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Teachers' Attitudes towards the Use of Information and Communication Technology in Teaching English: Impacts of Teachers' Characteristics

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Abstract

This survey was done to uncover the EFL lecturers' attitudes (cognitive, emotional, and behavioral components) towards the use of information and communication technology (ICT) in teaching English at a university in Vietnam. In addition, the survey also investigated the influence of some teachers' demographic characteristics, including gender, prior ICT training, education level, age, and teaching experience on their attitudes. The author employed a survey questionnaire adapted from Albirini to collect research data. One hundred twelve tertiary EFL teachers answered questionnaires administered online via Google Forms. Quantitative methods and descriptive and inferential statistical techniques were utilized to analyze the collected data. Results indicated that teachers had positive attitudes towards the use of ICT in teaching English. In addition, gender, prior ICT training, education level, teaching experience, and age were found not to impact their attitudes. Finally, this study had some suggestions for future investigations into the attitudes of teachers concerning the use of ICT in English language instruction.

Keywords: English teaching, attitude, teachers' attitudes, educational technology, Vietnam

Introduction

The application of information and communication technology (ICT) in education has been widely spread due to its visible transformative effects in raising the teaching-learning quality, resulting in broad societal changes (Lim et al., 2013). Administrators, educators, teachers, and practitioners have been searching for innovative methods to enhance educational quality (Lowther et al., 2008; Weert & Tatnall, 2005). Many educational systems have been concerned about how ICT can be utilized effectively in instruction, which has triggered significant ICT facility investment across several nations, enabling their integration into the educational instruction process (Tilya, 2008). Many educational institutions are equipped with ICT tools to make it possible for their use in instruction (Drijvers, 2015). In some cases, however, the use of ICT has yet to yield the projected outcomes. Several studies indicated that teachers solely used ICT for administrative tasks not for their actual instructional activities (Mwalongo, 2012). In other instances, they added ICT to their conventional teaching methods (Mwalongo, 2012; Thorvaldsen et al., 2012) or used it at a limited level (Al-zaidiyeen et al., 2010; Noori, 2019; Umar & Hassan, 2015).

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Concerning foreign language education, many EFL teachers have employed ICT in their teaching practices with the conviction that ICT is a valuable instrument to improve the effectiveness of their instruction (Fu, 2013; Lam Kieu et al., 2021; Player-Koro, 2012; Yunus, 2007). However, several other criteria determine how successfully ICT is used in education instead of the availability of ICT infrastructure. Therefore, many research studies have made attempts to uncover the factors that can facilitate or hinder successful ICT implementation (Albirini, 2006; Dinh, 2015; Inan & Lowther, 2010; Pham et al., 2021; Player-Koro, 2012; Salinas et al., 2016). Of all the examined factors, these studies claimed that the most critical element in promoting ICT integration and averting opposition use was teachers' attitudes (TATT) towards using ICT. Some studies claimed that teachers' positive attitudes were positively correlated with their frequencies of ICT use and led to successful teaching practices, while the negative attitudes were the primary obstacle to their effective instruction (Albirini, 2006; Capan, 2012; Kizil, 2016). Hue and Jalil (2013) argued that these days "universities must promote the use of ICT" (p. 54) to satisfy students' needs, establish new bonds, innovate programs, and re-form conceptions of the learning environments' characteristics to facilitate innovation, experimentation, and lecturers' creativity.

Being the critical determinant of the successful ICT implementation in teaching, teachers' attitudes have been the research domain which calls for further investigations, especially prior actual deployment of ICT in specific teaching settings (Aydin et al., 2016; Bariu & Chun, 2022; Hue & Jalil, 2013; Jahanban-Isfahlan et al., 2017). Bariu and Chun argued that empirical studies needed to be conducted to evaluate teachers' attitudes to ascertain their influence on ICT implementation in higher institutions in Kenya. Similarly, Aydin et al. (2016) stressed, "the teacher's ICT attitudes, pedagogical beliefs, ICT skills, and training have gained currency and are under scrutiny in today's educational settings" (p. 375). Jahanban-Isfahlan et al. pointed out that though much research in developed countries has been conducted on teachers' attitudes toward ICT integration, there has been an inadequate examination of this topic in developing countries, and even fewer inquiries done among EFL teachers.

Teachers' attitudes are affected by several factors, including teachers' characteristics, ICT-related factors, institutional factors, and cultural factors (Ayub et al., 2015; Islahi & Nasrin, 2019; Liu et al., 2017). The inquiries into correlations between teachers' characteristics such as gender, educational level, teaching experience, prior ICT training, age, and teacher's attitudes towards ICT employment in teaching English have yielded contradictory results, and this issue is still in need of further investigation. Although research projects on teachers' attitudes towards the use of ICT have received substantial attention in global contexts so far, few studies have been carried out in Vietnamese settings, especially in higher education institutions. Therefore, this research was done to uncover the attitudes of EFL teachers towards using ICT in their teaching at a comprehensive university in Vietnam.

Literature review

Conceptualizing the use of information and communication technology in teaching English

Since its introduction in education, numerous researchers have attempted to define the use of ICT in educational instruction. Hew and Brush argued that it is whatever application of "computing devices such as desktop computers, laptops, handheld computers, software, or Internet in K-12 schools for instructional purposes" (Hew & Brush, 2007, p. 225). Similarly, Drent and Meelissen regarded it as the usage of educational tools including Internet-based technologies, digital cameras, and computers to facilitate learning outcomes (Davies & Hewer, 2012). By contrast, Inan and Lowther (2010) gave a more specific definition; that is, it denotes the exploitation of certain technological tools by teachers to plan and deliver their instructions, and technological applications to serve their students' learning activities.

