College students' attitudes toward ICT Use for English learning

Hong Ngo
University of Hawaii System, USA

Ariana Eichelberger
University of Hawaii at Manoa, USA

ABSTRACT

Breakthroughs in information and communication technologies (ICTs) are increasingly providing language learners with opportunities for real-time interactions with those fluent in their target language. However, adoption of available ICTs may depend on students' perceptions of the ICTs as affordances. This study examined the attitudes of 928 Vietnamese, non-English major college students toward the use of selected information and communication technologies (ICT attitudes) in English learning, and if the attitudes were affected by gender or comfort levels using technology. The study found that 61.2% of the students reported positive ICT attitudes and ICTs were more beneficial in augmenting receptive English over expressive English skills. The study also found significant differences in ICT attitudes across gender with female students more positive regardless of how comfortable they were in using computers and the Internet, and across technology comfort levels with those more comfortable, regardless of gender, being more positive toward ICT use in English language learning.

Keywords*: Information and communication technologies; EFL learning; ICT attitudes*

INTRODUCTION

An attitude is "the predisposition of the individual to evaluate some symbol or object or aspect of this world in a favorable or unfavorable manner" (Katz, 1960, p. 168). Attitudes are not inborn but acquired through socialization and vary among individuals and groups due to cultural and social experience. An attitude is a "learned, global evaluation of an object (person, place, or issue)" (Perloff, 2010, p. 43) and made up of beliefs (Ajzen, 1985; Pajaras, 1992) or the personal convictions or ideas one holds (Haney et al., 2002). Clusters of beliefs form attitudes or action agendas and therefore strongly influence behavior (Nespor, 1987; Pajares, 1992) or the way the individual acts and thinks in the social communities (Perloff, 2010). An individual's attitude toward something is reflected in his or her engaging in a particular behavior for that thing. Therefore, behavior is better predicted from beliefs than from actual consequence of actions because according to Bandura (1986), "people regulate their level and distribution of effort in accordance with the effects they expect their actions to have" (p. 129).

This study focused on the attitudes of non-English major college students toward the use of information and communication technology (ICT) in learning English as a foreign language (herein EFL learning). As noted by various scholars (Rogers, 2010; Davis et al., 1989; Bhattacherjee & Sanford, 2006), attitudes toward a particular technology can be predictive of its future acceptance. It is important to measure existing attitudes before any attempt is made to change them (World Bank Communication for Governance & Accountability Program, n.d.). Understanding the attitudes of college students toward ICT usage, and the influence of gender and technology skill levels on those attitudes may contribute to successful integration of ICTs into EFL teaching and learning.

This study is therefore designed to seek answers specifically from non-English major college students to the following questions:

1. What are the attitudes of non-English major college students towards the use of selected ICTs (ICT attitudes) in EFL learning?
2. Is there a main effect of gender on ICT attitudes?
3. Is there a main effect of comfort levels using computers and the Internet on ICT attitudes?

BACKGROUND

Information and communication technologies (ICTs) in foreign language learning

ICTs refer to information technology, networking technology, and telecommunication technologies (Nicol, 2003). Information technologies use computers and refers to computer hardware and software. Networking technologies include Internet, mobile phones, cable, satellite and other broadband connectivity. Telecommunication technologies include telephones systems, and the broadcasting of radio and television. The use of ICTs in foreign-language learning creates unconventional opportunities for learners to develop their foreign language skills (Lloyd, 2012). Research has shown the benefits of utilizing available technological tools in learning a world language. For example, the arrival of Web 2.0 technologies afforded learners access to real-time interactions with speakers of their target language (Godwin-Jones, 2006; Kumar & Tammelin, 2008; Stevenson & Liu, 2010). Specifically, a number of language learning websites such as Livemocha, Palabea, and Babbel utilize social networking features to construct online language-learning communities in which learners practice their target language with other capable learners or fluent speakers. Without these tools, being a member of similar authentic language learning communities was only possible in a foreign country (Stevenson & Liu, 2010). According to many researchers, the authentic use of a target language is critical for learners to gain proficiency (Ho, 2002; Campbell, 2004; Fageeh, 2011).

Factors iinfluencing attitudes toward ttechnology

Various researchers have identified variables that contribute to shaping individuals' attitudes toward using a technological innovation. According to Ajzen (1991), people's attitudes toward performing a behavior are influenced by their beliefs about what others think they should do (that is, subjective norms) and by their perceptions of their capability of performing a task (that is, perceived behavioral control). Before Ajzen (1991), Davis, Bagozzi, and Warshaw (1989) included perceived ease of use and perceived usefulness as determinants of attitudes toward technology acceptance. The Diffusion of Innovations Theory (Rogers, 2010) emphasizes knowledge of an innovation, relative advantages, and expected outcomes as determinants of technology adoption. According to Rogers, knowledge is multi-faceted and includes awareness knowledge, how-to-knowledge, and principles-knowledge. Awareness knowledge refers to having information that a technological innovation exists. Awareness knowledge can motivate individuals to learn about an innovation and lead to gaining the other two types of knowledge (Sahin, 2006). How-to knowledge refers to information on how to use a technological innovation properly, and principles-knowledge refers to information on the functioning principles underlying how the innovation works (Rogers, 2010).

