (Pretest)
Perceived Effectiveness (Posttest)	.36*

* Correlation is significant at the .05 level (2-tailed).

Table 8 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on Ethnicity. Pretest scores are also provided for comparison purposes. The (post) mean scores ranged from a low of 3.23, to a high of 4.08, indicating overall the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective at the completion of the course. However, it was further noted that the mean scores of only two tribes, Amis and Atayal, showed increases whereas the scores of the remaining students decreased slightly.

Table 8. Perception changes based on ethnicity

Ethnicity/Tribe	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Bunun	3.46	3.59	.20	3.23	3.62
Amis	3.82	3.43	.65	2.92	4.46

	N	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Puyuma	5	3.23	3.54	.99	3.20	3.30
Paiwan	7	3.85	4.36	1.03	3.00	5.00
Saisiyat	0	3.69	4.31	.81	3.19	4.69
Atayal		4.08	3.85	.42	3.88	4.28

Table 9 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on class rank. Once again, pretest scores are also provided for comparison purposes. The (post) mean scores ranged from a low of 2.92, to a high of 3.98, indicating overall the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective at the completion of the course. However, it was noted that only "Sophomore" and "Cont'd Education" two class ranks saw slight increase in the means scores whereas the scores of the remaining class ranks (Freshman, Junior & Senior) decreased.

Table 9. Perception changes based on class rank

Class Rank	N	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Freshman	3	3.67	3.79	.45	3.23	4.31
Sophomore	0	2.92	2.77	.65	2.72	3.22
Junior	0	3.23	3.54	.52	3.03	3.41
Senior	6	3.54	4.31	.87	3.04	4.54
Cont'd Education	3	3.98	3.46	.45	3.38	4.46

Table 10 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on students' GPA. The (post) mean scores ranged from a low of 3.53, to a high of 3.88, indicating overall the participants in the study "agreed" that such learning mechanism was effective at the completion of the course. However, only mean score of "B" GPA saw slightly increased while that of "A" and "C" GPA decreased.

Table 10. Perception changes based on GPA

GPA	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
A (80 and up)	3.88	4.05	.	3.	5.

				62	23	00	
B (70 ~ 79)	8	3.53	3.33	. 60	2. 92	4. 46	
C (60 ~ 69)	4	3.69	4.31	. 55	3. 29	4. 09	

Composition Task Score

Students were required to submit a copy of their written work at the commencement and the completion of the study. Both works were graded using the same scoring rubric illustrated in Figure 4.

Table 11 shows the paired samples test between the pretest and posttest writing scores on a social networking, web based digital platform ($r = .70$, p. $< .05$). The result revealed that overall there was a statistical significant, *strong* positive association between the two variables. Table 12 shows the paired samples test between the pretest and posttest composition scores on a social networking, web based digital platform, broken down in five categories. The result revealed that overall there was a statistical significant, *very strong* ($r = .91$, p. $< .05$) positive association between pretest and posttest writing in term of content, *strong* positive associations in organization, dictation and mechanics, ($r = .62$, $.65$, and $.60$ respectively, p. $< .05$) and *moderate* ($r = .45$, p. $< .05$) association in grammar.

Table 11. Paired samples correlations of students' pretest and pretest writing scores

Variables	**Pretest Writing Scores**
Posttest Writing Scores	.70*

* Correlation is significant at the .05 level (2-tailed).

Table 12. Samples correlations between pretest and posttest scores

Pretest & Posttest	**Category**	**Coefficient Value**	**Relationship**
Pair 1	Content	.91	Very Strong Association
Pair 2	Organization	.62	Strong Association
Pair 3	Grammar	.45	Moderate Association
Pair 4	Dictation	.65	Strong Association
Pair 5	Mechanics	.60	Strong Association

Learning outcomes

Occurrences of Comma Splice (CS) vs. Ethnicity

Sphericity test indicated homogeneity of variance assumption for the two variables was not violated with *p.* > .05. As illustrated in Table 13, a repeated measure test was used to examine if there were significant differences of the occurrences of comma splice in participants' writings based on their ethnicity. The results indicated that there was a significant difference among groups $F (1, 160) = 8.73$, *p.* < .05.

Table 13. Repeated measure test of the occurrences of comma splice on ethnicity

Perception	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	19.13	1	19.13	8.73	.02 *
Within Groups	9.90	160	1.98		

Occurrences of Comma Splice (CS) vs. Class Rank

Sphericity test indicated homogeneity of variance assumption for the two variables was not violated with *p.* > .05. As illustrated in Table 14, the results of the repeated measure test indicated that there was a significant difference among groups $F (1, 160) = 7.35$, *p.* < .05.

