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An investigation of ICT policy implementation in an EFL teacher education program in Vietnam

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Abstract

Due to the increasing pace of advances in technology and attempts to integrate Information and Communications Technology (ICT) into education in Vietnam, teachers are now expected to make routine use of ICT in their teaching. The Vietnamese government has promulgated ambitious policies aimed at engaging in an increasingly globalised world and promoting the country's economic development. These policies focus on education, and in particular, the development of ICT and English as a Foreign Language (EFL) competencies, seen as key requirements for greater international participation. The competencies of teachers are a major factor in the successful implementation of these educational changes.

Given the key role played by ICT and EFL knowledge and skills in the educational reforms under way in Vietnam, this study investigated the process of implementing ICT into a pre-service EFL teacher education program. It was aimed at exploring and understanding lecturers' and pre-service EFL teachers' perceptions, knowledge and skills in the use of ICT in their teaching and learning practice, particularly as they related to pedagogical reforms in EFL that were occurring at the same time.

The theoretical framework for this study, derived from Fullan's (2007) Educational Change and the TPACK framework (Mishra & Koehler, 2006), was used to determine the factors that affected the implementation of new policies and reforms in the use of ICT in EFL teacher education in Vietnam. The study applied a mixed method design involving a quantitative data collection phase followed by a qualitative data collection phase (Creswell & Clark, 2018) through an analysis of national ICT policy, institutional translation and classroom implementation. At each level the analysis provided useful insights into the factors that impeded and supported the implementation progress. The quantitative data were derived from a questionnaire, and the qualitative data, from document analysis, focus groups and face-to-face interviews. Additional data were provided from analyses of policies, teacher education and course documents, lecturers' teaching outlines and pre-service teachers' lesson plans. The participants included faculty managers, EFL lecturers and pre-service teachers.

The key findings of the study were that, despite the noble goals of national ICT policies, conducive conditions at the university and the positive perceptions of lecturers and pre-service teachers, ICT was not fully integrated into the teacher training program. Evidence of a gap emerged between ICT-related policies and classroom practice, mainly due to barriers at every level of the educational system. The absence of clear ICT policies and guidelines at both national and institutional levels was a major cause of ineffective leadership, inappropriate allocation of ICT resources, and a lack of professional development, maintenance and support.

Based on the findings, a number of recommendations have been provided to address the development, translation and embeddedness of ICT policies and assist all stakeholders to solve the relevant issues. In addition, a model has been presented to address the interrelationships between the relevant factors and effectively guide lecturers and pre-service teachers to integrate ICT and enhance their EFL teaching and learning practice.

Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

i. Incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;
ii. Contain any material previously published or written by another person except where due reference is made in the text; or
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Definition of Terms

This section clarifies the meaning of basic terms used in this study to assist readers' understanding of the research. The definitions below were derived from scholarly or institutional sources and are presented in alphabetical order.

Attitude	The way that people feel or think about somebody or something (Turnbull, 2010)
Change	A result of a process which a new policy or a program was implemented in educational settings (Fullan, 2007)
Course	A unit or a set of lectures on a particular topic, and the associated assessment. A combination of foundation/core, major, minor and elective courses make up a program structure (Vonganusith, 2008)
Curriculum	A document that provides a broad, general outline of what is to be taught and articulates the educational philosophy and theories underpinning the outline (Allen, 2016)
EFL	The teaching or learning of English as a foreign language in a society where another language is dominant
Email	Electronic mail to send messages via a network
Globalisation	Compression of space and time, the intensification of social and political relationships and heightened economic competition (Singh, 2004)
ICT Implementation	The instalment of a new ICT system in the teacher education program
ICT Integration	The use of ICT in communication, data processing and data storage effectively to achieve desired teaching and learning goals (Group, 2016; Harris, 2008)
Innovation	"An idea, practice or object perceived as new by an individual or other unit of adoption" (Rogers, 1995, p. 35)
Perception	An idea, a belief people have as a result of how you see or understand something (Turnbull, 2010)
Policy	The principles of guiding actions to achieve rational outcomes. National policies are the statements of intent and implemented as a procedure to determine national economic development (Bai & Lam, 2015)
Policy Implementation	The transition of the policy's goals and objectives into an operating, ongoing program (Sonntagbauer, 2014)

Pre-service teachers	EFL teachers in their final year in English teacher training program
Program	A plan of study that, when connected to English as a Foreign Language (EFL), prepares pre-service teachers for future teaching.
Syllabus	A document that develops the curriculum by prescribing the skills and content to be taught as well as the methods, materials and measurement procedures for teachers to use and follow (Allen, 2016)

Acronyms

ASEAN	Association of South East Asian Nations
CFER	Common European Framework
CLT	Communicative Language Teaching
ICT	Information and Communications Technology
L2l	The second language
MOET	Ministry of Education and Training
SD	Standard Deviation
WTO	World Trade Organisation

Chapter 1: Introduction

Background

The age of globalisation has ushered in two major changes in modes of communication in developed and developing countries. English is now widely accepted as the preferred language of education, science and business. In Vietnam, the number of English-language learners has increased exponentially, because English is a means of exchanging information and doing business regionally and internationally, used by travellers worldwide and seen as a valuable asset for employment opportunities and winning scholarships from government and other developed countries (Vu, 2018).

Information and Communications Technology (ICT) has played a critical role in the globalisation process; countries that have embraced ICT successfully have also benefited economically (Newby, Hite, Hite, & Mugimu, 2013). In education, instructional ICT strategy has been emphasised, potentially changing pedagogical practices and increasing the breadth and richness of teaching and learning (Al Harbi, 2014; Howard & Mozejko, 2015).

Like many developing Asian countries, Vietnam is changing rapidly and reviewing its practices, especially in the field of education. Reforms have recognised the value of English language education and the use of ICT in the development of human resources. Policies mandate that teacher training institutions develop teachers who can adapt to and teach a new generation of students with a focus on English language proficiency and competency in the use of ICT. These demands have not only meant changes to existing content of teacher education courses, but also pedagogical approaches, which must now incorporate new technologies. The changes are reflected in several ICT policies that promote the use of ICT in education. Among them, the *National Project on Foreign Language Training (Vietnamese Government, 2008)*, commonly referred to as the 2020 Project, has attracted increasing investment in technological infrastructure, such as multi-media language labs for ICT integration in English teaching and learning.

The 2020 Project was aimed at providing "a solid legal corridor for foreign language curriculum design and foreign language textbook development" (Hoang, 2017, p. 12). In 2010, the Vietnamese MOET approved three pilot English language curricula for all levels of general education, consisting of two main documents: a Curriculum Framework and a Syllabus. To address the needs of higher education, in 2012, all

colleges, universities and academies were granted autonomy to develop their own training programs (National Assembly of Vietnam, 2012). However, the top-down approach of the national process hampered the contribution of academic staff, teachers, students and employers to developing the curricula (Phan, Lupton, & Watters, 2016). Although the textbooks were considered a breakthrough, MOET found it necessary to establish training and retraining programs to ensure that EFL teachers could use them effectively (Hoang, 2017; Nguyen, 2007). In 2014, MOET conducted ICT training courses for 838 Vietnamese EFL lecturers and organised a field trip to Australia for leading lecturers and administrators to learn more about ICT integration models in EFL teaching and learning (Mai & Pham, 2018; Ministry of Education and Training, 2014a; Vu, 2014). In general, significant funding for teaching materials, facilities and teacher training across all levels of education has been invested to improve the quality of EFL teaching.

Statement of the Problem

While recent interventions have created opportunities for teacher training and motivated professional improvement, the reforms imposed numerous pressures on the English teaching and learning workforce. Firstly, all Vietnamese teachers of English were expected to have a high level of English proficiency in the Common European Framework of References for Languages (CEFR): B2 level (an upper-intermediate level) for primary and lower secondary English teachers, C1 (an advanced level) for higher secondary English teachers, and C2 level (a proficient user) for university teachers (Ministry of Education and Training, 2014c). However, the results of a nationwide EFL teachers' language proficiency test revealed that two-thirds of teachers did not meet the requirements (Le & Renandya, 2017). In addition, the English proficiency of graduate students remains an area of national concern (Nguyen, Fehring, & Warren, 2015; Vu, 2018), not only in Vietnam, but also several other Asian countries such as Japan and Thailand (EF English Proficiency Index, 2018; Le & Renandya, 2017).

There has also been a recent push towards reform focused on integrating ICT into teaching with an appropriate pedagogy (Ngo, 2016). In 2014, ICT skills standards were introduced for Vietnamese officers (Ministry of Information and Communication, 2014) in the form of a draft framework identifying ICT competency standards for English as a Foreign Language (EFL) teachers. It was added to the 2020 Project (Nguyen, Hoang, & Vo, 2014) and outlined four standards to be met by English as a

Foreign Language (EFL) teachers in relation to ICT. Firstly, EFL teachers were required to develop basic knowledge and skills for using ICT suited to their career goals. Secondly, they needed to integrate ICT into their teaching methods. The third requirement was to develop a capacity for applying technology, storing, giving feedback and evaluating learning outcomes. Finally, teachers were instructed to use ICT to improve communication, collaboration and teaching efficiency.

In addition to meeting the demands of the Vietnamese Government, EFL teachers were faced with the challenge of adapting new technologies to meet their students' demands and expectations. Younger generations require more than merely teachers' use of ICT in teaching practice; they expect their teachers to guide and support them in the use of technologies (Dang & Nguyen, 2014). Moreover, since 2008, Vietnamese higher education students have become directly involved in evaluating teaching processes by questioning knowledge, pedagogy, learning materials and facilities, assessment methods and communication skills. Students must also report whether technology is employed effectively in their classrooms (Ministry of Education and Training, 2008b). Since then, teachers have struggled to integrate technology into their teaching in order to meet the requirements of the government and their students (Albion, Tondeur, Forkosh-Baruch, & Peeraer, 2015; Dang & Foster, 2015).

Gap in the Literature and Purpose of the Study

National ICT policy in EFL education has created demand and favourable conditions for Vietnamese teachers and students. The education sector has experienced considerable change as a result of the government and MOET's policies (Le, 2014), and within a decade, the English proficiency of Vietnamese learners has improved from very low to moderate proficiency (EF English Proficiency Index, 2018). However, the English proficiency of EFL teachers and graduates has not achieved the same success. Furthermore, the drive to integrate ICT into pedagogy reform has resulted in ineffective EFL teaching (Dang, 2014; Ngo, 2016), highlighting the urgent need for improved ICT integration.

A wide range of studies investigated ICT implementation in education (Al Harbi, 2014; Debra, 2017; Kazondovi, 2018; Mofarreh & Ibrahim, 2016; Nguyen, 2016), but mainly focused on areas other than language teaching and learning. According to Fullan (2007), the educational change process can be successful in one context and a disaster in another. In other words, even though ICT use has been

investigated in other educational systems, it is still worth researching in the Vietnamese context. A review of the relevant literature indicated a paucity of research on how the reforms have impacted on Vietnamese lecturers and pre-service EFL teachers, particularly in relation to their ICT skills development and approaches to EFL teaching and learning. The little research that has been conducted revealed limited success in preparation programs for pre-service teachers (Peeraer & Van Petegem, 2011), and a study on the implementation of technology in a teacher-preparation program is therefore significant and timely.

A number of studies have examined teachers' ICT uptake and the factors that affect their use of ICT (Dang, 2014; Le, 2015; Ngo, 2016). The TPACK framework and its knowledge components have increasingly been employed to measure teachers' ICT knowledge and skills, and for guiding pre-service teachers to integrate technology into their teaching practices (Mishra & Koehler, 2006). While numerous studies have measured in-service teachers' development of TPACK in various areas (Alahmari, 2013; Dinh, 2015; Garrett, 2014; Hoang, 2015), there is limited research on pre-service teachers' perceptions, knowledge and skills in relation to integrating technology in language teaching. TPACK in the context of the Vietnamese pre-service EFL teacher education program needs further investigation.

This study examined how stakeholders in a teacher training course at a major university in Vietnam perceived implementation of national ICT policy. It investigated how ICT policy was translated and implemented in an EFL teacher education program, probed lecturers' and pre-service teachers' ICT perceptions and practice, and identified factors that impacted on implementation.

Significance of the Study

At a national level, the findings of this study could prove useful to the Vietnamese Government and Ministry of Education, who are responsible for making decisions related to ICT and foreign language policies and for developing strategies to support and promote ICT implementation. The results may also assist the NFL 2020 Project under the Ministry of Education to reform the content of teacher development programs and bring about improvements. At a university level, this study is significant for administrators and curriculum planners of EFL teacher education to enhance their leadership and support of ICT policy translation and implementation.

Further, the findings offer the insights of EFL pre-service teachers and their lecturers with regard to implementation of curriculum reforms, particularly in the context of ICT use in EFL education. To do so, it was important to capture the voices of lecturers and students who were most impacted by the reforms. Finally, the findings may provide valuable insights for similar reforms in other developing countries, and are a timely contribution to the existing literature on change in education, particularly in key areas of ICT and EFL.

Research Questions

The following five key research questions guided the study:

(a) What aspects of Vietnamese national policy promote ICT integration into EFL teaching and learning and how has the policy been perceived by the study participants?

(b) How has the national ICT policy been interpreted and implemented into an EFL teacher education program at a specific institution?

(c) What are the perceptions of EFL lecturers and EFL pre-service teachers regarding the usefulness of ICT and their confidence in applying ICT to enhance their teaching practice?

(d) What are the perceptions of EFL lecturers and EFL pre-service teachers regarding their knowledge and skills in applying ICT to enhance their teaching practice?

(e) What factors do participants identify as either promoting or inhibiting the implementation of ICT into the EFL teacher education program and what recommendations can be provided for its successful implementation?

Outline of the Thesis

The thesis is organised into eight sections. The first chapter, the Introduction, provides information on globalisation and how it has led to changes in educational policy in Vietnam. It presents a statement of the problems and raises issues associated with changing policy, outlines the research questions, aims and objectives, and reviews the contribution of the current study.

Chapter 2 presents the context of the study, commencing with an overview of Vietnam and the Vietnamese education system and an explanation of how historical events have affected EFL education. Additionally, the chapter covers the role of

government in promoting ICT in educational reform through national ICT policy. The chapter concludes with the current state of EFL teacher training and the preparation of future teachers in the effective use of ICT technology in the classroom.

Chapter 3 offers a critical review of the relevant literature in three main sections. The first defines ICT and ICT integration, explaining how ICT can be used in language teaching and learning, as well as its benefits and challenges. The second section discusses previous attempts to identify and categorise factors that affected the implementation of ICT policy. It includes research that focused on a framework such as TPACK to gauge teachers' ICT confidence, knowledge and skills, further described in the research methods chapter. The chapter concludes with the conceptual framework that guided the study.

Chapter 4 describes the methods used in the study to address the research questions, beginning with the research paradigm and research design. This is followed by a description of the research setting and the sampling strategies selected for the study. The instruments and processes used for collecting and analysing the quantitative and qualitative data are explained, followed by a discussion of validity and reliability.

The findings of this study are reported according to the four research questions. Chapters 5 and 6 report the key results from the analyses of both the quantitative and qualitative data. They provide an account of how well the study participants understood the Vietnamese National ICT Policy to promote ICT integration into EFL teaching and learning; attempts to implement the policy in an EFL teacher education program; English lecturers' and pre-service EFL teachers' perceptions of their ICT knowledge, skills and practice, as well as their confidence in using ICT. This information helped to identify the factors that affected the implementation of ICT in the EFL teacher education program and provided valuable data for the integrated findings in chapter 7.

In chapter 8, recommendations are made for improving ICT implementation based on the thesis findings and supported by the literature review. A model is offered for effective ICT implementation. Limitations and recommendations for future research are also identified, before the chapter concludes with a brief summary of the study.

Chapter 2:
An Examination of Policy and Context

The previous chapter presented the background of the study. This chapter presents the geographic, political, socio-economic and educational contexts that influenced ICT policy in education in Vietnam. A primary objective of this study was to identify pre-service EFL teachers' perceptions of integrating ICT into their English language teaching programs, and accordingly, it was necessary to identify the major influences on EFL education in the Vietnamese university system. This entailed a review of the Vietnamese education system and how ICT was introduced, both generally and in English teaching and learning specifically, including a description of university training for pre-service EFL teachers. Finally, the chapter provides an analysis of the critical components of Vietnamese ICT policy related to EFL teaching and learning.

Geographic, Political and Socio-economic Status of Vietnam

The Socialist Republic of Vietnam is a small "s" shaped country situated on the eastern Indochinese Peninsula between 8° and 24°N latitudes, and 102° and 110°E longitudes. The country is surrounded by other Asian nations and has a surface area of approximately 331,212 square kilometres, with 4,639 km of boundaries and 3,444 km of coastline. Vietnam borders China to the north, Laos to the northwest, Cambodia to the southwest, Thailand across the Gulf of Thailand to the southwest, and the Philippines, Malaysia and Indonesia across the South China Sea in the east and southeast.

Politically, Vietnam is a one-party socialist republic. In 1986, the Communist Party of Vietnam, aware of the need to improve the mainly agricultural economy, deployed a reform program titled Đổi Mới. The program not only changed the economy but also positively affected politics and society. Since the introduction of Đổi Mới, Vietnam has become one of the most dynamic emerging countries in the East Asian region. Off-shore companies increased foreign investment and Vietnam's Gross Domestic Product (GDP) grew by 7.08% in 2018, the highest in the past 11 years (Vietnam GSO, 2018). These changes resulted in dramatic reforms within the higher education system (Harman, Hayden, & Nghi, 2010; Hoang, Tran, & Pham, 2018). However, the country faced several challenges in relation to macroeconomic stability,

limitations of mineral and agricultural resources, unequal economic development in rural areas and environmental issues (Diez, 2016).

Vietnamese Education System

Since this study focuses on Vietnamese EFL pre-service teachers' and lecturers' perceptions of ICT implementation in their EFL Teacher Education Program, it was necessary to establish their previous English language experiences, as these would have influenced their perceptions. Figure 2.1 outlines the levels that most EFL teachers pass through before entering university.

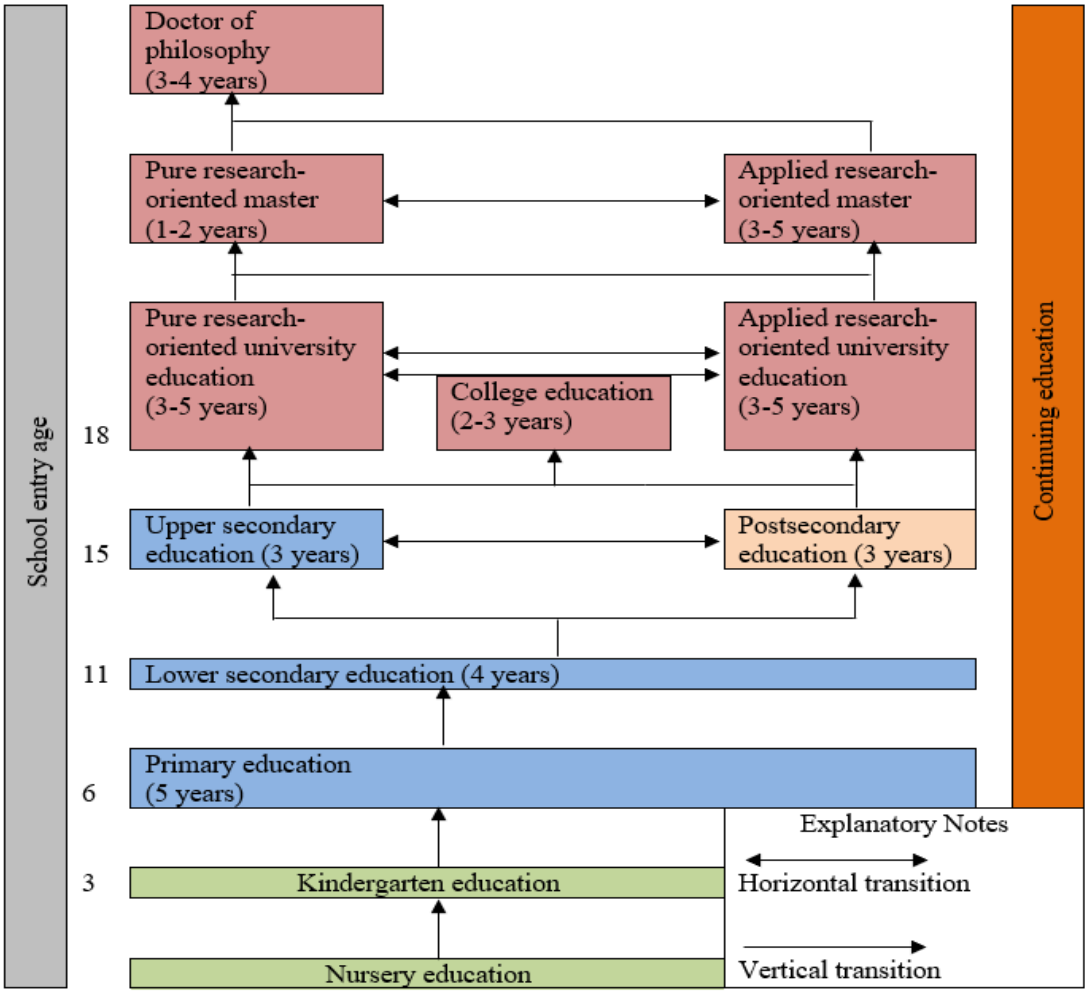


Figure 2.1 The Vietnamese National Education System

Adapted from the Vietnamese Government (2016), Decision No. 1981/QD-TTg, October 18, 2016, on approving the structural framework of the national education system.

On 18 October 2016, the Prime Minister of Vietnam approved Decision No. 1981/QD-TTg, endorsing the framework for the national education system. This policy introduced criteria for enrolment, length of study, further education opportunities and

training qualifications to be awarded at each educational level (Vietnamese Government, 2016). Today, the educational system in Vietnam consists of five levels: primary education, lower secondary education, upper secondary education, undergraduate university education, and at the fifth level, postgraduate education.

Early Childhood Care and Education includes pre-primary education, nursery school and kindergarten, and caters for children aged between three months and six years. Attendance is optional. The first formal level of education (Primary Education) is free (Vietnamese Government, 2010) and comprises five grades; the curriculum mainly covers basic skills, physical education and Vietnamese language. In the big cities, foreign language education is taught from Year 3, while pupils in the countryside do not learn a foreign language until they reach lower secondary school.

The second level of education (Secondary Education) caters for primary school graduates and includes four years of study for students aged from 11 to 15 years, starting from Year 6 and extending to Year 9. In secondary school, students are educated in basic skills required for general subjects, as well as subsidiary subjects, such as art and others involving life skills. After graduating they can opt to enrol in Upper Secondary School or attend Elementary and Intermediate-level Training programs.

Upper Secondary Education, the third level, is offered to students who graduate from Lower Secondary School and pass a compulsory entrance exam. During Upper Secondary Education, students can transfer to intermediate-level training programs, provided they meet the prescribed requirements. This education level covers three school years, from Year 10 to Year 12. Graduates can move to the next education level or register in vocational education programs.

To receive their Diploma at the end of Year 12, high school students are required to sit the national High Graduation Examination (HGE), administered by the Ministry of Education and Training (MOET). University entrance is based on scores achieved in the HGE. University training programs established by MOET include information about the minimum requirements expected for students to graduate. Training programs last from three to five years of fulltime study, depending on the discipline.

After more than a decade of renewal a number of positive changes have occurred in Vietnamese education, such as increased financial resources, establishment

of non-public schools and different types of informal education, open learning, distance education and joint ventures with foreign institutions (Nguyen, 2015a). Moreover, between 1990 and 2017, Vietnam's HDI (Human Development Index) value increased from 0.475 to 0.694, an increase of 46.1%, positioning the country at 116 out of 189 countries and territories (United Nations Development Programme, 2018). Following the reform period, stable politics, economic achievement and good living standards contributed to educational development in Vietnam.

EFL Education in Vietnam

Historical Context: Foreign Influence

To understand the status of English as a foreign language (EFL) in the Vietnamese education system, an historical context for the study is presented next, followed by an explanation of how traditional pedagogy has affected teaching of English.

Several factors determined the adoption of foreign languages in Vietnam. China occupied Vietnam for almost 1000 years (11 l BC - 938 AD), resulting in Chinese becoming the dominant language and Confucianism dictating educational practices (Le, 2016). The second major influence was French colonisation in 1858, when a French curriculum was adopted and French became the official language (Pham & Fry, 2004). It was not until 1945 that Vietnam gained independence from France. However, as a result of the Geneva Agreement, Vietnam became divided into two countries: The Democratic Republic of Vietnam (North Vietnam), governed by Vietnamese communists, and the Republic of Vietnam (South Vietnam), backed by American aid (Do, 2006; Wright, 2002). Consequently, South Vietnam adopted an American model of education, while North Vietnam adopted a Soviet model (Pham & Fry, 2004), leading to further language changes, most notably the emergence in North Vietnam in 1954 of a new language that used Latin characters. This language was also adopted in the south in 1966 (Le, 2016).

In the south English was dominant, although French was also spoken. English was so widely used in the south that teaching the language was undertaken by both professional educators, such as linguistic specialists and university graduates, as well as some untrained civilians and military officers (Do, 2006; Wright, 2002). After the USA withdrew from the south in 1975, the north and south were reunited. Vietnam adopted the USSR model of communism, leading to a decline in the use of English and a

predominance of Russian as the main foreign language taught throughout the Vietnamese educational system (Do, 2006).

Following reunification, the devastation of war brought severe hardship and financial difficulties. In response, the Vietnamese Communist Party proposed the "Doi Moi" policy (Shapiro, 1995) in 1986 to address the country's extreme poverty after a period of poor governance and economic isolation (Wright, 2002).

During the implementation of Doi Moi, Vietnam opened up dialogue with numerous countries, regardless of their political systems (Do, 2006), and in the early 1990s, communication with non-communist countries increased significantly (Wright, 2002). Globalisation led to the establishment of new relationships with the west, that in turn, influenced the economic sector and resulted in rapid growth in tourism to Vietnam. These changes led to foreign languages assuming a key role in economic reforms (Dang, Nguyen, & Le, 2013) for communicating and building relationships with other countries and an emphasis on the inclusion of foreign languages in the educational system. In particular, after Vietnam joined the Association of South East Asian Nations (ASEAN) and the World Trade Organisation (WTO), the need and motivation for English-language learning increased exponentially. Since then, English has become the most prominent foreign language in the Vietnamese education system.

Influence of Traditional Pedagogy on English Teaching

It is not surprising that the development of English language teaching (ELT) in Vietnam has been affected by traditional pedagogy, characterised by almost one thousand years of Chinese domination. This led to an inevitable and persistent influence of Chinese ideologies, especially Confucianism, not only on education, but Vietnamese society as a whole. The following subsections describe how ideology has influenced principal elements of the curriculum.

Traditional Role of the Teacher

Teachers plays a central role in education in Vietnam, where they are honoured and respected (Kramsch & Sullivan, 1996) and regarded as authority figures whose words are highly influential (Kramsch & Sullivan, 1996; Nguyen, Terlouw, & Pilot, 2006). In the past, the status of a teacher was ranked equal to that of a king or a parent. Teachers are considered role models for the morals, ethics and ideals that students should follow (Nguyen et al., 2006). Consequently teacher-centered pedagogy prevails in classrooms and students are discouraged from thinking independently, questioning

teachers' knowledge or drawing their own conclusions (Pham, 2007). Students who argue with teachers, parents or older people are considered rude and disrespectful (Bui, 2015). All these factors collectively designate teachers as absolute authority figures in the classroom, and in such an environment, students are not encouraged to express their creative and independent thinking (Littlewood, 2000, 2001).

Traditional Role of Textbooks

In Vietnam, the curriculum and syllabus are largely delivered through prescribed textbooks (Le, 2011b) that require teachers to guide their students through routine lessons for which structure, sequence and content are provided (Duggan, 2001). Vietnamese students are accustomed to traditional pedagogy dictated by textbooks. Specifically, they engage in learning that involves following the text faithfully and memorising knowledge (Ryan, 2013). As a result, only information included in the textbooks is perceived by Vietnamese students as learning. Additionally, ELT pedagogy has typically focused on supporting students to memorise grammar and vocabulary from the chosen textbooks.

Communication skills, such as speaking and writing, have typically been neglected (Bui, 2015) and teachers have become frustrated with having to complete the prescribed lessons in the syllabus and textbooks that prevent them from adopting more communicative teaching approaches due to time constraints (Le, 1999).

Traditional Role of Examinations

Examinations have traditionally played an important role in Vietnamese education. In the past, those who succeeded in examinations were considered successful and scholarly and received social recognition and government privileges (Sullivan, 1996). High marks for examinations were considered the only means for individuals and their families to succeed socially and economically (Pham & Fry, 2004; Pham, 2007; Woods, 2002; Zhu, 2013), and in this way, educational achievements were not only considered important for students, but also for their communities.

English is regarded as one of the main subjects of general education and must be passed in the National Examination by secondary and high school students. However, in accordance with the national framework, English is tested in written form only and includes comprehension, grammar and translation (Le, 2011a). To facilitate their students passing the exam, teachers follow the prescribed curriculum and textbooks to the letter using grammar translation approaches. Time and intention do not allow for

diverging from the all-important goal of passing the National Examination, so teachers are deterred from adopting communicative teaching approaches (Vu, 2015).

Despite recent educational changes, Vietnamese children, parents and society more broadly still believe that success in examinations is a key requirement for a good life and a rung on the ladder for upward social mobility (Le, 2011b). Consequently, students who receive encouragement and support from their parents tend to study hard to achieve academic excellence and pass the highly competitive university entrance examination (Tran, 2013a). Parents are typically "expected to sacrifice everything for the sake of their children's education" (Ryan, 2013, p. 60), reinforcing the important role of examinations in the current perceptions and motivations of Vietnamese society (Le, 2011b).

English Language Teaching in Vietnam

Currently, teaching English as a foreign language is emphasised at all levels of the curriculum in Vietnam. Previously taught only in certain schools in larger cities and mandatory only in secondary schools, English has more recently become a compulsory subject from Year 3 onwards.

A 1992 report by Denham showed that English language teaching practices in Vietnam were predominantly based on the grammar-translation method, despite other countries having embraced more research-based, communicative strategies. At that time, the focus was on developing students' reading skills. Speaking skills were overlooked, probably because there were approximately 50 students to a class and English teachers had a relatively poor command of the spoken language. Furthermore, there were limited opportunities to communicate in English, especially with L1 English speakers.

Communicative Language Teaching in Vietnam

Since 2002, the English language curriculum in Vietnam has undergone a major shift towards reforming education and adopting a more communicative approach to teaching and learning (Le & Barnard, 2009; Tran, 2009). A communicative language teaching (CLT) approach emphasises the use of language to communicate. Early proponents believed that, given the right conditions, "language learning will take care of itself " (Harmer, 2007, p. 52) and "language is learnt through meaningful language use" (Klapper, 2003, p. 52).

Richards (2006) observed that CLT had undergone several changes and that current trends focused on facilitating language learning using both inductive and discovery learning through exposure to and engagement in authentic and meaningful language exchanges (Richards & Rogers, 2001). Richards (2006) believed that current CLT practice was flexible and informed by a set of guiding principles within a teaching context that allowed students to negotiate meanings, use language creatively and purposefully, and discover and share interpersonal experiences. He commented:

> Current communicative language teaching theory and practice... draws on a number of different educational paradigms and traditions. And since it draws on a number of diverse sources there is no agreed upon set of practices that characterise current communicative language teaching (p. 22).

Richards (2006) argued that CLT was not a top-down process in which the teacher plays a central role, but served as facilitators and creators of rapport and collaboration between students, builders of confidence that will encourage students to take risks with language and role models of fluent language use.

Like many Asian countries where CLT has become the dominant approach in ELT (Butler, 2011; Kam, 2002; Littlewood, 2007), it was implemented in Vietnam via the year 2000 curriculum renewal policy and has been clearly documented in MOET's more recent policies (Ministry of Education and Training, 2014c; Vietnamese Government, 2008). For example, in secondary schools, English teaching focused on improving students' communicative skills based on formal knowledge of the language. In 2008, the government issued Decision 1400/QD-TTG (Vietnamese Government, 2008) for implementation of the National Foreign Language 2020 Project. The main purpose of the project was to ensure noticeable progress in professional skills and language competency and for graduates from vocational schools, colleges and universities to achieve independent use of a foreign language by the year 2020.

In response to the Decision, the *Common Framework of Foreign Language Proficiency*, comprised of six levels and based on the *Common European Framework (CFER)* was published as the official means of assessing L2 competencies of Vietnamese learners. This framework strongly influenced curriculum design, lesson plans, methods and assessment at all educational levels (Ministry of Education and Training, 2014c). According to its stipulations, primary students are required to attain Level 1 competency, and secondary students, Level 2 or 3. Tertiary students who do not have English as a major

must achieve Level 3 or 4 to graduate; while English majors are required to graduate with Level 4 or 5. Along with previous educational policies and practices, MOET (Ministry of Education and Training, 2014c) emphasised improvements in ELT students' communication abilities. In addition, the expected teaching and learning outcomes were published, calling for innovation in terms of goals, methods and assessment to meet the requirements of a CLT approach.

These policy initiatives triggered several changes in practice. The authors of textbooks commissioned by MOET adopted a more learner-centred approach by integrating skills in reading, writing, listening and speaking, describing interactive classroom activities that incorporated individual, pair and group work (Barnard & Nguyen, 2010; Chu, 2014; Nunan, 2003). MOET also organised CLT workshops, seminars and conferences for teachers to integrate this approach into their teaching practice - the results were positively received by both teachers and students (Hiep, 2007; Ngoc & Iwashita, 2012; Phan, 2004). These studies indicated that CLT can assist teachers to encourage students' involvement in communicative tasks that simultaneously preserve Vietnamese culture. Most importantly, teachers reported that they implemented CLT because of the communicative benefits of this approach.

Although implementing CLT in ELT has produced positive outcomes, some scholars have identified several challenges for teachers and students in developing English proficiency. For instance, Le (2012) found that despite years spent learning English, many secondary school students were only able to perform simple routine functions, such as introducing themselves and describing simple, everyday objects. They were unable to read simple texts or communicate with English speaking people, even in controlled environments. In contrast to the primary sector, at the tertiary level, ELT pedagogy required teachers to focus on grammar, reading and writing, rather than oral communication. This approach was taken because many tertiary institutions were forced to redesign English programs to cater for students who were beginners, many of whom had low levels of English proficiency. Although programs were redesigned to account for this, "recent studies have demonstrated that tertiary students' language proficiency has not improved and is still very far from the requirements of their future jobs" (Bui, 2015, p. 39).

Although CLT is considered central to English curriculum renewal in Vietnam, a gap exists between policy requirements and new pedagogy for teachers. Earlier, (Ellis, 1994) found the communicative approach in its early form unsuitable for Vietnamese

educators, due to constraints such as institutional barriers, teacher beliefs, the need for curriculum development and alternative assessment procedures. Similarly, Hiep (2007) claimed that CLT was not successful in Vietnam because teachers had limited access to learning environments with meaningful, authentic language activities to encourage students to use English. Instead of focusing on English proficiency, Vietnamese students are more concerned about passing grammar-based exams. In addition, teachers are uncertain about independent CLT practices and any attempts at communicative activities are thwarted by too many students in one classroom. A lack of student motivation is also considered an obstacle to CLT implementation. A review of recent studies by Bui (2015) indicated that the contemporary version of CLT remains challenging for Vietnamese educators, mainly due to factors such as teachers, teaching methods, textbooks, learning and teaching facilities and assessment methods.

In 2018, Nguyen (2018) reported a version of communicative language teaching in an EFL teacher education context. The term CLT can be interpreted from its single elements: C = Context, L = Learner and T = Tactic, all of which are considered priorities.

To summarise, despite MOET's efforts to develop a more communicative approach to ELT, existing teaching methods have been strongly influenced by traditional principles. CLT has not been implemented successfully because teachers still tend to focus on accuracy in written and spoken English language rather than fluency and expression of ideas.

The Government's Role in Promoting ICT

Vietnam is a developing country where ICT is seen as an important tool for realising a modern, global society supported by technological advances associated with the national reform agenda (Peeraer & Van Petegem, 2011). Education has played a central role in this reform agenda since the early 2000s and ICT has gained increasing prominence. In particular, ICT reform is seen as a means to support innovative teaching and learning in Vietnam, often "*as a way to merge into a globalising world"* (Peeraer & Van Petegem, 2010, p. 1).

The integration of ICT into the Vietnamese education system has not only created favourable opportunities for curriculum renewal, but also for incorporating the latest advances in pedagogical practice, thus providing a modern educational model for educators to follow. More broadly, it has highlighted the challenges of developing a knowledge-based economy using advanced technologies, thereby lessening the

economic, intellectual and educational gaps that exist between Vietnam and other capitalist, industrialised countries. Like other rapidly developing nations, Vietnam has initiated many changes, particularly in the field of education, and over the past decade reforms in educational policy have accentuated the value of integrating ICT to support English language education.