Attitudes toward ICT usage

EFL learners tend to have positive attitudes toward technology use for their learning. Dang and Nguyen (2014) in their exploratory study of ICT use among 149 EFL university students in Vietnam found that the majority of students (82.6%) reported positive attitudes toward ICT use in EFL learning. Similarly, in Liu's (2009) study on the ICT attitudes of 140 non-English major college

students in China, students were fully aware of and generally positive about the potential of ICTs in their development of EFL learning. Their attitudes were greatly influenced by their perceptions of ICT attributes, including relative advantage, compatibility, simplicity and observability (Liu, 2009).

While most students have reported positive attitudes toward ICTs in EFL learning, some have negative attitudes. In Liu's (2009) study with EFL students in China, some students reported negative feeling toward ICT use in EFL learning. These students reported that they were not prepared to utilize available ICTs for language learning in and outside of the classroom due to the lack of actual use of ICTs in their English classrooms. This finding is consistent with other studies suggesting that lack of experience using ICTs in EFL classrooms can lead to negative ICT attitudes in EFL learners (Dang & Nguyen, 2014).

Difference in attitudes across gender ggroups

There have been conflicting findings regarding technology attitudes toward between male and female students. Attitudes can differ between genders, and due to technology skill levels. Male students have been found to be less positive about ICT usage than female students (Liu, 2009). In this case it was believed that the female students were more interested and confident in learning English as compared to their male counterparts (Liu, 2009). Conversely, in a study of 200 Taiwanese students males were found to be more positive about the use of computer technology and computer-assisted language learning (CALL) programs. Male students were thought to favor CALL programs because they were less anxious about using technology in their EFL learning (Lai & Kuo, 2007). These authors suggested that female students' attitudes could have been influenced by cultural perceptions that technology is more appropriate for men.

Context of Vietnam: ICT infrastructure and ICT in education

For this study Vietnamese students served as EFL learning participants. In Vietnam, Internet access has seen steady growth but has yet to reach 50% of the population. In 2013, 36% of Vietnam's population were registered Internet users increasing to 39% in 2014, then 45% in 2015 (Vietnam E-Commerce and Information Technology Agency, 2015). The report of this agency in 2014 revealed that 34% of registered Internet users accessed the Internet through laptops (75%) and mobile phones (65%). The report also showed that 87% of registered Vietnamese Internet users in 2013 accessed the Internet daily, growing to 39% in 2014. These users participated in forums and social networking sites (81%), checking email (73%), watching online movies and listening to music (64%), and searching for information (63%). According to the Ministry of Information and Communications (MIC), in 2016, broadband Internet connected computers were made available for public use at 400 public libraries and 1,500 post offices across 40 provinces of Vietnam through MIC's Improvement of Computer Usage and Public Internet Access Ability in Vietnam project.

Recognizing the direct and positive impact of ICT teaching and learning on national development, the Vietnam Ministry of Education and Training (VMoET) implemented the National Plan for ICT in Education in 2009. However, there has been criticism that the plan was not efficient with respect to the practical use of ICT in real life or for teaching and learning (Tran & Stoilescu, 2016). With regard to the Vietnamese national ICT curriculum, it places a focus on software programming and theoretical aspects of ICTs, and does not create opportunities for a variety of software programs to be used in various content areas. It is therefore not surprising to learn that there is low ICT usage in Vietnamese classrooms (Dang & Nguyen, 2014), a key predictor of students' adoption of available ICTs in EFL learning.

Limited oral communicative competence in English as a foreign language has been a common and persistent issue in Vietnam (Nguyen & Nguyen, 2016). According to Nguyen et al. (2015), the limited proficiency in EFL is most often due to lack of ICT use in the classroom. Access to online language learning technologies can provide the authentic experiences with a target language (Ho, 2002; Campbell, 2004; Fageeh; 2011), critical to proficiency (Stevenson & Liu, 2010). These experiences are critical because "language is social" (Clark, 2003, p. 19) and learning language is "a social act" (Bloom, 2000, p. 55) in which language is co-constructed between learners and their learning environment (Kramsch, 2002). To be fluent in language, knowing its linguistic features such as vocabulary and grammatical rules is not enough. Language learners need sociolinguistic knowledge of their target language, which comes through using the language in its social and communicative contexts (Ho, 2002). However, Vietnamese English language curricula tends to use traditional methods that restrict in-class time spent on language learning and focus on grammar, vocabulary, reading, writing, and listening skills but not communicative competence (Nguyen et al., 2015).

It is in this context that the research questions of this study arise: 1) What do Vietnamese college students, especially non-English majors perceive the benefits of ICTs to be on their EFL learning? 2) Do the attitudes of these students differ by gender and technology comfort levels?

METHODS

Survey instrument

Quantitative data was collected via a survey which consisted of 23 questions, organized in two parts. Part 1 included five questions on demographics: age, gender, Internet and computer access, education levels, and comfort level using computers and the Internet. Part 2 of the survey consisted of 18 questions about students' attitudes toward the use of ICTs in EFL learning. The questions in Part 2 were answered on a five-point Likert scale with '1' indicating maximum disagreement and '5' indicating maximum agreement with each given statement.