Concerning English language teaching, some researchers conceptualized ICT use in teaching for typical EFL instructional purposes. Levy, for instance, referred to it as the use of ICT applications and categorized them as corresponding to some specific objectives of EFL instruction such as the enhancement of abilities and knowledge in vocabulary, grammar, pronunciation, receptive skills, productive skills and intercultural insight for students (Levy, 1991). Davies et al. (2012) stated the term ICT encompasses computer technologies and web-based technologies, which are classified into generic software applications (e.g., computer-mediated communication applications, word processing apps, presentation software, web browsers, and Web 2.0 applications) and computer-assisted language learning (CALL) software applications which are beneficial to foreign language teaching. In summary, because ICT is a broad term, researchers used diverse terms to refer to ICT when defining the use of ICT in teaching. Therefore, research into the attitudes of teachers towards the use of ICT in teaching English has employed some popular terms such as the use of technology, instructional technology, computers, CALL, web-based technologies, mobile-assisted language learning (MALL), digital technologies, technology-enhanced language learning (TELL), interchangeably to refer as attitude objects.

Conceptualizing teacher's attitudes towards the use of information and communication technology in teaching English

In the social science domain, many studies have been devoted to conceptualizing the construct "attitudes" as well as their nature. Banaji and Heiphetz (2010) indicated that over the last century, different researchers have partially focused on particular aspects of the concept. Some authors concentrated on attitudes' mental aspect and directive function (Droba, 1933; Morgan, 1934; Thomas & Znaniecki, 1918). Other researchers defined attitudes with an emphasis on their more specific affective representations (Chave, 1928; Ewer, 1929). Several authors described the behavioral aspect (Bogardus, 1931; Eagly & Chaiken, 1993). These definitions faced hard criticism; that is, attitudes have been mischaracterized as entities of some permanence (Banaji & Heiphetz, 2010).

In 1935, after scrutinizing 16 prior definitions, Allport gave his concept of attitudes which has been most cited so far. He stated, "An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's

response to all objects and situations with which it is related" (Allport, 1935, p. 810). More simply, Fishbein and Ajzen argued that an attitude represents a general feeling of an individual, which can be favourableness or unfavourableness towards some stimulus object (Fishbein & Ajzen, 1975). These favorable or unfavorable feelings are the same as the positive or negative values in Bogardus' definition or the same as the *affect for or against* a psychological object in the argument of Thurstone (Thurstone, 1932). However, Allport claimed that some attitudes were not readily categorized into either of these bipolar positions. He argued that it was difficult to reduce some attitudes such as tolerant, open-minded, and complacent attitudes to "*affect for or against*" an attitude object.

Several researchers defined attitudes based on their intra-attitudinal structure consisting of three components: affective, behavioral, and cognitive (Crano & Prislin, 2006; Fishbein & Ajzen, 1975; Matteson et al., 2016; Rosenberg & Hovland, 1960). The cognitive component refers to knowledge or belief about something; the affective element is the feelings about something, and the behavioral part refers to acting in certain manners about something. Although attitudes haven't had an agreed-upon definition, most researchers have agreed that an attitude refers to someone's positive or negative judgment of specific attitude objects or stimuli. Rosenberg and Hovland proposed the Schematic Conception of Attitudes which includes all three components and their measurable presentations. The stimuli can be social matters, individuals, social groups, situations, or other attitudinal objects. After having discussed the above definitions, teachers' attitudes towards the use of ICT might be conceptualized as a complex, multi-dimensional construct including affective, cognitive, and behavioral (conative) components or simply as teachers' positive, neutral or negative feelings about performing certain target behaviors. The cognitive component consists of teachers' factual knowledge or beliefs about using ICT in teaching English. The affective component denotes teachers' emotional reactions (responses) to or preferences for using ICT in English instruction. The behavioral component involves teachers' overt behavior directed towards using ICT in teaching English.

Prior research on EFL teachers' attitudes towards the use of information and communication technology in teaching English

Several studies have pointed out that using ICT in instruction is still in its infancy in most developing countries, such as Vietnam and Tanzania (Dinh, 2015; Ndibalema, 2014). Hence, researchers have attempted to shed light on the current state of ICT adoption and the factors influencing the success of the adoption. Teachers' attitudes have been the topic of much investigation among these factors. Many studies have been conducted to uncover their attitudes towards the use of ICT in teaching English and the factors affecting their attitudes. Rogers (2003) noted, "individual innovativeness [adoption of an innovation] was affected both by individuals' characteristics and by the nature of the social system in which the individuals are members" (p. 26). However, Katz (1992) countered this claim with his argument that only certain sets of personalities were radically correlated with favorable computer attitudes. Therefore, when investigating EFL teachers' attitudes, several studies also examined the associations between different teachers' demographic characteristics such as

age, gender, educational level, teaching experience, and ICT training and their attitudes towards adopting ICT in their teaching.

One of the earliest studies on this topic taking the context of developing countries was done by Albirini in 2004. He investigated Syrian EFL high school teachers' attitudes towards using computers in education and found that they held positive attitudes towards ICT in education. The behavioral domain ranked first followed by the cognitive component and affective component. Albirini argued that those favorable attitudes demonstrated "their initiation into the innovation-decision process" (Albirini, 2004, p. 111). They appeared to "have gone through the "Knowledge and Persuasion stages" (Albirini, 2004, p. 111) and were "probably proceeding to the Decision phase" (Albirini, 2004, p. 111). These findings were in line with those of Jahanban-Isfahlan et al. (2017) when they examined the relationships between the instructional technology use of Iranian teachers in their English classrooms and their attitudes towards using these technologies and perceived levels of ICT competency. Concerning the effects of teachers' traits or characteristics on their attitudes, Albirini's study revealed that gender, age, teaching experience, income, and educational level were not associated with teachers' attitudes towards using ICT. In contrast, ICT training was significantly and positively correlated with their attitudes.