The next section addresses research question one and comprises an examination of the government's role in promoting ICT for educational reform, as well as action plans by MOET to improve foreign language and informatics proficiency in Vietnamese educational institutions. For a review of policy goals and objectives, a framework developed by Kozma (2008); Kozma (2011) was used to identify policy levels and categorise their key components.

National Policy on ICT Integration into EFL Teaching and Learning

A chronological analysis of national policies issued by the Vietnamese government, MOET and the 2020 Project was undertaken to identify salient aspects that were intended to promote the implementation of ICT and improve EFL teaching and learning.

In this study, relevant educational policy documents, decisions, directives, circulars and guidelines were analysed. Tables 2.1 and 2.3 provide details of documents issued by the government, MOET and guidelines from the 2020 project. According to Kozma (2008, p. 1091) and Ward and Parr (2011, p. 328) coherent policies need to consider a) strategic-operational alignment; b) horizontal alignment; and c) vertical alignment.

Strategic-operational alignment is defined as coherence between the nation's goals and ICT programs and projects. For example, Vietnamese strategic policies emphasise educational reform aligned with educational projects that provide not only new resource allocation, but also professional development focused on pedagogy, curriculum and assessment reforms. Horizontal alignment refers to the coordination of ICT policies and other educational policies, such as infrastructure development, human resource development and English education reform. The Ministry of Education is responsible for establishing shared goals to ensure effective coordination between departments. Oyaid (2009) warned that a lack of coordination and collaboration between those involved in change will in all likelihood result in inconsistent policies, inadequate funding and unevenly distributed efforts and finances amongst agencies.

Vertical alignment refers to how different parts of the education system, i.e., government, MOET, schools and universities, support one another. Policies should not be developed in isolation, but through cooperation and collaboration to ensure that national and local policies are compatible. Moreover, national ICT policies should provide clear guidelines for educational leaders and teachers to follow during the implementation stage.

Strategic Policy

According to Kozma (2008) strategic policies are important for the following reasons:

> Strategic policies can provide a rationale, a set of goals, and a vision for how education systems might be with the introduction of ICT, and how students, teachers, parents, and the general population might benefit from its use in schools (p. 1084).

At a strategic level, the policies were aimed at transforming the socio-economic status of Vietnam to a comparable level with highly advanced economies, while at an operational level, the policies were designed to promote ICT use in education reform and support educational management. Table 2.1 presents the key strategic documents that emphasised ICT and foreign language proficiency in Vietnam.

Table 2.1 *Policy Documents Promoting ICT at Strategic Level*

Policy Code	Policy Title
246/QĐ-TTg	The ICT Development Strategy up to 2010 and Orientations toward 2020
698/QD-TTg	The Overall Plan on Development of ICT Human Resources up to 2015, and Orientations toward 2020
1755/QD-TTg	Scheme to make Vietnam a country strong in ICT more quickly
711/QD-TTg	The 2011 -2020 Education Development Strategy
1210/QD-TTg	The 2012-2015 National Target Program on Education and Training

Adapted from various policy documents. Copyright held by Vietnamese Government.

The first ICT strategy document listed in Table 2.1, the *ICT Development Strategy up to 2010 and Orientations toward 2020*, was released in 2005. It emphasised the importance of ICT as a tool for creating an information society, as well as speeding up the process of industrialisation and modernisation in Vietnam (Vision 2020). The strategy focused on developing ICT applications across industry, infrastructure and

human resources. One of the key priorities for education was to ensure that by 2020, 50% of university students and over 30% of the population would be able to effectively use ICT applications and the internet. This included most public servants, teachers, doctors, university and college students, vocational secondary school and upper secondary school students.

Pursuant to the *ICT Development Strategy*, the government released a second policy, *The Overall Plan on Development of ICT Human Resources up to 2015 and Orientations toward 2020* in 2009. The goals of this policy were to ensure that sufficient human resource personnel were trained in the development and application of IT, electronics and telecommunications, and that sufficient support services would be available for national industrialisation, modernisation and international economic integration. In education and training, the policy was aimed at accelerating IT application, modernisation and improving the effectiveness of IT training to international standards. Three specific objectives related to ICT implementation in education up to 2015. The first was that by 2010, 100% of university, college and upper secondary university students would be taught informatics. The second objective consisted of two segments. One of these recommended that ICT investment should reach an average rate of 15-20 students per lecturer in ICT training in universities and colleges. The other recommended that by the end of 2015, 100% of university and college lecturers, as well as professional secondary teachers and students would have personal computers. The third objective was to provide ICT training and promote ICT in teaching and management at all school levels. To achieve these targets nine basic measures were proposed, including: renovating the program, contents, methods and procedures for IT training in human resources; expanding the scale and form of IT training; intensifying and universalising informatics to include the whole of society; growing investment in human resources development; enhancing the role of IT in teaching English and other languages; using open-source software in teaching and training; developing an Educational Network (EduNet); and promoting and teaching informatics and IT applications at all school levels.

A year later, Decision No. 1755/QD-TTg approved the specific objectives shown in Table 2.2. This scheme was aimed at strengthening ICT in Vietnam through faster development of ICT in human resources and industry.

Table 2.2 *Specific Objectives of Decision No. 1755/QD-TTg*

Objectives	**In 2015**	**In 2020**
ICT human resources	30% ICT graduate students to be qualified and have foreign language proficiency. Over 50% of the population to be Internet users.	80% of ICT graduate students to be qualified and have foreign language proficiency. Over 70% of the population to be Internet users.
ICT industry	Vietnam to be ranked among 15 countries leading in software and digital content service provision.	Vietnam to be ranked among 10 countries leading in software and digital content service provision.
Broadband telecommunications infrastructure	Broadband network to be basically completed. Internet to all schools. Mobile broadband cover for 85% of the population. Vietnam to be ranked 65 on the International Telecommunications Union (ITU).	Completion of the broadband network. Mobile broadband to cover 95% of the population. Vietnam to be ranked 55 on the ranking list of the ITU.
Information universalisation	20-30% of households to have computers and access to broadband Internet. 80% of households to have the facility to watch digital television by different modes.	50-60% of households to have computers and access to broadband Internet. Almost all households to have the facility to watch digital television by different modes.
ICT application	Almost all basic online public services to be using ICT. 80% of enterprises and social organisations to be applying ICT. Universalisation of ICT in education and health care systems. Step up of ICT application in defense and security.	Vietnam to be ranked in the top 1/3rd of leading countries in the United Nations' ranking list on e-government readiness. All national key industries, enterprises and social organisations to be applying ICT.
ICT enterprises and the ICT market	ICT enterprises to reach ASEAN levels. Each enterprise to have a turnover of over USD 10 billion.	ICT enterprises in Vietnam to reach developed world level. Each enterprise to have a turnover of over USD 15 billion.

Adapted from Decision 1755/QD-TTg. The scheme was intended to speed up and strengthen Vietnam's information and communication technologies (2010). Website: thuvienphapluat.vn.

It included increasing nationwide broadband telecommunications infrastructure so that ICT could be applied efficiently and universally in all key industries, enterprises and social organisations. In view of these initiatives, ICT was considered an important driving force for contributing to the country's growth, improving transparency in the activities of local and central agencies, and saving both time and money for individuals and organisations.

In 2012, the *National Education Development Strategy by 2020* was released by the government as a means of standardising, modernising, socialising and democratising Vietnamese education. (Table 2.3)

Table 2.3 *National Education Development Strategy Solutions*

Number	Main Solutions	Specific Solutions Related to ICT and Foreign Languages
1	Modernising educational administration.	Increasing the application of ICT to raise the quality of education management.
2	Developing teaching staff and educational administrators.	Ensuring an adequate number of foreign-language teachers.
3	Renewing teaching content and methods as well as exams, tests and quality education assessments.	Applying ICT in order to expand forms of learning. Enhancing ICT in teaching and learning so that by 2020 all vocational and general education teachers will be able to apply ICT in training as well as compile and use e-training manuals and e-textbooks.
4	Increasing investment and renewing the financial regime for education.	Standardising and modernising physical and technical foundations and assuring that adequate financial resources and standard teaching aids are available to all educational institutions.
5	Associating training with employment, scientific research and technology transfer.	
6	Supporting education development in difficult and ethnic minority areas.	
7	Developing educational science.	
8	Expanding and raising the effectiveness of international cooperation.	

Adapted from Decision 711/QD-TTg on National Education Development Strategy by Prime Minister of Vietnam (2012). Website: thuvienphapluat.vn.

Focused on improving the quality of education and training in all fields, including morals, life skills, educational practice, creative skills, foreign language skills and ICT proficiency, the primary objective of the strategy was to improve human resources to support the industrialisation and modernisation of Vietnam. Table 2.3 presents eight solutions for achieving the goals of standardising, modernising, socialising and democratising Vietnamese education. The first four specifically refer to ICT applications in teaching foreign languages.

Although policies were approved at different stages and targeted different content, the development of human resources, infrastructure and ICT applications were always considered the main goals. In these documents, ICT strategic policy was directly linked to the shared national objectives of the *Socio-Economic Development Strategy by 2020,* aimed at modernising Vietnam into a democratic, disciplined, socio-politically stable, industrialised country that can maintain its independence and unification. In this way, it was expected that Vietnam's position in the international arena would continue to improve and form the foundation for future development.

Operational Policy

The term "operational policy" is variously defined in the literature but always includes the words: action plans, programs or projects. According to Kozma (2008), there are five components that assist policy makers to formulate, analyse and compare national policies to those of other countries, namely "infrastructure development, teacher training, technical support, pedagogical and curricular change and content development" Kozma (2008, pp. 1089-1091).

Following the release of the Vietnamese government's guiding principles in 2008, MOET distributed numerous project documents and guidelines to assist educational leaders and teachers implement ICT in classrooms. The following section and Table 2.4 describe the MOET documents that promoted operational policy for facilitating improvements in ICT and foreign language (English) proficiency.

The 2020 Project, nominated by MOET and approved by the government in 2008, was the first to address teaching and learning of foreign languages in the Vietnamese education system. The objective of the project was to systematically renew the teaching and learning practices of foreign languages in Vietnamese schools, and recognised the advantages of proficiency in a foreign language as the country strived for industrialisation and modernisation. The main aim of the operational policy was for

graduates from vocational schools, colleges and universities to have the capacity, independence and confidence to communicate in a variety of languages by the year 2020. This competency was anticipated to increase opportunities for further study and finding work in an integrated, multi-cultural environment.

Table 2.4 *Policy Documents Promoting ICT at Operational Level*

Policy Code	Policy Title
1400/QD-TTg	Project entitled "Teaching and Learning Foreign Languages in the National Education System, Period 2008–2020"
55/2008/CT- BGDĐT	Directive on Promoting Teaching, Training and Applying ICT in Education - Period 2008-2012
07/2010/TT-BGDĐT	Circular on the Organisation, Operation and Use of E-Mail and Websites of Tertiary Education Institutions in 2010
08/2010/TT-BGDĐT	Circular on the Use of Free Open Source Software in Educational Institutions in 2010
9772/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2008
9886/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2009
4937/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2010
4987/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2012
6072/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2013
5041/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2014
4983/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2015
4622/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks in 2016
6147/BGDĐT-CNTT	The MOET-Guidelines for ICT Tasks for Universities and Colleges in 2010
306/CV-ĐANN	The 2020 Project Guidelines on ICT training in 2013
9029/BGDĐT-KHTC	The MOET guidelines on Funds for Educational Programs in 2014
489/BGDĐT-ĐANN	The 2020 Project Guidelines on Main Tasks in 2015
45/CV-ĐANN	The 2020 Project Guidelines on Main Tasks in 2016
136/ĐANN-CM	The 2020 Project Guidelines on Main Tasks of the Second Stage in 2016

Adapted from various policy documents. Copyright held by Vietnamese Ministry of Education and Training.

2020 Project Operational Targets

To achieve the aims of the 2020 Project, the government invested more capital into facilities and equipment for teaching and learning languages. The first requirement was for educational managers to identify, list and purchase IT equipment suitable for teaching and learning tasks at different educational levels. In addition, various learning spaces, such as language laboratories, audio-visual rooms and multimedia rooms had to be organised and standardised. EFL teachers also needed training to operate and maintain the new equipment before IT in teaching and learning could be addressed and introduced in educational institutions. However, the 2020 Project was not deployed until

the Prime Minister approved the 2012-2015 *National Target Program on Education and Training*, which occurred on 9 September, 2012. It consisted of four projects, only one of which related to ICT and foreign language teaching and learning. The National Target Program was aimed at assisting the education sector to fulfil the tasks set out in the 2011-2020 development strategy and targeted training to ensure sufficient qualified staff.

Compared to the other three projects, the 2020 Project fund represents nearly one-third of the total funding, i.e., VND 4.146 billion. The fund finances several educational initiatives for teaching and learning foreign languages, including renewal and provision of teaching materials, teaching methods, in-service training for teachers at all educational levels and equipment and facilities to support these objectives.

Actions Required to Improve ICT Competency of EFL Teachers

The first ICT training for EFL lecturers was held a year later in 2016. In order to participate in this five-day workshop, trainees had to be able to use a computer and access the internet proficiently. The training was intended to guide EFL lecturers on how to identify, access and apply available online resources and management software. Additionally, it taught participants how to select suitable ICT tools for different levels or ages and how to apply ICT to build and design online courses for EFL learners.

In the case of the 2020 Project, one guideline was issued each financial year for the use of funds to ensure project leaders spent the allocated funds appropriately. For example, in 2015, the main objectives were building and expanding a number of selected educational institutions and strengthening the teaching abilities of foreign language teachers and lecturers. For provincial universities and colleges, the support fund for each chosen university was VND one billion – 55% of this was used for reviewing and upgrading the foreign language skills of teachers and training professional managers and lecturers. The fund was also used to hire foreign teachers, develop and host extracurricular programs, and for reforming student examinations, tests and assessments. Thirty-two percent of the funding was used to procure learning materials and supplementary equipment for teaching and learning foreign languages, while 13% went towards improving foreign language programs and organising training workshops based on expected outcomes, as well as identifying strategies for meeting foreign language standards.

In 2016, universities and colleges were required to complete four major tasks to ensure they had created a favourable environment for teaching and learning foreign languages according to the 2020 Project. In addition to appropriate programs, materials, textbooks and foreign language learning systems (direct and online), universities were required to standardise training for foreign language teachers. Universities were also reminded to use information technology in reviews of foreign language teaching materials. The final requirement was to develop new forms of testing, assessment and examination of students' foreign language abilities in accordance with expected standards at each stage of education and training to meet CEFR 6 levels.

MOET Operational Policies on the Use of ICT in Teaching and Learning

In the "Year of ICT" (2008-2009), MOET implemented several operational policies to increase adoption of ICT in teaching and training in the education sector. Amongst them, *MOET Directive 55* addressed how this should be accomplished in nine major sections. First, office staff, teachers and educational administrators were made aware of the importance of ICT in education. Then each educational institution had to assign an ICT technician to assist a specialised task force responsible for providing technical support. All educational institutions had to create websites and provide staff, teachers and students with email addresses. Teachers and trainers were expected to implement appropriate ICT applications that generated innovative methods of teaching and learning. ICT applications were promoted in teaching, management and research with the promise that MOET would reward ICT excellence in educational institutions.

Pursuant to *Directive 55*, at least one IT Task Implementation guideline has been issued every year, reinforcing the priority placed on ICT integration across the entire education system. The first national Vietnamese document, *Guidelines on IT Task Implementation in the Academic Year 2008-2009*, included three main foci for the integration of ICT: Major Tasks, Emulation and Report and Implementation. Nine sections in Directive 55 were broken down into 16 major tasks in the early phase, directed at ICT-related educational material, capital and human resources. The use of open source code, a collaborative code that allows educators free access to ideas posted by others so that programs can be modified to suit individual contexts was encouraged in teaching, learning and management. MOET reiterated the need for innovative use of ICT applications to enhance teaching and learning at every grade level, as well as educational management, and where applicable, for international collaboration.

Moreover, teachers and educational managers were expected to extend their ICT training to organising meetings, conferences, training and teaching through an educational network.

In the 2010-2011 academic year, MOET instructed universities to address two circulars: Circular No. 07/2010 referred to regulations, operation and use of email and websites in higher education institutions, and Circular No.08/2010, related to open source code applications. To address the requirements of these circulars, all universities, colleges, DOET, ETD and schools were tasked with creating a website to provide general information on issues such as organisational and administrative procedures; training programs; test information and results; admissions and staffing numbers; scientific research and technology transfer; and the institution's annual report. Teachers were also actively encouraged to use open source code to design and select educational resources for teaching that could be shared with others.

Shifts in Recent Guidelines for IT Tasks

A shift in guidelines occurred after general infrastructure requirements had been addressed. While all guidelines from 2008 onwards continued to consider ICT as a tool for effective support of innovative teaching methods and a means of improving the quality and the effectiveness of education, more recent documents issued by MOET incorporated fewer tasks than previous guidelines. For example, *Guidelines for the Academic Year 2014-2015* consisted of only 11 major tasks, ranging from mastering the legal requirements pertaining to IT use and ICT infrastructure investment to practical issues for online educational management and administration, as well as the use of ICT in teaching and training. This decreased to seven tasks in the academic year 2016-2017 that addressed more practical issues, such as assigning staff to ICT, investing in ICT infrastructure and facilities, on-site and off-site management and communication, implementation of an e-government website, exploring Open Online Education, teacher training and e-education and e-university platforms.

In general, the Vietnamese government has introduced a range of initiatives focused on allocating resources, teacher training and curriculum renewal. ICT policies have been linked to major education policies and initiatives by MOET so that all roads lead to the *Teaching and Learning Foreign Language in the National Education System* 2020 Project, with the aim of developing student skills and competencies for the future workforce. Policies also align with other government agencies, such as the Ministry of

Human Affairs and Ministry of Information and Communication, as part of a coherent strategy to strengthen and embed the use of ICT.

The emphasis on ICT in the majority of policies demonstrates the priority it has been given in the education reform process. There has been an unambiguous focus by national policy makers on developing qualified ICT personnel to meet the demands of a globalised society and contribute to Vietnamese economic development. MOET has published annual guidelines to reinforce the national vision in local education institutions and encourage ICT application in practice. However, despite the importance of ICT for EFL proficiency as an educational goal in the national strategy, no clear guidelines exist for embedding ICT into EFL teaching and learning or for support and evaluation of its implementation. As a result, teachers and lecturers have limited understanding of how national ICT policy impacts on EFL teacher education or how the policy should be translated at an institutional level.

Teacher Education and ICT Preparation for Pre-service Teachers

Teacher and EFL Teacher Education in Vietnam

The Vietnamese Teacher Education Branch was established in 1946. During its seven decades of development, the organisation has constantly strived to overcome the difficulties of war and education reform to include a large contingent of teachers and educational managers (Ministry of Education and Training, 2011b).

In Vietnam, the training of teachers is governed by the Ministry of Education and delivered by colleges or universities under a provincial government or MOET. Educators and leaders of these institutions have addressed important global developments in teacher preparation systems. For instance, the MOET development program for pedagogy in educational institutions from 2011 to 2020 focused on the following projects: strengthening the network of teacher training institutions; increasing facilities for advanced education; developing teacher educators for schools and faculties; transforming the management and administration of teacher training institutions; enhancing the role of teachers at all levels through development; strengthening the expertise of managers in educational institutions; improving the quality of science and technology activities; fostering cooperation between international and Vietnamese educational institutions; and providing a method of quality accreditation for pedagogical schools (Ministry of Education and Training, 2011b). Since the introduction of Doi Moi in the early 1990s, a number of changes have

impacted on Vietnam's system of education and training, both positively and negatively, such as the increase in government spending, rapid increase in the number of private teacher training institutions and reorganisation of the teacher training system (Nguyen, 2015a; Nguyen, 2006). In 2018, of the 100 educational training institutions permitted to train teachers at all levels, 14 higher education institutions specialised in pedagogy and 49 multidisciplinary higher education institutions provided pedagogical training. In most provinces/cities, training colleges specialised in pedagogy (Le, 2018). Universities employed 4,490 lecturers: 5.2% were professors or associate professors; 13.7% had a doctorate and 48.7% had a master's degree. The 3,543 lecturers in the pedagogical colleges were comprised of 0.07% professors and associate professors: 0.93% had a doctoral degree and 36.89% had a master's degree (Ministry of Education and Training, 2011b). Universities therefore employed a larger number of qualified academic staff than training colleges. The network of institutions involved in teacher training in 2013 is presented in Table 2.5.

Table 2.5 *Vietnamese Teacher Training Institutions (2013)*

Types	**Quantity**	**Level of Teachers they supply to Educational Institutions**	**Level of Management**
Universities of Pedagogy. Universities with a Faculty of Education.	14 49	Lower and upper secondary schools; primary and kindergartens.	MOET and provincial governments.
Teacher Training Colleges.	39	Lower secondary schools (and some primary schools).	Most are under provincial governments and some under MOET.
Post-secondary schools with a Faculty of Education.	31	24 supply college-level teachers. 4 supply other institutions. 3 supply post-secondary teachers.	Most are under provincial governments and some under MOET.

Adapted from http://vinhuni.edu.vn/tin-tuc-su-kien/seo/phat-trien-nganh-su-pham-va-cac-truongkhoa-su-pham-o-nuoc-ta-hien-nay-thuc-trang-va-giai-phap-42916#_ftn1

According to (Nguyen, 2015a); Nguyen (2006); (Nguyen, Dekker, & Goedhart, 2008), Vietnamese teacher institutions faced several challenges after the most recent changes in national education. Increased forms of training, such as open learning, distance education, joint ventures with foreign institutions and diverse modes of training, such as “3 plus 1” and “4 plus 1”, have solved the shortage of high school

teachers for the most part. However, the quality of teacher training is more complex, a "3 plus 1" training model requires teacher trainees to study basic units in the first three years, with the last year of study devoted to pedagogical knowledge, skills and teaching practice. Accordingly, the "4 plus 1" model is for Bachelor of Arts/Science holders who enrol in a one-year teacher education course that provides pedagogical knowledge and teaching practice. In the 2017-2018 school year, the number of teachers nationwide increased by 17,368, mainly for preschools and universities. Primary school teachers decreased by 498, lower secondary school teachers decreased by 4,843 and upper secondary school teachers decreased by 433. While the overall number of school teachers is sufficient to meet demand, some redundancies and a shortage in certain subjects still exist, such as informatics and foreign languages (Le, 2018).

The majority of teachers possess poor pedagogical competence, use traditional teaching methods such as *chalk-and-talk*, *telling and listening* and *demonstrating and imitating* approaches, all of which are influenced by Confucianism. In addition, they have poor knowledge of foreign languages and information technology (IT), so are unable to apply IT adequately in their teaching activities (Nguyen, 2006; Nguyen et al., 2008; Tran, 2013b).

The above issues are compounded by other concerns around teacher training (Nguyen, 2015a; Nguyen, 2006), the first of which relates to university recruitment policies that have not attracted quality students. Some education institutions have lowered their admission scores to maintain enrolment thresholds, and as a result, the quality of their student intakes has decreased markedly (Phạm, 2013). Secondly, both university and school facilities are inadequate and outdated, making it difficult to improve the quality of training. Thirdly, the content of teacher education programs focus heavily on theory and lack attention to student diversity and practice. For example, in the north of Vietnam, nearly a third of university teacher-training programs focus on theory in subjects shared by all pre-service teachers, such as psychology, philosophy, pedagogy, foreign languages, informatics and speciality subjects (Nguyen, 2015a). Moreover, there is little continued support for graduating teachers within the professional community, particularly in their first year of teaching (Nguyen & Baldauf Jr, 2015).

EFL teacher candidates are selected for entry to educational institutions based on their results in three subjects: literature, mathematics and English in the National

University Entrance Exam. They are assumed to have passed the English language writing and reading skills test at an intermediate level (B1/CEFR). While training programs have similarities with the MOET core curriculum, curriculum design differs between universities (Mai & Pham, 2018). *(University of Languages and International Study, 2018)* reported that the teacher training curriculum consisted of five domains, with study hours allocated for each domain, in addition to theory, practice and self-study where applicable. Domain 1, General Knowledge, focused mainly on the fundamental principles of Communism and the study of foreign languages, including national defence and physical education. The main emphases of domain 2, General Discipline Knowledge, were advanced mathematical concepts and social sciences (including geography and environment). Domain 3, Specific Discipline Knowledge, comprised core subjects (such as Vietnamese culture and linguistics) and elective courses related to research methods, history and critical thinking. The fourth domain, Inter-discipline Knowledge, highlighted EFL, with core subjects English language and culture and elective subjects in applied linguistics, English literature and English language proficiency. In Domain 5, Major Knowledge, core subjects related to the theoretical aspects of teaching, such as psychology, pedagogy, EFL testing and assessment. Elective courses in Domain 5 were a mix of theory and practice involving EFL teaching.

The Standard Teacher Education Program outlined in the *University of Languages and International Study (2018)* showed that Domain 5, the most applicable to EFL teachers, awarded 17 credits for compulsory theory courses, and 12 (out of 27) credits for elective courses, some of which covered the practical elements of EFL teaching.

This Standard Teacher Education Program directly targeted pre-service teachers for EFL teaching in primary, secondary and high schools, as well as vocational schools. In addition to the theoretical components, pre-service teachers complete an eight-week practicum in their final semester. After three years of study in college or four years at university, pre-service teacher graduates are awarded a Bachelor of English Teacher Education degree (Ministry of Education and Training, 2014b).

According to Mai and Pham (2018), several aspects of EFL teacher curricula need to be considered. Firstly, it should be structured to develop the language competencies of teachers rather than simply addressing pedagogical skills. Mai and

Pham (2018) claimed that a large number of EFL pre-service teachers' time had been spent acquiring skills in language practice, a serious concern given that students who are exposed to substandard teaching skills will themselves develop sub-standard skills. Albright stated that English cultural courses should be taught separately from language skills, theory and teaching methods, so that teacher trainees can attain English proficiency as well as making links between language theory and pedagogical practice. Further, teacher training programs and practicum experiences should emphasise and encourage learner autonomy. For example, in practicums student teachers may choose to imitate supervising teachers to get a positive assessment rather than using the pedagogy they had studied.

Although teacher training in Vietnam has been deemed a priority, (Nguyen, 2015a; Nguyen, 2015b) there is a dearth of research in both pre-service teacher training and practice due to a lack of infrastructure and leadership. This has resulted in poorly informed decisions and a reluctance to change, in addition to skepticism around the quality of the course due to questionable methods of evaluating student learning (Nguyen, 2015a; Nguyen, 2006).

ICT Training in Vietnamese EFL Teacher Education Programs

A decade after English was introduced as a school subject in Vietnam, the government implemented a number of English teacher education programs, aimed at promoting English education (Le, 2007). Most Vietnamese universities are now equipped with computers, internet access and other ICT tools for face-to-face, online or hybrid teaching. To prepare pre-service teachers with technology knowledge and skills in EFL teaching, two units on the use of ICT in education are currently offered. The first course is Basic ICT Application, which prepares pre-service teachers to meet the basic ICT standards for Vietnamese government officers (Ministry of Information and Communication, 2014). The course is aimed at providing anyone who uses a computer with essential skills in word processing, spreadsheets and presentations, as well as computer and online essentials. Table 2.6 summarises the key outcomes of the course.

Table 2.6 *Summary of Basic ICT Application Course*

Modules	Knowledge	Skill
Computer Essentials	Identify concepts and distinguish ICT devices and portable mobile devices. Differentiate between central equipment and peripherals.	Exploit computer devices on the basis of a specific operating system.
	Understand the terminology of computer hardware and software. Know the data units. Distinguish units measuring processor speed, bandwidth measurement unit of Internet transmission line.	Use a number of utilities on file (compression/decompression, antivirus, file format conversion and multimedia).
Word processing	Understand the method of presenting, organising, storing and designing administrative documents and professional documents.	Edit and present simple text. Insert objects, format objects. Design and format common administrative documents and professional documents.
Spreadsheets	Know the structure of data in spreadsheets. Know and recognise error values in formulae.	Enter, format and extract data. Draw diagrams. Create mathematical and logical formulae. Analyse and apply common functions in Microsoft Excel to solve analytical problems, synthesise data in practice to serve learning, research and work.
Presentation	Understand the presentation format. Understand the presentation design process. Know the function of support tools during the presentation.	Draft and design a slideshow using Microsoft PowerPoint software. Use tools during presentations. Set up printing options.
Web browsing and communication	Know about safety, information security and the law when using information technology equipment.	Use the internet for learning, research and work applications. Use email and online applications to exchange and share information.

Adapted from Ministry of Information and Communication (2014) and Thanh Binh University' basic ICT course

The second course, ICT Application in Language Teaching and Learning, was designed to provide students with advanced ICT knowledge for developing an online course using software and other ICT tools, including lesson content, lesson plans, tests, projects, interviews for learning, teaching and research purposes. Table 2.7 shows an

example of ICT application in a language teaching and learning course at a Vietnamese university.

Table 2.7 *Main Content and Objectives of ICT Integration Course*

Section	**T**	**P**	**S**	**Content**
	Teaching Hours			
1. Introduction	2	4	6	Benefits and challenges of ICT integration in language teaching and learning.
2. Moodle	3	6	9	
Introduction				Tour of Moodle site and discussion. Using Moodle to create an online course.
Tools				Import question bank and create a quiz. Embed files and media. Create a discussion session.
Management				Import and manage student lists.
3. Audio tools	1	2	3	Create a listening exercise and test. Offline tools: Audacity. Online tools: Voraroo, Voxopop, Voicethread.
4. Sharing tools	1	2	3	Google Form; Google drive; Google groups.
5. Animation tools	1	2	3	Create an animation/Comics/Short films/Books. Toondoo, GoAnimate, Story Bird, Story Jumper, Dvolver Movie Maker.
6. Assessment tools	2	4	6	Offline tools: Hot Potatoes. Online Tools: Vocaroo, Google Docs, Test Generator, my.vocabulary.size.com, http:// lingtlanguage.com.
7. Screen capture	2	4	6	Create video clips by Camtasia, Cam Studio, Screencast – O – Matic.
8. Web 2.0 tools	1	2	3	Skills improvement: Mindmeister, Marking Mate, British Council website, http://readwritethink.org. Vocabulary improvement: Quizlet, Study Blue.
9. Communicating	2	4	6	Blogs, Wikis, Wall wisher.

T = Theory; P = Practice; S = Self-study. Adapted from "Detailed teaching plan on ICT application in language teaching and learning" at Thanh Binh University.

Research indicates that ICT related courses not only play an important role in preparing teachers to effectively integrate ICT into their teaching, but is also likely to change their attitudes towards the use of computers and their confidence to use them (Carbonara, 2006; Lee, 2002). However, pre-service teachers weren't satisfied with a

single ICT course as it was not deemed sufficient to integrate ICT successfully. They suggested ICT training be embedded in entire teacher preparation programs and that lecturers model ICT use in all areas of education (Goktas, Yildirim, & Yildirim, 2008; Sutton, 2011). This signaled a shift in pedagogical approaches and reforms in teacher education programs to successfully integrate computers and instruction and change teachers' practices (Al-Zahrani, 2011). Research shows that Vietnam is not alone in experiencing problems integrating technology into the curriculum for pre-service teacher education. It is a problematic issue globally and underscores the need for further investigation (Al-Zahrani, 2011). The effects of recently introduced ICT courses into EFL teacher education programs in Vietnam warrant investigation to determine how ICT has been integrated into practice. Such an exploration will ensure sufficient support for pre-service teachers to gain the confidence, knowledge and skills for successful integration and to achieve the desired outcomes.

Summary

Chapter 2 presented the geographic, political, socio-economic and historical context of the study and outlined the Vietnamese education system, describing the processes that prepare EFL pre-service teachers for graduation. An explanation of ICT policy in EFL education specifically and education more broadly was presented to convey the setting in which the research participants worked and studied.

Chapter 3, the literature review, provides an analysis of research articles and theoretical foundations related to the study.

Chapter 3: Literature Review

Chapter 3 presents a review of the literature associated with this study. The first section examines definitions of ICT; the different uses of ICT by teachers and pre-service teachers; and the benefits and challenges faced by educators in adopting ICT as a tool for enhancing language teaching. This helped to identify the key factors that affected the implementation of ICT policy in language education. The second section, the theoretical foundation, builds upon educational change theory and the Technological Pedagogical Content Knowledge (TPACK) framework. The chapter concludes with a conceptual framework for the study that incorporates the relationships in the theoretical framework and examines the implementation of ICT in an EFL teacher education program in Vietnam.

ICT in Language Education

Definition of ICT and ICT Integration in Education

Information and Communications Technology (ICT) has been variously defined because of the rapid speed at which technology changes (Albugami, 2016). For example, Vandeyar (2013) defined ICT succinctly as a diverse set of technological tools and resources for gathering, storing, retrieving, processing, analysing and transmitting information. More recently, Rajput, Raghuwanshi, and Thakur (2015) described ICT as any service, application or communication device, such as radio, television, cellular phone, computer and network, hardware and software, satellite system, videoconferencing and distance learning. In considering the role of ICT in teaching foreign languages, Dang (2013) defined ICT as:

> …computer- and internet-based technologies, covering both generic software applications (e.g. word processors, presentation software, email packages, web browsers, search and download) and CALL software applications plus websites useful for teaching foreign languages (p. 2).

In this study, the term ICT refers to all ICT applications that are useful for language teaching and learning, including hardware, CALL software applications, software plus websites, communication networks and social networks such as Facebook, Google+.

ICT Integration in Language Education

The term *ICT integration* is widely used in many fields; however, no explicit definition exists (Debra, 2017; Shaabi, 2010). According to Ghavifekr and Rosdy (2015), ICT integration in education can be described as a technology-based teaching and learning process using any learning technologies, including information resources on the web, multimedia programs in CD-ROMs, learning objects or other tools to enhance student learning. Teachers' competencies in designing, developing, controlling, using and assessing ICT systems and processes are critical to the success of ICT integration in the classroom (Sani, 2014). To understand the task that Vietnamese teachers face when applying ICT as part of educational reform, it is useful to consider the experiences of other countries in using ICT as a tool for teaching English.

Most previous studies on language teachers' use of ICT in other Asian countries suggest that ICT is used in classrooms to aid the delivery of teaching content. For example, Nim Park and Son (2009), Li and Ni (2011), and Hassanzadeh, Gholami, Allahyar, and Noordin (2012) concluded that teachers tend to employ basic ICT software applications, such as web browsers, email packages, presentation software and word processors as teaching, communication and administrative tools. Keengwe and Kang (2013) found PowerPoint presentation software was the most commonly employed application for presenting lessons. Similarly, in Vietnam, the application of ICT by EFL teachers is fairly standard. In a study of factors influencing teachers' ICT use in language teaching, Dang (2011) revealed that EFL lecturers used only common ICT applications for lesson preparation and delivery. They employed internet searching, Microsoft Office, email and PowerPoint, but usage was limited. Notably, software programs such as mind-mapping, educational blogs and voice threads were under-utilised because teachers perceived they were difficult to use.

Le (2015) conducted a study on EFL teacher educators' adoption and integration of ICT in the Mekong Delta of Vietnam. Her findings concurred with those of previous research (Bui, 2015; Duong, 2010; Pham, 2014) that reported the majority of teachers used only cassette players, overhead projectors, computers, and occasionally, audio recorders. Online software platforms that enabled interactive distance learning were not promoted.

These studies suggest that Asian EFL educators and Vietnamese teachers who teach in similar contexts apply ICT as an aid to lesson planning and presentation; however,

they are in fact constrained by their limited ICT knowledge and skills to take full advantage of technology in the classroom.

Benefits and Challenges of ICT Integration in Language Education

Research on the effective use of ICT in language education has revealed several key benefits, not only for EFL teaching and learning but also for creating authentic language environments (Nguyen, 2018). The most frequently mentioned advantage is encouraging active independent learning (Çakici, 2016; Houcine, 2011; Shabaya, 2009). Educational ICT assists students to work independently and enables access to support for their relevant foreign language learning. Learners in the above study gained confidence by learning through communicative methods in an interactive ICT environment, demonstrating that computer technology allows for both independent and collaborative approaches to practicing and acquiring foreign language skills (Duong, 2010).

The importance of motivation in language learning was highlighted by Azmi (2017), who undertook a review of recent studies on the use of ICT in EFL classrooms. The findings revealed that appropriate implementation of ICT in language learning motivated leaners and turned classrooms into open digital environments. Importantly, the author suggested that teachers be provided with adequate training and use ICT in conjunction with careful pedagogical planning and well-defined objectives.

Studies of ICT in foreign language education in Vietnam conducted by Dang, Nicholas, and Lewis (2012) and Pham, Tan, and Lee (2018) found that ICT had benefits for both teachers and learners. Their results showed that students were more engaged due to the variety of interesting, contextualised topics using video clips and relevant examples. Learners were inspired and teachers saved time because they did not have to create teaching aids.