Seventeen of the 23 questions were adapted from a 2003 European Commission and Ellinogermaniki Agogi survey examining attitudes toward technology in language learning. The original survey consisted of six sections with a total of 108 questions; however, the present study only used 17 of the 61 questions from two of the original survey's sections: 1) using specific technologies for language learning and 2) attitudes toward the use of technology for language learning. Given the data set of the present study, internal consistency of these 17 modified questions were examined resulting in a Cronbach's Alpha coefficient of .83, providing initial evidence of reliable questions.

Participants

Study participants were Vietnamese college students not majoring in English. Participants lived in urban areas of Southern Vietnam, were aged 18 years and older, and were learning English to reach a certain proficiency level or to partially fulfill the requirements of their degree programs. This study purposefully excluded English majors as they have been found to differ from non-English majors in motivation and anxiety levels regarding EFL learning. Specifically, non-English majors have been found to have lower levels of intrinsic motivation (Quardir, 2011; Ngo, 2015) and higher levels of anxiety about learning EFL as opposed to English-majors (Quadir, 2011).

Survey Design

A mixed-mode strategy of data collection was utilized in which both hard copy paper based survey instruments and online versions were distributed to participants. Using a mixed-mode delivery approach in which participants chose online or paper based modes of responding accounts for differences in respondents' attitudes toward technology (Meckel, Waters, & Baugh, 2005; Griffin et al., 2001). Participants learned about the survey through college classroom instructors assisting the lead researcher. Participants indicated their survey mode preference and instructors in turn provided participants with either a paper version or link to the online version of the survey.

Ethics consideration

Participation in this study was completely voluntary and the data collection was initiated after the study received approval from the Institutional Review Board of Human Studies Program at the University of Hawaii at Manoa. No identifiable information on individual students was collected.

Data analysis

ICT attitudes in the present study was treated as a dependent variable and defined as learner perspectives of using ICTs to enhance EFL learning. Referencing the definition of ICTs by Nicol (2003), ICTs in the present study were organized into three categories: information technology, telecommunication technology, and networking technology. For the purposes of this study, the term networking technology is used, but refers to the much narrower subset of social media technologies such as Facebook and blogs. Students' responses to the survey questions were analyzed using the Statistical Package for the Social Sciences (SPSS, version 24). Both descriptive (mean, standard deviation, frequency in percentage) and inferential statistics (Univariate General Linear Model) were utilized to answer the research questions. Descriptive statistics summarized participants' responses to the first research question. The Univariate General Linear Model was used to determine if there were possible effects of participants' gender and comfort levels in using computers and the Internet on attitudes toward the use of ICTs in EFL learning.

RESULTS

Nine hundred and twenty eight students responded to the survey. There was a relatively equal ratio of males (n = 449, 48.4%) and females (n = 479, 51.6%). Approximately 91% of the students were between the ages of 18 and 23 with the remaining 9% over 24 years old. The majority were pursuing a Bachelor's (38.1%) or Associate's degree (44%). Of those remaining, 16.4% indicated they had received a high school diploma, 1.2% a master's degree, and 0.3% did not specify an education level.

Technology skills and access

Most students were comfortable using computers and the Internet with approximately 41% indicating high or very high comfort levels, 50% indicated average levels, and less than 10% indicated low or very low comfort levels. The majority of participants reported having computer and Internet access either at home (79.1%) or in another location (82.7%).

Overall ICT attitudes

Descriptive statistics were computed for the results of the 18 questions on ICT attitudes. The mean value was 3.704 (*SD* = .447), implying that students were moderately favorable toward the use of ICTs in EFL learning. Specifically, 61.2% indicated very positive or positive ICT attitudes, 29% indicated neutral attitudes, and 9.8% indicated negative attitudes toward ICTs in EFL learning.

Students' views on other ICT aspects related to EFL learning were relatively positive and are summarized in Table 1. The mean values of items 1 to 5 range from 3.46 to 3.99, all above mid-point on the 5-point scale. In other words, 49% to slightly greater than 74% of students believed in the usefulness of ICTs to their EFL learning. The majority of participants (74.2%) most strongly agreed with the statement that their use of ICTs for EFL learning would increase in the future (item 18, M = 3.99, SD = .844). Many students (48.6%) valued using ICTs in promoting their own self-regulated learning in EFL (item 1); however, a number of others, 43.6%, were neutral on this item. Greater than two-thirds of the students (69.1%) indicated that they perceived other advantages to using ICTs in EFL learning such as access to more authentic English use (item 2, 69.4%), motivation (item 3, 70.3%), and access (item 4, 67.4%).

Table 1. *Outlook on ICTs to EFL learning*

Items	M	SD	1-2 (%)	3 (%)	4-5 (%)
1. Promoting self-regulated learning of EFL	3.46	.828	7.8	43.6	48.6
2. Enabling access to more real-life English use	3.85	.840	5.7	24.9	69.4
3. Motivating me to learn EFL	3.84	.803	4.9	24.8	70.3
4. Making EFL learning more accessible and friendly	3.80	.803	5.1	27.5	67.4
5. Believing in an increasing use of ICTs in EFL learning	3.99	.844	4.2	21.6	74.2

*1-2 (%): Disagree; *3 (%): Neither disagree nor agree; *4 (%): Agree to strongly agree