According to Golshan and Tafazoli's (2014) findings, teachers felt comfortable with technology, believed that technology could save time and effort, and desired the new TELL programs and tools. These findings reflected three components of teachers' attitudes towards the use of ICT in teaching English. The same investigation by Pinner (2012) indicated that an ample number of instructors used CALL because of their intrinsic motivation to do so or their awareness of its pedagogical values. They expressed their desire to use computers more during their lessons.

Ndibalema conducted a mixed-method analysis to examine the perspectives of 80 Tanzanian teachers on the use of ICT as an educational tool. He discovered that teachers in Tanzania adopted positive views about using ICT as a pedagogical tool but failed to incorporate it successfully into their instruction. Also, teachers believed that ICT could improve their teaching practice. Similar to Ndibalema's study, in research into the attitudes of Indonesian EFL teachers towards technology use in classrooms, Cahyani and Cahyono (2012) disclosed that all teachers were in favor of using technology in classrooms. Incredibly, teachers convicted that there should be more various types of technology in language classrooms and that it was advisable for the teachers to apply these types of technology to improve the language skills of students. These positive attitudes were attributed to teachers' beliefs that ICT can enhance teachers' teaching and students' learning. These beliefs represent the cognitive domain of their attitudes.

Zyad (2016) explored the views of Moroccan secondary EFL teachers towards implementing ICT and the obstacles preventing its widespread use for teaching purposes. He reported that teachers expressed a favorable attitude towards ICT implementation in classroom practices. Specifically, the respondents had positive feelings about ICT; the cognitive component, including two subcomponents – "perceived ease of use and perceived usefulness" (Davis, 1989, p. 319) - was generally positive, and the respondents were psychologically ready to use computers in their lessons providing that some requirements were met. In this study, he also

found that all the demographic attributes (teaching experience, school location, ICT training, age) were negatively correlated with teachers' attitudes except for ICT training duration.

In another inquiry into the attitudes of Turkish English teachers towards using mobile applications for English as second language instruction, Dogan and Akbarov (2016) pointed out that teachers had favorable opinions about using mobile devices in ESL classrooms. However, the number of teachers using mobile devices or other digital content in their classes was almost as many as those who did not. Santiago (2015) also found that all teachers revealed an optimistic attitude towards using technology, were in favor of using and willing to use it any time. The teachers' perceived usefulness of technology use in their lesson delivery and students' learning process, the ICT's role in the modern era, the support from the Department of Education, and the available technological resources influenced the attitudes of teachers towards using ICT.

Burkšaitienė and Selevičienė (2017) carried out a small-scale survey to uncover higher education instructors' attitudes towards Web 2.0 technologies and their actual application in the delivery of courses in General English and English for Specific Purposes. These two researchers found that a majority of Lithuanian teachers exhibited a positive outlook on Web 2.0 technologies and the uses of these technologies for teaching English. The results also demonstrated that teachers' work experience in teaching English and their academic qualifications significantly affected their evaluative opinions about the benefits of using ICT in teaching practices.

As seen from the study by Liu et al. (2017), teachers believing in constructivist pedagogy encompassed more favorable attitudes to accept technology in teaching English. Canals and Al-Rawashdeh (2018) investigated Jordanian EFL teachers' attitudes towards deploying online English language courses and the reasons for technology adoption in lesson deliveries. The study found that contradictory attitudes existed among these teachers. For instance, some evaluative statements for gauging teachers' opinions should have received very positive responses, especially when compared with negative ones. Teachers' readiness levels to use computers, their beliefs about technology application to language teaching, the view on students' psychological readiness for computer usage, and the training amount and contexts were the source of contradictory attitudes.

In the same way, Noori (2019) explored the attitudes of EFL lecturers from Afghanistan towards instructional technology as well as examined the relationships between lecturers' demographic properties and their attitudes towards instructional technology. He uncovered those teachers had highly positive attitudes. Gender differences, teaching experience, and educational qualifications were not significantly affected the formulation of teachers' attitudes. By contrast, this study showed that the age factor and prior computer training influenced teachers' attitudes significantly. Some other researchers also found a substantial link between gender and attitudes towards computer usage (Francis, 1994; Jones, 1998). Females felt less self-confident and enthusiastic about using computers than males (Francis, 1994).

Huang et al. (2019) investigated the attitudes of 14 EFL teachers from China towards technology use and the influencing factors on their acceptance of technology. The findings unveiled that these teachers generally upheld a favorable attitude towards technology

deployment in their teaching. Teachers' reliance on technology varied by their age and professional experience. Novices and young teachers considered themselves members of a younger generation that used technology in the classroom. By contrast, experienced teachers firmly responded that their in-depth understanding of the subject could make up for the absence of technology in the classroom.

Ahmed et al. (2020) also explored Yemeni EFL teachers' attitudes regarding using ICTs to teach English courses in higher education institutions. Findings revealed that EFL teachers held positive attitudes, and teachers' attitudes were not varied regardless of differences in gender, academic level, or computer competence. This result concurred with Hong et al.'s (2014) claim that no substantial variations between male and female teachers concerning their attitudes towards computers and computer use were uncovered. However, regarding teachers' computer competence, Hong et al. claimed a contradictory finding that teachers' self-efficacy and attitudes towards computers were significantly and positively correlated although this correlation was less than moderate level.