Computer-assisted language learning (CALL) was useful for developing students' listening skills at Hanoi University (Luu, 2015). In Dao (2014) study, students' reading skills improved significantly with the help of modern technology and the internet. To improve students' writing skills, wikis were used by students at Hanoi University (Bui, 2015), blogs were used by students at Nong Lam University (Pham & Usaha, 2016) and Facebook was used by students at FPT University (Nguyen, 2019). ICT is also a valuable tool for EFL learners to expand their vocabulary, practice

pronunciation (Dang & Nguyen, 2014; Karras, 2016) and enhance their cultural understanding (Truong & Tran, 2014).

While there are many positive aspects of ICT, its use in education has resulted in some problematic outcomes. These include claims of possible detrimental effects on students' intellectual abilities, thinking and learning (Carr, 2010). For instance, Keen (2011) found that access to instant information tempted students to unquestionably accept search-engine results and copy data without evaluation or acknowledgement. Consequently, computers and the internet are viewed by some as facilitating students' engagement in academic dishonesty and plagiarism (Parker, Lenhart, & Moore, 2011). Other risks of students becoming dependent on ICT were identified by Carr (2010) as losing the ability to learn independently and shortening their concentration spans, leading to them being described as "shallow learners" who study less efficiently than pre-ICT generation students (Kolikant, 2010, p. 1384). According to Allen (2018), university students for whom English is an additional language tend to overuse the synonym function on their computers as a means of paraphrasing, unaware that English words can have several different meanings that dictate how they collocate and colligate. This leads to inappropriate substitutions and incorrect grammar and may be the reason why some teachers approach ICT cautiously, even though most claims are based on conjecture and supposition rather than empirical evidence (Selwyn, 2011).

Other authors have also reported serious obstacles in the efficient use of ICT. Mohammed (2015) claimed that a lack of ICT infrastructure, effective training, technical assistance and time discouraged teachers from employing ICT in language teaching. In addition, many teachers were not technologically competent or sufficiently confident to use ICT effectively (Pourhosein, Banou, & Zabihniaemran, 2015). Thus, these researchers agreed that, in addition to ICT resources, teachers should be provided with additional ICT training to improve their competency.

Both the advantages and disadvantages of ICT use were considered in this study when examining teachers' responses to ICT implementation in the classroom. It was also necessary to take into account factors that could affect language teachers' beliefs about the integration of ICT (Perrotta, 2013).

Theoretical Background

In chapter 2, the reforms introduced by government and MOET policies were outlined in relation to the use of ICT to enhance and reform ELT at all levels of

Vietnamese education. To better understand the factors that had an impact on the policy implementation process it was essential to identify the underlying theoretical considerations (Fullan, 2007) and the TPACK framework (Mishra & Koehler, 2006) that provided a comprehensive structure for the areas needing to be addressed.

The Theory of New Meaning of Educational Change

Fullan (2007), a change theorist, put forward a hypothesis on the stages of educational change and the factors influencing the educational change process. According to this author, change occurs as the "… result of adaptations and decisions made by users as they work with particular new policies or programmes, with the policy or programme and the user's situation mutually determining the outcome" (2007, p. 31). The term *educational change* is used interchangeably in the literature with *educational innovation* (Rogers, 1995) – both are concerned with newness.

Most educational researchers propose three extensive phases for the change process: initiation (or mobilisation or adoption), implementation (or initial use) and continuation (incorporation, routinisation or institutionalisation). The initiation phase is "the process that leads up to and includes a decision to adopt a change". Implementation refers to "the first experiences of attempting to put an idea or reform into practice", and continuation involves "whether the change gets built in as an ongoing part of the system or disappears by way of a decision to discard" (Fullan, 2007, p. 65). Table 3.1 shows the factors that influence the different phases of educational change.

Table 3.1 *Factors Affecting Different Phases of Educational Change*

Initiation	Implementation	Continuation
Existence and Quality of Innovations Access to Innovation Advocacy from Central Administration Teacher Advocacy External Change Agents Community Pressure/Support/Apathy New Policy—Funds Problem-Solving and Bureaucratic Orientations	**Characteristics of change** Need Clarity Complexity Quality/Practicality **Local characteristics** District Community Principal Teacher **External factors** Government and other agencies	Similar to the implementation process

Adapted from Fullan (2007, pp. 70,87)

In this study, only the factors affecting the implementation stage have been investigated, as the principal aim of the study was to explore how stakeholders, i.e., students, teachers and managers, perceived the implementation of national ICT policy in a teacher training course. The implementation phase is one of the most complex, because it is the means for achieving desired educational goals. During this stage, change comprises at least three dimensions: new teaching materials (syllabi and curricula); new teaching approaches (techniques, strategies and activities); and altering beliefs and principles underlying new policies or programs (pedagogical assumptions and theories) (Fullan, 2007).

Fullan's theory has been cited in numerous studies that investigated factors affecting educational change (Alev, 2003; Hu & McGrath, 2011; Le, 2015; Nachmias, Mioduser, Cohen, Tubin, & Forkosh-Baruch, 2004). For example, Alev (2003) identified challenges that emerged during the process of integrating ICT into teacher education in a Faculty of Education in Turkey. In that study, although the lecturers and student teachers had positive attitudes and understandings of ICT and its potential for teaching and learning science, the faculty failed to provide appropriate ICT training courses for student teachers to develop their technical skills. The problems evidently stemmed from the institutional level, where a lack of proper access to ICT resources, overcrowded classrooms, and a lack of technical and pedagogical support impeded the change process. After examining the human, infrastructure, organisational, internal and external factors affecting successful technology implementation in innovative pedagogical practices within schools, Nachmias et al. (2004) concluded that technical support was more important than the number of computers, while the attitudes of staff was a less critical factor for successful innovation.

On the topic of English language teaching, Hu and McGrath (2011) conducted a study on ICT-related EFL teacher development in the context of national Chinese College reform. Their findings indicated that while teachers initially had positive attitudes towards ICT use, EFL teachers were challenged to adapt to new teaching materials, student-centered teaching and guiding student autonomy due to inadequate support and training. In addition, there was a disconnect between demand and current professional development policies.

In Vietnam, Le (2015) explored conditions of ICT use and the factors (e.g., lecturer, institutional, technological and external factors) that affected lecturers' ICT

adoption. In that study, the lecturers' academic levels played a key role in ICT uptake, and although institutional administrators supported the change, the study suggested that professional development was a critical factor.

In general, there is a plethora of literature about factors that influence change in its different stages (Chaaban, 2014; Fullan, 2007; Le, 2015; Mofarreh & Ibrahim, 2016). This study was not aimed at examining each factor in detail, but rather on providing information and insights into how ICT can be successfully implemented in education.

Factors Influencing ICT Implementation

Fullan (2007) argued that educational change occurs at various levels: learners, teachers, education institutions, state-wide and nationally (Fullan, 2007). For over a century, incorporating technology in learning has been linked to educational change and its role has become more important as ICT facilities have been more widely introduced (Howard & Mozejko, 2015). According to the new meaning of change (Fullan, 1991, 2007), three main groups of factors affect the implementation of change: the nature of change, local characteristics and external factors.

Hu and McGrath (2011) believed these factors ranged from individual to institutional and governmental dynamics. It was therefore necessary to identify the physical environment in which the participants operated, as well as the social and historical influences and internal factors that affected individuals' thoughts and actions (Murphy & Ivinson, 2003).

Previous research on factors that influenced successful implementation of ICT in education classified these factors in similar ways. Some writers concluded that ICT implementation was impacted by both extrinsic barriers, such as policy, support and infrastructure, and intrinsic barriers, such as teachers' beliefs and attitudes (Ertmer, Ottenbreit-Leftwich, & York, 2006). Dang (2013) further categorised these into two areas: teacher-level and institutional-level factors. According to Dang (2013, p. 11) teacher-level factors included "beliefs, attitudes, ICT competence and confidence, social influence, teachers' workloads, teaching experience, age and gender". On the other hand, institutional-level factors comprised "leadership support, ICT professional development, access to ICT facilities and technical support" (Dang, 2013, p. 26). Balanskat, Blamire, and Kefala (2006) however, organised the barriers into three main groups: system, school and teacher factors.

As outlined in chapter 1, the purpose of this study was to investigate the process of ICT policy implementation in an EFL teacher education program aimed at enhancing the quality of English teaching and learning with the support of ICT. According to Chaaban (2014, p. 82), "ICT implementation is a complex process of change required on more than one level and influenced by complex contextual factors". The following sections review and describe the significant factors that affected ICT implementation in an EFL teacher education program. As in previous studies, three organisational levels were considered: national, institutional and teacher levels (Chaaban, 2014; Mominó & Carrere, 2016; Pandolfini, 2016).

In Vietnam, the national level is characterised by a top-down process of decision-making and policy development by the government. The institutional level relates to the responsibility of educational institutions who provide support, and the individual level refers to factors that affect teaching staff. Three clusters of the most relevant influential factors were considered:

1. Government role and support for ICT in EFL reform
   - Clarity of ICT policies
   - Management system for policy deployment

2. Institutional factors
   - Leadership
   - ICT resources
   - Professional development
   - Technical support
   - ICT-based pedagogical, curricular and assessment reform

3. Individual factors
   - Role change
   - Attitudes and beliefs
   - ICT knowledge and skills
   - ICT pedagogy

National Policy and Strategies

In general, policy is viewed as a plan of action agreed upon or selected to ensure the aims and steps to achieving goals are clear (Turnbull, 2010, p. 1171). Anderson (2005) provided a narrower concept and defined policy as a guiding principle or course of action that can be used to guide an organisation's decisions under specific circumstances. In education, policy is defined by Albugami (2016) as:

> ... the government's plans and strategies which explain the general principles of government, based on the state's objectives regarding the educational process, whether these articles are written and published in the form of decrees, or unwritten and unpublished, or are actions on the ground (p. 71).

Khan (2016) defined implementation as a process that involves many actors, organisations and controlling techniques. Accordingly, policy implementation is viewed as a process that encompasses public and private individuals or group actions to transform policy-setting goals into actions (Pressman & Wildavsky, 1984). Howlett, Ramesh, and Perl (2009) viewed policy implementation as part of a cycle and that implementation relates to how policies are put into action to achieve the intended goals.

In policy implementation research, different generations of researchers placed different emphases on factors that affect the success or failure of public policy. Three generations of research on policy implementation theories (Goggin, Bowman, Lester, & O'Toole Jr, 1990; Khan, 2016; Matland, 1995; Paudel, 2009; Stewart Jr, Hedge, & Lester, 2008) are summarised in Table 3.2 in relation to their emphasis and criticisms.

Table 3.2 *Summary of Policy Implementation Theories*

Generation	**Emphasis**	**Criticisms**
First generation 1970s - 1980s	Understand the factors that facilitate or constrain implementation.	Atheoretical, case-specific and noncumulative studies.
Second generation 1980s - 1990s	Develop analytical frameworks to guide research, top-down and bottom-up approaches to explain implementation success or failure.	Too many case studies. Not enough validation and replication. Failed to provide a comprehensive synthesis or unifying approach to implementation.
Third generation 1990 onwards	Build explicit implementation theory.	Has not been realised in practice.

First generation studies were primarily concerned with identifying the barriers to effective policy implementation, while second generation studies focused on framework

development to explain the success or failure of implementation (Stewart Jr et al., 2008). Top-down models required careful study because they used statutory language as a starting point, placed exclusive emphasis on statute framers as key actors and ignored or eliminated political aspects (Berman, 1978). Conversely, the bottom-up approach over-emphasised local autonomy by identifying the local network of actors and asking them about their goals, strategies, activities and contacts (Stewart Jr et al., 2008). Despite the contributions of the first and second generation researchers, they nevertheless failed to identify differences between the types of implementation outcomes, causal patterns and relative importance of many independent variables. Third generation research attempted to create a theoretical model, operational concepts and reliable indicators for policy implementation (Paudel, 2009; Saetren, 2014).

Educational policy typically undergoes different stages of progress: formulation, adoption and implementation, and it is vital for implementation to take into account factors that could impede progress unless they are addressed in the planning stage. Many scholars (Elmore, 1978; Mofarreh & Ibrahim, 2016; Paudel, 2009) identified four main aspects for effective implementation.

First, current educational issues must be identified as a means of rationalising the inclusion of ICT into educational programs. According to Albugami (2016, p. 39), such changes are usually brought about by "dissatisfaction with the status quo and the desire to improve the educational opportunities provided to students". Hakami, Hussin, and Dahlan (2013) and Al Harbi (2014) supported this view, adding that educators must clarify the objectives and expected learning outcomes of the new policy and select the most suitable ICT tools to assist teachers in achieving these outcomes. It follows that in order to reach this goal "policy makers and others who are primarily situated outside the classroom context" obtain the opinions of literacy teachers about the proposed action, otherwise they will "not respond favorably to these changes" (Toll, 2001, p. 74).

Secondly, ICT policy should include clear guidelines for educational leaders and teachers to follow during the implementation stage (Al Harbi, 2014). Twining (2007) and Tondeur, Van Keer, van Braak, and Valcke (2008) maintained that providing a technically-rich environment will not automatically result in effective ICT integration if teachers are not aware of the purpose of ICT use, how to select suitable ICT tools or do not have a solid understanding of the value ICT brings to education. Consequently,

several researchers have called for explicit steps in policy planning to ensure these aims are fulfilled (Albugami, 2016; Paudel, 2009).

Thirdly, Albugami and Ahmed (2015) asserted that in addition to investing in ICT resources for classroom practice, the government should provide measures to support and manage ICT implementation. For example, in EFL education, MOET should design a support system for teachers comprising an integrated approach with online and offline ICT assistance to guide teachers through the implementation process. Another inhibitor of ICT implementation is the lack of collaboration between MOET and other governmental bodies (Oyaid, 2009) and schools (Albugami, 2016). Balanskat et al. (2006); Roblyer and Doering (2012); Vanderlinde, van Braak, and Dexter (2012) suggested that policy makers focus on timely support and manage the processes between MOET and other ministries or universities for deploying ICT policies to ensure adequate support for teachers to improve their teaching practice.

Another factor that hinders ICT implementation is a lack of supervision and progressive assessment by MOET (Hakami et al. (2013). According to Goktas, Yildirim, and Yildirim (2009), supervision is important at all levels to identify shortcomings and correct them in a timely fashion. In addition, ongoing evaluation is vital for establishing policy reform and preventing outdated and poorly designed policies (Mofarreh & Ibrahim, 2016). Consequently, several researchers (Elmore, 1978; Paudel, 2009) highlighted the need for accurate and objective measurements of performance. Figure 3.1 summarises four vital elements that are inextricably interrelated in the ICT policy implementation process.

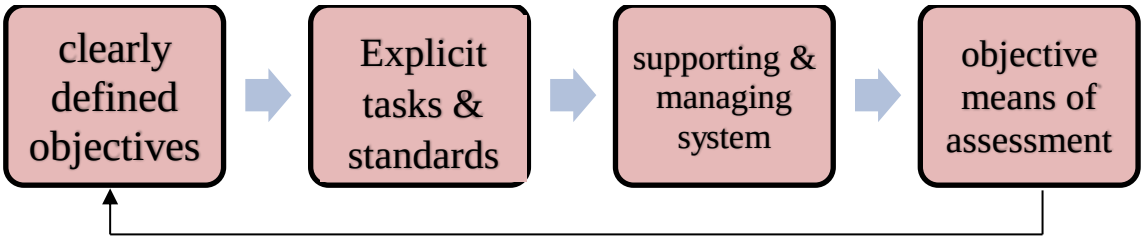


Figure 3.1 Essential Elements of National ICT Policy

In addition to the role of government in policy planning, specification and control, the success of ICT policy also depends on other critical factors: local capacity,

individual motivation and will (Khan, 2016). A review of institutional factors follows to place the current research in context.

Institutional Factors

This study merged two fields – change management and policy translation – to provide a framework for understanding the issues related to ICT policy implementation at an institutional level. The reviewed literature highlighted six influential subfactors: a) leadership support; b) ICT curriculum policy; c) access to ICT infrastructure; d) ICT professional development, e) technical support and f) assessment.

Leadership Support

In addition to government administration, leadership support at an institutional level is crucial for successful ICT implementation. Institutional leaders are tasked with interpreting national policies and planning the direction of ICT use for the entire organisation (Peeraer & Van Petegem, 2012a). To be successful, ICT guidelines should provide teachers with a clear rationale and comprehensive list of goals to be achieved when integrating ICT into their classrooms (Buabeng-Andoh, 2012; Goktas, Gedik, & Baydas, 2013). Institutional leaders are also responsible for ensuring that public universities are equipped with sufficient ICT infrastructure and facilities. Additionally, the role of leadership in teachers' professional development includes creating opportunities and providing encouragement (Newhouse, 2010; Timperley, 2011). In order to motivate and maintain teachers' engagement with ICT, some leaders have issued incentives in the form of financial and non-financial rewards (Mahdi, 2013; Wastiau et al., 2013).

However, leadership support in isolation is insufficient for successful integration of ICT. Supportive ICT policies, a clear vision and guidelines are important enablers of ICT integration, provided teachers are familiar with what is required of them (Tondeur et al., 2008). Research has shown that, guided by explicit ICT policies, educators in teacher training institutions used ICT with high frequency in classroom teaching (Tondeur et al., 2008).

The literature shows that teacher educators in institutions with a lack of leadership support in ICT policy, vision, guidelines and incentives are unlikely to use ICT regularly in their method courses, largely because they have no shared goals or understanding of the rationale for ICT use (Peeraer, 2013). For these reasons, failure to

achieve the goals of national ICT policy can be attributed to a lack of leadership (Almaghlouth, 2008).

Curriculum ICT Policy

Khvilon and Patru (2002) believed that ICT tools contributed valuable teaching and learning resources to real-world subject content. These tools also assist teachers to analyse and synthesise collected data, and then convey teaching content through different media. In the pre-service teacher curriculum, ICT integration gives educators access to resource databases, improves pre-service teachers' ICT skills and productivity, increases pre-service teachers' participation and engagement, and decreases the time spent on lesson preparation and organising teaching materials (Roblyer & Doering, 2012).

In educational reform, innovative curriculum design combined with ICT-based pedagogical practices creates a conducive environment for ICT integration (Al-Zahrani, 2011; Kozma, 2008; Kozma, 2011). O'mahony (2003) suggested that the intention and direction of ICT use, such as minimum hours, targeted qualifications or specific ICT-based assessment tasks be clearly stated in ICT curriculum policy. In the early phases of ICT use it is also recommended that literacy courses, including tutorial or drill-and-practice software associated with traditional pedagogical models be introduced into the curriculum to provide pre-service teachers with knowledge of commonly used ICT equipment, productivity software, and to some extent, networking. As ICT use becomes more common, the emphasis should shift to more advanced applications, such as simulations, games associated with pedagogical change that treat students as active agents in solving complex, real-world problems, and sustained investigation on collaborative projects (Kozma, 2011). However, it is challenging for teaching institutions to integrate ICT into their curriculum. Peeraer and Van Petegem (2011) argued that the pressure was greater in developing countries where ICT implementation in the curriculum remains limited and merely replaces traditional teaching approaches. An exploratory analysis of technology plans in Vietnamese teaching institutions by Peeraer and Van Petegem (2012a) found no models or guidelines for pedagogic and curriculum change, despite ICT being considered an important pedagogical tool for innovative teaching methodology. This may be because teacher education programs used pedagogical content knowledge as a core philosophy (Jamieson-Proctor, Finger, & Albion, 2010) and ICT was viewed as a standalone course (Garba, 2014).

ICT Infrastructure and Facilities

Important factors for promoting teachers' use of ICT in their classroom instruction have been identified as: availability of computers in classrooms rather than a few computer laboratories; bookable ICT rooms; wireless internet connection; access to laptops; and institutional access to shared resources (Scrimshaw, 2004). ICT resources must be "easily accessed", "reliable" and "up to date" to prevent problems for teachers (Hu & McGrath, 2011; Le, 2015, p. 46).

Due to financial constraints in developing countries such as Vietnam, low levels of access have been a common cause of limited usage (Peeraer & Van Petegem, 2011). However, in developed countries, where teachers have high levels of access to computers, the internet and other facilities, research has found that ICT usage is not necessarily high (Cuban, Kirkpatrick, & Peck, 2001), suggesting that access alone is insufficient for successful integration of ICT and does not automatically lead to ICT use (Buabeng-Andoh, 2012).

ICT Training and Professional Development

A major enabler of successful ICT integration in teaching (Buabeng-Andoh, 2012) is professional development in providing teachers with knowledge of available ICT facilities, updating their understanding of ICT applications and guiding operation of these resources. Research has shown that informal self-training or more formal ICT training assists in improving teachers' ICT competency and leads to self-efficacy, greater confidence and positive attitudes (Buabeng-Andoh, 2012; Kessler, 2007). Conversely, a lack of appropriate ICT training has been shown to impact negatively (Bauer & Kenton, 2005). In the process of conducting ICT professional development, national and institutional administrators must consider balancing time constraints and heavy workloads, as well as the content of ICT training and teachers' existing knowledge and skills. Buabeng-Andoh (2012) asserted that professional development should focus on how to integrate ICT tools into subject teaching.

The literature highlighted that professional development related to ICT should be an ongoing process rather than a one-off event, so that teachers' ICT skills are sustained (Trucano, 2005). Effective ICT training contributes to teachers' positive beliefs in the use of ICT, thereby reducing their levels of anxiety, strengthening their beliefs in the value of using ICT and their abilities to master it (Teo, 2011). However, the literature review revealed that several issues, such as venues for ICT training, timing

and content must be considered before implementing professional development programs (O'mahony, 2003).

Technical Support

During the implementation period, sufficient and effective technical support is a critical factor for teacher educators to successfully implement ICT into their teaching and encouraging trainee teachers' use of ICT (Johnson & Hoba, 2015; Tondeur, van Braak, Siddiq, & Scherer, 2016).

In early attempts to introduce ICT, teachers experienced problems with a lack of timely technical support and out-of-date software and hardware (Preston, Cox, & Cox, 2000). Research findings indicate that these impediments discouraged teachers from adopting ICT because they felt frustrated, fearful of technology failures and deemed troubleshooting a waste of teaching time (Goktas et al., 2009; Kumar, 2016). Reliable ICT facilities (Cuban et al., 2001) and confidence in being able to solve technical problems (Tondeur et al., 2008) are crucial for successful ICT integration. In addition to formal technical support, it is also useful to establish ICT peer support groups in institutions to provide just-in-time peer support for teachers (Goktas et al., 2013).

Assessment

Ferrari, Cachia, and Punie (2009) defined assessment as a vital component of the learning and teaching process that gathers evidence about students' proficiency in order to judge their achievements at the end of a course. Changes in curricula, pedagogy and assessments should be carried out simultaneously, because without any one of them, other changes are ineffective (Cachia, Ferrari, Ala-Mutka, & Punie, 2010). Khvilon and Patru (2002) emphasised the importance of assessing students' skills in analysing and applying information, problem solving, collaborating, communicating and using a range of technology tools in a knowledge-based society. ICT offers students the capability to create knowledge products, such as reports, presentations and creative works, and at the same time, serves as a new assessment method for performance tasks and portfolios.

Pre-service teacher training provides a foundation for using assessment to improve learning and promote student engagement (Eyers, 2014). Nevertheless, research has shown that beginning teachers have low competency levels in assessment and revealed a misalignment between national standards and syllabus expectations (DeLuca & Bellara, 2013). These researchers suggested that national education policies be embedded in entire pre-service programs rather than solely within assessment

courses. Further research incorporating multiple perspectives on an enhanced research agenda to assist teacher candidates engage more confidently and competently with assessments in their classrooms, will address this shortcoming.

To summarise, the literature shows that institutional factors are vital considerations in the implementation of ICT innovation. The six subfactors outlined above need to be in place for successful outcomes to be fully achieved. O'Connor and Gatton (2004) concluded that no ICT-based innovation can succeed without a real commitment on broad institutional and personal fronts.

Individual Factors

Institutional factors have been shown to outweigh individual factors that impact on teachers' uptake of ICT, such as roles, beliefs and attitudes, ICT knowledge and skills and ICT pedagogy (Fulkerth, 1992; Fullan, 2007; Le, 2015). As shown above, training and professional development are highly influential in establishing teachers' beliefs and attitudes as well as their ICT knowledge and skills.

Role Change

In education reform, teachers' roles have changed from information and knowledge dispensers to learning facilitators for promoting students' independent learning. For students to comprehensively adopt ICT and new learning strategies, teachers need to change their roles. Many researchers have conducted studies in the context of technology teaching and found that the role of teachers changed according to their teaching goals. In a web-based teaching environment teachers are required to take on four different roles as: a) reflective learners and researchers in their own professional development; b) designers, developers, organisers, collaborators, supervisors and assessors in their teaching practice; c) knowledge constructors and personality builders for students' personal development, and d) mentors on ethics in web-based environments (Liao, 2005). In a study on autonomous language learning, Wang and Woo (2007) found that teachers were expected to be counsellors, inspirers, trainers, providers of specific training for students and developers of suitable materials for students' autonomous learning.

A study by Zheng and Davison (2008) examined English teachers' teaching processes in China and indicated that Confucianism had less influence in the EFL classroom. However, a teacher-centered model and exam-oriented teaching and learning method still dominated English classrooms, because teachers were not confident in a

student-centered teaching model and lacked sufficient ICT knowledge and skills to implement ICT in their language teaching. Similarly, Hu and McGrath (2011) claimed that Chinese college teachers acknowledged their teaching should become more student-centered, but were unable to adapt to new teaching materials, student-centered teaching and guiding students in their autonomous learning. Since ICT-enhanced learning is not only new for students but also for teachers, many scholars have suggested that teachers be assisted to cope with changes in their roles. Lock (2006) proposed teachers be provided with opportunities to observe and experience the advantages of role changes and that professional development for teachers be student-centered, followed by reflection in action. In addition, ICT-supported training courses for teachers were recommended before investing in other favourable conditions (McGrath, 2007). Since changing roles is a long and complex process, teachers need time to change (Hu & McGrath, 2011; Liao, 2005; Meng, 2005) and access to external assistance throughout.

TPACK Framework

The Technological Pedagogical and Content Knowledge (TPACK) framework was devised to assist teachers effectively combine technology, pedagogy and content knowledge. Lecturers and university graduates are expected to have specific knowledge of their teaching discipline, as well as suitable pedagogical knowledge to allow them to plan lessons and pass knowledge on to their students. The difficulty for educators is linking all three areas and devising a more effective way to teach their specialty subjects.

Researchers have found TPACK not only identifies links between technology, content knowledge and pedagogy, but can also be used to produce a questionnaire for measuring teachers' confidence levels, beliefs and attitudes towards ICT in relation to their classroom teaching (Baser, Kopcha, & Ozden, 2016; Dinh, 2015).

Development of TPACK

The literature review suggested that good ICT knowledge and skills serve as enablers of the implementation process. Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur (2012b) claimed that by increasing teachers' ICT knowledge and skills, their confidence, attitudes and beliefs can also be changed. In this study, the TPACK framework provided a model to describe how EFL lecturers and pre-service teachers viewed their subject knowledge, pedagogy, confidence levels, beliefs and attitudes towards integrating ICT into their English-language teaching.

The TPACK framework was chosen because it was initially developed for teacher education and has been effective in other research contexts similar to the current study (Chai, Koh, & Tsai, 2013). Further, the nature of its components, described in more detail later, allowed for the integration of additional theoretical and pedagogical considerations in the investigation. Since inception, this model has taken into account the needs of particular learners, compatible with a needs-analysis approach advocated in language teaching (Long, 2005) and the contribution of content specialists, such as EFL teachers.

The TPACK model is a modification of the original Pedagogical Content Knowledge (PCK) model constructed by Shulman (1986, 1987). According to Shulman (1987), PCK is a particular type of knowledge that:

> … represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organised, represented and adapted to the diverse interests and abilities of learners, and presented for instruction. Pedagogical content knowledge is the category most likely to distinguish the understanding of content specialist from that of pedagogue (p. 8).

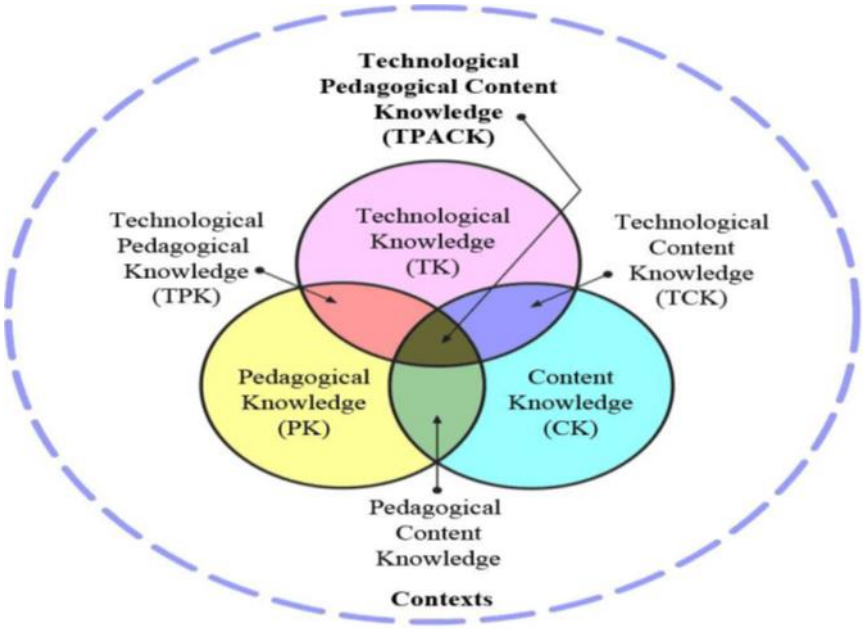


Figure 3.2 The TPACK Framework

Source http://tpack.org/

Earlier in-service ICT courses tended to treat technology as separate from teaching and learning, so the focus was on ICT knowledge rather than the application of this knowledge to teaching and learning (Mishra & Koehler, 2006). However, later developments by Mishra and Koehler included the integration of technology knowledge into pedagogical and content knowledge. In contrast, the TPACK model promotes the connection between teacher technology, pedagogical and content knowledge.

TPACK Components and ICT Knowledge and Skills

This section presents definitions of the seven TPACK components, primarily based on Mishra and Koehler (2006), Shulman (1986) and other studies compatible with EFL teaching and learning practice.

Mishra and Koehler (2006) described Content Knowledge (CK) as knowledge of the learning or teaching subject, comprising "central facts, concepts, theories and procedures [and]…rules of evidence and proof" (Shulman, 1986, cited in Mishra & Koehler, 2006, p. 1026). CK varies according to the demands of different subjects, such as mathematics or English (Mishra & Koehler, 2006). (Kang, Ni, & Li, 2010) believed EFL teachers should possess knowledge to teach English language skills (vocabulary, conversation and problem solving); linguistic components (knowledge of English sounds, word formation and syntax); and cultural understandings of English-speaking countries. These components represent the "what" of teaching. However, it is also important for teachers to understand the "why" and "how" of teaching EAL, by understanding the underpinning theories that guide the choices they make.

Chaaban (2014) took this into account by defining the PK of EFL teachers as including knowledge of the purpose, values, strategies and goals of the teaching process. It is vital for teachers to understand the learning, cognitive, social and developmental theories and how to apply them in EFL teaching practice. In their second categorisation, Mishra and Koehler (2006, p. 1026) provided a more general view of Pedagogical Knowledge (PK) and defined it as "a generic form of knowledge that is involved in all issues of student learning, classroom management, lesson plan development and use, and student evaluation".

Chaaban (2014) acknowledged that pedagogical knowledge does not change rapidly, unlike technological knowledge (TK) that is not easy to define because technology is constantly changing. At a basic level, teachers are constantly required to learn and adapt to new technology, while at a higher level, TK requires learning to

adjust computer settings, install or remove computer software, and establish an internet connection (Mishra & Koehler, 2006). Schmidt et al. (2009) identified further complexities, adding that teachers develop the necessary ICT knowledge and skills to troubleshoot common technical problems independently. They should also become familiar with and investigate possibilities of using a variety of new technologies, so that EFL teachers' TK includes using and operating general ICT devices and applications, troubleshooting common technical issues and an ability to adjust to new technologies (Dinh, 2015).

In linking CK and PK, Mishra and Koehler (2006, p. 1027) defined pedagogical content knowledge (PCK) as cognisance of suitable teaching approaches to teaching content and rational scope, sequence, assessment and reporting procedures. Mishra and Koehler (2006) emphasised the need for teachers to have knowledge of learners and their characteristics in order to plan their teaching strategies to suit different learners. Without a grasp of theoretical considerations this would prove very difficult. Murray and Christison (2010) included this in a number of PCK elements they deemed particularly important for EFL teachers. Their first recommendation was for teachers to be able to modify the content they delivered to students to ensure it was appropriate for different learner groups. Secondly, teachers should be aware of students' needs to interact so that they can negotiate meaning. Thirdly, they endorsed teaching strategies that followed communicative language methods as more suitable for meeting learners' needs. Bax (2003) also suggested pairing or grouping students.

Technological Content Knowledge (TCK) was defined by Mishra and Koehler (2006, p. 1028) as a reciprocal relationship between technology and content. Mishra and Koehler (2006) argued that teachers should know how technology can change the delivery of subject matter so that teachers can choose the most suitable ICT tools for their teaching. In this way, an EFL teacher's TCK encompasses knowledge of the mutual relationship between ICT and English language skills, linguistics and culture (Dinh, 2015).

Technological Pedagogical Knowledge (TPK) refers to teachers' awareness of various technological programs, their usefulness and capacity for supporting teaching and learning, and knowing how to use them. In the context of EFL, a teacher's TPK also includes understanding EAL learning theories, an ability to select suitable ICT

applications to suit different learning styles, and using ICT in classroom management, lesson preparation and assessment procedures (Dinh, 2015, pp. 45-46).

Finally, Technological Pedagogical Content Knowledge (TPACK) represents a complex form of professional knowledge involving:

> …understanding of the representation of concepts using technologies, pedagogical techniques that utilise technologies in constructive ways to teach content knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology, and knowledge of how technologies can be utilised to build on existing knowledge and to develop new epistemologies or strengthen old ones…(Mishra & Koehler, 2006, p. 1029).

In preparing pre-service teachers to use ICT effectively, teacher educators are required to replicate these complex knowledge components in their methodology courses, while pre-service teachers are expected to thoughtfully integrate pedagogy content and technology into their lesson planning (Angeli & Valanides, 2009; Shoffner, 2007).

In EFL teaching, TPACK goes beyond ICT knowledge and skills. For EFL teachers, the framework is used to improve the language teaching process. It requires teachers to identify the competency of students to communicate and understanding how classroom interactions assist students in using technology to learn and improve their English skills (Chapelle, 2009). It also requires teachers to use ICT for designing English lessons based on real-life tasks (Kang et al., 2010) and to evaluate the usefulness of ICT in improving student performance (Compton, 2009) in a fully equipped ICT classroom.

ICT Pedagogy

Educational changes have placed the emphasis on a student-centered approach within a technology-inclusive curriculum that promotes students' skills, understandings, beliefs and values (ISTE, 2008). Some researchers (Larson & Miller, 2011) have called for appropriate pedagogical practices to develop students' creative and critical thinking, problem-solving processes, collaborative work and confidence. Karagiorgi and Charalambous (2006) believed that in education, ICT is not only an operational tool but

also a vital learning and communication tool that assists students to improve their understandings and skills. However, merely knowing how to operate ICT facilities is not enough; teachers must be aware of the ways in which ICT can support and enhance their students' learning outcomes. Moreover, teachers must have sufficient confidence to apply ICT successfully in their teaching practice (Hu & McGrath, 2011).

In 2006, Mishra & Koehler developed a framework whereby technological knowledge, pedagogical knowledge and content knowledge (TPACK) interact to form a body of knowledge for explaining pedagogy and ICT integration (a detailed discussion is presented in the following section). Since technological knowledge is in a constant state of change, teachers must be familiar with integration processes and how resources can be used to prepare and present subject content (Kershaw, 2016). Accordingly, in educational reform, ICT pedagogy can be defined as a new methodology whereby teachers effectively integrate ICT into pedagogical and content knowledge to increase students' control of their learning, self-regulation and collaboration, fundamentally changing the role of teachers.

Many scholars found that teachers lacked expertise and confidence to use ICT pedagogy in language teaching (Drenoyianni, 2004; Hu, 2007; Hu & McGrath, 2011; Law, Chow, & Yuen, 2005). For example, a study in Greece (Drenoyianni, 2004) investigated the implementation of a project-based ICT course for teacher training and found that teachers encountered pedagogical problems rather than technological ones. In Webb and Cox (2004) study, teachers' pedagogical knowledge also needed improvement. Hu and McGrath (2011) found teachers were unskilled and lacked the confidence to apply ICT to their pedagogy, highlighting the urgent need for training teachers in the use of ICT skills in a pedagogic context. In addition, EFL teachers encountered challenges in guiding students' individual learning, autonomous learning and cooperative learning in an ICT-equipped context, signalling a need for teachers to engage with pedagogy that promotes students' autonomy and individual learning (Smith, Erdoğan, Lamb, & Reinders, 2008). Gu (2007) cautioned that new ICT pedagogy cannot be adopted in a short timeframe because it involves a whole gamut of tasks, such as experimenting, evaluating, adjusting and re-routing.