Attitudes toward specific ICT types

As shown in Figure 1 below, when indicating which ICT types participants felt would be most helpful in learning English, students most frequently indicated computers (81.5%), online dictionaries (76%), and digital music (68.3%). Students then indicated that they felt watching films in English (59.7%), watching television or listening to the radio in English (59.6%), and using social networking sites (57.9%) could help them learn English better. Fewer students indicated that they felt blogs (32.8%) or video conferencing tools (40.3%) would be helpful in their EFL learning.
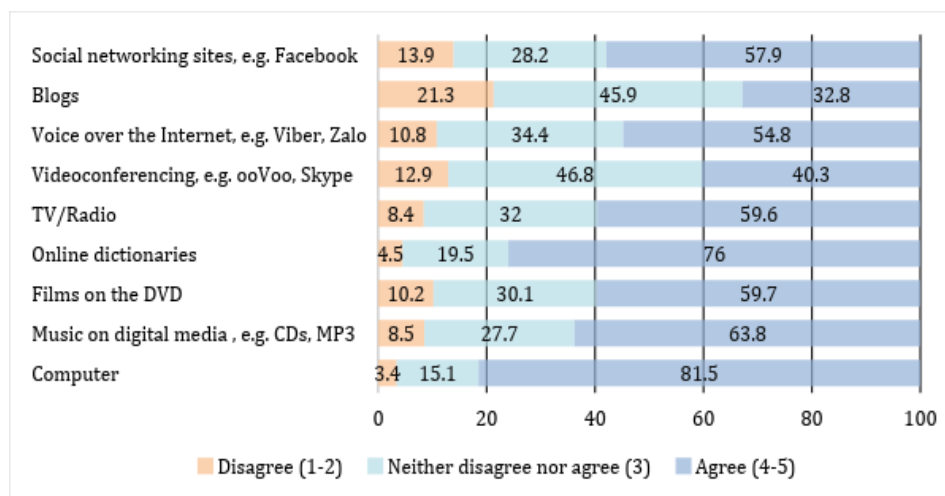
Figure 1. *Specific types of ICTs for EFL learning*

These results may be suggesting that computers were most frequently rated as helpful to EFL learning because they can be used as the platform through which students access other types of

ICTs. For example, looking up a word in an online dictionary, listening to digital music, video conferencing, blogging, watching films on DVDs all can be done using a computer. Despite computers being the most frequently ICT identified as helpful in EFL, there were students who indicated negative or neutral attitudes toward computers.

Neutral attitudes were commonly indicated toward a few ICT types. Specifically, video conferencing had the largest number of neutral ratings with 46.8%, followed by blogs with 45.9%, voice over Internet protocol with 34.4%, and finally TV/Radio with 32%. Of the nine types of ICTs, computers had the smallest number of neutral ratings (15.1%) or negative ratings (3.4%).

The nine tools can also be grouped into the three general ICT categories: 1) information technology (computers, digital music, films on DVD, and online dictionaries), 2) telecommunication technology (television/radio, videoconferencing, and voice over Internet protocol, and 3) networking technology (for this study blogs and social networking sites). When looked at in groups, information technology was rated most favorably with an average of 70.1% positive ratings, while telecommunication technology had 51.6% average of positive ratings, and social networking technology had an average of 45.4% positive ratings. However, it is important to note that not all communication and social networking tools garnered low scores. More than half of the participants favored television/radio (59.6%) and social networking sites (57.9%) despite being part of groups with overall lower average ratings.

Attitudes toward ICT use in receptive and expressive English skills

Students were also asked about which particular English language skills they felt would be enhanced by ICT integration. Students indicated that receptive skills (listening and reading) would benefit more from ICT integration than expressive skills (speaking and writing). Figure 2 displays the means and percentages of students indicating which skill would be enhanced by ICTs. The mean value of listening was highest at 4.02 (SD =.789), followed by reading (M = 3.86, SD = .809), speaking (M = 3.70, SD = .903), and finally writing (M = 3.55, SD = .857). Figure 2 also displays the percentage of students supporting, not supporting, or reporting neutral attitudes toward the use of ICTs in the development of these EFL skills. An average of 58.4% of students agreed that ICTs would enhance the learning of expressive English language skills. Particularly, 62.8% indicated their support for the use of ICTs in enhancing speaking skills; 54.2% for enhancing writing skills. A considerably larger proportion agreed that ICTs would enhance the learning of receptive English language skills with 71.3% in reading and 77.5% in listening.
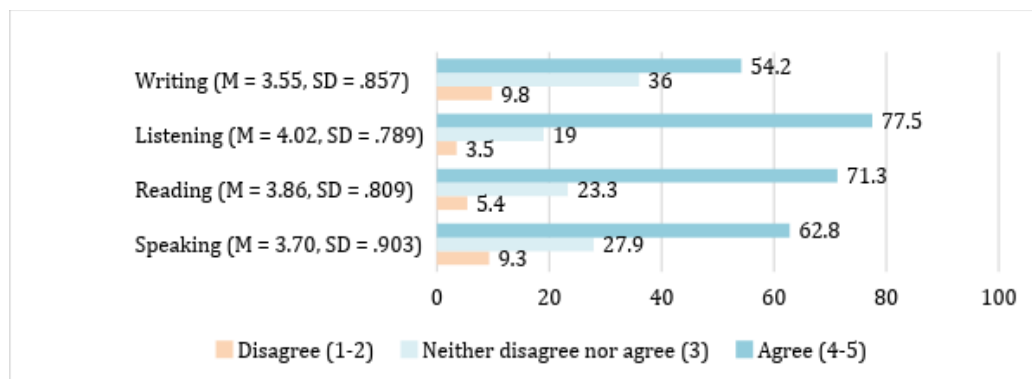