Concerning the specific Vietnamese context, some researchers also attempted to document the current state of Vietnamese teachers' attitudes towards using ICT in teaching. For instance, Hue and Jalil explored 109 lecturers' attitudes towards ICT integration in their teaching and learning process and their frequency of ICT use. These researchers found that despite recognizing the benefits of using ICT in teaching, teachers did not use ICT at an adequate level. Furthermore, the relationship between their attitudes towards and their actual ICT use in the classroom was slightly moderately positive. The authors also argued that "their findings on lecturers' attitudes towards ICT integration into the curriculum in the teaching and learning process can be connected to Rogers' (2003) theory of diffusion of innovation" (p. 62). Mai and Bao conducted a similar study in Vietnam. This study explored the perceptions and attitudes of both tertiary teachers and learners towards using a specific ICT application – Blogs – for writing English. The significant findings on teachers' attitudes were that they generally held a positive attitude towards adopting blogs into EFL writing. Besides, teachers also expressed her willingness to adopt blog technology in other subjects. Similarly, Nguyen and Nguyen (2021) conducted a study on elements influencing the adoption of some popular video conferencing tools like Google Meet, Zoom and Microsoft Teams for online instructions in response to the Covid-19 panemic. Their finding was that teachers' behavioral intentions (a component of their attitudes) to adopt video conferencing greatly influenced their actual use in online instructions, and they were "willing to use video conferencing to boost the standard of their teaching experiences" (Nguyen & Nguyen, 2021, p. 12).

In summary, so far as most research showed that EFL teachers had favourable or positive attitudes towards using ICT to teach English. Some tailored all three components of attitudes such as Albirini's (2004) and Jahanban-Isfahlan et al.'s (2017). By contrast, some others employed specific constructs to represent the attitude components such as beliefs or perceived usefulness. Several studies employed Roger's theory of diffusion of innovation as their theoretical framework for gauging teachers' attitudes towards ICT use and discussing the phenomenon, proving that this theory is highly relevant to the current research topic. Besides, prior research yielded contradictory findings about the relationships between teachers' personal traits and their attitudes towards using ICT in teaching English. Finally, though most

studies were conducted in educational contexts, very few studies have been done in higher education settings. Therefore, this research was done to explore EFL tertiary teachers' attitudes towards the use of ICT in teaching English and to investigate how some selected demographic characteristics influenced their attitudes.

Research Questions

To obtain the research objectives, the present project sought to address two following questions:

1. What are the Vietnamese teachers' attitudes (affective, cognitive, and behavioral components) towards the use of ICT in teaching English?
2. What are the relationships between teachers' characteristics (teaching experience, gender, educational level, age, ICT training) and their attitudes towards the use of ICT in teaching English?

Methods

Pedagogical Setting & Participants

The setting of this research is a comprehensive regional university comprised of 10 affiliated members (schools, colleges, and universities). Each member has autonomous rights, and the rector/ principal has legal rights to make decisions on finance, human resources, policies, etc. However, the whole system still has to follow the instructions and guidelines issued by the Government and the Vietnamese Ministry of Education and Training. To enhance English language teaching, the university had the directions to strengthen the use of ICT to innovate the instruction methodology and improve the teaching quality (University, 2015). So far, financial investments have been made to purchase computers, speakers, projectors, and interactive boards; and to install language laboratories, LMS and studios. However, these facilities still need to be expanded. For example, most member universities do not have language laboratories. By the time we conducted this study, only the School of Foreign Languages (SFL) was equipped with a studio for producing video lessons.

Some commercialized coursebooks such as the "Life" series, "Skillful" series, and "English for Medicine and Pharmacy" have been employed as official coursebooks for students. These coursebooks are partially designed based on the blended-learning model with their Learning Management System (LMS), which can provide teachers and students with ubiquitous online access to learning materials. In some cases, students are obliged to fulfill certain levels of online learning activities (e.g., 80%) to sit for the end-term exams. At the same time, in other instances, teachers have used online materials as a supplement and let students exploit them voluntarily.

Many EFL teachers have proactively used ICT in their teaching. They have used their personal computers, mobile phones, projectors, language labs, generic software applications (e.g., Microsoft Word, Microsoft PowerPoint, and audio players), and specific software applications (e.g., Pronunciation Power, Lingoes, and Audacity). Besides, they have exploited free websites to support their teaching and communications with students, such as https://www.esl-lab.com, http://facebook.com, and https://quizlet.com. In summary, teachers have been using various types of ICT for both compulsory and voluntary purposes.

In addition to investment in ICT facilities, the university has paid attention to improving the ICT competence of English teachers. Since 2012, it has sent teachers to attend ICT training courses and urged other teachers to utilize ICT. About one-fifth of them have been formally sent to attend such ICT training courses; others have acquired ICT skills on their own. The Departments/ Faculties of English sometimes organized workshops/ seminars on using ICT in teaching. Participating in ICT training courses or workshops, teachers have been introduced to new ICT applications and skills that they may adopt in their specific teaching contexts. However, their practices of using ICT have revealed that each teacher has their ways and level of competence in using ICT in their teaching. Many teachers have been confidently willing to use ICT in their teaching, while others seem to need help and may use it only perfunctorily. Therefore, it can be argued that for many English teachers, the use of ICT in teaching English can be considered an innovation, which means that their decision to use ICT in teaching English is supposed to follow "the Model of Five Stages in the Innovation – Decision Process" (Rogers, 2003, p. 396).