Beliefs and Attitudes

Attempts have been made to define teachers' beliefs. Pajares (1992, p. 307) labeled teacher beliefs as a "messy construct" and cited a problem with defining

teachers' beliefs caused by "poor conceptualisation and differing understandings of beliefs and belief structures". Others have been more forthright in offering definitions. Borg (2001, p. 186) defined it as "a proposition which may be consciously or unconsciously held, is evaluative in that it is accepted as true by the individual, and is therefore imbued with emotive commitment; further, it serves as a guide to thought and behavior". A statement by Richardson (as cited in Tondeur et al., 2008) described beliefs as: "psychological understandings, premises or propositions felt to be true" (p. 2543). Despite these reservations, Galvis (2012, p. 100) stated that "teachers' educational beliefs are understood as the different educational phenomena that have an effect on teachers' decision making in the classroom".

The role of teachers' beliefs in predicting how they apply ICT in language teaching has received much attention, because changes in beliefs are associated with changes in practice (Ng, Nicholas, & Williams, 2010). To explain, Chaaban (2014) proposed three types of beliefs: a) a belief in the value of using ICT; b) a belief that using ICT is pedagogically beneficial, and c) teachers' beliefs in their ability to master the technology. Teachers who value ICT and believe that it will lead to better teaching and learning outcomes are more likely to use it. Similarly, if applying ICT offers pedagogical benefits by improving their teaching methods they are more likely to want to master it. The third belief, self-efficacy, asserts that teachers who believe they have an ability to successfully employ ICT in their teaching practice are confident to use it.

Teacher beliefs in the relevance and benefits of ICT for their classroom practice play a primary role in their willingness to adopt ICT applications (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012a; Mama & Hennessy, 2013). When they believe in the usefulness of ICT to meet both their own and their students' needs, they are more likely to integrate it into their work (Mirriahi, Dawson, & Hoven, 2012). Similarly, teachers who tend to use ICT believe that it provides the best solutions to helping them achieve their teaching goals (Ertmer et al., 2012b).

In addition, EFL lecturers and pre-service teachers must be able to reflect on the use of ICT during and after teaching practice because reflective practice plays a vital component in teacher training programmes (Farrell, 2011; Shoffner, 2009). Nomlomo and Desai (2014) stated:

> In every sphere of his/her work, the chartered teacher will be reviewing practice, searching for improvements, turning to reading and search for fresh insights, and relating these to the classroom and the school. He or she will bring to his or her work more sophisticated forms of critical scrutiny, demonstrate a heightened capacity for self-evaluation, and a marked disposition to be innovative and to improve.

According to Shoffner (2009) the integration of reflection and ICT provides teachers the chance to develop their technological, pedagogical content knowledge (TPACK) and the connection between these single domains which this study focused on.

Another essential determinant of successful change in this area of education is teachers' attitudes towards ICT integration into instruction. Teachers with positive attitudes are more likely to integrate ICT into their work, whereas teachers whose attitudes are negative tend to avoid using it (Dang & Nguyen, 2014; Fu, 2013; Mama & Hennessy, 2013; Mofarreh & Ibrahim, 2016). This includes their beliefs in the value and benefits of integrating ICT into their language teaching and learning processes. Additionally, if teachers experience success, they will continue to use ICT tools in their teaching practice, while failure results in embarrassment or "loss of face" and is likely to result in resistance to its use (Aydin, 2013).

Application of the TPACK Framework in Education

The TPACK model has featured in a large number of journal articles, conference papers and postgraduate research papers to generate, validate and measure teachers' knowledge of how to successfully integrate technology into their classroom instruction (Chai et al., 2013; Graham, 2011; Jordan, 2014). While considerable research has used the construct to improve teacher training programs in various subjects and professional development courses and for generating, validating and measuring teachers' ICT knowledge and skills, (Chai, Koh, Tsai, & Tan, 2011; Hofer & Grandgenett, 2012) very little research has been undertaken in Vietnam, particularly with Vietnamese pre-service EFL teachers.

As one of the first researchers in this field, Koçoğlu (2009) examined how technology knowledge and skills were developed in second-language teaching in a Turkish EFL program for pre-service teachers. She found that the TPACK framework

assisted EFL teachers to build, integrate and implement ICT successfully into their learning and teaching practice.

Two USA studies (Cavin, 2008; Hofer & Grandgenett, 2012) investigated how pre-service teachers of mathematics, biology and social sciences integrated TPACK into their teacher preparation programs. The findings from these studies revealed that, through their ICT training, pre-service teachers developed a greater awareness of how content, pedagogy and technology complemented each other. With this awareness they were able to adjust their teaching plans and teaching practice to enhance the quality of their lessons by incorporating ICT. However, while their technological and pedagogical knowledge (TPK) grew significantly, there was limited development in their technological content knowledge (TPK)

A later study by Kurt, Mishra, and Kocoglu (2013) investigated the outcomes of an explicit TPACK development program for pre-service EFL teachers in Turkey. Their findings showed that after the program, the technology-related domain scores of all participants showed a statistically significant increase, although they had not received any prior ICT training for second-language teaching. These future teachers also gained more confidence in selecting ICT tools to enhance their teaching and learning practice.

A study by Garrett (2014) at Cornell University, USA, in which instructors, clinical professors and adjuncts, such as graduate teaching assistants, self-assessed their perceptions of TPACK, had positive beliefs in the role of technology training and confidence in their TPACK knowledge and skills.

Confidence was also a factor in a study by Al Harbi (2014), who investigated Saudi Arabian high school teachers' perceptions of their ICT implementation and found they had a low to moderate knowledge of TPACK elements, resulting in a low level of ICT implementation. The findings also revealed barriers that further inhibited ICT implementation, such as insufficient ICT resources; lack of professional development and support; unavailability of ICT policy and limited ICT knowledge.

Another study (Doukakis et al., 2010) conducted in Greece to measure the TPACK knowledge of secondary computer science teachers and their ICT implementation revealed that teachers of Computer Science had very high CK, TPK, TK, PK and TPACK. However, their TCK and PCK were relatively low and they were less confident in these domains. The study also showed that their efforts to implement ICT were relatively restricted (62%) due to time pressures, class sizes and insufficient

ICT tools. The researchers suggested setting guidelines for teacher education programs to select appropriate ICT tools for classroom instruction.

As noted earlier, research into the use of TPACK by university EFL teacher-trainers in Vietnam is limited. A primary school study conducted with EFL beginner teachers investigated the factors that influenced ICT use in their teaching practices (Dinh, 2009). Dinh concluded that these teachers could not fully apply ICT in their language teaching because of their limited ICT knowledge and skills. Importantly, according to Dinh, "a big investment into technology infrastructure and the top-down approach of implementing technological change in English teaching is not a guarantee for the adoption of technology by English teachers in their classroom practice" (p. 9).

In another study examining how EFL teachers perceived the blending of e-learning with traditional teaching, Hoang (2015) reported that teacher understanding was limited. Negative factors included a reliance on traditional teacher-centered methods, unclear government guidelines, limited understanding of TPACK by management, and teachers' segmented knowledge of TPACK. The researcher highlighted the need to improve educational leaders' understanding of how to blend e-learning with traditional teaching approaches and CLT within the local context and a framework for training pre-service teachers to take advantage of the benefits of e-learning for language teaching in Vietnam.

A recent study at a university in the north of Vietnam in which EFL teachers self-assessed their knowledge and beliefs of TPACK identified important factors as a belief in the value that ICT adds to EFL teaching and learning and teachers' ICT knowledge and skills (Dinh, 2015). The research also uncovered the added complexity of other factors and distinguished between compulsory and optional implementation stages.

The findings from these studies contribute to our current understanding of the characteristics of TPACK and provide relevant information on preparing future teachers to use ICT. They suggest educators not only teach their students which ICT tools to use, but also guide them to integrate content, pedagogy and technological knowledge into existing teacher education programs to enhance their language learning and teaching. A number of issues may have impacted these results, including defining the boundaries between constructs. This study adds to the call of researchers such as Brantley-Dias and

Ertmer (2013) to re-examine the framework for explaining the knowledge teachers require to integrate ICT into practice.

Other Factors Influencing the Uptake of ICT in EFL Teaching

Research shows that the uptake of ICT in teaching has been affected by both personal attributes, such as age, gender and teaching experience (Buabeng-Andoh, 2012), and organisational difficulties, such as teachers' workloads, classroom configuration, large class sizes and time.

The impact of teachers' genders has shown inconsistent results. A Singaporean study by Koh and Chai (2011) investigated the perceptions of pre-service teachers attending a compulsory ICT course with a focus on age and gender effects on their acceptance of TPACK components. The research provided insights into the different factors affecting pre-service teachers' perceptions of ICT integration and concluded that ICT knowledge and skills have a greater impact on pre-service teachers' perceptions than demographic factors like age and gender. Moreover, TPK and TCK were perceived as the most influential elements of the TPACK framework.

Similar results were revealed by Öz (2015), who assessed pre-service EFL teachers' perceptions of TPACK in Turkey after TPACK elements had been integrated into a teacher training program. However, unlike Koh and Chai's (2011) investigation, gender differences were significant, with female perceptions of TPACK more positive than those of males. Venkatesh, Thong, and Xu (2012) found that teachers' age and experience impacted on their willingness to use ICT. Rahimi and Yadollahi (2011) concurred that older, more experienced teachers had less enthusiasm than younger teachers in applying ICT to their teaching.

In many studies male teachers reported higher ICT usage in their instruction than female teachers (Mahdi & Al-Dera, 2013), attributed to men having more interest in technology than women (Volman & van Eck, 2001). However, Adams (2002) found increased numbers of female teachers used ICT. It is also interesting to note that in recent years, research has found no meaningful difference between male and female lecturers' use of ICT hardware and software tools (Fomsi & Orduah, 2017; Le, 2015; Verma & Dahiya, 2016)

More compelling but easier to address are organisational difficulties. Effective use of ICT places considerable demands on teachers' time while they master integration and then apply it to their teaching practice. Furthermore, it takes time for teachers to

search the internet for appropriate teaching materials, and even more time to use ICT for preparing slides for content delivery. These tasks have to be combined with an already onerous workload of teaching responsibilities – preparing lessons, mastering CLT, evaluating student competencies, organising groups and other classroom management activities. According to Abuhmaid (2011, p. 206), this often leads to "mere recycling of old practices in order to accommodate both, pressure to change practices and overload, creating the illusion of improved performance".

Conceptual Framework

A review of the literature on educational innovation, ICT policy implementation and the TPACK framework offered useful perspectives for exploring the implementation process. Educational innovation is a complex and dynamic process with many factors influencing the changes and rates of adoption. This research started at a time when large-scale educational innovation was taking place in Vietnam, of which a key recommendation was extended use of ICT in education. Since my research focused on implementation of the reform, teachers' perceptions of ICT integration and their attitudes towards the reform, as well as the above theories/framework were particularly important for supporting the research methodology and research methods and for guiding the data collection and data analysis.

In view of these aspects and based on Fullan's model of interactive factors affecting change implementation, a model of factors known to impact the implementation of ICT in EFL teaching was developed to serve as a conceptual framework for the study. In Vietnam, integrating ICT into pre-service EFL teacher education followed a top-down administrative process involving three levels of control: policy level, institutional level and individual level (Figure 3.3).

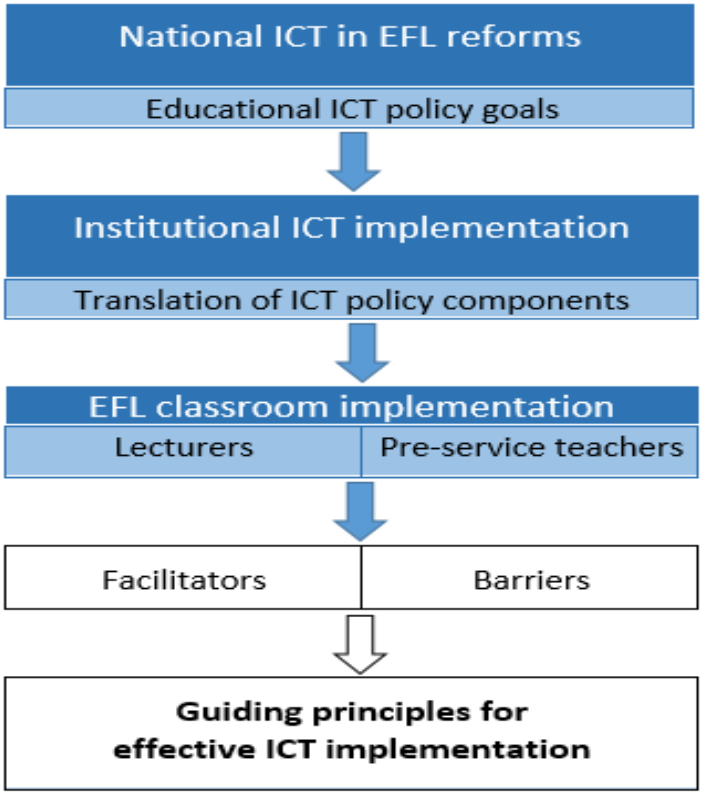


Figure 3.3 Conceptual Framework of the Top-Down Administrative Process

At a policy level, the perceived characteristics of the government and related agencies issuing the policies were important because they influenced attitudes and determined the rate of adoption (Rogers, 1995). Theory on policy implementation was used to check how features of the national ICT policy and English reforms influenced the decisions of teachers and educational institutions to adopt or reject it. Documents related to national ICT and EFL policies were examined to identify aspects that promoted and supported ICT integration into EFL teaching and learning.

In addition to policy characteristics, Fullan (2007) also drew attention to the influence of institutional and individual influences on change implementation. The institutional environment plays an important role because it is where the reform takes place. At this level, the university is responsible for adapting ICT policies to suit the local context and creating a conducive environment for teachers to include ICT in their teaching practice. This requires support from university administrators in the form of curriculum policy, access to infrastructure and facilities, training and professional development, technical support and assessment reform. In previous research, incentives and rewards for integrating ICT into EFL teaching have been linked to an enabling environment.

The individual level relates directly to ICT use within the classroom and is affected by the characteristics of teachers who implement the policy, including their changed role in the reform, their perceptions of ICT in their teaching practice and their attitudes and concerns about change. However, even a willingness to change will not lead to real change without sufficient ICT knowledge and skills.

An examination of this three-level administrative process uncovered several facilitating factors and barriers associated with effective implementation of ICT into EFL teaching. Each of the levels shown in Figure 3.3 were analysed.

Chapter Summary

This chapter discussed the application of change theory to ICT integration in language education and the factors affecting ICT policy implementation using the TPACK framework as a lens for measuring the perceptions of lecturers and pre-service teachers. The theories and findings were valuable for setting the foundations and boundaries for the research.

The chapter also presented the findings of other research related to ICT integration into language education and identified the benefits and disadvantages reported by teachers pursuant to their attempts to integrate ICT. The indications were that ICT implementation is a complex process, dependent on different factors and groups of factors (Dinh, 2015). In addition, the levels are not isolated and consist of components that interact with each other and are influenced by external factors. Accordingly, the research was designed to investigate how stakeholders in a teacher training course at a major university in Vietnam perceived the implementation of national ICT policy and the factors that impacted the implementation process. The next chapter presents the research methodology and methods used to answer the research questions.

Chapter 4: Methodology

This chapter describes the research paradigm that formed the basis of the research methods. It is divided into five main sections. Section 1 describes and justifies the choice of design, the data collection and data analysis undertaken in the study (Mertens, 2010; Saunders, Lewis, & Thornhill, 2009). The second section introduces the "… aims, uses, purposes, intentions and plans within the practical constraint of location, time, money" (Hakim, 2000, p. 1). Section 3 describes the research setting and sampling strategies, explaining how participants were chosen. Following this, section 4 provides an overview of the data collection methods including the use of documents, questionnaires and semi-structured interviews. In the final section the data analysis methods are discussed, including descriptive statistics and thematic analysis, as well as reliability, validity and ethical issues. The chapter concludes with a brief summary of the research methodology.

Scope of the Research

Based on the three-level conceptual framework, the current study investigated the process of ICT government policy implementation in an EFL teacher education program at a university in Vietnam. In doing so, it identified how the policy was interpreted and implemented and uncovered the facilitating factors and barriers that influenced lecturers' and pre-service teachers' integration of ICT into their EFL teaching and learning to bring about improved learning outcomes. In addition, teachers' motivations for applying ICT in their EFL lessons were examined, as well as their perceptions of its usefulness.

Effective implementation of ICT can only be achieved if administrators have a thorough understanding of the needs, knowledge, skills and perceptions of users and stakeholders. As shown in the research framework, each administrative level was responsible for addressing its responsibilities and considering possible deterrents and facilitators in order to achieve positive outcomes. In this study, these levels were regarded as units of analysis, with each level requiring different data collection instruments, such as document analysis, survey questionnaires, interviews, etc. (Cohen, Manion, & Morrison, 2011) to gather important information for informing the best possible additional language acquisition (Long, 2005).

Research Paradigm

Creswell (2014) referred to a "worldview" rather than a paradigm, the latter more commonly defined as "a basic set of beliefs that guide actions" (Guba, 1990, p. 17). Four dominant paradigms are frequently quoted in research methodology: positivism, realism, interpretivism and pragmatism (Creswell, 2011; Mertens, 2010; Saunders et al., 2009; Venkatesh, Brown, & Bala, 2013). Although a research thesis can include all of these paradigms in its methodology, positivism is normally associated with quantitative research, while realism and interpretivism are frequently used in qualitative research because they rely mainly on naturalistic procedures such as interviewing, focus group discussions, observations and secondary analysis of existing texts. Pragmatism is a paradigm that advocates the use of mixed methods for analysing data and answering research questions (Al-Zahrani, 2011), allowing researchers to modify their expectations using a combination of positivism and interpretivism. It also accommodates the integration of findings from quantitative, qualitative and action research. In these ways it is considered value-free and more objective than a single paradigm. With pragmatic philosophy, researchers can employ many different ways of interpreting the world and undertaking research because no single point of view gives the entire picture and various realities can co-exist (Saunders et al., 2009).

This study investigated the process of ICT policy implementation into an EFL teacher education program. It involved an evaluation of quantitative and qualitative data on ICT implementation, including the perceived confidence of pre-service teachers in their ICT knowledge and skills, how they used ICT during their practicums and the factors they believed facilitated or inhibited the process. The same method was used to analyse the qualitative data from the lecturers, while secondary research was employed to examine policy documents.

In summary, pragmatic philosophy is appropriate for this study because it "draws on the strengths of each of the traditional perspectives whilst offsetting their weaknesses" (Count, 2016, p. 71). As such, the research questions concerning ICT implementation were answered by combining quantitative and qualitative data obtained from the different administrative levels: national/macro (Vietnamese government); university/institutional (university administrators); and teachers/ individuals (university lecturers and EFL pre-service teachers).

Research Design

A mixed-methods single case study was chosen to empirically capture the process of ICT integration at one Vietnamese university. This approach is popular in educational research because it can be carried out in a real-life context using multiple sources of evidence to create a holistic picture (Cameron, 2011; Johnson & Onwuegbuzie, 2004).

A case study provides an empirical means to investigate a real-life context from more than one tool for data collection and multiple sources of evidence (Yin, 2014). Case-study strategy served to answer the what, why and how questions (Saunders et al., 2009) and assisted in developing theories that can be translated to other similar cases or situations (Cohen et al., 2011; Woodside, 2016). According to Yin (2014), there are four main case study designs: single-case design, embedded, single-case design, multi-case design and embedded, multi-case design. The case in this study is a single-case design to capture a holistic picture of the whole process of ICT implementation through multi-level sources (national, institutional and personal level). These levels could be regarded as constituting units of analysis incorporated into the design and each level might require different data collection instruments, e.g. document analysis, a survey questionnaire, interviews, etc. (Cohen et al., 2011). Multiple data instruments were used to answer questions about what was happening in EFL teacher education classes with regard to the implementation of ICT tools, the lack of ICT facilities and equipment, and how ICT can be better implemented in EFL teacher education programs. Overall, case study strategy–the most flexible strategy for most research designs (Yin, 2014) was adopted the as the appropriate strategy for this research because it meets the demand of answering the research questions, objectives based on the characteristics of the research worldview.

Previous researchers (Al-Zahrani, 2011; Chaaban, 2014) concluded that the ICT implementation is a complex process of change that required an appropriate research method. The mixed-method approach which employed both qualitative and quantitative techniques was adopted to answer research questions in a single or a multiphase study (Mertens, 2014). There have been different ways for classifying and identifying types of mixed methods strategies. Creswell (2014) suggested three basic types: convergent parallel (both quantitative and qualitative data are collected, analysed separately, and then the results are compared to see if the findings confirm or disconfirm each other), explanatory sequential (collected qualitative data are analysed

to explain quantitative results) and the exploratory design (collected quantitative data are analysed to explain a relationship in qualitative results). From amongst the various forms of mixed-methods research (Creswell, 2014), the approach chosen for this study was explanatory sequential, based on Creswell's definition for an initial online questionnaire used to collect statistical data that informs the questions for subsequent semi-structured interviews (Creswell & Clark, 2018). This design was chosen because it "captures the best of both quantitative and qualitative data – to obtain quantitative results from a population in the first phase, and then refine or elaborate these findings through an in-depth qualitative exploration in the second phase" (Creswell, 2005). Quantitative data was then integrated with qualitative data to clarify the findings by allowing for more comprehensive responses to research questions than would otherwise be possible (Creswell, 2011; Johnson, Onwuegbuzie, & Turner, 2007). In addition, this approach permitted cross-validation and a better understanding of the phenomena under investigation (Greene, 2007; Kelle, 2006) through triangulation of multiple sources of evidence to increase the trustworthiness of the findings (Yin, 2014).

Creswell and Clark (2018) introduced two variants of the explanatory design. The first was the follow-up explanations model which uses the qualitative data to find possible explanations for the quantitative data. The second was the participant selection model which is used when a researcher needs quantitative information to identify and purposefully select participants for a follow-up, in-depth, qualitative study. In the current study, data analysis focused on a qualitative approach because it provided in-depth explanations of the results obtained from the quantitative phase and involved extensive data collection from multiple sources. The data collection and analysis procedures commenced with a quantitative phase followed by a qualitative phase. The same sequence was applied to the data analysis. The quantitative and qualitative phases were linked by second-phase participant selection and protocol development of the qualitative data collection. The process concluded with an integration of the quantitative and qualitative results and a discussion of the outcomes. Figure 4.1 presents the research design and data sources, adapted from Creswell and Clark (2018) basic procedures for an explanatory sequential mixed-methods design.

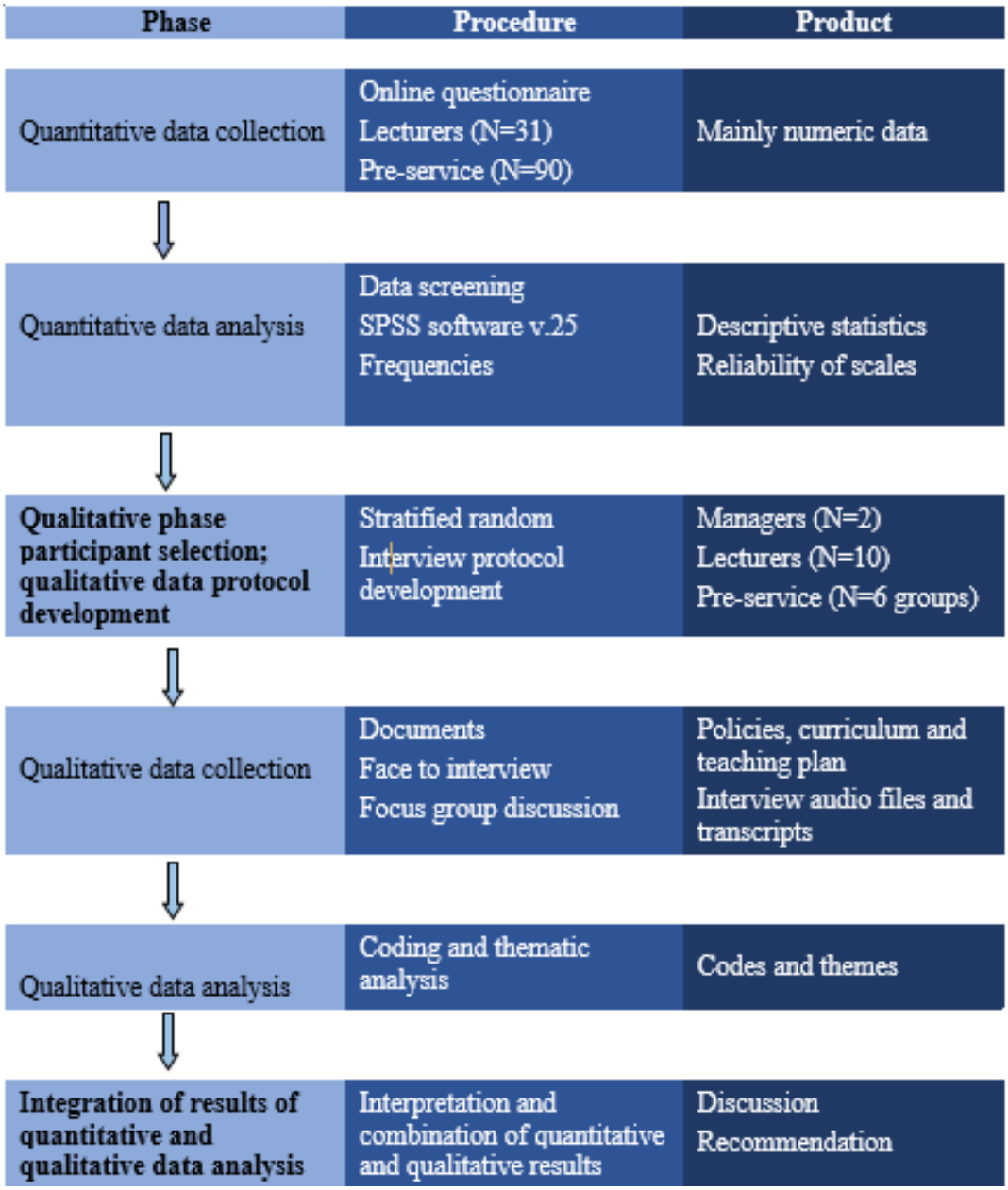


Figure 4.1 Research Design.

Adapted from John W. Creswell and Clark (2018).

Research Setting and Participants

Research Setting

In this research, the largest source of data was the responses from participants regarding perceptions of their confidence in using ICT and the value they believed it added to their classroom practice. This cannot be completely understood without a comprehensive description of the context and what it provided for staff and students.

The context for this research was a state-run university, which, for anonymity, has been named the University (a pseudonym). The university was located in the

Mekong Delta of Vietnam. In 2003, the university was upgraded from a teacher training college with a vision to be "a qualified and prestigious training centre in the Mekong Delta and one of the universities training highly-qualified teachers in Vietnam", as published on its website. With its 40-year history of educational training, the university had graduated more than 40,000 teachers who contributed to the socio-economic development of the Mekong Delta provinces and the country more broadly (Bao Moi, 2015). Since 2011, the university had been one of 12 educational institutions chosen to receive additional resources and technical facilities for developing its foreign language teaching capacity. It was also assigned responsibility for in-service training of primary and secondary EFL teachers in the northern provinces of the Mekong Delta to improve English proficiency and teaching methods (Ministry of Education and Training, 2011a).

The researcher worked as an EFL lecturer at the university for 18 years, advantageous because according to the literature, conducting research at a familiar site provides greater understanding of the socio-cultural nature of the location and easier access to data; both of which contribute to the quality and scope of the research (Marshall & Rossman, 2016; Yin, 2014).

Participants in this study were associated with the Foreign Languages Faculty (FLF) and Foreign Languages and Informatics Centre (FLIC) at the institution. FLIC was responsible for teaching foreign languages and technology skills appropriate for governmental employees and university graduates. All enrolled students at the university were required to register in two compulsory courses: a short-term technology course and a foreign language course. Certificates for these courses were presented to students prior to receiving their Bachelor degrees.

Academic staff at the Centre were invited to teach in both faculties (FLF and FLIC). The faculty program provided EFL teacher training, English studies and Chinese studies for teachers and other professionals who wished to become interpreters or translators. With strengths in both teaching and research, it catered for over 664 full-time students and 394 part-time students. Of the 30+ lecturers in the faculty who taught English, French and Chinese, more than 20 had majored in English teaching.

To be enrolled in an EFL teacher education course students have to pass the National University Entrance Exam. In the first two years, pre-service teachers study

Vietnamese culture and politics, and the theory of education and psychology in addition to foreign language skills. At the time of this study there were approximately 40 students in a class. In their final year, students participated in tutorials and lab sessions to develop their teaching skills and practice their teaching methods, interpretation and translation skills. The course concluded with an 8-week teaching practicum at a local high school. In addition to a positive academic report, pre-service teachers had to acquire a certificate in ICT and a foreign language before they could graduate.

Sampling Strategies and Participants

Sampling Strategies

After obtaining approval to access the university's research site, sampling strategies were determined for recruiting participants suited to the purpose of the study (Etikan, Musa, & Alkassim, 2016; Mertens, 2014). As the current research adopted a mixed-methods sequential approach based on pragmatic philosophy, the sampling strategies varied for the different phases.

For the quantitative data collection phase, convenience sampling, a type of non-probability or non-random sampling, was used to recruit participants for the questionnaire, because it allowed for easy accessibility, geographical proximity and a likelihood of participating (Dörnyei, 2007; Mertens, 2014). Three groups were formed. The first group comprised the entire cohort of EFL pre-service teachers in their final year who were completing their practicum course at the time of the study. In the second group, all EFL lecturers were invited to participate. After completing the questionnaire, a third group was created, made up of participants who indicated a willingness to be further involved in the study and attend a focus group interview.

The qualitative phase employed another type of convenience sampling suited to secondary research. Purposive sampling was used to select national and curriculum policy documents from the many that were published in 2008 and beyond, and to provide rich, in-depth information about ICT implementation in EFL teaching and learning at the macro and institutional phases of development (Johnson & Christensen, 2008; Mertens, 2014). Following this, a proportionate stratified random sampling technique was employed to select volunteer lecturers and pre-service teachers for focus group discussions. The criteria used to target lecturers were age, gender, teaching experience and their assigned course (from the faculty teaching arrangement),

and six focus groups were formed based on gender, hometown, ICT experience in high schools and total teaching time in the practicum course.

Participants

Participants were categorised into three groups: departmental managers, EFL lecturers and EFL pre-service teachers. To address the top-down model of decision making common in Vietnam, interviews with administrative managers at the institution proved vital. Table 4.1 provides a brief profile of the two managers chosen for the study, who played a significant role in professional development (Le, 2015).

Table 4.1 *Profile of Managers*

Code	Age	Qualification	Role Description
M1	50	Doctor of Language Studies	Key role in designing, celebrating and managing plans for human resources, enrolling students, teaching, research and 2020 Project.
M2	49	Master of Education	Key role in human resources, enrolling students, teaching and awarding foreign languages and Technology Certificates and 2020 Project.

M1 = Manager 1; M2 = Manager 2

Interviews uncovered attitudes towards and perceptions of ICT integration in EFL teaching and learning, and the resources that were provided in support. The detailed descriptions of educational managers' ICT practices can potentially provide models for lecturers and pre-service teachers. The criteria for choosing the administrative group were the influential positions they held and their perceptions of preparing future teachers to use ICT. Interviews were scheduled and conducted in an office at the university. Participants' real names have been coded to protect their anonymity and preserve confidentiality.

The second group of participants in this study consisted of EFL lecturers who provided a link between the managers and students. This group was responsible for lecturing, guiding students in their research, and assisting students to deal with any academic issues. The lecturers were involved in two phases of the study: completing the e-questionnaire and participating in semi-structured interviews. Their responses revealed their views, beliefs, perceptions and pedagogical practices as a means of uncovering the factors that impacted on implementing ICT in EFL teacher education.

In the first phase, 31 lecturers volunteered to participate and completed the online survey by the deadline. After screening the data for errors, missing data and sufficiency, all responses were deemed useable. Table 4.2 presents a profile of the volunteer lecturers who completed the questionnaire.

Table 4.2 *Profile of the Lecturer Group who Participated in the Survey*

Variable	Groups	N (31)
Gender	Male	13
	Female	18
Age (in years)	Under 30	1
	30-39	10
	40-49	16
	From 50	4
Teaching Experience (in years)	Under 5	3
	5-9	9
	10-14	4
	15-19	3
	From 20	12
Position	Faculty manager	4
	Academic group leader	3
	Office role	6
	Teaching only	18

Next, the lecturers were classified into four groups according to their teaching experience. As shown in Table 4.2, only three lecturers (9.6 %) had under five years teaching experience. The majority (n = 13; 41.9%) had between five and 14 years of experience. Very few lecturers (n = 5; 16.1%) had been teaching for 25 years or more. In relation to their current positions at the university, 18 lecturers (58.1%) only had responsibility for teaching.

In the second phase, participants were randomly selected from half the lecturers who were willing to participate in the semi-structured interviews. Sampling strategies were again based on gender, age, teaching experience and position; however, for confidentiality reasons, some detailed information was coded to protect the identities of participants. In addition, male and female interviewees were unequal in number because more female lecturers volunteered to take part in the research. Table 4.3 provides an overview of the participants in the follow-up interviews.

Table 4.3 *Profile of Lecturers who Participated in the Interviews*

Variable	Groups	N
Age (years old)	30-39	3
	40-49	5
	From 50	2
Teaching Experience (years)	5-9	2
	10-14	2
	15-19	3
	From 20	3
Position	Administrative and teaching	3
	Teaching only	7
Teaching load (hours per week)	1-10	2
	11-15	6
	16-20	2

The third group of participants, EFL pre-service teachers, was critical to the research due to their key role in ICT implementation at both the university and in high schools. Their expressed views, beliefs and perceptions were examined to identify potential issues related to their use of ICT in EFL teaching and learning. As with the lecturers, their participation involved two phases of data collection: survey questionnaires and focus group interviews.

In the survey questionnaire phase, 90 pre-service teachers indicated their willingness to participate by responding to the online questionnaire and submitting their responses by the deadline. Table 4. 4 presents the demographics of the pre-service teachers.

Table 4.4 *Profile of Pre-service Teachers who Participated in the Survey*

Variable	Group	Total (N = 90)
Gender	Male	10
	Female	80
Age (years old)	21	76
	22	12
	23	2
Hometown	In the countryside	75
	In the city	15
ICT use	Began in high school	88
Teaching practicum (hours)	Under 11	34
	11-20	39
	21-30	17

Demographic information was collected to gain insights into participants' backgrounds, since research has shown that factors such as gender, age, teaching and

ICT experience directly and indirectly affect the implementation of ICT (Aldowah, Ghazal, Umar, & Muniandy, 2017). The cohort then answered questions about their experience with ICT. As shown, participants comprised 10 males (11.1%) and 80 females (88.9%) between the ages of 21 and 23 years old. The majority was 21 years old. Of the total cohort, 83.3% was from the countryside (n = 75) and 16.7% was from the city (n = 15). Interestingly, nearly all participants (97.7%) used ICT at high school. During the 8-week practicum course, nearly half of them (43.3%) taught in a high school for between 11 and 20 hours.

Pre-service teacher participants in the focus group interviews were selected according to gender, hometown, ICT experience and teaching time in the practicum course. However, because more female students participated in the study, selecting an equal number of male and female students was not possible. Table 4.5 shows the variables for this cohort.

Table 4.5 *Profiles of Pre-Service Teachers who Participated in the Interviews*

Variable	Group	n
Gender	Male	7
	Female	23
Hometown	In the countryside	21
	In the city	9
Teaching practicum (hours)	Under 11	10
	11-20	14
	21-30	6

Gaining Access to the Research Setting

Before collecting data, the researcher corresponded with the university to secure access to the study setting. A request was emailed to the rector seeking approval to conduct the study. As the researcher had been an EFL lecturer involved in training pre-service teachers at the university, it was important to ensure that the research was conducted ethically and reflectively (Wellington, 2015, p. 66).

In carrying out this study the researcher played an insider role, since she had worked at the university before embarking on a PhD. In one respect, the researcher's insider role was valuable for gaining access to the site and providing greater understanding of the participants and their daily programs, thereby allowing for a more critical examination of the context (Berg (2009). In another respect, the insider

role ran the risk of bias, such as advocating for certain participants or bias towards the findings. However, the researcher believed the risks were low, because she had not held any position in the faculty other than a teaching role and participants were therefore able to share their opinions honestly and without concern.