Table 14. Repeated measure test of the occurrences of comma splice on class rank

Perception	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	22.05	1	22.05	7.35	.03 *
Within Groups	6.43	160	1.98		

Subject-Verb Agreement (SVA) vs. Class Rank

Sphericity test of the homogeneity of variance assumption for the subject-verb agreement in participants' writing on a social networking, web based digital platform based on students' class rank. The test score indicated that the assumption was not violated with *p.* > .05.

As illustrated in Table 15, a repeated measure test was used to examine if there were significant differences of the subject-verb agreement in participants' writings based on their class rank. The results indicated that there was a significant difference among groups $F (1, 160) = 18.06$, *p.* < .05.

Table 15. Repeated measure test of subject-verb agreement (SVA) on class rank

Perception	Sum of Squares	*df*	Mean Square	*F*	*p*

Between Groups	177.01	1	177.01	18.06	*	.01
Within Groups	36.37	160	6.06			

Verb Tense vs. Grade Point Average (GPA)

Sphericity test of the homogeneity of variance assumption for the verb tense in participants' writing on a social networking, web based digital platform based on students' GPA. The test score indicated that the assumption was not violated with $p. > .05$.

As illustrated in Table 16, a repeated measure test was used to examine if there were significant differences of the verb tense in participants' writings based on their GPA. The results indicated that there was a significant difference among groups $F (1, 160) = 34.43$, $p. < .05$.

Table 16. Repeated measure test of verb tense on GPA

Perception	Sum of Squares	*df*	Mean Square	*F*		*p*
Between Groups	96.65	1	96.65	34.43	*	.01
Within Groups	3.50	160	1.75			

This study sought to investigate the impact of teaching/learning via a web-based social networking platform on aboriginal nursing students' perceptions and learning outcome. The independent variables examined in the study predicted a portion of the variance of participants' perceptions of the effectiveness of learning English writing on the Facebook, a social networking platform. Based on the correlational and regressional analyses, several notable findings have been highlighted in the table 17 below, followed by detailed interpretations:

Table 17. Highlighted findings

o.	Variable 1	Variable 2	Way of Analysis	Relationship
	Pretest Writing Score	Posttest Writing Score	Correlation	*Strong Positive*
	Comma Splice Occurrences	Ethnicity		
	Comma Splice Occurrences	Class Rank	Repeated Measure	*Statistical Significant*
	Subject-Verb Agreement	Class Rank		
	Verb Tense	GPA		

Interpretations

Basing on the highlighted findings in Table 18, the following interpretations are given:

Finding 1 – This study adds to the literature that there was a *strong positive* relationship between students' pretest writing scores versus their posttest scores. A follow-up examination of the writing performance grading rubric revealed the highest coefficient value, .91 (very strong association), in the "Content" dimension indicating that the "indirect-" or "meaning-" error correction strategy contributed much more positively in students' writing performance. On the other hand, a comparatively lower coefficient value, .45 (moderate association), was noted in the "Grammar" category, indicating that the "direct-" or "mechanical-" error correction strategy was less contributive than the other dimensions (i.e. content, organization, dictation, etc.). This finding supported the similar claims made by Berg in 1999, Liu & Hansen in 2002, and Xiao & Lucking in 2008.

Findings 2 & 3 – This study also adds to the literature that there was a statistically significant difference F (1, 160) = 8.73, $p. < .05$ by Repeated Measures, between the "occurrences of comma splice in participants' compositions" and "ethnicity." When two independent clauses are connected by *only* a comma, they constitute a run-on sentence that is called a comma-splice. An example of a run-on sentence is as follows: "It is cold outside, put on some clothes." (missing conjunction). A follow up test revealed that Paiwan students were significantly different (M = 4.01), from Bunun students (M = 3.50). Students from Bunun tribe tended to commit more Comma Splice grammatical errors than the Paiwan students. Another statistical significance was observed F (1, 160) = 7.35, $p. < .05.$, between "comma splice occurrences" and "class rank." The follow up test disclosed that Junior rank students (M= 3.20) were significantly different from cont'd education students (M=3.8) in that the later seemingly committed less grammatical errors than the former.

Finding 4 – Subject-verb (S-V) agreement (i.e. We <u>drive</u> to school every day (V). vs. Mary <u>go</u> to school by bus every day.(X) Mary goes to school by busy every day (V)) is one of the most commonly made grammar errors among students who learn English as a foreign language (EFL). Freshman students (M=3.60) were significant different from Junior students (M=3.10) as noted by Repeated measures, F (1, 160) = 18.06, $p. < .05$, in that freshmen made less S-V agreement errors than did the juniors. This finding is in contrast to the previous studies (Brooks & Grundy, 1990; Horwitz, 1986; Hyland, 2002) which suggested that students of higher classification (i.e. senior/junior) were less liable to commit such errors. One of the possible explanations might have been that students in their freshman or sophomore year still benefited from high school's intensive English training in preparation of the college entrance exam. Under which, greater emphases were placed in the mechanical aspects of the target language.