Figure 2. *Attitudes toward the Use of ICTs to enhance EFL skills*

ICT attitudes between gender groups and across comfort levels

Table 2 displays comparisons among participants in terms of gender and reported comfort levels with technology. The mean ICT attitudes (all 18 items) for males was 3.68 (SD = .467) and 3.72 (SD = .429) for females. Of note, none of the mean values fell below the mid-point of the five-point scale. Overall, participants that reported higher comfort levels with technology had a higher mean value or more positive views on ICT use for EFL learning. Not surprisingly, those who reported being less comfortable with technology had a lower mean value or less positive views on ICT use for EFL learning. The mean ICT attitude for the low to very low group was 3.59 (SD = .467), the lowest when compared to the means of the average (M = 3.69, SD = .443), and high to very high (M = 3.75, SD = .451) groups.

Table 2. *Group statistics*

	Gender & Comfort Levels	N	Mean	Std. Deviation
ICT Attitudes	Male	449	3.68	.467
	Female	479	3.72	.429
	Low to very low	86	3.59	.439
	Average	461	3.69	.443
	High to very high	381	3.75	.451

To determine if there were significant differences in ICT attitudes across gender groups and groups of varying comfort levels using technology, a Univariate General Linear Model (GLM) was performed after the normality of errors and variables was confirmed and the homogeneity assumption verified. The test for normality with kurtosis = -.320 and skewness = .021 falling in range from -2 to +2, revealed that the data were normally distributed (Lewis-Beck, Bryman, & Liao, 2004). The test for homogeneity of variance was not significant, Levene $F(5,922)$ = 1.930, p = .087 > ∝ = .05, suggesting the assumption of homoscedasticity was met.

The results for the GLM showed that all the effects were statistically significant at the .05 significance level with the exception of the interaction effect. The main effect for gender on ICT attitudes yielded an F ratio of $F(1,922)$ = 7.184, p < .05, indicating a significant difference in the ICT attitudes between males (M = 3.68, SD = .467) and females (M = 3.72, SD = .429). The main effects of comfort levels on ICT attitudes also yielded a significant F ratio of $F(2,922)$ = 8.740, p < .001, indicating a significant difference in the ICT attitude mean across the three comfort levels as a whole. Therefore, Tukey's Honestly Significant Difference procedure was performed with the results presenting three significant comparisons:

1. The significant difference in ICT attitudes was between students with high to very high comfort levels (M = 3.75, SD = .451) and those with low to very low comfort levels (M = 3.59, SD = .439), with a 95% confidence interval of the difference between means from .126 to .385 points on a -5 to +5 scale.
2. The significant difference in ICT attitudes was between students with high to very high comfort levels (M = 3.75, SD = .451) and those with an average comfort level (M = 3.69, SD = .443), with a 95% confidence interval of the difference between means from 0.19 to .143 points on a -5 to +5 scale.
3. The significant difference in ICT attitudes was between students with an average comfort level (M = 3.69, SD = .443) and those with a low to very low comfort level (M = 3.59, SD = .439), with a 95% confidence interval of the difference between means from .047 to .302 points on a -5 to +5 scale.

The interaction effect for the gender and comfort levels on ICT attitudes was not statistically significant, $F(2,922) = 1.250$, $p = .287$. This finding suggests that the effect of gender on ICT attitudes was not due to comfort levels and the effects of comfort levels on ICT attitudes was not due to gender.

DISCUSSION

High prevalence of positive ICT attitudes

While the results reflecting ICT attitudes are clear, why students actually hold those attitudes is less so. A similar study of non-English major college students learning English in China found that ICT attitudes were highly influenced by perceptions of an ICT's attributes, that is, relative advantage, compatibility, simplicity, and observability (Liu, 2009). Other studies have found that people were positive about a technological innovation if they perceived it to be useful to their work and/or that associated learning curves were minimal (Davis et al, 1989). It could also be that ICT attitudes were influenced by personal ICT experiences given that attitudes are "a learned, global evaluation of an object (person, place, or issue) that influences thought and action" and are acquired through socialization (Perloff, 2010, p. 43). The social aspect of attitude development may also play a role in that the opinions of those deemed trustworthy can influence one's attitudes. Bhattacherjee and Sanford (2006) refer to this as source credibility or "the extent to which an information source is perceived to be believable, competent, and trustworthy by information recipients" (p. 811).