The Data Collection Process

After receiving approval from the university, the researcher contacted the FLF and FLIC departments to gain their support for recruiting participants. All EFL lecturers were identified and the pre-service teacher directory consulted to locate the names, email addresses, current teaching courses and telephone numbers of final year EFL trainees. As an external party not involved in teaching the pre-service teacher cohort, the researcher distributed questionnaires via email to all lecturers and pre-service teachers inviting them to participate in the study. The email included an information letter and consent form written in both English and Vietnamese (see Appendix A). A link to the online survey and a deadline for returning the questionnaire were also provided. Lecturers and pre-service teachers were requested to independently complete the questionnaire and their responses were collected after the deadline. The total number of participants included 31 EFL lecturers and 90 EFL pre-service teachers. Prepared prompt-and-probe questions were used to elicit information from the managers, lecturers and pre-service teachers during the interviews.

A mixed-methods design using multiple methods of data collection was chosen for gathering the data. (Mercer, 2007). The first method involved the collection and analysis of documents relevant to national and institutional ICT policy in EFL teaching and learning. The second included analysis of the questionnaire responses from EFL lecturers belonging to FLF and FLIC (N = 31) and final-year EFL pre-service teachers (N = 90). The third method entailed qualitative semi-structured interviews with faculty managers (N = 2), EFL lecturers from the two departments (N = 10) and pre-service teacher focus groups (N = 6). The design of each instrument and data collection methods used are described below.

Policy Documents

In this study, secondary research involved an analysis of policy documents, institutional documents and individual documents – see Table 4.6 for a summary.

Table 4.6 *Documents Examined in the Research*

Code	Description	Level
S1	ICT Development Strategy up to 2010 and Orientations toward 2020	Government
S2	Overall Plan on Development of ICT Human Resources up to 2015, and Orientations toward 2020	Government
S3	Scheme to early make Vietnam a country strong in ICT	Government
S4	2011 -2020 Education Development Strategy	Government
S5	The 2012-2015 National Target Program on Education and Training	Government
O1	Project entitled "Teaching and Learning Foreign Languages in the National Education System, Period 2008–2020"	MOET
O2	Directive on Promoting Teaching, Training and Applying ICT in Education - Period 2008-2012	MOET
O3	Circular on the Organisation, Operation and Use of E-Mail and Websites of Tertiary Education Institutions in 2010	MOET
O4	Circular on the Use of Free Open Source Software in Educational Institutions in 2010	MOET
O5	The MOET-Guidelines for ICT Tasks from 2008 to 2016	MOET
O6	The 2020 Project Guidelines on ICT training, Funds and Main Tasks from 2013 to 2016	MOET
U1	The University Plan from 2013 to 2016	University
U2	The University Report from 2013 to 2016	University
U3	EFL teacher education curriculum	University
U4	The Faculty Plan from 2013 to 2016	FLF
U5	The Faculty Report from 2013 to 2016	FLF
U6	The Centre Technology Education Program	FLIC

S = Strategic policy; O = Operational policy; U = University documents; FLF = Foreign Languages Faculty; FLIC = Foreign Languages and Informatics Centre

National policy documents included decisions, decrees and guidelines on ICT integration issued by the government. Institutional documents issued by MOET provided a comprehensive understanding of policy makers' expectations and useful insights for sharpening the survey and interview questions (Atkinson & Coffey, 2011, p. 58). These included plans, decisions, reports and curriculum guidelines describing the objectives and activities of ICT-related training in the research location. The documents provided a deeper understanding of what was expected from EFL pre-service teacher education programs in relation to ICT training, and were used to draw comparisons between policy, vision and the curriculum in order to determine what was actually occurring.

Individual documents were those provided by lecturers and pre-service teachers, of relevance to the teacher education course in general and ICT application in

particular. They consisted of outlines, textbooks, lesson plans and teaching materials, and provided the researcher with insights into how participants interpreted both the macro and institutional-level policies for designing their lessons in alignment with curriculum goals. The documents formed the basis of their reported teaching practices and experiences. As the original documents were written in Vietnamese, the researcher enlisted the assistance of a native Vietnamese native speaker with experience in postgraduate studies in an English-speaking country to translate the relevant parts.

Questionnaires

In the current study, online questionnaires were distributed to EFL lecturers and pre-service teachers to gain an understanding of their perceptions, beliefs, knowledge and practice using ICT, before conducting follow-up interviews and focus group discussions. According to Mertens (2014), such a procedure allows the researcher to more deeply investigate the phenomena under study. Incorporating the recommendations of other research models (Green, Camilli, Elmore, & American Educational Research, 2006), the questionnaires were designed with reference to the relevant literature and previous findings on the topic. The questionnaire for the quantitative phase was adapted from Baser et al. (2016) study that developed a TPACK assessment tool for pre-service teachers' EFL learning. Since the original scales did not address the TPACK of higher education lecturers, the questionnaire was adapted by using some of the items identified in Dinh (2015) study on EFL lecturers' use of ICT and factors influencing their use. Permission was sought from the author of the unpublished survey before using it in this study, and divided into five main parts or scales as recommended by (Creswell, 2014), incorporating both closed (multiple choice) and open-ended questions - see Table 4.7.

Administered to both cohorts, the questionnaire is presented in Appendix B. In addition to obtaining participants' demographic data, it was designed to investigate their views on the implementation of ICT in EFL teacher education. To achieve this, participants were first required to self-evaluate their knowledge and skills of TK, CK, PK, PCK, TCK, TPK and TPACK, as well as their confidence levels in using ICT in EFL teaching practice. The next section of the questionnaire revealed how teachers applied current ICT software and hardware in their teaching and learning; and in the final section, they were asked to identify any factors that facilitated and/or hindered their use of ICT.

Table 4.7 *Main Parts of the Survey Design*

Section	Purpose
Demographics	To identify possible relationships between demographic features and teachers' ICT use.
ICT use in EFL teacher education	To gauge the understanding of the national and institutional ICT policy and its impact on EFL teacher education.
ICT perceptions, knowledge, skills and confidence levels	To assess the level of usefulness and confidence in the ICT knowledge and skills of participants.
ICT use	To assess the perceptions of usefulness and confidence of participants in the usage of ICT software and hardware.
Factors	Identifying the facilitators and inhibitors impact the ICT implementation.

As Vietnamese was the first and dominant language of the participants, the questionnaires were translated into Vietnamese after development in English. Although the respondents were English teachers, it was anticipated that answering the questions in their mother tongue would make them feel more comfortable, and as a result, they would provide more detailed and comprehensive answers (Al-Zahrani, 2011). Consequently, key words in the questionnaire were translated by a Vietnamese expert who was also proficient in English.

The questionnaires were distributed by email to all final-year EFL pre-service teachers and lecturers with a covering letter explaining the objectives of the study, advising of their choice to withdraw at any time and assuring that privacy and confidentiality would be maintained. The potential benefits of the research were emphasised and the researcher's contact details provided. Those willing to participate simply clicked on the link to start the survey, and the data were collected online after the deadline.

Interviews

In addition to the data from the questionnaires, follow-up interviews were conducted to gain deeper, richer information from the participants in recognition of the importance of their voices and points of view (Minichiello, Aroni, & Hays, 2008)

Type of Interviews

A semi-structured interview format was chosen to allow the interviewer to adjust questions in accordance with participants' responses (Rubin & Rubin, 2012).

The interviews provided opportunities to clarify, modify, explain and elaborate on the qualitative data gathered from the questionnaires so that it could be quantified. An interview guide, comprising a sequence of pre-determined questions, prompts, follow-up probes and validating questions to restate key points was prepared in accordance with the advice of several well-known researchers (Doody & Noonan, 2013; May, 2010; Minichiello et al., 2008).

Three different versions of the interview questions were devised for each of the cohorts respectively, managers, lecturers and pre-service teachers. Managers and lecturers were interviewed individually to ensure comprehensive collection of data related to policy development and implementation. Focus groups were held with the relatively large group of pre-service teachers to provide added depth and a safe environment for encouraging potentially reluctant respondents to provide feedback, as found in previous research (Creswell, 2005). The three focus group guides are shown in Appendix C.

The Interview Process

April and May proved to be the most convenient time for collecting data from the lecturers and pre-service teachers who had just returned to university after their eight-week, high-school practicum where they were expected to apply ICT in their EFL teaching.

Interviews with managers were conducted in their offices. Interviews with lecturers and pre-service teachers took place in faculty laboratories. Each interview and focus group took approximately 30-45 minutes and were audio-taped with the permission of the interviewees to ensure data were retrievable in its exact, original form (Erlandson, Harris, Skipper, & Allen, 1993; Opdenakker, 2006; Rubin & Rubin, 2012). The recordings were then transcribed and the transcriptions sent to the participants for their review and comments. Follow-up interviews were requested by email where further information was necessary or ambiguous responses needed clarification (Ritchie, Lewis, Nicholls, & Ormston, 2013; Shenton, 2004). Finally, keywords were back-translated into English to maintain their original meaning and intention (Mertens, 2014).

Data Analysis Process

Validity and Reliability

A range of measures ensured authenticity of the quantitative and qualitative data. Firstly, questionnaire items were adapted from previously validated instruments used in studies by Baser et al. (2016) and Dinh (2015). The resulting questionnaire was then piloted with selected Vietnamese EFL lecturers from several Vietnamese higher education institutions, including some who were studying in Australia. Feedback from the pilot informed the final questionnaire design and dictated minor changes.

After recoding and computing the quantitative data, reliability and internal consistency was assessed to establish the degree to which each of the seven TPACK components measured the same construct (Hair, Black, Babin, & Anderson, 2010). As can be seen in Table 4.8 (p. 81), the results of the assessment show the Cronbach's alpha coefficient values for each subdomain ranged from 0.75 to 0.92, demonstrating that each category in the questionnaire was internally reliable (Pallant, 2011).

Table 4.8 *Reliability of the TPACK Scales*

Domains	Pre-service Teachers		Lecturers	
	Useful	Confident	Useful	Confident
Technological Knowledge	0.84	0.85	0.92	0.84
Content Knowledge	0.75	0.79	0.91	0.84
Pedagogical Knowledge	0.85	0.84	0.86	0.87
Pedagogical Content Knowledge	0.82	0.84	0.88	0.80
Technological Content Knowledge	0.87	0.85	0.87	0.84
Technological Pedagogical Knowledge	0.76	0.88	0.89	0.82
Technological Pedagogical & Content Knowledge	0.80	0.82	0.87	0.91

The structure of the interviews complied with protocol and space for note-taking allowed for recording participants' remarks. The validation process involved sending the initial version of the semi-structured interview questions to the Vietnamese EFL lecturers for verifying meaning, structure, grammar, logic and cohesion and to enhance the appropriateness of the instrument. The feedback was then collated and necessary adjustments made by the researcher. The questionnaire data

were analysed quantitatively, while the interview data from the individuals and focus groups were analysed qualitatively.

Quantitative Data Analysis

The completed online questionnaires were exported from Qualtrics (an online data-collection platform) to Excel files. The raw data were then converted for data analysis by assigning numeric values, cleaning errors and coded using Microsoft Excel 2016. Next, the Statistical Package for Social Science (SPSS) Version 25 was used to input, process and analyse the quantitative data from the questionnaire responses of the lecturers and pre-service teachers. Descriptive statistics (percentages, mean score and standard deviation) were calculated to compare and identify any significant differences between the lecturers' and pre-service teachers' responses. SPSS software was also used to analyse the relationship between university-level and teacher-level factors that affected ICT implementation.

Qualitative Data Analysis

The qualitative data analysis was carried out in two phases: ICT policy document analysis and interview data analysis. The final step in the qualitative analysis was merging the quantitative and qualitative data. These phases are described in the following sections.

Analysis of Secondary Data

National ICT Policy documents associated with EFL teaching and learning and distributed between 2008 and 2016 were analysed using a framework devised by Kozma (2008); Kozma (2011). The framework addressed strategic elements of the policy and operational components that could explain the context in which lecturers and pre-service teachers worked and the constraints they encountered.

The policy analysis focused on descriptions in the selected documents of strategic and operational elements that had been organised into content categories related to the research questions. The strategic policy analysis explained the reasons for the release of the document, while the operational policy described how the strategic policy could be implemented (Fereday & Muir-Cochrane, 2006). Table 4.9 outlines and describes the elements as conceived by Kozma.

The document analysis began with a careful, re-reading of each policy. A list of key aspects based on Kozma's model was then generated and codes assigned to paragraphs or segments relevant to the research questions. Data from these two

sources were integrated to identify overlapping categories that subsequently became themes.

Table 4.9 *Categories Used to Analyse Policy Components*

Level	Categories	Description
Strategic policy	Support economic growth	Policy discourse that articulates how educational deployment of ICT can support economic development.
	Promote social development	Policy discourse that describes specific uses of ICT to promote social development
	Advance educational reform	Policy discourse that presents curriculum revisions, pedagogical and assessment change associated with the introduction of ICT.
	Support educational development	Policy discourse that advocates ICT use to improve the efficiencies of educational management.
Operational policy	Infrastructure development	Policy discourse that provides and allocates budget for technical resources.
	Teacher training	Policy discourse that spells out not only basic but also advanced ICT knowledge and skills for classroom practices.
	Pedagogical and curricular change	Policy discourse that articulates ICT-related changes in teaching methods, curricular and assessment.
	Content development	Policy discourse that emphasises on the development of digital content.
	Technical support	Policy discourse that clarifies ongoing technical assistance to schools.

Categories and description adapted from Kozma (2008, p. 1084)

Data from Interviews and Focus Group Discussions

As explained earlier, interviews and focus-group discussions were recorded, transcribed and returned to participants for their verification. Following this, the data were read and re-read several times prior to coding. The data from each participant and focus group were colour coded separately and recorded in a codebook. The numerous codes were then collapsed to create categories that were organised under superordinate headings, revealing the major themes related to the understandings, beliefs, practices and perceptions of ICT in EFL teaching and learning (Johnson & Christensen, 2008; Richards, 2015).

Combining the Quantitative and Qualitative Data

Data from the quantitative and qualitative analyses were merged for interpretation. The themes established in the qualitative analysis were used to support the explanations derived from the quantitative data, with the literature review and conceptual framework serving as a lens to connect and compare the relationships between the qualitative and quantitative data. This integration provided a rich, comprehensive picture of the implementation of ICT policy into the EFL teacher education program.

Summary

The main aim of this study was to understand and explore the implementation of ICT in a preservice EFL teacher education program. Chapter 4 outlined the mixed methods employed to address this objective and detailed the document analysis, and analyses of the interviews and focus group discussions encompassing the views of educational managers, university lecturers and pre-service teachers. Quantitative methods were used to analyse the questionnaire responses and provide a baseline against which the qualitative data from the interviews and focus-group discussions were compared. The processes involved in collecting this information were described, along with development of the questionnaires. The findings of the investigation are discussed in chapters 5 and 6.

Chapter 5:
Findings on ICT Policy and Implementation

The study set out to examine the perspectives of the study participants on the ICT implementation process into their EFL teaching and learning practice. This chapter begins by examining the findings related to the first research question, i.e., the extent to which ICT policies and guidelines were implemented into an EFL Teacher Training Program in Vietnam (Figure 5.1).

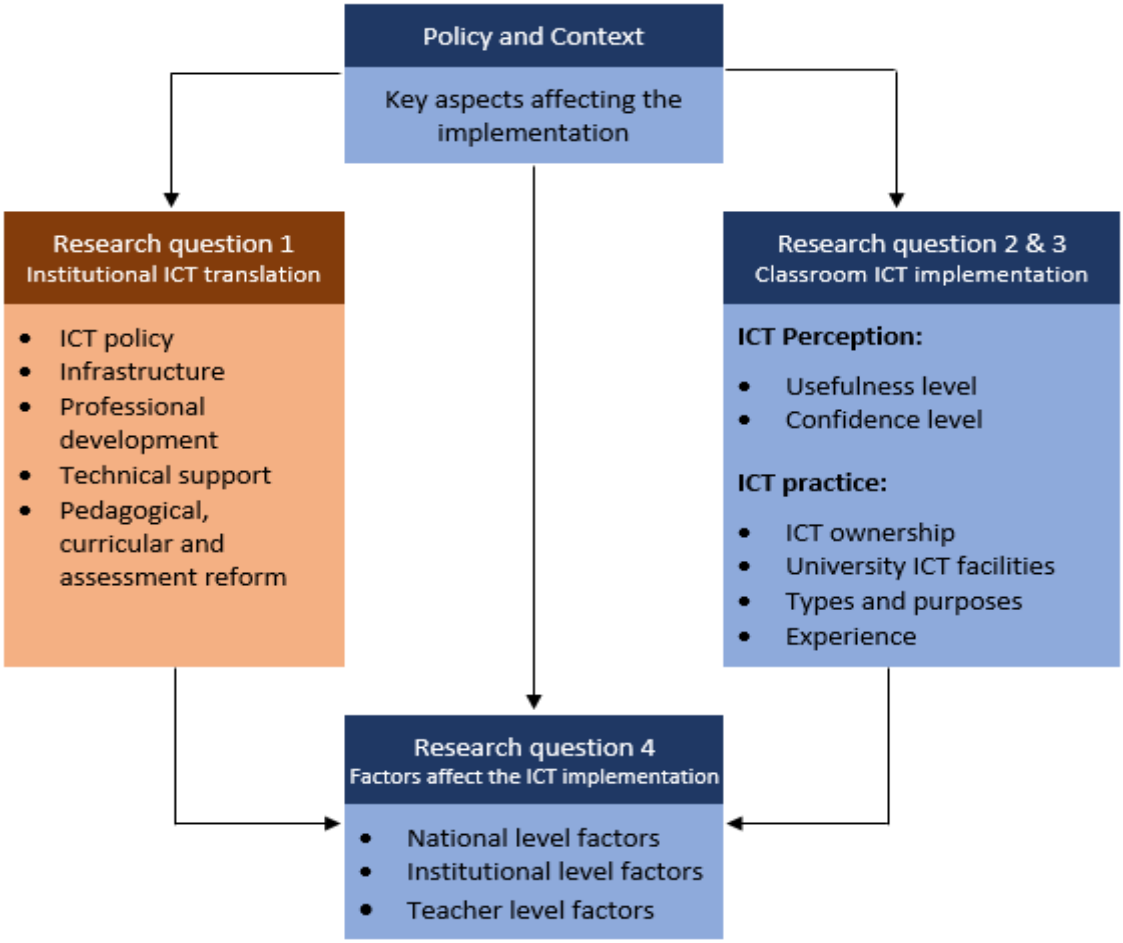


Figure 5.1 Organisation of the Findings Related to Research Question 1

Implementation of ICT policy was highly dependent on the university's preparedness to interpret the vision and mission for meeting the expectations of the Ministry. To address the findings of this research question, it was necessary to first examine the participants' awareness of the policies and their impact on EFL teacher education. Next, an analysis of the university's technology plans and reports for each

academic year was amalgamated with the findings of the survey and interviews with managers, lecturers and pre-service teachers relating to the key components of ICT policy as identified by Kozma (2008); Kozma (2011).

Participants' Perspectives of ICT in National EFL Reform

This section focuses on the ICT policies of the Vietnamese government and MOET's oversight of the implementation process from the perspectives of the participants. Managers, lecturers and pre-service teachers were asked to share their knowledge and viewpoints on different aspects of ICT policy and their impact on EFL teacher education. This was based on the premise that successful integration of ICT in education relied upon a combination of multi-dimensional factors, such as infrastructure development, teacher training, pedagogical and curriculum change, content development and technical support (Peeraer & Van Petegem, 2012b).

A 100% response rate was received to the two questions in this theme from pre-service teachers (N = 90) and lecturers (N = 31). Their answers were categorised into superordinates or subthemes related to the key factors and their impact on ICT policy. It should be noted that the answers of one respondent were assigned to more than one subtheme, so the totals do not equal 90 for the pre-service group or 31 for the lecturer group.

Awareness of National ICT Policies in EFL Education

Given the cohort's responses to the open-ended question about ICT use in EFL teaching and learning, it was evident that their understandings of ICT policy ranged from poor to average (see Table 5.1).

In the pre-service teacher group, half the cohort (n = 45) had no knowledge of the policy, while the remaining pre-service teachers were aware of the policy but had vague and limited knowledge of the details. Despite this, over a third of pre-service teachers (n = 37) believed the policy would provide positive outcomes. Five subthemes emerged from their responses and are presented in Table 5.1.

Table 5.1 *Pre-service Teachers' and Lecturers' Understandings of ICT Policy*

Subthemes	Pre-service teachers n	Lecturer n
I do not know	45	6
Not relevant	8	0
Improve EFL education	19	3
Assist pedagogic changes	9	6
Increase ICT facilities	3	1
Improve EFL proficiency	0	1
Improve ICT competence	2	0
More pressure for teachers and students	4	0
Provide ICT training	0	6
Promote ICT use	0	8

Pre-service = Pre-service teachers (*N* = 90); Lecturers (*N* = 31)

In the lecturer group, a fifth (n = 6) had no knowledge of the policy, while the rest (n = 25) agreed with pre-service teachers that the benefits of the policy encouraged them to use ICT. Lecturer QL4 summarised it thus:

> I do not care much about policies because of the following reasons. First of all, ICT is for everyone, if one sees the benefits of it, then they will use it without any binding policy. Second, ICT is used for different purposes, so there can be no specific "rules" on how to use or not use it. Third, these rules are too general and do not indicate what is specific to each subject, skill, class, school.

Table 5.1 shows the two subthemes with the highest coverage in the pre-service group were *improving EFL education* and *assisting pedagogical changes*, while lecturers did not place much emphasis on these. One pre-service teacher (QS8) stated: "the ICT policy promotes ICT use to assist teaching, help students acquire knowledge in a positive and effective way". Although fewer lecturers perceived ICT policy as directly influencing their teaching methods, one lecturer (QL1) had some knowledge of the policy's aims, as indicated by the following comment: "MOET ICT policy aimed to assist students' learning actively and thinking creatively by renewing their learning methods, the organisation of examination and assessment". An interesting point is that a fifth of lecturers perceived ICT policy would include *provision of ICT training courses*

(n = 6) and *promoting ICT use* (n = 8), while none of the pre-service teachers shared these views.

Given that none of the students had accessed the policy document it is not surprising that, despite references to some elements of the TPACK model, other components had not been considered. For example, few participants (n = 1, n = 2, n = 0) mentioned developing teachers' technical knowledge to build their capacity for troubleshooting common problems or using technology to cater for different learning styles or assisting with classroom management and assessments.

The findings from the interviews reinforced the survey responses in relation to participants' limited knowledge of MOETs ICT policy. Three lecturers (IL2, IL3, IL7) and three focus groups (1, 5, 6) reported a lack of knowledge related to this issue. One lecturer (IL5) said she was too busy teaching to look for the policy. Only four lecturers (IL1, IL4, IL5 and IL9) and two pre-service teachers (IS2.2 and IS3.1) mentioned the 2020 Project that was aimed at promoting their use of ICT to improve their EFL teaching. Other participants merely alluded to ICT policies in their teaching and learning practice. Lecturer IL6 stated: "I do not know anything about the specific name or issued date of legal documents. ICT policy, in my point, equipped more facilities for our university to improve teaching quality". One pre-service teacher (IS4.3) added: "I do not know exactly about ICT policy. I heard one of my lecturers introduced that MOET offered the interactive whiteboard for our university". These pre-service participants evidently gained their understanding of the policy by word of mouth from university lecturers and the Rector's address in meetings or via the internet, workshops and television broadcasts.

The results of the survey show that pre-service teachers were subjected to more pressure than the lecturers. A few pre-service teachers (n = 4) verbalised this negative consequence of the policy, stating that the requirements would increase the workload of both pre-service teachers and lecturers and impose more pressure. Close scrutiny of the interviews revealed that pre-service teachers who had opportunities to observe EFL teaching at high schools recognised another challenge, one of them (IS1.1) emphasising: "I understand it is difficult for old teachers at high schools to use ICT tools because they are not young enough to learn it and they are familiar to traditional tools like books, photocopy papers, chart and board."

The Impact of ICT Policy on EFL Teacher Education

The pre-service teachers and lecturers were asked for their views on the impact of ICT policy on EFL teacher education. Table 5.2 shows similar responses to questions about their understanding of ICT policy. Although more responses were received to this than to the previous question, a number of them (n = 21, n = 6) did not relate to EFL teaching and learning or were too general.

As can be seen in Table 5.2, over half the pre-service teachers and lecturers expressed limited knowledge of the impact of ICT on EFL teacher training.

Table 5.2 *Responses to the Impact of ICT Policy on EFL Teacher Education*

Subthemes	Pre-service teachers n	Lecturers n
I do not know	11	3
General response	21	6
Improve EFL teacher education	40	8
Assist pedagogical changes	4	5
Improve ICT competence	5	0
More pressure for teachers and students	3	2
Provide ICT training	2	4
Promote ICT use	2	2
Increase ICT facilities	2	5
Content development	0	2

Pre-service teachers (*N* = 90), Lecturers (*N* = 31)

In addition, the majority of participants agreed that ICT policy had a positive impact on EFL teacher education. There was also support for development of ICT competency of pre-service teachers and increased ICT facilities by lecturers. One pre-service teacher (QS22) commented: "This policy will contribute to the formation of a creative teacher with ICT in the future, a good teacher not only for knowledge but also for skills with computers or other IT equipment."

For the subtheme *assist pedagogical changes*, a number of responses from pre-service teachers and lecturers (n = 4, n = 5) agreed that policies promoting ICT application would be helpful for changing their teaching methods. The results from the interviews confirmed this, as iterated by Lecturer IL2:

> I think that the ICT policies have good impact on my lecturing experience. I have more opportunities to experience modern devices and technologies which support for my teaching process. The ICT training contents are really helpful and valuable for my teaching because my students feel more interested and willing to study English.

More pre-service teachers (n = 3) than lecturers (n = 2) raised the negative effect of ICT implementation as *more pressure on teachers and students.*

In general, most of the study participants believed that incorporating ICT into EFL reform would bring about positive results for their EFL teaching and learning practice, however, the results showed weakness in relation to the clarity of ICT policy for managers, lecturers and pre-service teachers. The findings are compatible with those of Albugami (2016), who also concluded that there was an absence of support, supervision and evaluation by MOET and poor translation into practice.

Perceptions of Institutional ICT Policy

It was evident from the interviews that participants had a limited understanding of the university's ICT policy. Some were unaware of any ICT policies or guidelines on EFL teaching and learning at an institutional level. The following comments by lecturer IL4 illustrates:

> In my understanding, there were not any specific guidelines on ICT integration into EFL teaching and learning at the university. If there were one, the university would post them on the website or electronic internal website.

This was also clear from the following comment made by a pre-service teacher (IS2.4): "There are not any general ICT policies or clear guidelines on wifi access on campus, therefore we can identify many ID wifi but we cannot access to".

The response of the faculty manager (IM1) clarified why both pre-service teachers and lecturers could not access any ICT policy:

> The university has deployed the 2020 Project to improve English proficiency for lecturers and students. ICT is only one of the tasks. However, there was not any specific guide for lecturers to follow. I usually encourage lecturers to use ICT in the faculty meetings at the beginning or at the end of each semester.

However, despite the lack of knowledge of an institutional ICT policy, over half the lecturers (8) and all pre-service teachers were aware of the ICT requirements for both lecturers and students. One lecturer (IL8) remarked:

> One of the requirements for lecturers to be employed at the university is having a B level in ICT. In addition, ICT application is one of the criteria in the end of year self-evaluation about pedagogical innovation but no more detailed evidence for how this application happened.

One pre-service teacher added: "All students have to get a B level in ICT and a foreign language certificate to be considered graduating".

Several recommendations emerged from the interviews. The first, made by both lecturers and pre-service teachers, was that there should be an ICT standard or framework for EFL lecturers and teachers. One lecturer (IL11) reinforced this by saying:

> ICT has been integrated widely at the University with encouragement from the Rector or Dean of the faculty in meetings; however, we do not have any ICT framework for EFL teaching that guide us what level we are and what we need to improve.

Two pre-service teacher focus groups (1 and 4) expressed the same view: "We would like to know the ICT standards for EFL teachers so that we can prepare from now".

Moreover, one third of pre-service teachers suggested: "The University Student Union or the faculty should build ICT clubs or celebrate activities to improve students' ICT use on campus".

In summary, the university had been participating in the EFL reforms for half a decade, yet translation of the national ICT goals still had some way to go at the institutional level. Most of the study participants lacked knowledge and awareness of

the advantages these changes could bring, particularly the integration of ICT into EFL teaching. There were no detailed guidelines for achieving minimum qualifications or for ICT-based assessment.

Technological Infrastructure Development

ICT facilities play a key role in operational policies and include the allocation of technical resources such as hardware and software, content and network development. Since the start of the 2012 academic year, the university had increased its investment in equipment and facilities for teaching and learning, assessment and evaluation of foreign language skills. In 2016, English-language resources in the university's Information and Library Center comprised 2,022 books out of a total of 11,062,000 and 400 discs out of a total of 3,000. English-language learning materials were accessible via the university website, open source Moodle and www.XXX.tailieu.vn.

Moreover, infrastructure and IT equipment have been improved to enhance the application of ICT in management, teaching and scientific research. The university is connected to the internet by way of three fiber optic lines for different management segments: a 50Mbps internet connection dedicated to operation of the university website, the electronic administration system, training management software, and two 70Mbps FTTH internet lines support teaching and research. More than 200 networked computers are available across classrooms, faculties and 650 computers in labs.

The plan for the future is to provide equipment for teaching and learning of foreign languages, such as an e-library, a multi-media lab, five rooms specially equipped for listening, speaking and translating, and 27 other spaces fitted out with projectors, amplifiers and computers, and connected to the internet. University leaders have placed great importance on providing the technical resources needed to attain the national ICT goals.

Availability of ICT Facilities

The results of the survey indicated that the university provided a variety of useful ICT facilities for English classes (Table 5.3, p. 93). However, the numbers of available equipment differed across the range of facilities. For example, the most readily available equipment to pre-service teachers and lecturers appear to be projectors (n = 89 and n = 29), followed by wifi/internet (n = 85 and n = 30) and computers (n = 86 and n = 27). In addition, over half the pre-service teachers (n = 48) reported the availability of

interactive whiteboards while only nearly a third of lecturers (n = 9) noted the presence of these ICT tools.

Table 5.3 *Availability of ICT Facilities*

ICT devices	Pre-service teachers		Lecturers	
	n	%	n	%
Language Lab	69	76.7	29	93.5
Internet/wifi	85	94.4	30	96.8
Computer	86	95.6	27	87.1
Mobile devices	19	21.1	17	54.8
Interactive Whiteboard	48	53.3	9	29.0
Digital Camera/Camcorder	13	14.4	15	48.4
CD player	68	75.6	20	64.5
Projector	89	98.9	29	93.5
TV/Video player	31	34.4	18	58.1
Software and applications	31	34.4	23	74.2

The variety of ICT devices identified in the questionnaire as available at the university for lecturers and pre-service teachers in English language classes. The symbol n = the number of responses to each item.

The interviews reinforced the findings shown in Table 5.3, with many pre-service teachers and all lecturers agreeing that projectors, wifi/internet and computers were the three most available devices. The pre-service teachers predominantly expressed the view that the university provided a variety of ICT resources to assist EFL teaching and learning. One student (IS5.3) explained: "There are around 30 PCs at the library, 5 PCs at the Student Centre and 30 PCs in each computer room. All can be connected to the internet". Another student (IS1.5) added: "Lecturers can book one of three foreign language rooms for teaching with one PC, access to the internet and a projector". All lecturers agreed that each classroom in the C1 building was equipped with projectors.

Issues with ICT Resource Provision at the University

Although the university had invested significantly in equipment for ICT in EFL teaching, the pre-service teachers and lecturers reported several factors that inhibited them from fully integrating ICT into their teaching and realising its full potential. Figure 5.2 presents the findings from section five of the questionnaire that probed pre-service teachers' and lecturers' perceptions of the university's ICT infrastructure.

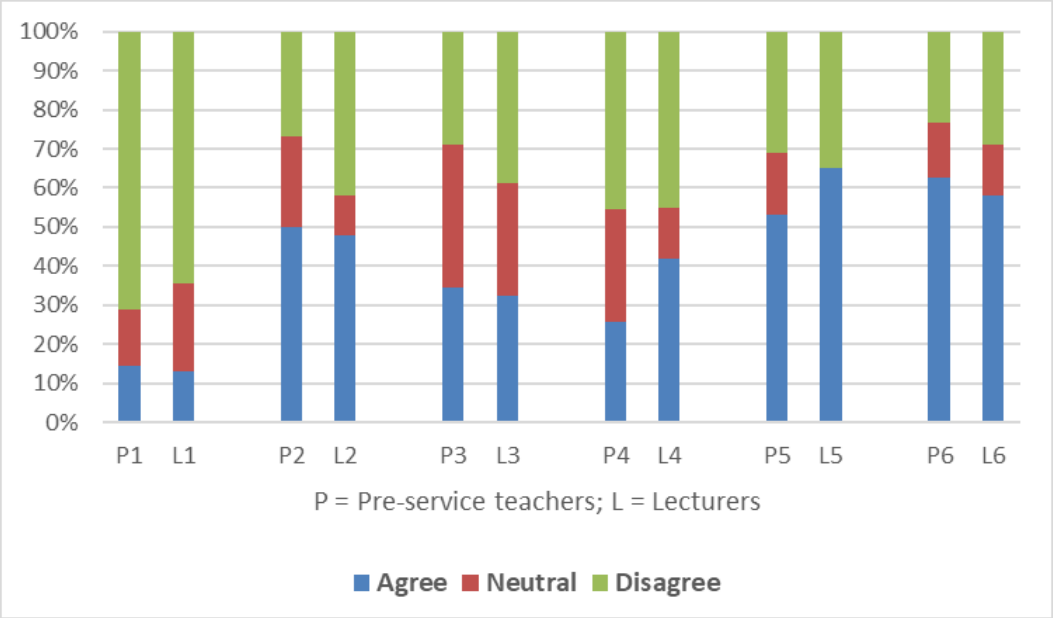


Figure 5.2 Perceptions of the University's ICT Facilities

P1, L1 = The school offers adequate ICT tools for students; P2, L2 = I have limited access to the University computers; P3, L3 = Most of the University's computers have software that I can use for language learning and teaching practice; P4, L4 = The school offers adequate maintenance and support for technology resources; P5, L5 = Technical problems often happen at the University and waste a lot of time; P6, L6 = The University Internet discourages me from using ICT.

Despite the university being equipped with a variety of ICT tools (Table 5.3), feedback was not positive, with only a small percentage (14.4% of pre-service teachers and 12.9% of lecturers) agreeing that students were offered adequate ICT facilities. This was consistent with comments in response to the open-ended question asking about other inhibitors preventing ICT use.

Almost all participants stated that personal computers were available, but around half the respondents said they had limited need for access to computers because they owned their own laptops. Software for EFL teaching and learning was reportedly installed on the university's computers according to approximately a third of pre-service teachers (34.4%) and lecturers (32.2%). According to these respondents, the three foreign-language rooms had similar ICT facilities to other subject areas and there were no ICT resources specific to EFL teaching. Pre-service teacher IS3.2 commented: "We never have access to other facilities for EFL teaching and learning except computers, projectors, internet and amplifiers at the University". The manager (IM2) stated: "Several years ago, the University was equipped with some interactive whiteboards, but we have no chance to see or use them. Maybe they were in the storehouses".

Another factor that discouraged these participants from using ICT was the internet at the university. As shown in Table 5.3 (p. 92), participants stated there were wifi hotspot around the campus; however, both students and lecturers complained about the internet speed or connection. The quantitative results showed that 62% of pre-service teachers and 58% of lecturers were dissatisfied with the university's internet. Findings from the interviews and focus groups confirmed that the university wifi and internet were inconsistent. Lecturers and students sometimes used their personal 3G USBs in EFL classes. These difficulties limited ICT integration and led to lecturers and pre-service teachers spending money on other devices. One lecturer (IL4) commented:

> I am lucky to participate in two national training and one institutional training workshops which are necessary for my EFL teaching. However, the quality of the University internet sometimes prevents me from sharing materials to the students or exploring academic websites.

As shown in Table 5.4, most of the ICT facilities at the university were reportedly in poor condition due to a lack of maintenance and adequate support for technology resources. The resulting downtimes were viewed as a waste of time by 53% of pre-service teachers and 65% of lecturers and hindered effective delivery of lectures. Lecturer IL7 complained: "The computers at the computer rooms need to be maintained frequently. When they did not work, both lecturers and students had to stop to wait for a technician. Each breakdown lasted around fifteen minutes".