Finding 5 – Even paradoxically, "Verb tense" (i.e. present, past & future tenses) is not usually perceived as being difficult to teach/learn, EFL students often express that it is a one of the difficult grammatical areas to master (Larsen-Freeman, Kuehn & Haccius, 2002). Once again, taking "Mary goes to school by bus" for an example, while in English, present tense is often used to refer to actions that are habitual, repeated, or always true (Mary takes the bus to school everyday), it in most languages refers to actions that are taking place in the present. If the latter is true, English uses progressive (Mary is going to school by bus) to express actions that are taking place in the present time. This finding affirmed Bitchener, Young & Cameron's claim in 2005, adding that there was a statistically significant difference F (1, 160) = 34.43, $p. < .05$ by Repeated Measures, between "verb tense" and "GPA." A follow-up test revealed that students with higher GPA (A average, M=3.90) formed less "verb tense" errors than students with lower GPA (B average, M=3.30).

CONCLUSIONS

This study made theoretical, methodological, and contextual contributions to the field. As far the theoretical development is concerned, even though much has been written about student diversity and technology mediated learning and/or e-learning, these two dimensions have been pursued separately (Palma-Rivas, 2000). There is insufficient literature that examined them together. Thus, this research can expanded the theoretical horizons of the effects of minority (aboriginal) student's learning styles and cultural experience on technology mediated teaching and learning.

Methodologically, this study contributes to the current learning theories based on social constructivism. As a social-constructivist approach to manage a English language classroom, the use of a web digital learning platform helps answer questions about the social cultural implications of instructional technologies and how technology as a whole fits into a conceptual framework of principles into a broader philosophy of teaching and learning (Grasha & Yangarber-Hicks, 2000, cited in Palma-Rivas, 2000).

Contextually, this study extends the research of technology facilitated learning to language teaching and learning, specifically in the development of writing skills. In the educational context in Taiwan, even though research studies have been conducted in related subject areas, there is an absence in the literature examining minority (aboriginal) students and web based language teaching and learning in conjunction. This study explores aboriginal students' perceptions and learning effectiveness in English writing, using a social networking, web digital platform. Most importantly, it looks far and beyond to provide substantial explanations in the extent to which if any significant differences found are the results of some unforeseen issues (eg. ethnic, racial and/or cultural). Lastly, it will prompt for more culturally sensitive technology-mediated instructional designs in the overall teaching context in Taiwan.

IMPLICATION FOR TEACHING ENGLISH WRITING USING A WEB-BASED DIGITAL PLATFORM

Results from this study found the participants' perceptions and learning outcome to be significantly related to the chosen instructional pedagogy. Students responded favorably to statements such as "I think I can be more satisfied with this course arrangement and the designated teaching method", "I think learning by using a social network, web digital platform enables me to be an active learner" & "I think my attitude toward learning the given subject is more serious on a social networking, web digital platform. However, they either agreed or strongly disagreed with statements such as "I think the online English writing instruction can fully replace the conventional face-to-face instruction", and that "I think my interaction with the instructor and other students is greater in a social networking, web digital platform."

Rovai (2002) developed a model that examined the reasons students were not retained in online learning contexts. He found internal factors such as social integration, self-esteem, and study habits affected whether or not students were retained in the courses. Nicholas' study found contact and support from peer students and the instructor as other reasons effecting student retention in online learning (2010). The presence of the instructor can provide students with a sense of comfort (Westera, 1999). Creating a sense of community can help students feel more comfortable in the course while possibly decreasing existing anxieties. Having a well-organized course with supportive features such as individual chat forum (can always be substituted by face-to-face meeting if necessary) and a discussion board where students are able to openly interact can alleviate feelings of isolation or disconnection (Angelino, Williams, & Natvig, 2007; Hara & Kling, 1999), and help improve not only students' self-efficacy beliefs, but also increase their value of the course.

RECOMMENDATIONS FOR FUTURE RESEARCH

While this study presented research on the students' perceptions of learning English writing on a social networking platem, it is only a starting place for future research. The followings are additional recommendations for future research. First, this study should be replicated in a different setting with a larger population of students. Secondly, future research may want to examine other variables beyond those analyzed in this study to determine if additional relationship may exist. Future research could explore possible group differences to determine when and if changes might occur.

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