The population of EFL teachers (including the author) working at this University was 139 teachers. According to Creswell (2013), there are three techniques for selecting the participants: random, systemic, and convenience. While the two former techniques require some typical steps for obtaining specific numbers of participants to ensure representativeness and generalization, the latter is chosen due to the participant's convenience and availability. Convenience sampling was selected for this study; the questionnaires were administered to all the teachers excluding the author. There were some reasons for the selection of this strategy. First, it is convenient to access all the teachers because the author had quite a good network with them. The population was not numerous, and these teachers and the author were colleagues. In addition, these teachers are interested in research projects conducted in their teaching context to get more insights into the current situation of their institutions to adjust their teaching practices. Hence, they were available, enthusiastic, and volunteered to participate in the survey when they were introduced to the study's aims, significance, and measures to ensure research ethics (i.e., anonymity and data processing and storing) in a consent form. Finally, this study attempted to allow all the teachers to express their opinions about and experience using ICT in their teaching. The result was that 112 teachers voluntarily took part in the study by sending back their consent forms.

Most participants were females (88.4%; n = 99), and the rest were males (11.6%; n = 13). The mean score for age was 36.2 years old (SD = 4.7), ranging from 25 to 48 years old. The number of teachers aged 30 to 39 was highest (67.0 %; n=75), while the figure for the teachers aged between 20 and 29 was lowest (just 3.6%; n=4). 29.5% (n=33) of the teachers aged from 40 to 49. Regarding educational level, the teachers possessing doctoral titles constituted 19.6% (n=22), while the number of master's degree holders was more than fourfold, 80.4 % (n=90). None of them had bachelor's degrees. Regarding the English teaching experience at their current academic institutions, 34.8% of participants (n=39) had 6 – 10 years of teaching, and 42.9% of them (n=48) had been teaching for 11 to 15 years. 16.1% of the teachers (n=18) had taught English for 16 to 20 years, and the rest had a very long-time experience teaching (21 – 25 years). Finally, a majority of teachers (88.4%; n=99) had attended ICT training programs (workshops/ seminars/ courses) while the others had not.

Design of the Study

This was a part of more extensive research which employed an explanatory sequential design; that is, the quantitative phase is conducted before the qualitative phase is done (Creswell, 2013). In this phase, the quantitative data from the questionnaire survey were collected and analyzed to reveal teachers' attitudes towards the use of teaching English and the relationship between their attitudes and some selected demographic characteristics. In the next phase, the qualitative data from semi-structured interviews would be gathered and analyzed to get deeper insights into teachers' attitudes and provide some explanation for initial quantitative findings.

Data collection & analysis

Instrument

An adapted survey questionnaire based on Albirini's (2004) was used to obtain data for this investigation. The questionnaire had two parts: Part A – The demographic scale, gathered teachers' demographic information, including sex, age, year of teaching English, educational level, ICT training, and income; Part B – The attitude scale, was initially composed of 20 items (evaluative statements) to measure three attitude components: affective (items 1 – 6), cognitive (items 7 – 15) and behavioral (items 16-20). Twenty statements were designed on a 5-point Likert scale format with values 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neutral", 4 = "Agree", and 5 = "Strongly agree." The questionnaire was translated into Vietnamese to facilitate and ensure teachers' understanding of the statements. One rationale for adapting the questionnaire was that it was conducted in a higher education institution and had similar goals to the current study, which was to investigate Vietnamese EFL teachers' attitudes towards using ICT in teaching English. A pilot survey was conducted before the official one. In the pilot phase, 42 randomly picked teachers completed the questionnaire. Any points of misunderstanding or ambiguity were carefully considered, and the researchers made any required changes to the items. The calculation of Cronbach's alpha coefficient revealed that the adapted questionnaire had a satisfactory Cronbach's alpha coefficient of over 0.70, which suggested that the survey items were reliable for the official survey (Hair et al., 2018; Pallant, 2011).

Data collection procedures

The study was conducted in a regional university as a case study in its nature. After obtaining permission from the leaders of the participating departments of English, the online survey questionnaire designed on Google Forms was administered to all 138 EFL teachers from affiliated members of the University via email. Some further steps (reminder emailing, telephoning, providing incentives, and sending reminder postcards) were employed to raise the rate of responses. After four weeks, 112 teachers responded to the survey, resulting in an 81% response rate, which is greater than the typical response rate for online surveys (44.1%) (Wu et al., 2022) and over the acceptable rate of response (Holtom et al., 2022), and which was "a good response rate cutoff for maintaining representativeness" (Ruel et al., 2016, p. 276).

Data analysis

Before analysis, the collected data were screened and cleaned. The data were then entered into SPSS software version 25 which provides advanced statistical analysis techniques (IBM, 2019). Quantitative data analysis was conducted in light of the research questions. Descriptive statistics such as mean scores, standard deviations and percentages were used to depict and recap the features of the massive data obtained from the respondents (Gay & Geoffrey, 2018). An exploratory factor analysis (EFA) was done to explore the intra-structure of teachers' attitudes (cognitive, affective, behavioral attitudes and overall attitudes) towards the use of ICT in teaching English. Teachers' attitudes were characterized by mean scores on a 5-point scale on which 4.3-5 (Highly positive), 3.5-4.2 (Positive), 2.6-3.4 (Neutral), 1.9 – 2.6 (Negative), and 1.0-1.8 (Highly negative). Next, simple independent sample T-tests and One-way ANOVA were used to analyze the relationships between the listed factors (demographic characteristics) and teachers' attitudes towards using ICT in teaching English. After the findings of the study were sought, the data were kept in the author's personal computer using the encrypted folder and were deleted after five years.

Findings and discussion

Teachers' attitudes towards the use of ICT in teaching English

Exploratory Factor Analysis

To explore the factorial structure of teachers' attitudes towards the use of ICT in teaching English, EFA with the method of oblique rotation (Oblimin) and the factor loading of at least .30 was carried out on all 20 evaluative statements of the attitude scale. Before performing EFA, the data were checked to ensure their suitability for factor analysis. Specifically, after the examination of the correlation matrix, 14 coefficients of 0.3 and above were found. The value of Kaiser-Meyer-Olkin (KMO) was 0.831, which exceeded 0.6 (the recommended value) (Tabachnick & Fidell, 2013); Statistics showed that Bartlett's Test was significant (Pallant, 2011) (see Table 1). These findings supported the matrix of correlations' factorability.