Table 5.4 *Other Inhibitors to Using University ICT Facilities*

Main inhibitors	Sub-inhibitors	Pre-service teachers n	Lecturers n
ICT facilities	Not enough funding.	0	4
	Lack of facilities.	16	2
	Old facilities.	14	6
Internet	Inadequate wifi.	8	0
	Slow speed.	9	5

Pre-service teachers $N = 90$; lecturers $N = 31$

As far as the provision of ICT resources was concerned, it appears that investments from the 2020 Project were made without first investigating the needs of lecturers or seeking their input in the decision making. As a result, the ICT equipment and facilities provided did not always meet the relevant needs. Almost half the lecturers

were dissatisfied with the ineffective management of ICT tools at the university, caused by a lack of coordination between the Project and the university, as described by Lecturer IL4:

> Several years ago, the faculty received two computer rooms. Each equipped about 20 computers, headphones, internet and managed by Net school support software. The Dean used to ask all subjects had to be taught at least 30% with ICT in these ICT rooms in a year. This number of rooms not enough for over 20 lecturers and these rooms not suitable for all subjects. Now these rooms did not belong to our faculty.

Professional Development

In the early stages, teachers were trained to use ICT software, hardware and networking. According to Kozma (2008, p. 1090), a teacher professional development program is an essential component of any ICT operational policy and represents a key element of educational reform. This section presents the findings of document analyses, surveys and interviews in relation to ICT training courses and professional development provided by the university to assist EFL teaching and learning.

University reports showed that all lecturers had been trained consistently in English as a Second Language as verified by testing and assessment programs, such as TOEIC (The Test of English for International Communication), IELTS (The International English Language Testing System), and VSTEP (Vietnamese Standardised Test of English Proficiency), an initiative of the 2020 Project. In addition, they participated in professional training courses inside and outside Vietnam, supported by the Project and other related programs. Training was widely seen as a key component of lecturers' and pre-service teachers' ICT competencies. The university developed ICT training programs for EFL teaching and learning and delivered the training to two separate groups: EFL major lecturers and non-major lecturers.

ICT Training Courses for EFL Pre-Service Teachers

Document analysis and interviews with the faculty manager, pre-service teachers and lecturers revealed there was only one preparation course, *ICT Application in EFL Teaching*, in the English teacher education program at the university that provided pre-service teachers with instruction on how to integrate ICT into their English teaching. However, enrolment in this subject required students to first gain a certificate of basic

ICT application, an adjunct course managed by the Foreign Languages and Informatics Centre (FLIC) of the university.

The duration of the FLIC course, 90 periods of theory and 180 periods of practice, was much longer than the *ICT Application in EFL Teaching Course* that consisted of only 15 periods of theory and 30 periods of practice. Pre-service teachers could register to attend any time within a four-year timeframe. After passing the test, learners were expected to have comprehensive knowledge of IT skills at a standard prescribed for the base modules outlined in Table 2.6.

ICT application to EFL teaching and learning was a compulsory professional knowledge subject, taught in the fifth semester of an eight-semester EFL teacher education course. The course made up only two out of 138 credits, a very small proportion of the total curriculum content. It introduced basic and advanced ICT knowledge to develop an online course, and covered software and tools for designing lessons, lesson plans, tests, projects, questionnaires to support language learning and teaching, as well as research. Each module/subject had its own time allocation for theory, practice, self-study and objectives. Table 2.7 (p. 33) summarises these ICT subjects.

In order to shed further light on the views and opinions about these ICT courses, surveys and interviews were conducted with the faculty Dean of Foreign Languages Education, EFL lecturers and EFL pre-service teachers before and after the practicum course. In the questionnaire, the lecturers and pre-service teachers were asked to evaluate, using a five-point Likert scale, the extent to which ICT integration into EFL teacher curriculum design met particular criteria. The five responses were: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree and 5 = strongly agree.

Table 5.5 (p. 98) displays the combined responses of pre-service teachers and lecturers and shows that the responses of the two groups did not always correspond for the five items. The table shows the mean of the pre-service teacher survey ranged from 4.29 to 4.76, with standard deviations ranging from 0.67 to 1.11. Pre-service teachers' responses indicated that two items: *It presents ICT as an important tool to improve pre-service teachers' approaches to teaching English* and *It explains how to integrate ICT in the pre-service teachers' classrooms* had been achieved, but three others were in doubt.

Table 5.5 *Judgements of ICT Integration into the Curriculum*

Items	Pre-service teachers		Lecturer	
	M	***SD***	***M***	***SD***
It presents ICT as an important tool to improve pre-service teachers' approaches to teaching English.	4.76	0.78	4.24	1.03
It presents technology integration as a serious demand for the society's technological transformation.	4.34	0.78	3.94	1.02
It explains how to integrate ICT in the pre-service teachers' classrooms.	4.47	0.75	3.91	1.12
It provides pre-service teachers with adequate training and skills to integrate ICT into their future teaching.	4.41	0.86	3.92	1.06
It clearly explains ICT integration goals and objectives in EFL teacher education program.	4.29	0.93	3.94	1.13

Pre-service teachers (N = 90); Lecturers (N = 31).

It should be noted, however, that responses to the latter three were predominantly between "somewhat agree" and "strongly agree", with means of 4.29, 4.34 and 4.41 respectively. Both cohorts agreed that the EFL teacher education curriculum presented ICT as an important tool to improve pre-service teachers' approaches to teaching English. As can be seen from Table 5.5, lecturers' judgements were slightly lower, with averages ranging between 3.91 to 4.24 and standard deviations ranging from 0.75 to 1.13. This cohort indicated that all five aims were in doubt, however, the means were closer to "somewhat agree". Overall, the lecturers' results were slightly less positive than those of the pre-service teachers.

The interview results confirmed the survey results in relation to the purpose of ICT courses, their contents and providing information about methods of teaching. All participants were aware of the role of ICT in EFL teaching and learning and society more broadly. For example, the faculty manager (IM1) made the following comment:

> ICT integration plays an important role in EFL pre-service teacher education thanks to collaboration tools such as skype, Facebook messenger lecturers as well as pre-service teachers can access to English speaking community that they lack of.

One lecturer (IL1) stated: "ICT tools assist English teaching is more exciting and ICT applications attract more students' participation". A pre-service teacher (IS6.1)

said: “There is no doubt that ICT is becoming more and more necessary in our life. If we do not master ICT use, we will be out of date”.

The most significant finding was that nearly all interviewees believed the university offered adequate ICT training for pre-service teachers. One pre-service teacher reported having received ICT training both officially (A, B certificate and ICT in EFL from the university) and informally (EFL lecturers guided and shared ICT knowledge necessary for their subjects). The manager (IM2) concluded: “Basically, ICT level A and level B meet employer’s demand. Employers should train pre-service teachers to update knowledge later.”

In relation to concerns about prerequisite subjects for ICT in EFL, there was a discrepancy between the documents and the interviews due to an ICT policy change. According to pre-service teachers, the resultant ICT program was irrelevant and unhelpful, wasted time and money, and reduced the training time for the final ICT subject. Pre-service teachers had to first complete basic ICT level A that covered Word, Excel and PowerPoint before they could enroll in intermediate ICT level B that included Photoshop, Corel Draw and web design. Only then could they register for *ICT Application in EFL Teaching* course.

One pre-service teacher (IS1.2) claimed: “The content of ICT level A is more helpful for teaching than ICT level B because this intermediate ICT knowledge is used for designing logos, posters, web and photo editing”. Pre-service teacher (IS6.3) added: “We have to pay extra tuition for attending ICT classes in A, B levels and then even more examination fee if we cannot pass the first ICT test”.

One lecturer (1L11), responsible for training EFL teachers in ICT application explained: “The university has just changed the policy for ICT requirements for pre-service teachers, from this school year, they do not have to get ICT level B to follow ICT application into their professional teaching”.

With regard to the organisation and methods of teaching the ICT courses, the findings from the interviews did not align with the questionnaire in several respects. The first criticism, crowded ICT classes, was raised by most pre-service teachers. One (IS5.4) commented:

> There are around 40 students from different majors in the basic ICT classes and 30 EFL pre-service teachers in the ICT application in EFL teaching course. We often share the computers with other classmates because some of the computers do not work properly.

The second issue was related to teaching time. Both lecturers and pre-service teachers reported that ICT application in the EFL course was taught only in the seventh and final semester. Pre-service teacher (IS3.3) stated:

> We have not got many opportunities to practice ICT knowledge at the university when we have micro teaching and at high schools because some of us have not finished the ICT in EFL course before the practicum.

Another pre-service teacher (IS4.1) said: "The ICT in EFL course content is too much, and the teaching time is limited so the lecturer sometimes introduced the lesson quickly, like SPSS and Audacity".

Although pre-service teachers held mostly negative views about the administration of the ICT courses, they nevertheless supported the method of teaching ICT for implementation into the EFL teaching course. All pre-service teachers in this study had the same ICT lecturer, who adopted a project-based approach. Pre-service teachers were required to present educational projects in groups after achieving the required skills for using the technological tools. Lecturer IL11 stated: "At the beginning I divided students into different groups. Each group is responsible for one teaching tool. Assessment is based on both individual and group assignments all through their course".

Pre-service teacher 6.1 concurred with the following statement:

> At first, the lecturer showed the demo product in the big screen for the whole class, we then were guided to create the teaching tool through personal computers. The lecturer also came to each student to help when we practised.

Access to and Expectations of Professional Development

Lecturers were asked about their previous ICT training according to the number of training hours they had attended at institutional and national sessions during the past two years. The results were coded into four main categories from 1 to 4 where 1 = no training and 4 = 20 hours and more.

As previously mentioned, it is vital for professional development to follow ICT training, yet the lecturers in this study did not have many opportunities to participate in this type of training. Over a quarter of lecturers (n = 7) had not attended any training at the university and more than double this figure (n = 17) had not participated in any ICT training provided by another government organisation. Most English pre-service teachers indicated they were happy to attend workshops/short-term training courses (47.8%), and around a quarter of both pre-service teachers and lecturers viewed ICT-related professional training as a necessity. As shown in Table 5.6, the majority of participants (n = 10) had between 10 and 19 hours of institutional training. Interestingly, the same number of lecturers (n = 8) had received 20 hours or more of ICT training at different levels over the preceding two years.

Table 5.6 *Lecturers' ICT Training*

Categories	Institutional level n	National level n
No training	7	17
Fewer than 10 hours	6	3
10 - 19 hours	10	3
20 hours and more	8	8

Lecturers (*N* = 31)

The lecturers' comments were consistent with the above and elaborated on the ICT training courses. Almost an equal number of lecturers had attended institutional and national training respectively. They were also trained in the use of Moodle, audio tools, sharing tools and assessment tools. Although most of them thought the content was helpful for their EFL teaching, they were disappointed in certain aspects, such as an imbalance between the training content and time allocation, and the widespread ICT incompetence of lecturers. Having completed national ICT training, lecturer IL6 commented: "The 2020 project offered ICT training with much content from teaching to evaluating but it lasted for short time and presenters show slides quickly".

Further, the effectiveness of ICT training depended on attendees' ICT competencies, as explained by lecturer 8: "The ICT workshop at our university provided much content, software, online tests, Hot Potatoes. I feel that they are useful for my teaching process, but I cannot apply because of my low ICT". Over one-third of lecturers (5/12) expressed a desire to share ICT resources with other teachers.

In general, EFL lecturers commented that both MOET and the university had tried to develop lecturers' ICT knowledge and skills, however, they needed to pay more attention to delivering this knowledge to a variety of audiences to avoid wasting time, effort and money. They also suggested that administrators of national ICT workshops and seminars balance the content and duration of training so that trainees could master the knowledge and effectively translate their skills in their institutional settings (lecturer IL3, IL4, IL6, IL7 and IL9).

Table 5.7 *Expectations of Professional Development*

Items	Pre-service teachers		Lecturer	
	Yes	%	Yes	%
ICT-related to professional training	23	25.6	7	22.6
ICT facilities for EFL learning and teaching	29	32.2	9	29.0
EFL lecturers' shares of technological resources	40	44.4	11	35.5
ICT training for EFL learning and teaching	43	47.8	8	25.8

Pre-service teachers (N = 90); Lecturers (N = 31)

As shown in Table 5.7, in addition to professional development, similar percentages of pre-service teachers (29%) and lecturers (32.2%) wanted ICT facilities and equipment specifically dedicated to EFL learning and teaching. This aligned with the feedback in interviews about ICT resources at the university.

Technical Support

Ongoing technical assistance is required to support and sustain ICT training, particularly when facilities have been updated and are more complex. At the beginning of the 2016 academic year, the university designated a staff member to be responsible for ICT tasks, including faculty website administration, technical problem solving and sharing ICT knowledge. However, the data collected in the interviews with the Dean, lecturers and pre-service teachers were not consistent with the university's version of events. According to the faculty Dean:

> There were not any staff responsible for ICT support at the faculty level. EFL lecturers who have participated in ICT workshops only to upgrade their ICT knowledge and skills. The University has assigned a group of IT technicians assisting solving technical problems, however, they are not specialised in EFL resources or software so EFL lecturers mainly have to learn ICT by themselves.

Three focus groups (1, 2 and 6) complained that every teaching hour was typically reduced to only 50 minutes because of issues with technology, and it took between 15 and 30 minutes for an IT technician to provide support. Occasionally they had to stop the class because computers couldn't be repaired. Pre-service teacher (IS 6.2) suggested:

> The University should do more technical checks and maintenance with all computer rooms to prevent frequent technical problems. In addition, the ICT centre should develop indirect support for the teaching staff as well as the students through TeamViewer, both inside and outside classroom times.

Pedagogical Change, Curriculum Development and Assessment Reform

According to Kozma (2008, p. 1090), "ICT-related changes in curriculum, pedagogical practices, and assessment are seen as an especially important component of operational policies, particularly for strategic policies that promote education reform". In order to increase the uptake of ICT for producing innovative content, new teaching-and-learning methods and evaluation, the university introduced technical and technological methods in university teaching as a topic in pedagogical training classes for lecturers and pre-service teachers. Lecturers and students were encouraged to increase their use of the information technology environment (email, blackboard, e-learning system) for exchanging learning materials and discussing academic topics. In addition, English-language teaching programs were steadily being standardised to meet the objectives of the 2020 Project by linking innovative teaching methods. Today, informatics and foreign language tests are performed online under the administration of the Informatics and Foreign Languages Centre.

ICT development has clearly been a priority in Vietnam's education reforms to meet the demand for "high-quality human resources and a knowledge-based society" (Vietnamese Government, 2012, p. 2). The university's efforts have been aimed at infrastructure development and teacher training, but they have not provided any models or specific plans for pedagogical change, curriculum or content development.

Summary

This chapter examined how ICT policy was perceived and interpreted by university managers, lecturers and pre-service teachers. Data were obtained from documents, online questionnaires and semi-structured interviews. Based on the

institutional plans and end-of-year school reports, an analysis was undertaken of the planned activities and achievements of the university according to the following operational components: ICT resources, ICT training courses and professional development. Despite the existence of several institutional conditions for effective ICT implementation, a number of concerns surfaced from both the quantitative and qualitative data.

Firstly, most of the university documents articulated high expectations for the role and use of ICT by teachers and students within the faculty. However, an analysis of the IT plans and feedback in the interviews highlighted a persistent lack of detailed guidelines for using ICT effectively in EFL teaching, methodology and content development.

Secondly, infrastructure development was highlighted as a priority in all the technology plans, yet there was a discrepancy between university reports and study participants' perceptions of ICT facilities. The findings indicated a lack of clear ICT policies and guidelines at the university was a major contributor to poor decision-making and inappropriate allocations of ICT resources to EFL teaching and learning.

Thirdly, while ICT training was offered to both pre-service teachers and lecturers to enhance their skills and confidence in using ICT tools to design lessons, lesson plans, tests and research; the frequency, content and methods of national and institutional training sessions needed improvement. Another concern that arose suggested lecturers should design tasks that engaged pre-service teachers in reflection of their own ICT beliefs, attitudes, confidence and pedagogical use.

Finally, technical units and personnel were assigned to support all university staff during teaching hours. However, there appeared to be high levels of dissatisfaction with the technical support and lack of maintenance that resulted in frequent technical breakdowns. Participants recommended engaging more technicians and modes of support.

Chapter 6:
Findings on the Perceptions of ICT Integration into EFL Teacher Education

The previous chapter presented the findings on ICT integration into EFL teaching and learning, and specifically, the university's efforts to implement ICT in the EFL teacher education program. This chapter consists of two main sections and presents the findings related to the second and the third research questions (Figure 6.1). The first section describes the results derived from the survey and semi-structured interviews, clarifying the perceptions of lecturers and pre-service teachers of the usefulness that ICT contributed to their learning, as well as their self-evaluated confidence levels in using ICT. The second section reviews the ICT devices owned and used by lecturers and pre-service teachers and the purposes for which they were used, as well as the participants' experiences of how the device/s had been integrated into their EFL teacher education.

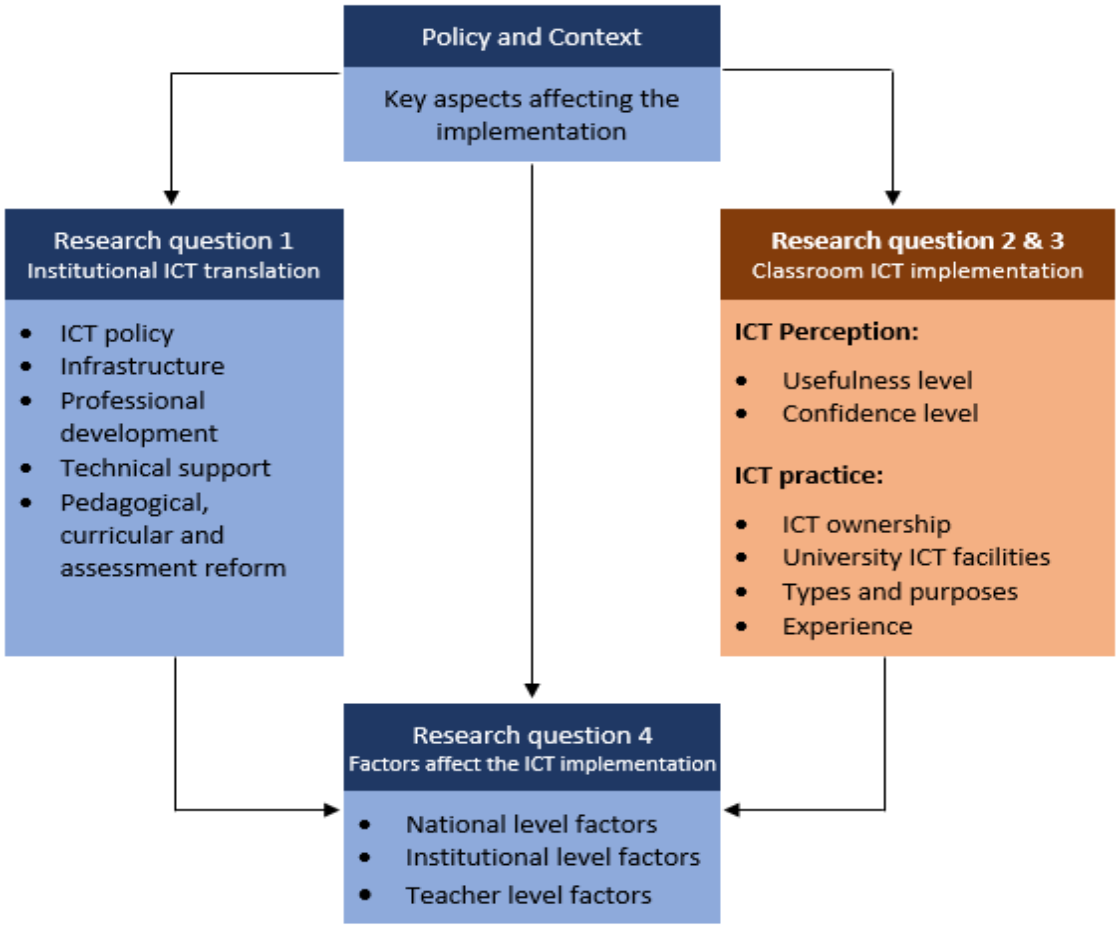


Figure 6.1 Organisation of the Findings Related to Research Question 2&3

Perceptions of ICT Usefulness

This section presents the pre-service teachers' and lecturers' perceptions of ICT usefulness and includes a comparison between the two groups. The quantitative data from the questionnaire (Sections 3 and 4, Appendix B) are presented first. Quotations from the semi-structured interviews have been inserted to provide in-depth information about the participants' perceptions.

The questionnaire asked EFL pre-service teachers and lecturers to self-assess the usefulness of various components of the TPACK framework, as well as describing how they applied components of ICT in their teaching and learning. The mean (M), standard deviation (SD) and frequency with percentage (%) were obtained for each subscale and domain in the survey instrument and are presented in the following tables and Appendix D.

Perceptions of TPACK's Usefulness

For reporting purposes the TPACK components were sorted into seven categories: a) technology knowledge (TK), b) content knowledge (CK), c) pedagogical knowledge (PK), d) pedagogical content knowledge (PCK), e) technological pedagogical knowledge (TPK), f) technological content knowledge (TCK), and g) technological pedagogical and content knowledge (TPACK). As shown in the survey score ratings in Table 6.1, pre-service teachers and lecturers agreed that the TPACK components were helpful for their teaching and learning. All mean scores ranged from 2.54 to 3.40, indicating a positive response and agreement by both cohorts.

Table 6.1 *Mean Scores and Standard Deviations of TPACK Usefulness*

TPACK	**Pre-service teachers (N = 90)**		**Lecturer (N = 31)**	
Domains	***M***	***SD***	***M***	***SD***
TK	2.54	0.84	2.98	0.81
CK	3.29	0.66	3.29	0.62
PK	3.39	0.62	3.24	0.64
PCK	3.13	0.64	3.19	0.58
TCK	3.38	0.63	3.25	0.66
TPK	3.40	0.57	3.18	0.61
TPACK	3.26	0.66	3.10	0.67

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

As can be seen in Table 6.1, pre-service teachers considered TPK (*M* = 3.40), PK (*M* = 3.39) and TCK (*M* = 3.38) as the most useful components, possibly due to a perception that technological skills connected them to theories that could enhance their knowledge and teaching of English language and assessment processes. Although the lecturers' perceptions of these three components were also positive – TPK (*M* = 3.18), PK (*M* = 3.24) and TCK (*M* = 3.25) – their ratings were slightly lower than those of the pre-service teachers.

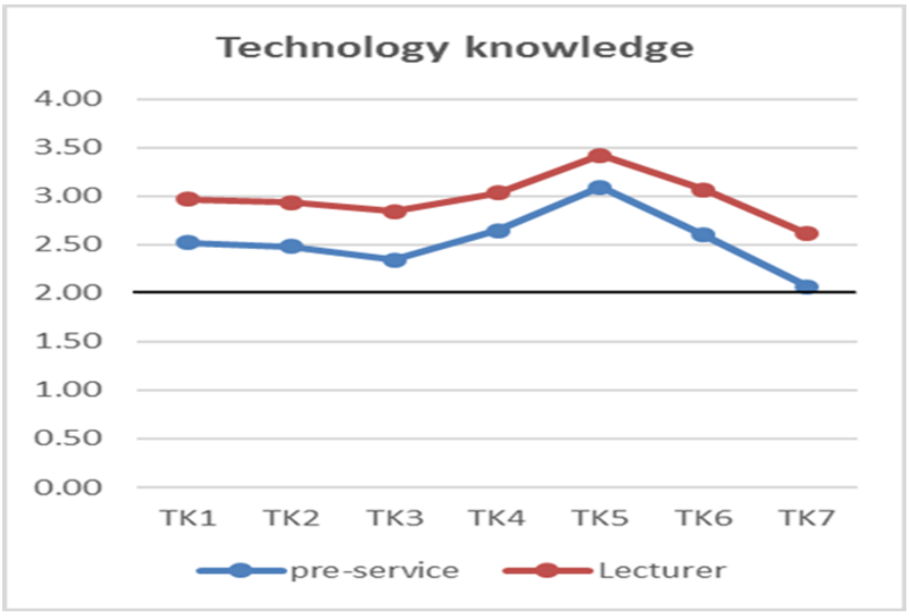
TK was the lowest ranked item (see Table 6.1) on the usefulness scale for pre-service teachers (*M* = 2.54) and lecturers (*M* = 2.98), possibly because they viewed knowledge and technical skills as the specialist domain of trained technicians. It is not surprising that both cohorts concurred (*M* = 3.29) that content knowledge (CK) of their subject matter was important and useful.

While Table 6.1 reported on perceptions of usefulness of the major categories of the TPACK framework, specific skills have also been identified within in each of these components. The following figures present the findings and comparison of the responses pre-service teachers and lecturers provided regarding their perceptions of usefulness of the specific skills within these components.

Usefulness Perceptions of Knowledge and Skills for Each TPACK Component

Pre-service teachers and lecturers were then asked to rate their perceptions on the usefulness of skills associated with each of the TPACK components. As illustrated in the following figures which show the mean scores for perceptions of Usefulness across the major categories of the TPACK framework, responses from the two groups proved very similar.

As shown in Figure 6.2, knowledge of using Office programs in EFL teaching and learning (TK5) were believed the most useful among the technology knowledge with the mean score was 3.42 for the lecturers and 3.09 for the pre-service teachers. On the other hand, both of the two groups rated TK7, using collaboration tools (wiki, Edmodo, 3D virtual environment, etc.) in accordance with their teaching purposes as the lowest item. This maybe because the University did not provide enough ICT infrastructure and practical opportunities for these participants.



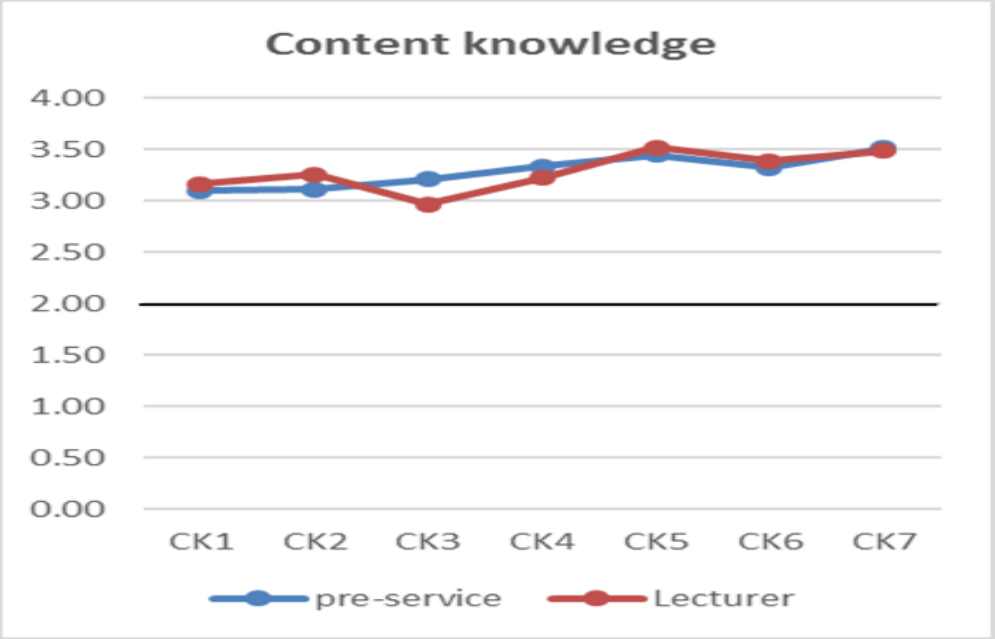
Key:	TK1: Adjust computer settings
0 = Unable to Judge	TK2: Use computer peripherals
1 = Not Useful	TK3: Troubleshoot computer problems
2 = Moderately Useful	TK4: Use digital classroom equipment
3 = Useful	TK5: Use Office programs
4 = Extremely Useful	TK6: Create multimedia
	TK7: Use collaboration tools

Figure 6.2 Mean Scores for Usefulness of Technology Knowledge Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Figure 6.3 shows both pre-service teachers and lecturers ranked the seven CK items more positively than the seven TK items, possibly because the CK skills were syllabus requirements.

While the mean scores of both groups show that participants considered all skills useful, lecturers rated the ability to understand English written texts as less useful (*M* = 3.21) than pre-service teachers (*M* = 2.97). The ability to teach English-language skills, such as vocabulary and conversation (CK5), was rated highly by both groups and judged the most useful item by lecturers (*M* = 3.52). The highest rated item (*M* = 3.51) by pre-service teachers was CK7: having the knowledge to promote cultural understanding of people from English-speaking countries. This may suggest that the two groups did not focus on the same English content in their ICT teaching. Pre-service teachers perceived the least useful item (*M* = 3.10) as the ability to express ideas and feelings in English (CK1).

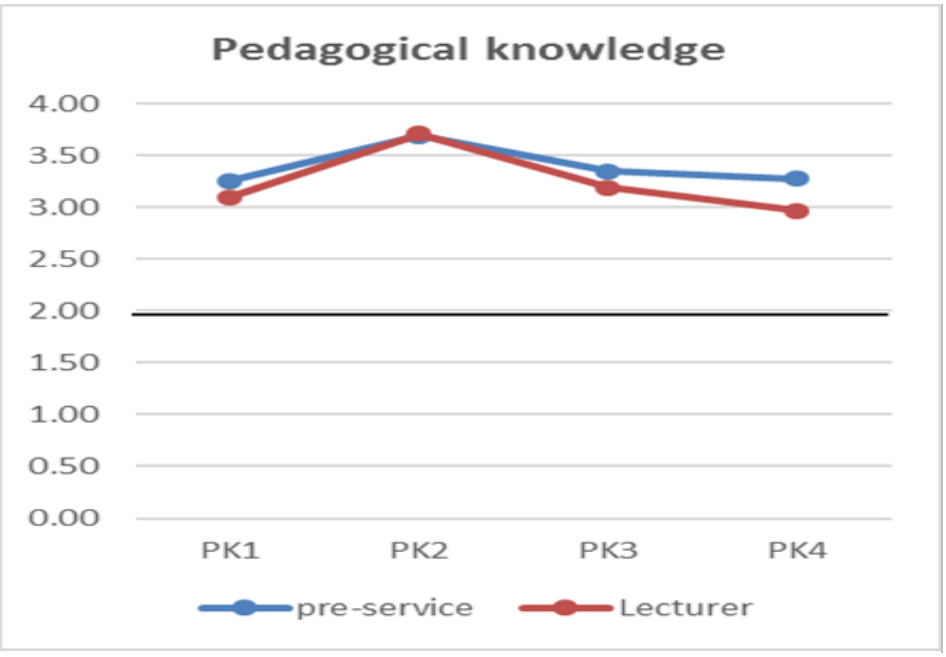


Key: 0 = Unable to judge 1 = Not Useful 2 = Moderately Useful 3 = Useful 4 = Extremely Useful	CK1: Express ideas/feelings by English speaking CK2: Express ideas/feelings by English writing CK3: Understand English written texts CK4: Easily understand English speaker speech CK5: Teach English vocabulary and conversation CK6: Teach linguistic knowledge CK7: Teach English cultural understanding

Figure 6.3 Mean Scores for Usefulness of Content Knowledge Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

In their ratings of PK usefulness (Figure 6.4), both groups perceived all items to be beneficial, with lecturers' ratings slightly more positive than pre-service teachers. However, it is evident that neither group felt a knowledge of general learning theories was particularly useful for educators. It is possible that they had not made the connection between theory and practice because PK2 (knowledge to prepare, plan and deliver teaching) was rated the most useful item by lecturers (M = 3.71) and pre-service teachers (M = 3.69). Similarly, evaluation in their teaching was viewed as least important, as shown in their responses to PK 4, rated M = 2.97 by lecturers and M = 3.26 by pre-service teachers.

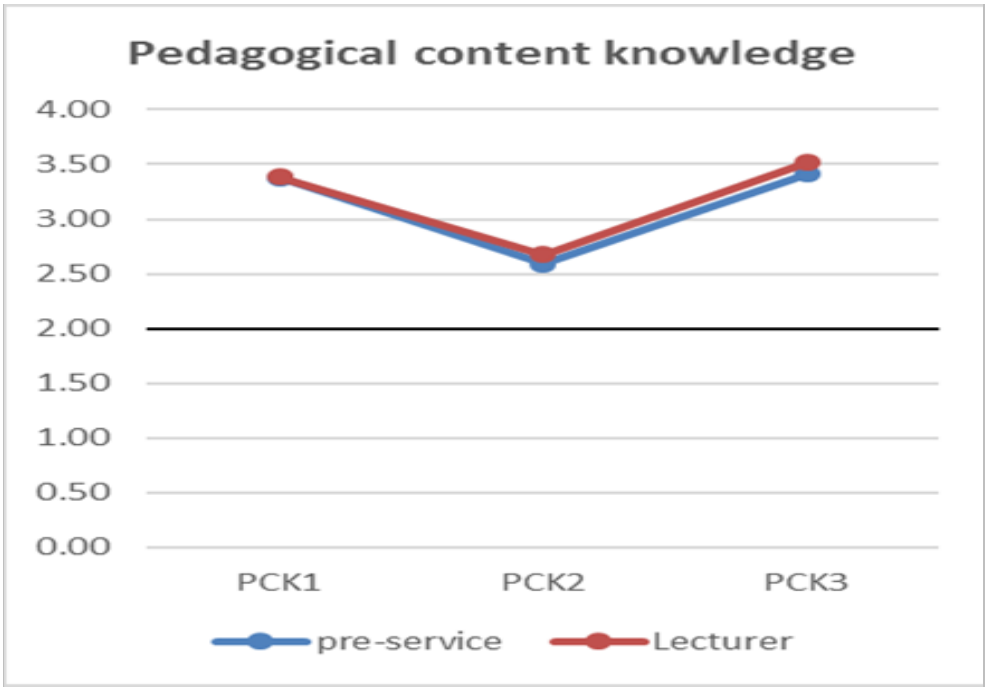


Key:	PK1: Knowledge of general learning theories
0 = Unable to judge	PK2: Prepare, plan and deliver teaching
1 = Not Useful	PK3: Manage a classroom learning environment
2 = Moderately Useful	PK4: Evaluate students' learning processes
3 = Useful	
4 = Extremely Useful	

Figure 6.4 Mean Scores for Usefulness of Pedagogical Knowledge Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Other combined domains, PCK, TCK, TPK and TPACK were more complex to understand; however, the responses of the two groups showed similar profiles. A comparison between PK and PCK responses (Figure 6.5) revealed some inconsistencies. Given that a key feature of CLT is allowing students to communicate and interact to negotiate meaning, it was surprising that this was rated the least useful PCK item by both pre-service teachers (M = 2.59) and lecturers (M = 2.68); yet group work (PCK1) was rated highly on the usefulness scale. Furthermore, PCK 3 (ability to adapt lesson plans in accordance with students' current language skills) was rated highly by lecturers (M = 3.52) and pre-service teachers (M = 3.41), yet evaluations within their teaching (PK4) was not given priority.

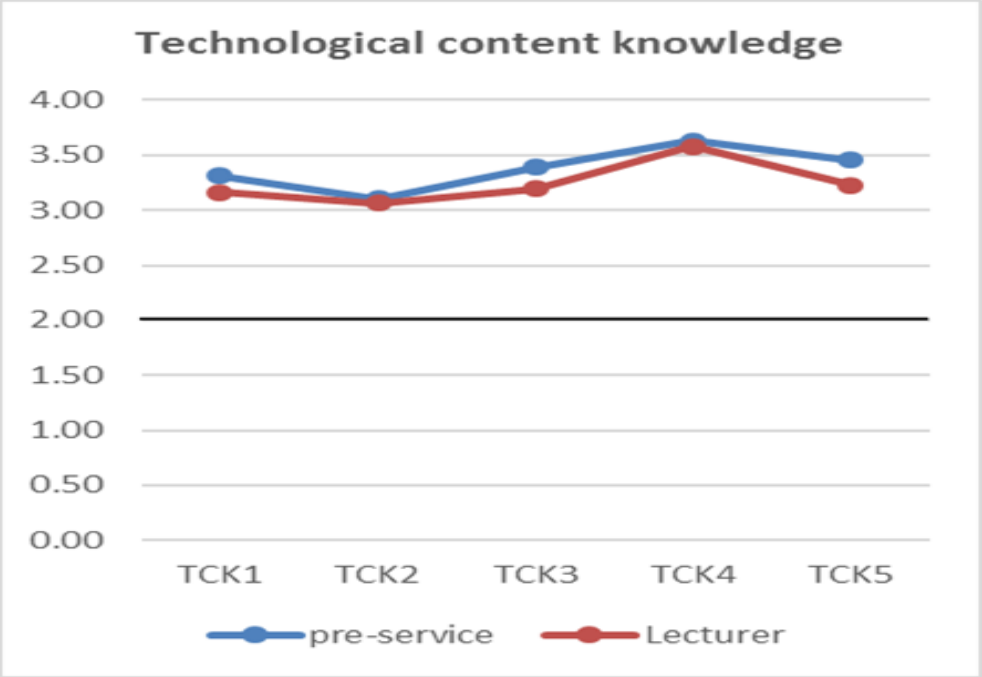


Key: 0 = Unable to judge 1 = Not Useful 2 = Moderately Useful 3 = Useful 4 = Extremely Useful	PCK1: Select effective teaching strategies to guide students' learning in an EFL context PCK2: Knowledge about the way students interact to negotiate meaning in English PCK3: Adapt lesson plans in accordance with students' language skill levels

Figure 6.5 Mean Scores for Usefulness of PCK Domain Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

The mean scores of items in the TCK domain (Figure 6.6) were rated above three on the scale, signalling that both groups perceived technological applications useful for teaching English. Item TCK4 received the highest mean score from pre-service teachers (M = 3.63) and lecturers (M = 3.58), indicating that ICT provided useful support for educators to obtain information and enhance their English linguistics. The lowest mean score was for item TCK2: the value of using collaboration tools such as Wiki to work collaboratively with foreigners. Notably, a significant positive correlation was noted between TCK and CK. Domain values for these two items ranged from M = 3.0 to M = 3.5; perhaps because neither group grasped the difference between using ICT to gain knowledge *to teach* EFL and using ICT *to gain knowledge about technological applications* for teaching EFL.