Information technologies perceived to be more beneficial to EFL learning

When considering the high ranking of the information technology category it may be that the tools in that category are more commonly used in everyday life and their benefits may therefore be more apparent to students than the other ICTs. Other tools that received lower ratings such as blogs, video conferencing, and voice over Internet protocol may be less familiar to students and therefore perceived to be more difficult. Those who have a vision of how and why to use a tool are more likely to have positive attitudes about using it (Rogers, 2010). In addition, those who perceive a tool as complex are less likely to be positive about using it (Liu, 2009). This should not however discount the pedagogical affordances of these tools. Students who feel computers offer little benefit to their learning often do not recognize the pedagogical benefits of computers (Barr, 2004). Blogs have been successfully used in classrooms to enhance general writing skills (Campbell, 2003; Özdemir & Aydın, 2015), to provide foreign language students with additional opportunities to complete learning tasks, and to reduce cognitive and behavioral anxiety (Cheng, 2004; Campbell, 2003). Blogs have also been found to motivate learners to practice their target language (İnceçay & Genç, 2014). Of note, in these studies, students used blogs with instructional guidance, not through independent exploration. The positive ratings students provided to the common information technologies (computers, films, radio/TV and online dictionaries) may be due to their familiarity, not necessarily their pedagogical worth. Those who have not experienced a tool may not be able to recognize its implications for EFL learning.

More favorable ICT attitudes for receptive language skills

Confirming the student opinions in this study, technology has been found in some cases to more strongly benefit learning receptive language skills (Newton, 2016). Also, the information technology tools that students were most positive about are those that may be most likely used in enhancement of receptive skills. For example, online dictionaries were highly rated as beneficial for EFL learning and are generally used for word meaning, pronunciation, spelling, and syntax (Barham, 2017). Tools that were less favorably rated tend to be associated with expressive language learning skills. VOIP and video conferencing tools such as Skype enable opportunities for language learners to

practice speaking and writing in their target language without being impeded by time or space (Newton, 2016). Video conferencing, chat rooms, and blogs have not been widely adopted by language learners despite their great potential for language development (Yunus, Lubis, & Lin, 2009). In fact, students tend to blog for purposes other than learning English and do so in their mother tongue, not English (Ibid). Students' lack of vision and experience with the how and why of using a particular tool may impede them from utilizing tools with positive affordances for their EFL learning.

Difference in ICT attitudes between genders and across technology comfort levels

This study's findings support conclusions of previous studies in which female students and those with higher comfort levels using computers and the Internet both held more positive ICT attitudes. It may be that the female students in this study were more interested and confident in learning English and may have had stronger self-belief in their capability to learn English, leading them to try different learning strategies to enhance their development of English. Females have been found to use social/affective learning strategies more often than males (Maccoby & Jacklin, 1974; Zeynali, 2012), be more motivated than males to learn a foreign language (Diab, 2000), and tend to outperform males in language learning (Sunderland, 1998). Given these findings, it could be that the females in this study were more motivated to use available technologies in their EFL learning. This in turn would make them more familiar with various types of ICTs for EFL learning, eventually resulting in more positive ICT attitudes.

This study's findings point to gender being a factor in differing ICT attitudes among non-English major college students in EFL learning. These results however do not align with Lai and Kuo's findings (2007) in which males had more positive attitudes toward technology use in enhancing EFL learning. In that study, male students not only had more confidence using computer technologies, but also lower anxiety levels toward learning a foreign language with computer-assisted language learning (CALL) programs. Those researchers point to cultural and gender perceptions in Taiwan, specifically that technology has traditionally been viewed as a subject appropriate for males to learn, but not for females. In that case, female learners' self-efficacy in learning English with CALL programs may have been negatively affected by gender stereotypes, resulting in less positive attitudes. Ajzen (1991) theorized that attitudes are influenced by beliefs about what others think one should or should not do (that is, subjective norms) and by one's perceptions of their own capability of performing a particular task (that is, perceived behavioral control). However, in the present study, female students' ICT attitudes were more positive than males and were not affected by their self-reported comfort levels using technology.

IMPLICATIONS

Given the empirical results, this study highlights two key implications for theory as well as practice with respect to ICTs adoption for EFL learning among non-English major college students. The first implication is regarding the direct effect of gender on ICT attitudes. Females are often stereotyped as being "shy" of technologies. In this study female students were more positive toward the use of ICTs than male students. However variability in ICT attitudes between genders persist across empirical studies and any assumptions about ICT attitudes among female or male students should therefore be made carefully. The second implication is regarding the direct effect of comfort levels in using computer and the Internet on ICT attitudes. These findings suggest that students' experience using s and the Internet to some degree matters when investigating attitudes toward the use of ICTs in EFL learning.

LIMITATIONS AND FUTURE DIRECTIONS

While this study sampled a large number of participants, the results are subject to two limitations. The first is that of ecological generalizability. Because participants were non-English major college students residing in urban areas of Vietnam they may have had more access to ICTs as compared to students in rural Vietnamese areas. This study also only investigated attitudes toward nine ICT tools although they spanned across the three ICT categories. It is recommended that future studies use different sample participant pools and additional ICT tools for a more comprehensive understanding of the perceptions of non-English major college students toward the use of ICTs in EFL learning.

This study focused on the ICT attitudes of non-English major college students and the effects of gender and technology comfort levels on ICT attitudes. The study did not examine students' experience in using any of the selected nine ICT tools. This has restricted the ability to elaborate on students' ICT attitudes regarding their experience in using any of the selected nine ICT tools. Students' comfort levels in using computers and the Internet could partially explain their attitudes, however, they cannot speak to the students' experience in using specific tools. Future studies might consider looking at the relationship between students' experience using a particular tool and their attitudes toward that tool.