Table 1.

Results of the KMO and Barlett's test

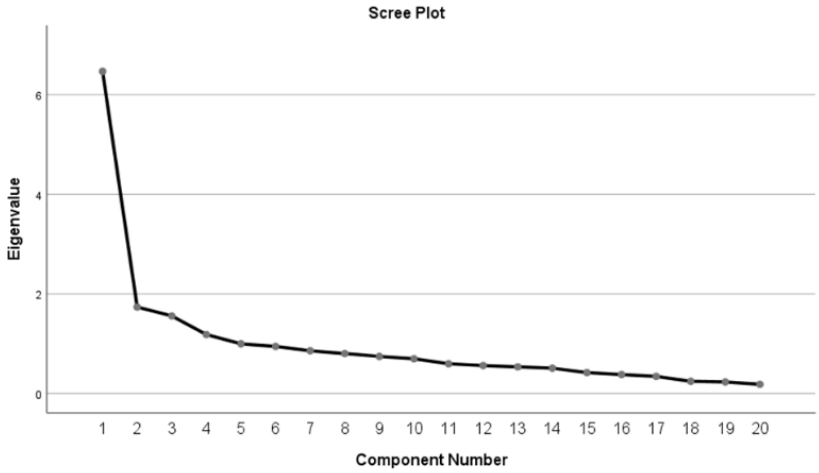
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.831
Bartlett's Test of Sphericity	Approx. Chi-Square	818.045
	df	190
	Sig.	.000

Principal components analysis (PCA) showed that there were four components having eigenvalues exceeding 1 and these components accounted for 32.33%, 8.68%, 7.80%, and 5.92% of the variance, respectively. Before the factors were accepted, some additional criteria were employed such as the Scree plot which is an eigenvalue graph (Cattell, 1966) and parallel analysis (Horn, 1965). It is advisable to keep components which lies to the left of

debris or sharp break from linearity (Williams et al., 2010). The Scree plot (Figure 1) showed a prominent break after the third component.

Figure 1

Scree plot of initial factor extraction



A parallel analysis was carried out to additionally support the retainment of the components. The results showed that there were only three components having eigenvalues surpassing the random ordered values generated with a data matrix of the same size (20 variables x 112 respondents).

Table 2

Eigenvalues from PCA versus parallel analysis values

Component number	Actual eigenvalue from PCA	Random order from parallel analysis	Decision
1	6.467	1.8146	Accept
2	1.735	1.6613	Accept
3	1.558	1.5486	Accept
4	1.184	1.4497	Reject

According to Hinkin (1998), a parsimonious and simple structure for the scales is desired, and only the items that load strongly on a distinct appropriate component should be maintained. Therefore, some items that were low-loading, cross-loading, or freestanding were dropped out and some further PCA tests were performed after each item removal. Finally, 13 items were retained and loaded on three factors representing three attitudinal components and forming three subscales: affective subscale (three items), cognitive subscale (five items), and behavioral subscale (five items). One item (item 12) was initially supposed to load on the cognitive subscale but loaded on the behavioral subscale. Specifically, item 12 in the initial scale belonged to the subscale (items 7 - 15) measuring the cognitive component and was expected to load on this subscale after PCA was performed. Yet, it did not load on this group but loaded together with items 17 - 20 (the behavioral subscale) with a significant loading of 0.54. When re-examining the construct this item measured, it was found that it expressed the teachers' experience using ICT (behavior – the act of getting information). Therefore, item 12

was decided to constitute the behavioral subscale. The Cronbach alpha values for the remained items were over 0.7 suggesting that the consistency among the items was internally acceptable (see Table 3).

As can be seen from Table 3, 52.7% of the total variance was explained by the three components, of which component 1, component 2, and component 3 contribute 31.1%, 10.9%, and 10.7%, respectively. The three factors were interpreted in a way that was consistent with earlier research on the structure of teachers' attitudes towards the use of ICT in English education. The Oblimin rotation technique aided in interpreting these three components. The rotation revealed the presence of a parsimonious and simple structure with three components, revealing some strong loadings and most variables loaded markedly on two components. Data from 13 retained items were analyzed descriptively to reveal teachers' attitudes towards the use of ICT in their teaching. Table 4 illustrates the distribution of participants' responses on their use of ICT in teaching English.

Table 3

Results from a Factor Analysis of the TATT towards the use of ICT in teaching English

TATT items	Factor loading			Cronbach alpha
	1	2	3	
Factor 1: Behavioral component				
17. If I had the money, I would buy an ICT application.	.78			.74
19. I would like to learn more about ICT.	.75			.74
20. I have the intention to use ICT in the near future.	.72			.72
18. I would use ICT as much as possible.	.63			.73
12. ICT is a fast and efficient means of getting information.	.54			.74
Factor 2: Cognitive component				
8. My university would be a better place with ICT.		.74		.73
14. ICT can enhance students' learning.		.70		.73
7. ICT saves time and effort.		.70		.73
13. I think I would need ICT in my classroom.		.61		.73
9. Students must use ICT in all subject matters.		.42		.76
Factor 3: Affective component				
2. I feel comfortable when using ICT.			.77	.72
1. I am not scared of using ICT.			.72	.78
4. I like talking with others about ICT.			.70	.73