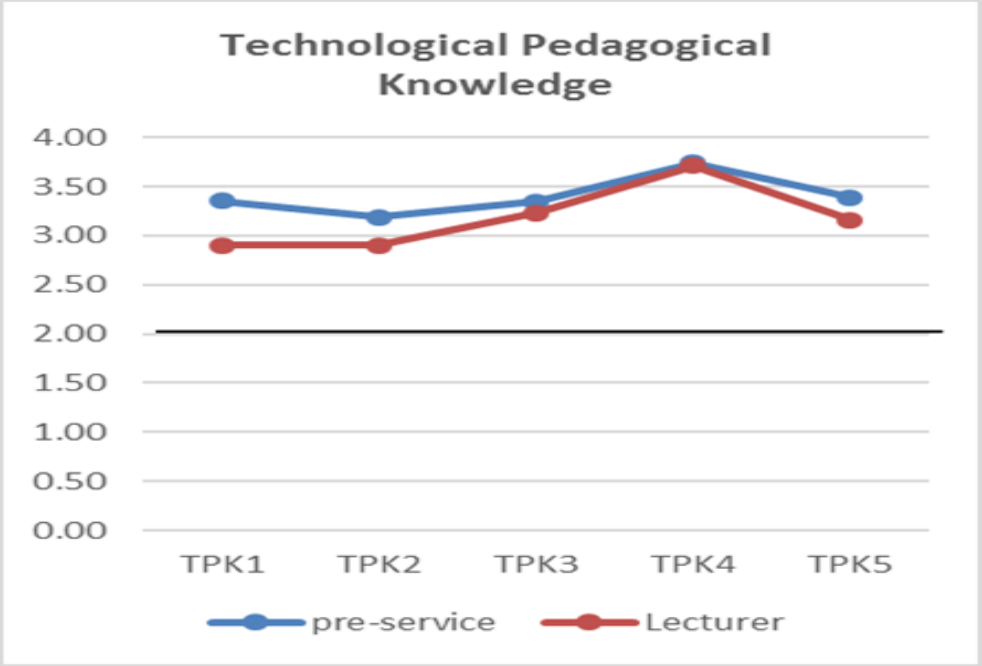


Key: 0 = Unable to judge 1 = Not Useful 2 = Moderately Useful 3 = Useful 4 = Extremely Useful	TCK1: Take advantage of multimedia to express my ideas about various topics TCK2: Use collaboration tools to work with foreign persons TCK 3: Knowledge about ICT applications for teaching English skills TCK 4: Knowledge about ICT applications for teaching English linguistics TCK 5: Knowledge about ICT applications for teaching English culture

Figure 6.6 *Mean Scores for Usefulness of TCK Domain*

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Within the TPK domains (Figure 6.7), both groups rated the same TPK items highest and lowest. TPK5 (using ICT to assess student learning) was deemed very beneficial in English teaching, with lecturers rating at M = 3.72 and pre-service teachers at M = 3.74. TPK2, which required educators to motivate students' use of information technologies legally, ethically, safely and with respect to copyright received the lowest mean score; particularly from lecturers. It is possible that they were not aware of safety, information security and the law when using information technology equipment.

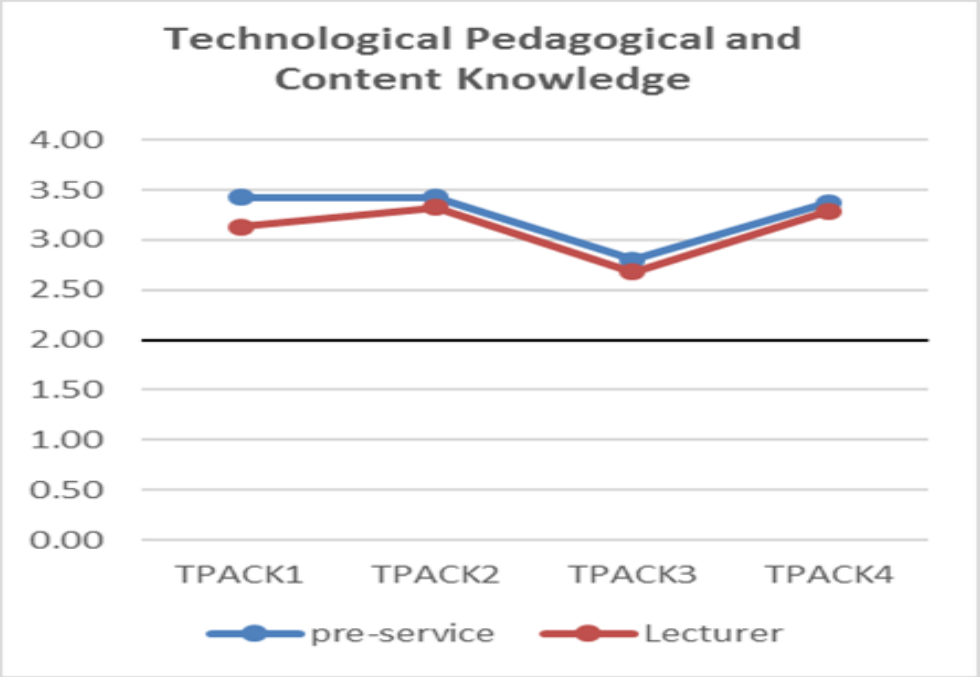


Key:	TPK1: Knowledge of ICT learning theories
0 = Unable to judge	TPK2: Lead students to use ICT legally, ethically, safely and with respect for copyright
1 = Not Useful	TPK3: Use ICT to manage classes
2 = Moderately Useful	TPK4: Prepare, plan and deliver teaching using ICT
3 = Useful	TPK5: Assess student learning with ICT
4 = Extremely Useful	

Figure 6.7 Mean Scores for Usefulness of TPK Domain Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

In the TPACK core domain (Figure 6.8), very little difference was evident in the response profiles of the two groups who rated three items higher than useful. Item TPACK2 (perceived usefulness of being able to design real-life tasks in which students use ICT to learn English) was judged the most useful item by pre-service teachers at *M* = 3.42 and lecturers at *M* = 3.32. The least useful item, TPACK3, requiring educators to identify the usefulness of evaluating software, tasks and students' performance in a technology-rich class was rated *M* = 2.80 by pre-service teachers and *M* = 2.68 by lecturers. This may suggest a preference for relying on the recommendations of others who have used software dedicated to EFL teaching.



Key: 0 = Unable to judge 1 = Not Useful 2 = Moderately Useful 3 = Useful 4 = Extremely Useful	TPACK1: Support students' use of ICT to develop their language skills independently TPACK 2: Design real-life tasks for students use of ICT to learn English TPACK 3: Evaluate software, tasks and students' performance in a technology-rich class TPACK 4: Use ICT tools and resources to continuously improve the language teaching process

Figure 6.8 Mean Scores for Usefulness of TPACK Domain Perceptions

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

ICT Applications in EFL

This subsection reports on the responses of pre-service teachers and lecturers in relation to the level of usefulness that ICT applications contributed to their teaching. The questionnaire required participants to consider 13 items categorised into two major groups: ICT software and ICT hardware. The results are shown in Figures 6.9 and 6.10.

Figure 6.9 shows little variation in participants' self-rated perceptions of ICT usefulness. The mean scores for most of the ICT applications ranged between $M = 3.0$ and $M = 3.5$, indicating that participants perceived ICT applications as useful for their teaching.

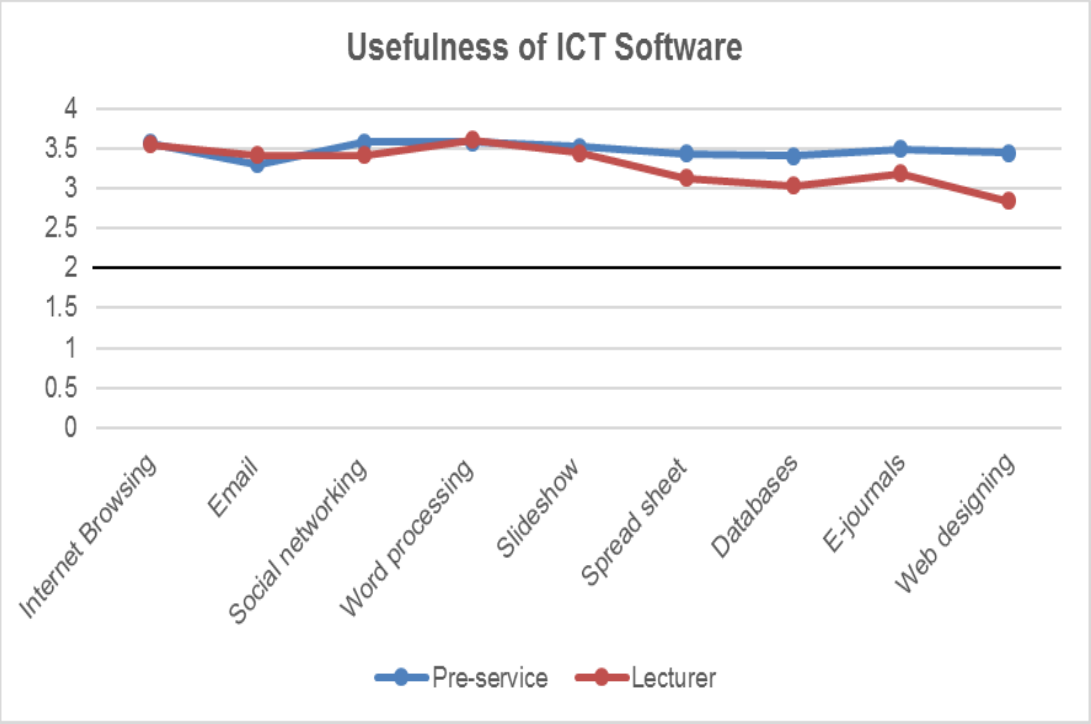


Figure 6.9 Perceptions of the Usefulness of ICT Software

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

In the pre-service teacher group, two items – *social networking* and *word processing* – were perceived as the most useful devices with the same mean scores (M = 3.58). Although email was rated as the least useful software application, the rating of M = 3.3 indicates that pre-service teachers nevertheless deemed it a valuable resource. In general, pre-service teachers judged ICT software applications to be useful teaching tools.

Similarly, lecturers judged *word processing* to be the most useful ICT software tool (M = 3.6), followed by *internet browsing* (M = 3.55). However, the ability to design web pages was rated by lecturers as the least useful application (M = 2.84); whereas pre-service teachers rated it as useful (M = 3.45). It is possible that pre-service teachers, most of whom had completed special ICT courses, were aware that web design offered a potential medium for teaching and practising EFL concepts.

Notably, the response patterns of the two groups were almost parallel for ICT hardware, although pre-service teachers' ratings were higher than lecturers. From the graph in Figure 6.10 it can be concluded that lecturers regarded ICT hardware less positively for teaching purposes than pre-service teachers.

The first item, *data projector* was deemed the most useful device by pre-service teachers (*M* = 3.69) and lecturers (*M* = 3.55). The second highest rated item was *mobile phones*, with pre-service teachers rating it higher (*M* = 3.54) than lecturers (M = 3.29). Although *digital cameras* were rated as the least useful hardware item for educational purposes, the means recorded for pre-service teachers (*M* = 3.19) and lecturers (*M* =2.9) were relatively positive.

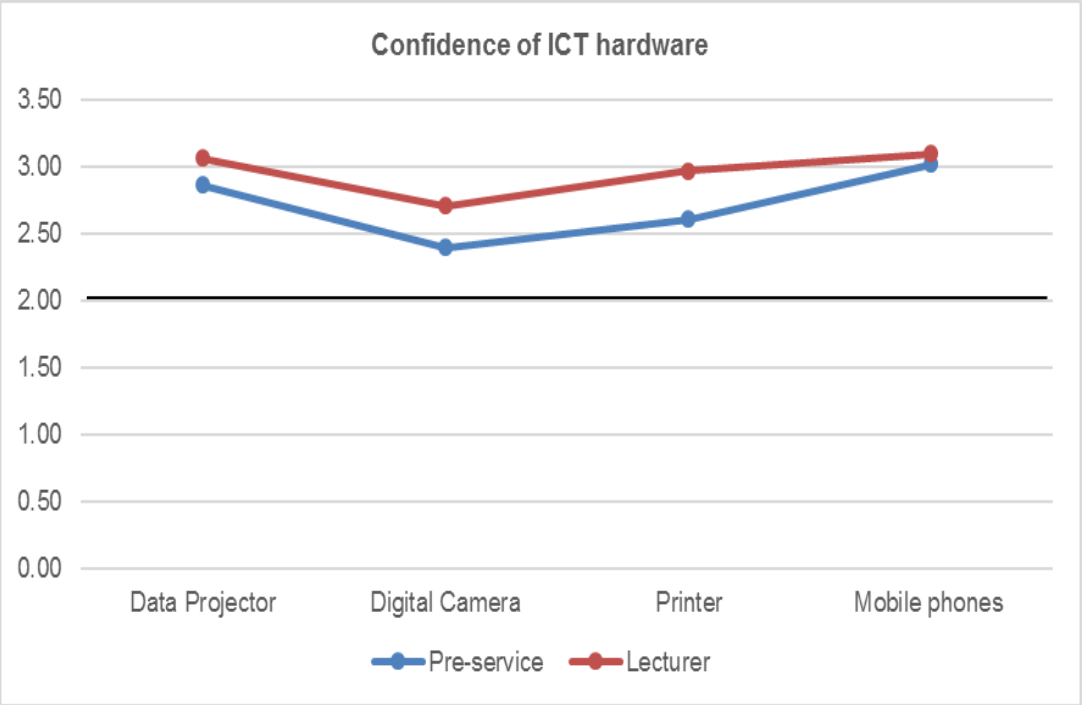


Figure 6.10 Perceptions of the Usefulness of ICT Hardware

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Perceptions of ICT Confidence

This section presents the findings on pre-service teachers' and lecturers' perceptions of their confidence levels in using ICT to teach. The quantitative data from the questionnaire uncovered pre-service teachers' and lecturers' perceptions of the usefulness of various components of the TPACK framework and ICT in their teaching and learning.

TPACK Confidence Perceptions

In the same way as for ICT usefulness perceptions, the seven TPACK variables were used to measure confidence perceptions, viz., technology knowledge (TK), content knowledge (CK), pedagogical knowledge (PK), pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), technological content knowledge (TCK),

and technological pedagogical and content knowledge (TPACK). The mean (*M*), standard deviation (SD) and frequency with percentage were obtained for each of the subscales and domains of the TPACK survey instrument – they are described and depicted in the following tables and Appendix D.

Generally, pre-service teachers and lecturers perceived themselves moderately confident to confident in their ICT knowledge and skills, with mean scores ranging from 2.35 to 3.13. There was a significant variation between pre-service teachers' and lecturers' perceptions in all seven TPACK domains. Nearly all the mean scores were higher for lecturers than pre-service teachers, with the exception of the TK domain. Lecturers considered PCK their most confident domain (M = 3.04, SD = 0.67), yet pre-service teachers gave it the lowest mean score (2.35). The highest mean score for the two groups (3.13) was the pre-service teachers' rating of TK, possibly attributable to pre-service teachers having grown up around information technology and was therefore more comfortable using it. The mean score for TPACK was noticeably the lowest of the seven domains for both pre-service teachers (M = 2.35) and lecturers (M = 2.47), implying that both groups were not very confident with integrating technology, pedagogical knowledge or English knowledge in their EFL teaching. The following table presents the combined responses of pre-service teachers and lecturers to the survey.

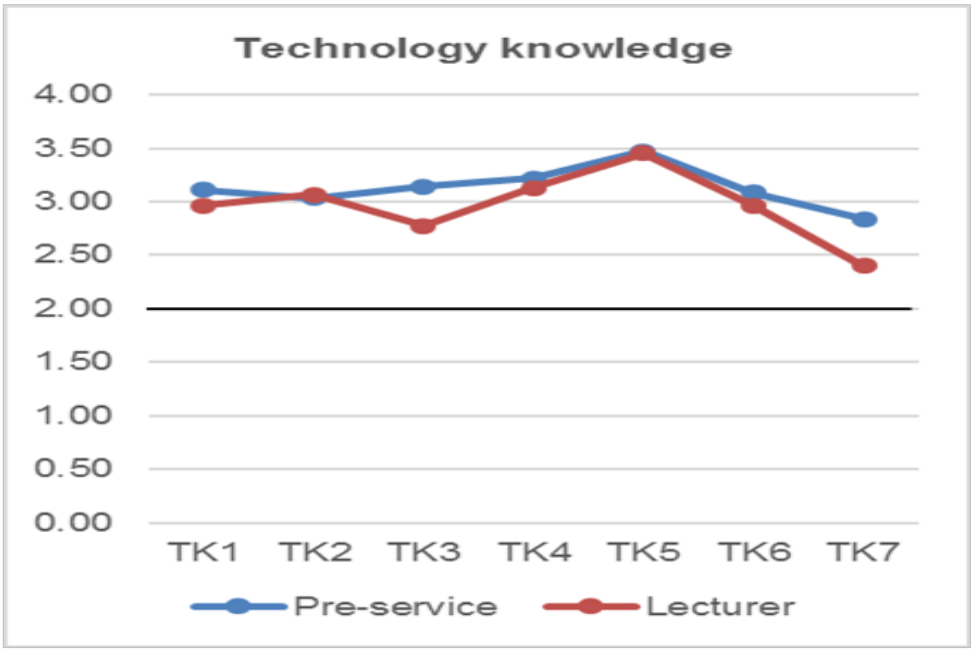
Table 6.2 *Mean Scores and Standard Deviations of TPACK Confidence*

TPACK	**Pre-service teachers (*N* = 90)**		**Lecturer (*N* = 31)**	
Domains	***M***	***SD***	***M***	***SD***
TK	3.13	0.73	2.97	0.74
CK	2.47	0.75	2.96	0.65
PK	2.66	0.65	2.99	0.64
PCK	2.35	0.75	3.04	0.67
TCK	2.40	0.79	2.57	0.75
TPK	2.54	0.77	2.70	0.66
TPACK	2.35	0.72	2.47	0.74

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Confidence Perceptions of Knowledge and Skills for Each TPACK Component

A detailed examination of individual TPACK items (Figure 6.11 – Figure 6.19) showed the same items were rated highest by both groups for the TK domain (TK5), CK domain (CK3), PK domain (PK2), PCK domain (PCK3) and TPK domain (TPK4). It is also evident from Figure 6.11 – Figure 6.19 that pre-service teachers and lecturers rated the same items lowest across the seven domains, viz., TK7, CK7, PK1, PCK2, TCK5, TPK2 and TPACK3.



Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	TK1: Adjust computer settings TK2: Use computer peripherals TK3: Troubleshoot computer problems TK4: Use digital classroom equipment TK5: Use Office programs TK6: Create multimedia TK7: Use collaboration tools

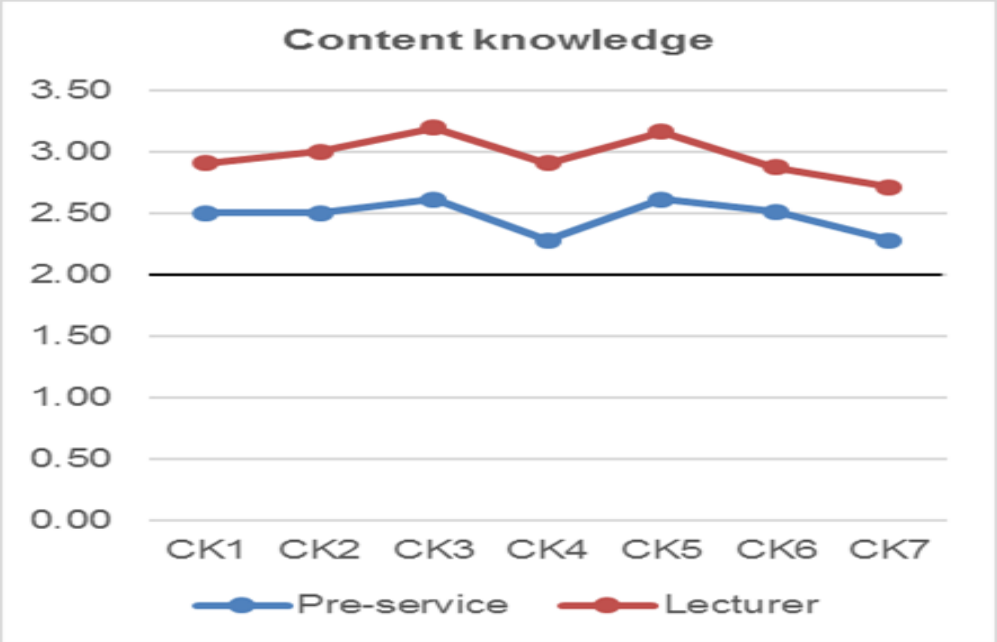
Figure 6.11 Mean Scores for Confidence in Technology Knowledge

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

In the TK domain, both pre-service teachers and lecturers expressed confidence in using Office programs (i.e. Word, PowerPoint, etc.), indicating a high level of proficiency (TK5). Interestingly, the mean scores for pre-service teachers and lecturers were nearly equal at 3.47 and 3.45 respectively. Appendix D shows that all lecturers (100%) and a large majority of pre-service teachers (97.8% - 98.9%) evaluated themselves as confident in adjusting computer settings (TK1), using digital classroom

equipment (TK6), using Office programs (TK5) and creating multimedia (TK6). These findings concur with those of Christensen and Knezek (2008), who concluded that confidence in ICT skills was the only sure way to maximise the application of ICT tools (TK7) in teaching and learning practice. Although TK7 was rated the lowest by both groups, pre-service teachers' results (*M* = 2.84) were higher than lecturers (*M* = 2.40) for using collaboration tools (wiki, Edmodo, 3D virtual environments, etc.) in accordance with teaching and learning objectives. This may suggest that lecturers had inadequate opportunities to enhance their abilities to support students solving a common goal using computer software.

In the CK and PK domains, both pre-service teachers and lecturers shared the same pattern of increased and decreased mean scores (Figures 6.12 and 6.13), with lecturers' results higher than pre-service teachers in both domains.



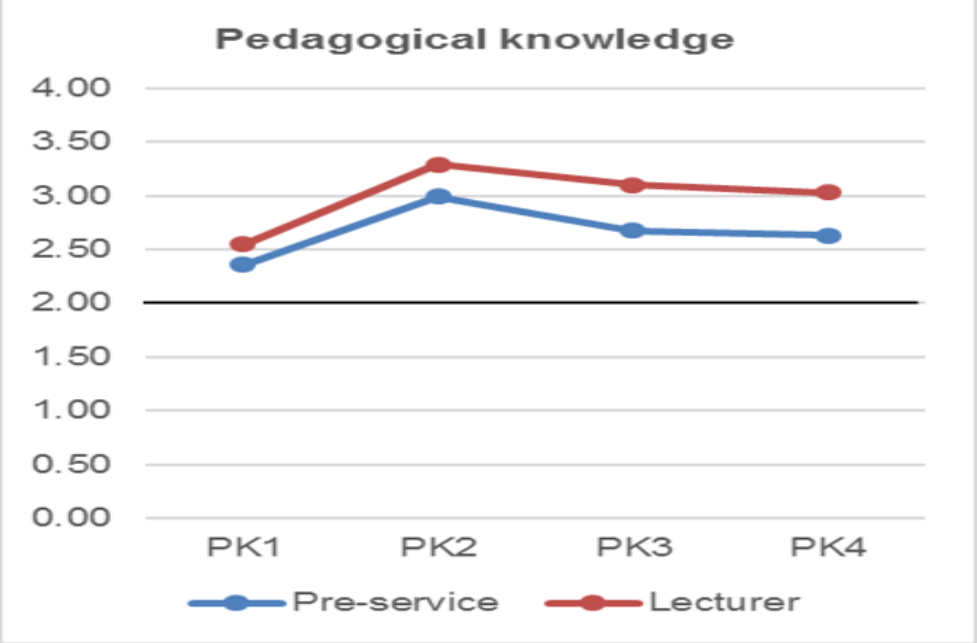
Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	CK1: Express ideas/feelings by English speaking CK2: Express ideas/feelings by English writing CK3: Understand English written texts CK4: Easily understand English speaker speech CK5: Teach English vocabulary and conversation CK6: Teach linguistic knowledge CK7: Teach English cultural understanding

Figure 6.12 Mean Scores for Confidence in Content Knowledge

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

From Figure 6.12, on average, lecturers rated themselves as confident, while pre-service teachers indicated moderate confidence in two non-technological domains: CK3 (understand texts written in English) and CK5 (knowledge to teach English-language skills such as vocabulary usage and conversation). The latter, ranked the same by pre-service teachers (M = 2.61), also returned the highest confidence ranking for knowledge and skills in both groups. However, pre-service teachers lacked confidence in CK7 and CK4, with nearly a fifth "not confident" in *gaining the knowledge to teach cultural understanding of English-speaking countries*, and 15.6% "not confident" in *understanding native English speakers' speech*. These results suggest that pre-service teachers lacked opportunities to learn and practice with native English speakers.

In the PK survey, all lecturers (100%) expressed confidence in their teaching, from preparation through to evaluation.



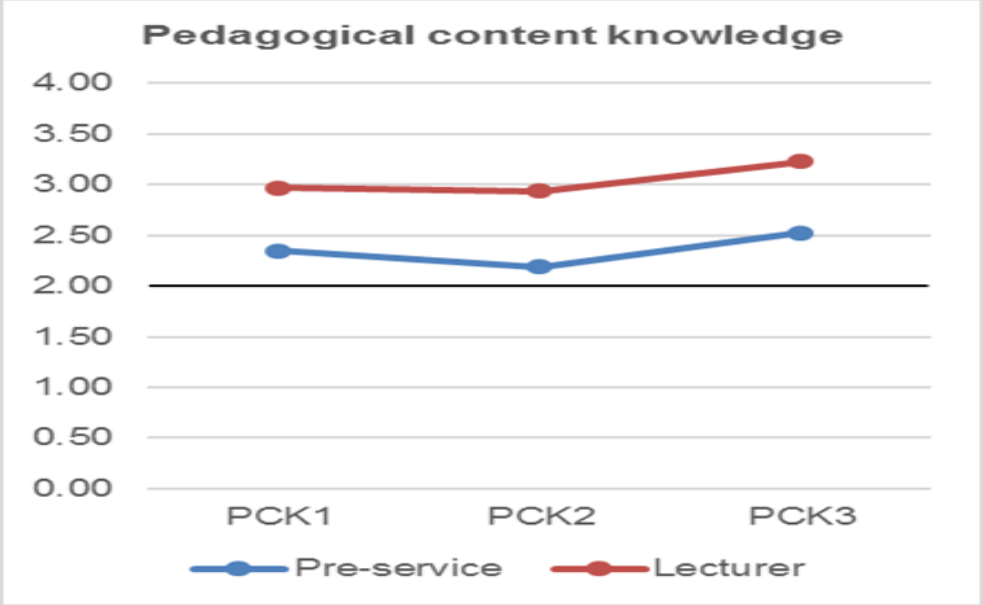
Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	PK1: Knowledge of general learning theories PK2: Prepare, plan and deliver teaching PK3: Manage a classroom learning environment PK4: Evaluate students' learning processes

Figure 6.13 Mean Scores for Confidence in Pedagogical Knowledge

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

The descriptive analysis (Appendix D) show that all lecturers (100%) reported having sufficient confidence to use their pedagogical knowledge for teaching language skills, linguistic knowledge and cultural understanding of English-speaking countries. The high proportion was in all likelihood due to the fact that lecturers were well trained and highly experienced in both English content and pedagogical knowledge. This implies that the lecturers considered themselves experienced educators, capable of contributing to improved EFL teaching outcomes. The pre-service teachers' confidence rating for PK2 (prepare, plan and deliver teaching) was the highest in the two groups, while PK1 (knowledge about general learning theories) was ranked the lowest confidence item (lecturers: M = 2.55; pre-service teachers: M = 2.36). This suggests that EFL teaching theories require improvement in the teacher education program.

The first combined domain, PCK (Figure 6.14) had the same highest and lowest constructs for the two groups, but lecturers rated themselves more confident than pre-service teachers for all items.



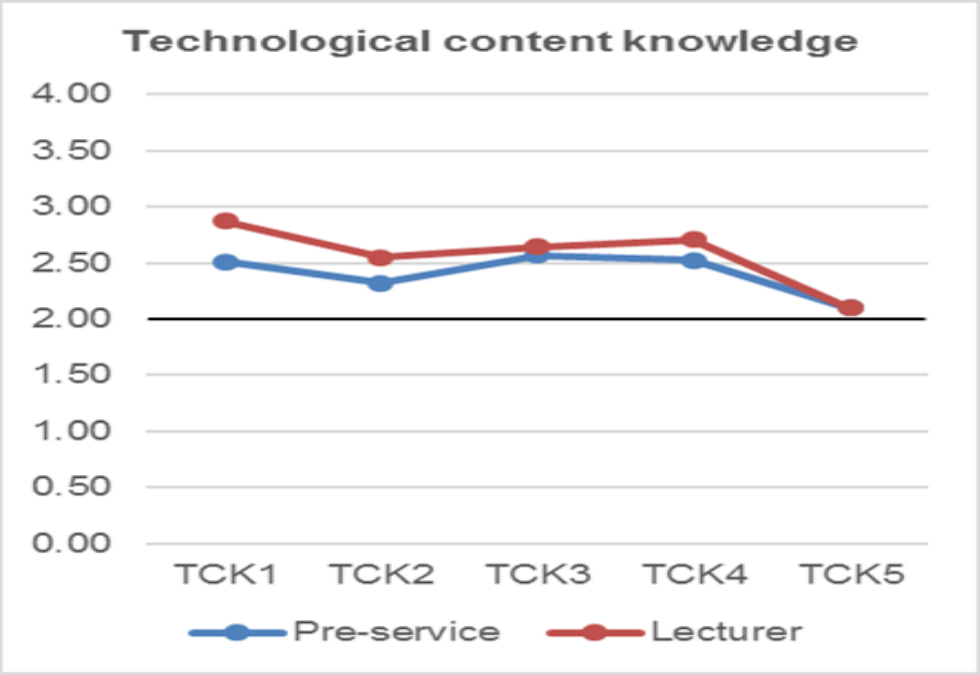
Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	PCK1: Select effective teaching strategies to guide students' learning in an EFL context PCK2: Knowledge about the way students interact to negotiate meaning in English PCK3: Adapt lesson plans in accordance with students' language skill levels

Figure 6.14 Mean Scores for Confidence in PCK Domain

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

It is interesting to note that PCK3 (adapt a lesson plan in accordance with students' language skill levels) was rated highest, with a gradual increase from moderately confident in pre-service teachers (*M* = 2.52) to confident in lecturers (*M* = 3.53). All participants agreed that PCK2 (knowledge about the way students interact to negotiate meaning in English) was the lowest priority, with pre-service teachers (*M* = 2.19) and lecturers (*M* = 2.94).

Item one in TCK (Figure 6.15) had the highest mean score, with pre-service teachers (*M* = 2.51) and lecturers (*M* = 2.87) agreeing they were confident in using ICT to *take advantage of multimedia* (e.g. video, slideshow, etc.) for expressing ideas about various topics in English.



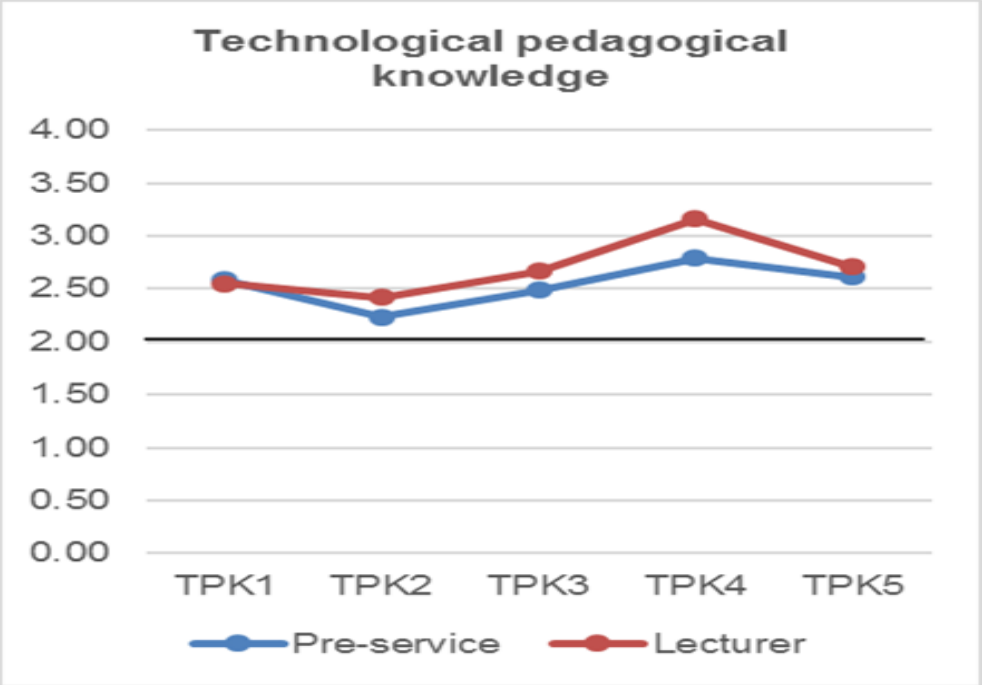
Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	TCK1: Take advantage of multimedia to express my ideas about various topics TCK2: Use collaboration tools to work with foreign persons TCK 3: Knowledge of ICT applications for teaching English skills TCK 4: Knowledge of ICT applications for teaching English linguistics TCK 5: Knowledge of ICT applications for teaching English culture

Figure 6.15 Mean Scores for Confidence in TCK Domain

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

For pre-service teachers, TCK3, *have knowledge about technological applications for teaching English language skills* rated highest with a mean score of *M* = 2.57 and *SD* = .72, while for lecturers TCK1, *take advantage of multi-media to express my ideas about various topics in English* was their highest confidence item (*M* = 2.87). Figure 6.15 shows that lecturers with more teaching experience reported the same confidence levels (*M* = 2.10) as pre-service teachers for TCK5, with over a quarter (lecturers: *M* = 25.8% and pre-service teachers: *M* = 25.6%) admitting they were not confident in their knowledge of technological applications for teaching English culture.

For TPK (Figure 6.16), item 4 (prepare, plan and deliver teaching using ICT) was rated the highest, with the mean score increasing slightly from moderately confident for pre-service teachers (*M* = 2.79) to confident for lecturers (*M* = 3.16).