CONCLUSION

The majority of the students in this study had positive attitudes toward using selected ICTs in EFL learning. The information technology category was favored more as compared to the other categories (social networking, telecommunication technology). Students felt that ICTs were more beneficial to the development of their receptive English skills rather than that of their expressive skills. Approximately 30% of students were unsure of the benefits of ICTs to their EFL learning and less than 10% were neutral. Female students in this study adopted more favorable attitudes toward the use of selected ICTs than males, a result both supporting and contradicting previous research findings. This study found gender and comfort levels in using computers and the Internet to be factors influencing students' attitudes toward selected ICTs in EFL learning. Importantly, the effect of one factor on attitudes was not mediated by the other factor.

REFERENCES

Ajzen, I. 1985. From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.

Ajzen, I. 1991. "The theory of planned behavior". *Organizational behavior and human decision processes,* vol. *50*, pp. 179-211.

Bandura, A. 1986. *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, N.J: Prentice-Hall.

Barham, K. A. 2017. "The use of electronic dictionary in the language classroom: The views of language learners". Paper presented at The Second International Conference for Learning and Teaching in the Digital World/Smart Learning. Retrieved from https://files.eric.ed.gov/fulltext/ED573437.pdf

Barr, D. 2004. "Students and ICT: An analysis of student reaction to the use of computer technology in language learning". *IALLT Journal of Language Learning Technologies,* vol. 36, no. 2, pp. 19-38.

Bhattacherjee, A., & Sanford, C. 2006. "Influence processes for information technology acceptance: An elaboration likelihood model". *MIS Quarterly,* vol. 30, no. 4, pp. 805-825.

Bloom, L. 2000. The intentionality model of word learning: How to learn a word, any word. In R. M. Golinkoff, K. Hirsh-Pasek, L. Bloom, L. Smith, A. Woodward, N. Akhtar, M. Tomasello, and G. Hollich (Eds.), *Becoming a word learner: A debate on lexical acquisition* (pp. 19-50). New York: Oxford University Press.

Campbell, A. P. 2004. "Using live journal for authentic communication in EFL classes". *The Internet TESL Journal*, vol. X, no. 9. Retrieved from http://iteslj.org/Techniques/Campbell-LiveJournal/

Cheng Y. S. 2004. "A measure of second language writing anxiety: scale development and preliminary validation". *Journal of Second Language Writing,* vol. 13, no. 4, pp. 313-335.

Clark, E. 2003. *First language acquisition*. Cambridge, UK: Cambridge University Press.

Dang, H. T. & Nguyen, N. H. T. 2014. "An exploratory study of ICT use in English language learning among EFL university students". *Teaching English with Technology,* vol. 14, no. 4, pp. 32-46.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. 1989. "User acceptance of computer technology: A comparison of two theoretical models". *Management Science,* vol. 35, no. 8, pp. 982-1003.

Diab, R. 2000. "Political and socio-cultural factors in foreign language education: The case of Lebanon". *Texas Papers in Foreign Language Education,* vol. 5, no. 1, pp. 177-187.

European Commission and Ellinogermaniki Agogi (ECEA). 2007. "Questionnaire: The role of technology in your life". Retrieved from http://www.ea.gr/ep/survey/2008/survey.asp?lag=en

Fageeh, A. I. 2011. "EFL learners' use of blogging for developing writing skills and enhancing attitudes toward English learning: An exploratory study". *Journal of Language and Literature,* vol. 2, no. 1, pp. 31-48.

Godwin-Jones, B. 2006. "Emerging technologies: Tag clouds in the blogsphere: Electronic literacy and social networking". *Language Learning & Technology,* vol. 10, pp. 8-15.

Griffin, D. H., Fischer, D. P., & Morgan, M. T. 2001. "Testing an Internet response option for the American community survey." Paper presented at the American Association for Public Opinion Research, Montreal, Canada. Retrieved from https://www.census.gov/content/dam/Census/library/workingpapers/2001/acs/2001_Griffin_01.pdf

Haney, J. J., Lumpe, A. T., Czerniak, C. M., & Egan, V. 2002. "From beliefs to actions: The beliefs and actions of teachers implementing change." *Journal of Science Teacher Education*, vol. 13, no. 3, pp. 171–187. doi:10.1023/A:1016565016116

Ho, T. M. H. 2002. Developing pragmatic competence in Vietnamese learners of English. *Teacher's Edition,* pp. 4-11.

İnceçay, G., & Genç, E. 2014. "University Level EFL Students' Self Blogging to Enhance Writing Efficacy." *Procedia - Social and Behavioral Sciences,* vol. 116*,* pp. 2640-2644.

Katz, D. 1960. "The Functional Approach to the Study of Attitudes". The Public Opinion Quarterly, vol. 24, no. 2, pp. 163-204.

Kramsch, C. 2002. "*Language acquisition and language socialization: Ecological perspectives"*. London: Continuum.

Kumar, S., & Tammelin, M. 2008. "Integrating ICT into language learning and teaching." Retrieved from http://webh01.ua.ac.be/odlac/guides/4b-GUIDESINSTITUTIONS- EN.pdf

Lai, C.-C., & Kuo, M.-M. 2007. "Gender differences in CALL programs for English as a second language acquisition." Retrieved from http://files.eric.ed.gov/fulltext/ED496190.pdf

Liu, J. 2009. "A survey of EFL learners' attitudes toward information and communication technologies." *English Language Teaching,* vol. *2*, no. 4, pp. 101-106.