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Table 4

Distribution of participants' responses on the use of ICT in teaching English

TATT items	*M*	*SD*	Percent (%)				
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Factor 1: Behavioral component							
17. If I had the money, I would buy an ICT application.	4.0	0.6	0	1.8	10.7	69.6	17.9
19. I would like to learn more about ICT.	4.2	0.5	0	0	7.1	69.6	23.2
20. I have the intention to use ICT in the near future.	4.3	0.5	0	0	1.8	64.3	33.9
18. I would use ICT as much as possible.	4.2	0.6	0	0.9	8.9	64.3	25.9
12. ICT is a fast and efficient means of getting information.	4.5	0.6	0.9	0	0.9	49.1	49.1
Factor 2: Cognitive component							
8. My university would be a better place with ICT.	4.1	0.7	0	0.9	15.2	56.3	27.7
14. ICT can enhance students' learning.	4.2	0.6	0	0	7.1	67.0	25.9
7. ICT saves time and effort.	4.3	0.8	0	1.8	14.3	41.1	42.9
13. I think I would need ICT in my classroom.	4.4	0.6	0	0.9	2.7	56.3	40.2
9. Students must use ICT in all subject matters.	3.2	0.8	0	20.5	44.6	33.0	1.8
Factor 3: Affective component							
2. I feel comfortable when using ICT.	4.3	0.7	0	1.8	8.9	50.9	38.4
1. I am not scared of using ICT.	3.7	1.3	11.6	10.7	4.5	39.3	33.9
4. I like talking with others about ICT.	4.0	0.7	0	1.8	20.5	62.5	15.2

As illustrated in Table 4, teachers expressed their positive or highly positive attitudes towards using ICT in teaching English, illustrated by the mean score of over 4.0 for most of the items. Especially, teachers highly agreed with five items depicting their intentions to use ICT in the near future (*M = 4.3, SD = 0.5*), ICT's efficiency in getting information (*M = 4.5, SD = 0.6*), and ICT's benefits of time and effort savings (*M = 4.3, SD = 0.8*), teachers' belief about the need for ICT in classrooms (*M = 4.4, SD = 0.6*), and teachers' comfortable feeling when using ICT (*M = 4.3, SD = 0.7*). Also, as depicted in Table 4, the respondents had firm intentions of using ICT when 87.5%, 92.8%, and 90.2% of them agreed or highly agreed on purchasing an ICT application if they had money, learning more about ICT, and using ICT as much as possible, respectively. Participants believed that ICT would better their university and enhance students' learning. However, teachers expressed neutral attitudes towards the compulsory use of ICT in all subject matters (*M = 3.2, SD = 0.8*). On the other hand, 73.3% and 77.7% of teachers reported that they were not scared of using ICT and liked talking about it with others.

Table 5

TATT towards the use of ICT in teaching English

Scale	*M*	*SD*	Percent (%)				
			Highly Negative	Negative	Neutral	Positive	Highly Positive
Cognitive	4.0	0.4	0.0	4.8	16.8	50.7	27.7
Affective	4.0	0.7	3.9	4.8	11.3	50.9	29.2
Behavioral	4.2	0.4	0.2	0.5	5.9	63.4	30.0
Overall attitude	4.1	0.4	1.0	3.2	11.3	55.6	28.9

Table 5 presents teachers' intra-structural attitudinal components and overall attitudes towards using ICT in teaching. As is clear from the table, teachers' general attitudes towards using ICT in teaching English were positive (*M = 4.1, SD = 0.4*), and were manifested within the cognitive (*M=4.0, SD = 0.4*), affective (*M=4.0, SD = 0.7*) and behavioral components (*M=4.2, SD = 0.4*).

Relationships between teachers' characteristics and their attitudes towards the use of ICT in teaching English

To examine the differences in teachers' attitudes towards the use of ICT in teaching English concerning gender, prior ICT training, and educational level, the overall attitude scores of teachers were compared using independent-sample t-tests. Table 6 presents the tests' results comparing the mean scores for respondents' attitudes concerning demographic variables (gender, prior ICT training and educational level).

As depicted in Table 6, the males and females' mean scores were not significantly different (t(110) = 1.071, p = .287). Likewise, there was no significant difference in the mean scores between respondents who had prior ICT training and those who did not (t(110) = -.756, p = .451). Regarding educational level, the mean scores between master's degree holders and doctor's degree holders were not significantly different (t(110) = -.297, p = .767).

Table 6

Comparison of TATT towards the use of ICT in teaching English in terms of gender, prior ICT training, and academic qualifications

Demographic characteristics		Levene's Test for Equality of Variances	*N*	*M*	*SD*	*t*(110)	*p*
Gender	Male	.703	13	4.174	.396	1.071	.287
	Female		99	4.054	.378		
Prior ICT training	NO	.638	13	3.993	.383	-.756	.451
	YES		99	4.078	.381		
Educational level	Master	.182	90	4.063	.396	-.297	.767
	Doctor		22	4.090	.315		

To examine the difference in teachers' attitudes towards the use of ICT in teaching English in terms of age and teaching experience, OneWay ANOVA tests were conducted. Regarding age, the Levene value showed equal variances between groups (p = 0.39). Table 7 illustrates that no statistically significant differences were revealed between the three age groups' mean scores as determined by one-way ANOVA (F(2,109) = 0.27, p = 0.79).

Table 7

One-Way ANOVA comparing TATT towards the use of ICT in teaching English in terms of age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.069	2	.035	.236	.790
Within Groups	15.985	109	.147		
Total	16.054	111			

Concerning teaching experience, the Levene value showed equal variances between groups (p = 0.98). Table 8 indicated that there were no statistically significant differences between the four groups' mean scores due to teaching experience as determined by one-way ANOVA (F(3, 108) = 1.58, p = 0.19).