Lloyd, E. 2012. "Language learners' willingness to communicate through Livemocha.com." *Social Media and language Learning Revolution, vol. 15*, no. 1, [Online] doi:10.4000/alsic.2437. Retrieved from http://alsic.revues.org/2437

Maccoby, E. E., & Jacklin, C. N. 1974. *The psychology of sex differences*. Stanford, CA: Stanford University Press.

Meckel, M., Walters, D., & Baugh, P. 2005. "Mixed-mode surveys using mail and web questionnaires." *The Electronic Journal of Business Research Methodology,* vol. 3, no. 1, pp. 69-80.

Ministry of Information and Communication. 2011. "News: Project "Improvement of computer usage and public Internet access ability in Vietnam" launched in Hanoi." Retrieved from http://wcag.mic.gov.vn/Pages/TinTuc/114661/Project-Improvement-of-computer-usage-and-public-Internet-access-ability-in-Viet-Nam--launched-in-Hanoi.html

Nespor, J. 1987. "The role of beliefs in the practice of teaching." *Journal of Curriculum Studies*, vol. *19*, no. 4, pp. 317–328. doi:10.1080/0022027870190403

Newton, J. 2016. Teaching language skills. In G. Hall (Ed.), *The Routledge handbook of English language teaching* (pp. 428-440). Routledge.

Ngo, T. H. 2015. An investigation into students' motivation to learn English in higher education in Vietnam [Dissertation]. Retrieved from https://eprints.qut.edu.au/84470/1/Thu%20Huong_Ngo_Thesis.pdf

Nguyen, N. H. 2013. Chapter 1.7: Vietnam's National Foreign Language 2020 Project: Challenges, Opportunities, and Solutions. Retrieved from http://bruneiusprogramme.org/wp-content/uploads/2013-Forum-Publication-Complete.63-65.pdf

Nguyen, T. T., & Nguyen, T. K. T. 2016. "Oral English communication strategies among Vietnamese non-majors of English at intermediate level." *American Journal of Educational Research,* vol. 4*,* no. 3, pp. 283-287. DOI:10.12691/education-4-3-9

Nguyen, H. T., Fehring, H., & Warren, W. 2015. "EFL teaching and learning at a Vietnamese university: What do teachers say? *English Language Teaching,* vol. 8*,* no. 1, pp. 31-43.

Nicol, C. 2003. "ICT policy: A beginner's handbook. Johannesburg: Association of Progressive Communications." Retrieved from https://www.apc.org/en/system/files/policy_handbook_EN.pdf

Özdemir, E., & Aydın, S. 2015. "The Effects of Blogging on EFL Writing Achievement." *Procedia - Social and Behavioral Sciences,* vol. 199, pp. 372-380.

Pajares, M. F. 1992. "Teachers' beliefs and educational research: Cleaning up a messy construct." *Review of Educational Research*, vol. 62, no. 3, pp. 307–332. doi:10.3102/00346543062003307

Perloff, R. M. 2010. T*he dynamics of persuasion: Communication and attitudes in the twenty-first century* (4th ed.) Routledge.

Quadir, M. 2011. "A comparative study of English and non-English major university students' motivation to learn English oral communication." 91-111. Retrieved from http://dspace.ewubd.edu/bitstream/handle/123456789/387/Mst._Moriam_Quadir .pdf?sequence=1

Rogers, E. 2010. *The diffusion of innovations*. 5th edn. New York: Free Press.

Sahin, I. 2006. Detailed review of Rogers' Diffusion of Innovations Theory and educational technology-related studies based on Rogers' theory. *The Turkish Online Journal of Educational Technology,* vol. 5, no. 2, pp. 14-23.

Stevenson, M. P., & Liu, M. 2010. "Learning a language with Web 2.0: Exploring the use of social networking features of foreign language learning websites." *CALICO Journal,* vol. 27, no. 2, pp. 233-259.

Sunderland, J. 1998. "Girls being quiet: A problem for foreign language classrooms?" *Language Teaching Research,* vol. 2, no. 1, pp. 48-82.

Tran, T. M., & Stoilescu, D. 2016. "An analysis of the content, policies and assessment of ICT curricula in the final years of secondary schooling in Australia and Vietnam: A comparative educational study." *Journal of Information Technology Education: Research,* vol. 15, pp. 49-73.

Vietnam E-Commerce and Information Agency. 2014. Vietnam mobile e-commerce report 2014. Retrieved from http://tttm.vecita.gov.vn/App_File/files/f7c2601c-17e9-4f2f-b640-1bbfa1c5bcce.pdf

World Bank Communication for Governance & Accountability Program. n.d.. "Theories of behavior change." Retrieved from http://siteresources.worldbank.org/EXTGOVACC/Resources/BehaviorChangeweb.pdf

Yunus, M. M, Lubis, M. A., & Lin, C. P. 2009. "Language learning via ICT: Uses, challenges and issues." *VSEAS Transactions on Information Science and Applications,* vol. 6, no. 9, pp. 1453–1467.

Zeynali, S. 2012. "Exploring the gender effect on EFL learners' learning strategies." *Theory and Practice in Language Studies*, vol. 2, no. 8, pp. 1614-1620.