Table 8

One-Way ANOVA comparing TATT towards the use of ICT in teaching English in terms of teaching experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.677	3	.226	1.584	.197
Within Groups	15.377	108	.142		
Total	16.054	111			

Discussion

The findings demonstrated that Vietnamese EFL lecturers embraced positive attitudes towards the use of ICT in teaching English, which was consistent with Albirini's study, which reported that teachers held positive attitudes towards ICT in education. The present findings also align with Jahanban-Isfahlan et al.'s findings that an overall positive attitude towards educational technology was observed among Iranian teachers. These positive attitudes exposed that the lecturers initially approached the stages of innovation-decision (Rogers, 2003). Moreover, it seemed that they also had gone through the Knowledge and Persuasion stages (Rogers, 2003), and were expectedly moving onto the step of making decisions (Rogers, 2003). These arguments concur with the conclusions found by Jahanban-Isfahlan et al. who also speculated that their participants' favorable attitudes towards TELL showed their initial progress into the innovation-decision procedure and that teachers had by-passed the Knowledge and Persuasion stages (Rogers, 2003), and were most likely moving on the Decision phase (Rogers, 2003). Teachers were strongly willing to adopt ICT in their teaching, which was manifested by the high mean score for their behavioral intention to use ICT in their teaching (*M = 4.2*).

Concerning the associations between teachers' characteristics and their attitudes, the results suggested that gender and education level did not affect EFL teachers' attitudes towards the

use of ICT in teaching English. These results concur with the findings in past research (e.g., Ahmed et al.'s, Albirini's, Hong et al.'s and Noori's studies). This may be because, as tertiary teachers, male and female teachers have equal chances of accessing the ICT facilities, hence allowing them to develop positive attitudes towards using ICT. However, in terms of gender, this finding casts doubts on those findings in Francis's and Jones's studies, which reported that gender and attitudes towards computers were significantly related. Similarly, in terms of educational level, the current finding is contradictory to that of Burkšaitienė & Selevičienė (2017). According to these authors, teachers' academic qualifications significantly affected the perceived benefits of using ICT in teaching practices. Next, our research revealed that there was no relationship between the teachers' attitudes and their prior ICT training, which is not in line with the findings of Albirini, Noori, and Zyad. Albirini and Noori found a similar result: ICT training was significantly and positively correlated with teachers' attitudes while Zyad reported that ICT training was negatively correlated with teachers' attitudes.

Regarding age, several previous studies (e.g., Noori's and Zyad's studies) asserted that age significantly correlated with teachers' attitudes, which is contradictory to the finding of this research. For example, Zyad found that Moroccan EFL secondary education teachers' attitudes towards ICT implementation were negatively correlated with their age. Zyad argued that the latent cause for the age's impact on teachers' attitudes might be that teachers between 26 and 30 years old were born and grew up in the era of technology; thus, they would be optimistic about using technology in their specific pedagogical settings. Lastly, this study showed that teachers' teaching experience did not correlate with their attitudes towards using ICT in teaching English. This result is not inconsistent with the findings of Albirini and Noori, but does not agree with the findings of Huang et al., Burkšaitienė and Selevičienė and Zyad. Zyad argued that the younger the EFL teachers are, the more certain it would be that he or she adopt technology for teaching. Burkšaitienė and Selevičienė also reported that teachers' work experience in teaching English significantly affected their perceived benefits (the cognitive component) of using ICT in teaching practices.

Conclusion

This study investigated tertiary EFL teachers' attitudes towards the use of ICT in teaching English and the relationships between some teachers' demographic characteristics with their attitudes. The results indicated that teachers had positive attitudes towards using ICT in teaching English demonstrated in the three aspects of attitudes. Significantly, the high value for behavioral intention to use ICT indicated that in mental and neural manners teachers had been ready to use ICT in their teaching. Furthermore, the findings on the intra-attitudinal structure of teachers' attitudes towards the use of ICT in teaching English supported the research into social attitudes in the existing literature, especially those employed Rosenberg and Hovland's Schematic Conception of Attitudes and Roger's theoretical model as their conceptual frameworks. Specifically, the findings on teachers' attitudes first provided empirical evidence confirming the existence of the intra-structure of attitudes with three components which can be measured through verbal statements of feelings and beliefs or knowledge and verbal statements about intended behavior.

Additionally, the findings shed light on some constructs in the models. Specifically, while the

stimuli in Rosenberg and Hovland's model generally refer to any attitude object, it could refer specifically to the use of ICT in teaching English. This study also contributed to Roger's model that at the persuasion stage, when the attitudes are formed, these attitudes can be measured in three aspects: cognitive, affective and behavioral. Methodologically, the combination of the two models can pave the way for researchers to examine individuals' attitudes to using ICT, which individuals can be any social group.

This study was conducted in a regional university in Vietnam and revealed no differences in teachers' attitudes regarding gender, age, educational level, teaching experience, and ICT training. While there was consensus with some previous studies, the current study also yielded conflicting results. This implies that further studies in different contexts should be conducted to re-examine these relationships and consolidate the existing findings in this field of study in developing countries.

This study retained some limitations in terms of the methodology and scope. Methodologically, using quantitative research to investigate the teachers' attitudes, which were argued to be a complex, multi-dimensional construct, would not provide an in-depth insight into the phenomenon. Therefore, it is suggested that a mixed method approach combining quantitative and qualitative techniques should be employed for the studies on teachers' attitudes. Besides, this study focused only on the impacts of teachers' characteristics, which also failed to provide a comprehensive view of the teachers' attitudes concerning other factors such as ICT-related, institutional, and cultural factors. Therefore, it is recommended that studies with extended scopes should be carried out to fulfill this limitation.

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