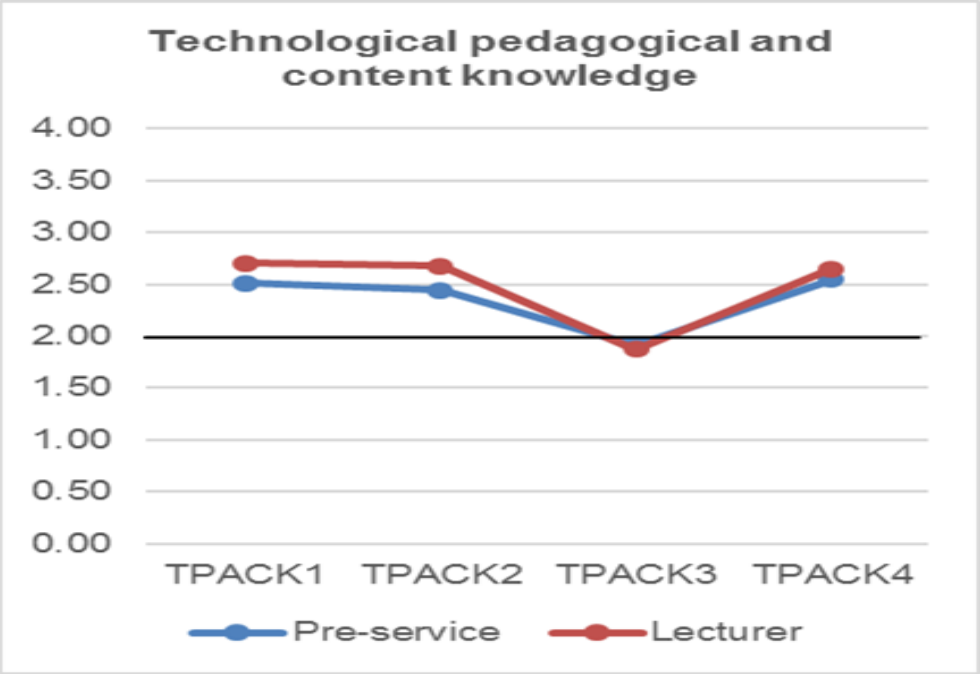
Key:	TPK1: Knowledge about learning theories with ICT
0 = Unable to judge	TPK2: Lead students to use ICT legally, ethically and safely and with respect for copyright
1 = Not Confident	TPK3: Use ICT to manage classes
2 = Moderately Confident	TPK4: Prepare, plan and deliver teaching using ICT
3 = Confident	TPK5: Assess student learning with ICT
4 = Extremely Confident	

Figure 6.16 Mean Scores for Confidence in TPK Domain

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Moreover, there were no significant differences between pre-service teachers (*M* = 2.23) and lecturers' (*M* = 2.42) confidence to *lead students to use information technologies legally, ethically, safely, and with respect to copyrights*, with mean scores around moderately confident. It is interesting to see that nearly a quarter of the pre-service teachers (*M* = 23.3%) were not confident in their knowledge about safety, information security and the laws governing ICT use. Overall, these results suggest that both groups of participants were more confident using ICT for preparing and presenting teaching than guiding students to use ICT safely.

As shown in Figure 61.7, both groups of participants had the lowest confidence in the combined TPACK domain.



Key: 0 = Unable to judge 1 = Not Confident 2 = Moderately Confident 3 = Confident 4 = Extremely Confident	TPACK1: Support students as they use ICT to develop their language skills independently TPACK 2: Design real-life tasks through which students use ICT to learn English TPACK 3: Evaluate software, tasks and students' performance in a technologically-rich class TPACK 4: Use ICT tools and resources to continuously improve the language teaching process

Figure 6.17 Mean Scores for Confidence in TPACK Domain

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Among the items, TPACK3 (evaluate software, tasks and students' performance in a technology-rich class) was rated the lowest, just shy of moderately confident, by pre-service teachers (M = 1.91, SD = 0.82) and lecturers (M = 1.87, SD = 0.76). Although TPACK1 (support students as they use technology to develop their language skills in an independent manner) was scored highest by lecturers (M = 2.70, SD = 0.75) and TPACK4 (use technological tools and resources to continuously improve the language teaching process) was scored highest (M = 2.54, SD = 0.69) by pre-service teachers, all mean scores were below confident level. Collectively, these results suggest that both pre-service teachers and lecturers rated themselves moderately confident to integrate technological pedagogical and content knowledge.

ICT Applications in EFL

This section describes the findings related to pre-service teachers' and lecturers' perceptions of their confidence in using ICT applications in their teaching. Thirteen items in the questionnaire were collapsed into two major groups: ICT software and ICT hardware, illustrated in Figures 6.18 and 6.19. The means (M) and standard deviations (SD) were obtained for each ICT application for both pre-service teachers and lecturers.

Small variations are evident in participants' self-rated perceptions of their confidence in ICT software. The mean scores for most ICT applications ranged from 2 to just above 3 (moderately confident to confident), indicating that participants' confidence levels differed for each application. The pre-service teacher group was most confident with *Social Networking*, with a mean score of 3.17. Although *Web Design* was rated lowest by both groups, the mean score for pre-service teachers at 2.60 was higher than for lecturers at 2.0. In general, pre-service teachers expressed confidence in the prescribed ICT software applications.

Perceptions of the lecturer group in relation to ICT software indicated they were most confident with *Word Processing*, with a mean score of 3.39. This was followed by *Internet Browsing* with a mean score of 3.35. Figure 6.18 shows lecturers had the lowest confidence in *Web Design*, with a moderately confident mean of 2.0. In general, these results indicate that lecturers had confidence in all the prescribed ICT applications with the exception of *Web Design*.

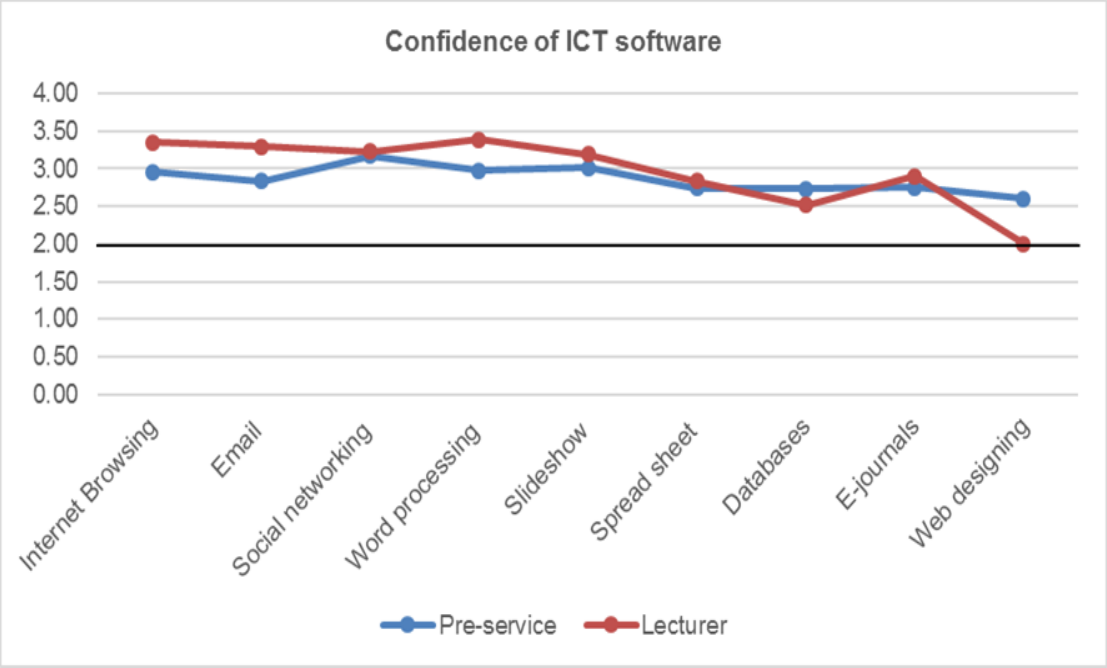


Figure 6.18 *Perceptions of Confidence in ICT Software*

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Figure 6.19 shows little difference between the mean scores of the two groups – both pre-service teachers and lecturers expressed confidence in their use of ICT devices. *Mobile Phones* was considered the most useful device by both groups, with mean scores of 3.02 (pre-service teachers) and 3.10 (lecturers). The second most useful device was *Data Projector*, with mean scores of 2.87 and 3.07 respectively. Although *Digital Camera* was rated lowest by both groups, the mean score for lecturers was still relatively high at 2.71.

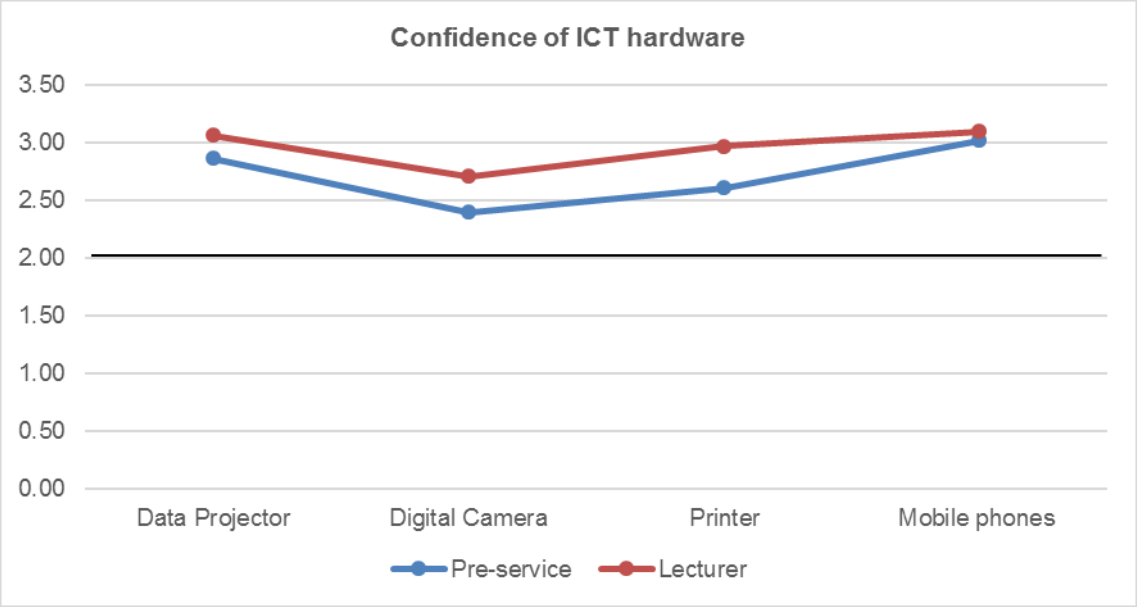


Figure 6.19 Perceptions of Confidence in ICT Hardware

Questionnaire adapted from Baser et al. (2016) on developing a TPACK assessment for pre-service teachers learning to teach English as a foreign language and from Dinh (2015) on factors influencing EFL teachers' use of ICT in classroom practice at university level.

Collectively, these results suggest that both pre-service teachers and lecturers had positive perceptions of ICT applications in their teaching. However, their rankings were not very high, ranging from moderately confident to confident. They also appeared to prefer ICT applications that assisted them with preparation, design and teaching above complicated technologies such as *Web Design*, *Databases* and *Digital Camera*.

Relationship between Participants' Demographics and TPACK Components

The questionnaire provided participants' demographics, such as gender, hometown, teaching experience and teaching load, all of which have been shown to impact EFL teachers' use of ICT (Dinh, 2015). The findings have been organised into two separate tables for lecturers and pre-service teachers respectively and are shown in Appendix E.

Lecturer Demographics and TPACK Components

In the current study, differences between genders, teaching experience and teaching loads related to TPACK components were examined. In general, female participants had a more positive self-belief in the usefulness of ICT, while male participants were more confident in using ICT for EFL teaching. However, the difference was not significant. For ICT usefulness, CK and TCK had the highest mean

values, while TPACK and TK had the lowest mean values for male and female participants respectively. For ICT confidence, both groups expressed the most confidence in pedagogy-related domains, such as PK and PCK. It can therefore be concluded that males were slightly more confident than females in selecting and using technology, pedagogy and content knowledge in their EFL teaching practice. On the other hand, females had more positive beliefs in the benefits of technology, pedagogy and content knowledge for EFL education.

Descriptive statistics showed a slight difference in variations between years of teaching experience and ICT usefulness and confidence, and a correlation between the number of years of teaching experience and more positive beliefs and higher confidence levels. Notably, in the group with under 15 years teaching experience, the most confident item, TK, was perceived as the least useful, while TPACK, the most useful item, was rated as the one in which they had the least confidence. Additionally, the means of all the TPACK components were below confident, indicating room for improvement in ICT beliefs and confidence for lecturers with fewer years of teaching experience.

The relationship between lecturers' teaching loads and ICT perceptions showed different trends in Technology Knowledge domains and Non-Technology Knowledge domains. The findings indicated that lecturers with a minimum of 10 hours of teaching a week had more positive beliefs in TCK and TPACK components, while those who taught fewer than 10 hours a week believed more strongly in the benefits of CK, PK and PCK components of EFL teaching. Moreover, lecturers with heavier teaching loads expressed more confidence in TPACK domains than those who taught fewer than 10 hours a week.

Pre-Service Teacher Demographics and TPACK Components

Appendix E depicts the descriptive statistics of TPACK subfactors in terms of pre-service teachers' genders, hometowns and practicum teaching loads. According to the data, the mean was higher for females than males for most of the TPACK components. However, there were no significant differences between male and female perceptions of ICT usefulness and confidence. It is interesting to note that TK, the most confident item for both male and female pre-service teachers, was rated the least useful component. Although all the confident mean scores were related to Content Knowledge, in the female group CK, PCK and TCK were slightly higher than the male group, yet

still only around moderately confident. This indicated a gap between pre-service teachers' English language skills, knowledge and cultural understanding and their Technology and Pedagogical Knowledge.

Descriptive analysis of the relationship between pre-service teachers' hometowns and TPACK did not reveal a noticeable difference. With regard to ICT confidence, the mean for pre-service teachers from cities was slightly higher across all TPACK components. On the other hand, pre-service teachers from the countryside reported more positive beliefs in the benefits of TCK, TPK and TPACK, although the difference was not significant.

Pre-service Teachers' and Lecturers' ICT Practices

The following sections discuss the findings of pre-service teachers' and lecturers' ICT experience in relation to ICT ownership, access to institutional ICT facilities, the aims of ICT use and perceptions of ICT benefits and challenges for EFL teaching and learning.

Personal ICT Tools

In the questionnaire, pre-service teachers and lecturers were asked about their ICT tools and equipment at home. Both groups possessed sophisticated computers and mobile phones, but employed limited ICT devices at home. Similar figures were reported for possessing computers with internet by pre-service teachers (86.7%) and lecturers (90.3%). Contrary to the interviews that revealed all pre-service teachers and lecturers possessed laptops with internet or USB 3G at home, around one in ten participants claimed they did not have a computer with internet access at home. This discrepancy may be due to participants distinguishing between an internet line and USB 3G, despite both providing access to online resources. It is unsurprising that younger participants possessed more smartphones (84.4%) than lecturers (67.7%) as shown in Figure 6.20, probably because pre-service teachers were born and raised in the digital information age. Of the 90 pre-service teachers, only two possessed tablets and one owned an electronic dictionary. Of the 31 lecturers, only one owned a tablet, two owned iPads and two owned projectors.

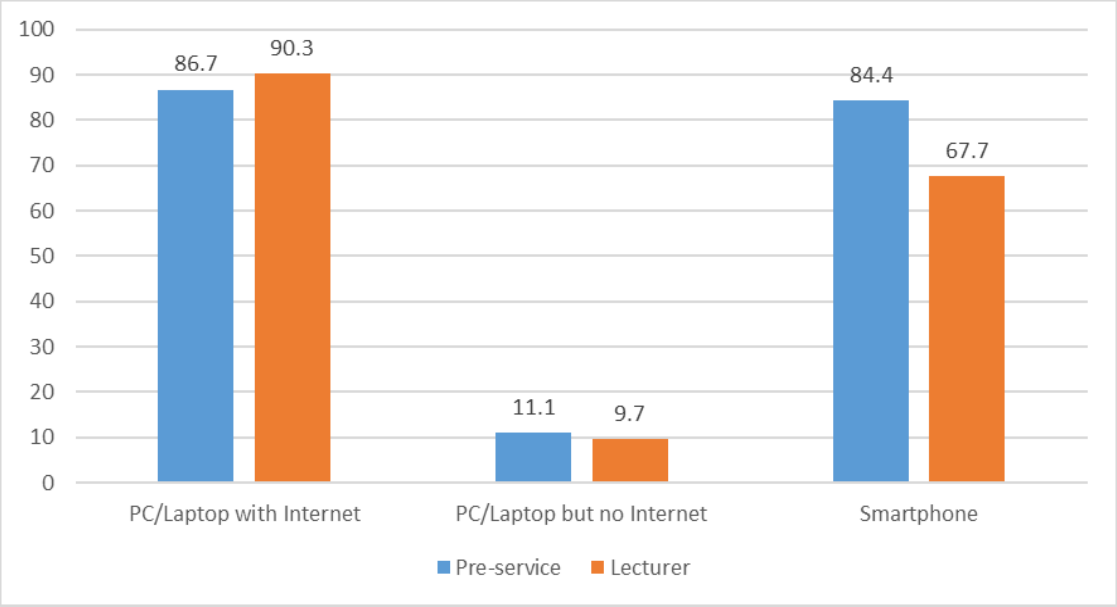


Figure 6.20 Lecturers' and Pre-Service Teachers' ICT Ownership

Access to University ICT Facilities

To establish the frequency with which lecturers and pre-service teachers used available technological equipment at the university, they were asked to respond to ten items indicating the number of times they used the devices during their EFL teacher education course.

The pre-service teacher group had very limited access to the university's ICT facilities. Almost all of them had never used two popular hardware devices, namely a digital camera/camcorder (81.1%) and TV/Video player (72.2%) because they were not available at the university. More than half the responses indicated no access to mobile devices (62.2%) or interactive whiteboards (55.6%). Figure 6. 21 shows the most frequently used equipment by pre-service teachers in their EFL training were projectors (93.3%), computers (93.3%) and internet/wifi (92.2%), all of which were available in the faculty's language labs.

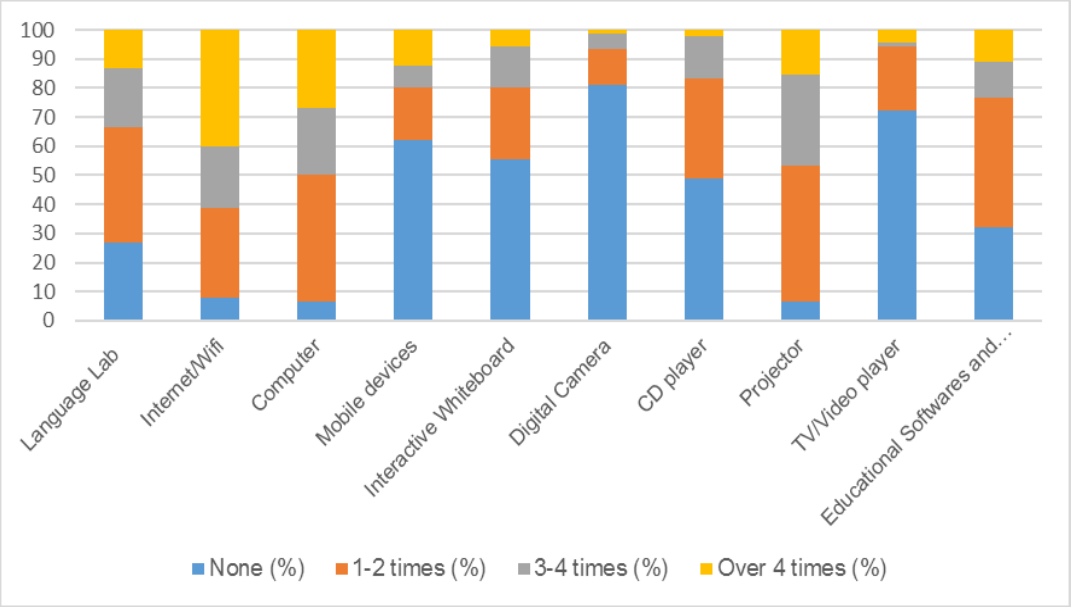


Figure 6.21 Pre-Service Teachers' Access to University ICT Facilities

Pre-Service Teachers (N = 90)

Results for the lecturer group were similar. Nearly one third reported that an interactive whiteboard was available at the university, but no-one could access this device. Around half the lecturers stated that the university had a digital camera, but fewer than 20% could access it. Figure 6.21 shows the most commonly used ICT tools for lecturers were wifi/internet (92.8%) and projectors (91.3%). The university computers were not as popular for lecturers as for pre-service teachers, possibly because lecturers used their own personal laptops for teaching.

Figures 6.21 and 6.22 show that pre-service teachers and lecturers were in agreement about the frequency of their access to language labs, educational software and applications. For example, despite being essential for teaching and learning language skills, 25% of pre-service teachers and lecturers reported having no access to language labs. Additionally, a third of these two groups had never used any educational software or applications, although their faculty dean claimed that both lecturers and students had been trained to use the English Centre software.

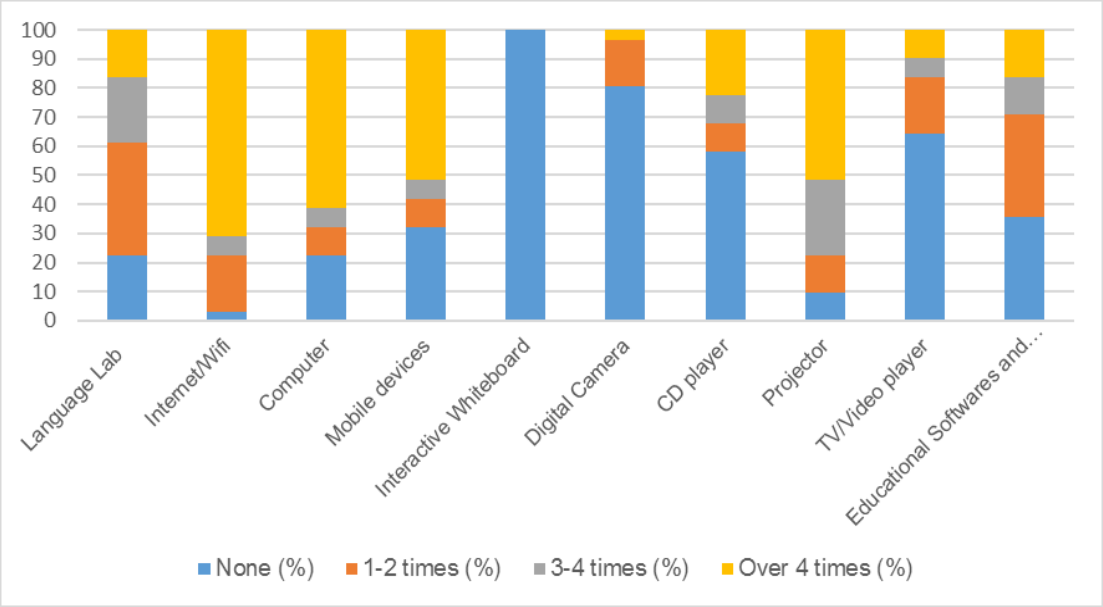


Figure 6.22 Lecturers' Access to University ICT Facilities

Lecturer Survey (N = 31)

Types and Purpose of ICT Use in EFL Teaching and Learning

The qualitative results of the document analysis provided a general understanding of the purpose and types of ICT used by pre-service teachers and lecturers in their teaching. The interview findings related to the purpose and types of ICT used by pre-service teachers and lecturers were categorised according to: a) home, b) university, and c) high school where pre-service teachers undertook their eight-week practicum course.

Document analysis of participants' teaching plans revealed that ICT tools were used by more than half the pre-service teachers (12/20) and half the lecturers (6/12) in their teaching practice. The remaining pre-service teachers focused their efforts on designing posters and typically paid for enlarged photographs from school text books, internet access and photocopies for their pupils. This may be because they had been primarily trained to teach with boards, chalk and posters, as outlined in the lecturers' teaching practice. One manager (IM1) stated: "The pre-service teachers have not been obligated to using ICT in their teaching practice, they must deploy their teaching activities mainly on the board". Although the lecturers did not use much equipment in their teaching, many designed self-study activities for their students, such as visiting useful websites for EFL, preparing assignments and doing presentations in class. Table 6.3 shows that both pre-service teachers and lecturers used limited ICT devices, with only PC/Laptops and Projectors utilised by both groups.

Table 6.3 *ICT Use in Teaching Outline*

Type	Purpose of ICT	Pre-service teachers n	Lecturer n
PC/Laptop and projector	Show PPT slides with audio, video or word files.	9	5
Blackboard	Contact, send and receive learning materials.	0	1
CD player	Play listening files.	3	0

Pre-Service teachers $N = 12$; Lecturers $N = 6$

Semi-structured interviews were conducted with lecturers and groups of pre-service teachers to obtain a deeper understanding of their use of ICT. The following tables show participants used different ICT tools for numerous reasons. Personal Computer/Laptop with Internet were the most commonly used devices in all locations. At home, ICT hardware and software were mainly employed for arranging teaching and learning hours. Table 6.4 shows email was the most commonly used ICT application by all participants for making contact, sending learning products to lecturers and receiving feedback, in compliance with MOETs Circular 07 for using email with an education domain "…edu.vn" (MOET, 2010).

Table 6.4 *ICT Use at Home*

Type	Purpose	Pre-service n	Lecturer n
PC/Laptop with Internet	*Searching EFL online resources for:*		
	Doing assignments.	28	0
	Improving skills.	15	2
	Improving linguistic knowledge.	18	0
	Improving cultural understandings.	6	2
	Improving teaching methods.	13	2
	Building and improving background knowledge of assigned subjects.	20	12
	Doing research.	2	11
	Share/exchange EFL learning materials:		
	Google drive.	18	7
	Emails.	9	8
	Word, PowerPoint to plan teaching /presentation.	22	12
Software	Hot Potatoes to create exercises.	5	3
	Audacity to edit audio files.	17	4
PC/Laptop with Internet; Smartphone	*Communications related to EFL learning through:*		
	Emails.	28	12
	Facebook (group, individual).	24	9
	Skype.	3	0
	Viber.	5	2
	Record speaking assignments.	20	0

Pre-Service Teachers: 6 focus groups $N = 28$; Lecturers: $N = 12$

The second most commonly used ICT device was Personal Computer/Laptop with Internet, utilised by almost all pre-service teachers and lecturers for planning, designing teaching and presentations, and searching for EFL resources to broaden their background knowledge of specific subjects. Some of the most frequently accessed websites by most pre-service teachers and lecturers were British Council, British Broadcasting Corporation, Voice of America, Tuoitre, Vietnam News and Violet. In their searches, pre-service teachers focused mainly on language knowledge and skills, while lecturers tended to look for useful content for their teaching subjects. Table 6.4 shows that Facebook was the most frequently used collaboration tool by interview participants (n = 24 and n = 9). In addition to individual accounts, participants also created student-to-student and student-to-lecturer group accounts for announcements, sharing learning materials, discussions and writing.

In relation to software, a larger number of pre-service teachers (n = 17) reported using Audacity for editing audio files compared to lecturers (n = 4). Hot Potatoes, a useful tool for testing pre-service teachers' ICT application in an EFL course was used by fewer participants in both groups (n = 5 and n = 3).

At the university, although pre-service teachers and lecturers reported having access to many ICT facilities, their usage was limited (Table 6.5). The most common purpose for using ICT was group reports for pre-service teachers (n = 19) and presenting lesson content for all lecturers. Using ICT software and applications to manage classes did not receive much attention, with only a few lecturers (n = 2) employing Blackboard and School Support software.

Table 6.5 *ICT Use at the University*

Type	Purpose	Pre-service n	Lecturer n
Laptop with Internet	Searching EFL online resources:		
	Doing assignments in groups on campus	13	0
	Show links to useful EFL learning materials	0	7
PC/Laptop	Deliver teaching content: audio/visual	0	12
Internet	Individual/Group presentation	19	0
Projectors	Provide and support their students' basic ICT	0	8
Speakers	knowledge and skills		
Smartphone	Taking photos of PPT slides	11	0
Software Application	Managing classes:		
	School Support	0	2
	Blackboard	0	2

Pre-Service Teachers: 6 focus groups *N* = 28; Lecturers: *N* = 12

Certain ICT equipment at the university was used only by the pre-service teacher group or the lecturer group. For example, approximately a third of pre-service teachers used Smartphones to photograph lecturers' PowerPoint slides, and around the same number used a Laptop with Internet for group assignments. In the lecturer group, (n = 8) supported pre-service teachers to develop the basic ICT skills necessary for their subjects. Lecturer IL2 commented:

> At the beginning of each semester, I used to introduce essential ICT knowledge and skills such as using PowerPoint to design presentation slides to my students, connecting the projector to computer, showing audio and video files, exploring, downloading and sharing resources in accordance with my field. Moreover, I also suggested them get help related to ICT problems from their classmates who are good at ICT.

Evidence of ICT practice by pre-service teachers in their practicums was obtained from their typical use of ICT for teaching specific skills or knowledge. Table 6.6 shows each teaching hour was divided into three main stages. Pre-service teachers used only basic ICT, but for a variety of purposes.

Table 6.6 *ICT Use at High School*

Type	Stage	Purpose
USB, PC/Laptop with TV/Projectors and Speakers	Pre-teaching (Warm up)	Photos. Games. Video.
	While teaching	Introducing new words. Introducing grammar structure.
	Post teaching	Listening. Showing lesson content.
	English clubs	Games. Showing questions.

Pre-service teachers: 6 focus groups (*N* = 28-2). Two pre-service teachers (IS1.5 and IS6.4) did not use ICT in their practicum due to a lack of support from supervising teachers.

For example, pre-service teacher IS1.2 used a Laptop and TV for teaching reading:

> Before teaching reading, I accessed the Internet to download photos related to my lesson and designed PowerPoint. In class, I show the photos to assist my students guess the meaning of the new words. These slides

> attracted my students to big TV screen with beautiful photos and help me save time to write the content on the board.

Laptop, Internet and Speakers were helpful for capturing listening files and referencing later. Pre-service teacher IS4.2 stated: “I downloaded the listening files from the Internet and designed different exercises from textbooks to prevent students copying keys”.

Three pre-service teachers who did their practicum course in the same high school participated in a game show called “Who is the Millionaire?” for English club. They used laptops and the internet (at home or 3G) to prepare PowerPoint slides, Audacity software to edit audio files, projectors to present the questions and speakers for audio. However, one of these pre-service teachers (IS6.4), whose supervising teacher did not support ICT use in EFL teaching, commented:

> My supervisor teacher did not allow me to use technology in my teaching hours at the high school. There were not any pre-service teachers under her guide used ICT tools in practicum because they were only familiar with non-ICT environment teaching in the remote areas. Therefore, it took me a lot of time, money and effort to design posters, photocopy photos.

Another pre-service teacher (IS4.4) gave a general description of ICT use at high school as follows:

> In writing, I used my laptop and the projector of the school. At first, the colours were not very clear for students to play learning games so I got help from the IT technician. Then I introduced vocabulary and structures useful for the writing topic on the screen. After guiding students how to write they worked in groups to build their writing on an A0 paper. Their products were moved to the other groups for correcting grammar and spelling before choosing the best model to paste on the board for the whole class to learn.

In general, it appeared that pre-service teachers had tried to apply ICT at different stages of their training in high schools in multiple ways with limited facilities.

Experience of ICT Integration into EFL Teacher Education

This section presents the findings on pre-service teachers' and lecturers' perceptions of the benefits and challenges they encountered when applying ICT in the EFL teacher education program. The findings were derived from section five of the questionnaire, focus groups with the pre-service teachers and the semi-structured interviews with lecturers.

The first part describes participants' reasons for using ICT, followed by their perceptions of the positive effects of ICT on their teaching and learning practice. As shown in Figure 6.23, the teaching group had more positive perceptions of ICT than the learning group, with most pre-service teachers (88.9%) and almost all lecturers (96.8%) claiming they used ICT for its academic benefits.

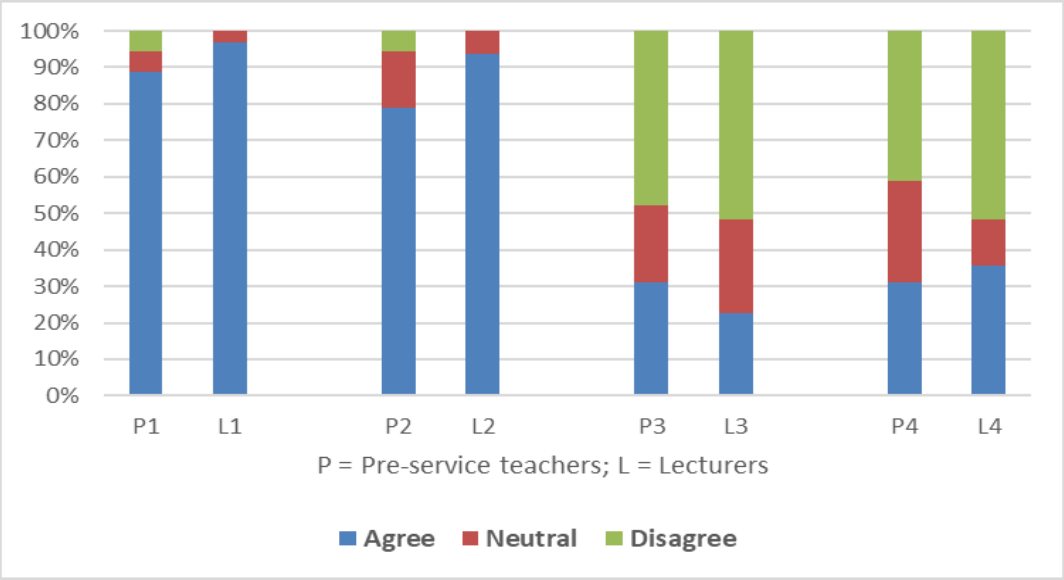


Figure 6.23 Reasons for ICT use in EFL Teaching and Learning

P1, L1 = I use ICT tools in EFL teaching and learning because I am aware of its benefits; P2, L2 = I use ICT tools in EFL teaching and learning due to my personal preference; P3, L3 = I use ICT tools in EFL teaching and learning due to the pressure from my lecturers/students; P4, L4 = I use ICT tools in EFL teaching and learning due to the pressure from my classmates/other lecturers.

As far as a preference for using ICT was concerned, 74.2% of lecturers expressed a strong preference for using ICT, almost double the pre-service teacher group (41.1%). *Pressure to use ICT* was similar for both groups; around half reported they did not encounter pressure from their lecturers/students, classmates/other lecturers. However, approximately one third reported being under pressure to use ICT, possibly attributable to lecturers encouraging pre-service teachers to use ICT and lecturers being instructed to use ICT by faculty managers.

Participants' perceptions of the advantages of ICT in teaching and learning were categorised into three main themes, as summarised in Table 6.7. The first category refers to the benefits of ICT for teaching, preparing lessons and presenting material. The second refers to two main advantages: supporting students' self-study and improving their learning outcomes, and the third category refers to the usefulness of ICT for both teaching and learning.

Table 6.7 *ICT Benefits*

ICT Benefits	Subcategories	Pre-service n	Lecturer n
Assisting EFL teaching	Designing electronic lesson plans.	10	8
	Reducing workload, saving time.	16	6
	Encouraging students' engagement.	8	7
Assisting EFL learning	Improving learning outcomes.	8	9
	Assisting learning autonomy.	3	4
Other benefits	Access to rich, helpful resources.	15	5
	Facilitating communication, interaction.	11	2
	Improve lecturers' and students' ICT.	5	3

Pre-service teachers $N = 28$, Lecturers $N = 12$

As shown in Table 6.7, *Assisting EFL Teaching* was a dominant theme for both groups of participants. More than half the pre-service teachers (n = 16) and almost half the lecturers (n = 6) considered ICT tools helpful for reducing their workload and saving time with planning, designing and delivering lessons. Pre-service teacher 1.6 commented:

> To prepare for teaching practice, I accessed useful websites for EFL teaching such as grammar.com, violet.vn, tailieu.vn to look for sample lesson plans for reference. Then I design PowerPoint slides for teaching topics with photos or videos. While teaching I usually take my laptops to connect to projectors, speakers to present the lessons. These tools help me save time to find teaching resources and write on the boards and save money to photocopy photos.

The second major benefit of the internet for participants was access to rich, varied resources. This was consistent with the findings in the previous section on the purpose of ICT in EFL teacher education, with around half pre-service teachers (n = 15) and lecturers (n = 5) holding positive perceptions of online learning materials as helpful

for their teaching and learning. However, when questioned about the specific benefits of ICT for learning, pre-service teachers did not provide much data – around 25% (n = 8) acknowledged that their English knowledge and skills improved with ICT use. Pre-service teacher IS4.2 stated:

> In speaking and listening skills, the lecturer guided us to access to VOA, BBC or YouTube to listen live or download to edit files to practice. At first, I did not understand what they said because there are many words related to politics, economics. Day by day I improve from listening five times to 3 times or less to catch what they were talking.

The theme examining how social media affected interaction and communication drew both positive and negative responses (discussed in the following section). In terms of ICT benefits, lecturer 5, who used a Facebook group to improve pre-service teachers' writing and interactions commented:

> After I posted the topic and link for writing resources on Facebook group, the students were very excited to post their writing as well as commented their friends' writing on the group' wall. It supports us discussing with many members at the same time. I also found that the students feel free to comment because only members can participate into the account.

It is interesting to note that both pre-service teachers (n = 3) and lecturers (n = 5) believed their ICT knowledge and skills improved after employing ICT. In general, both groups gained benefits from using ICT in their teaching and learning practice. Despite having more teaching experience, the lecturer group did not appear to perceive the influence of ICT more positively than the pre-service teacher group. There were few comments on the role of ICT in pedagogical change and no mention of ICT in relation to assessment reform.

Figure 6.23 illustrates the findings from section five of the questionnaire related to the disadvantages of using ICT as perceived by pre-service teachers and lecturers. In response to the first challenge, *it takes a lot of time to use ICT*, fewer pre-service teachers (22.2%) expressed the view that teaching and learning with ICT took a lot of time compared to lecturers (41.9%). However, more detailed comments on ICT challenges in relation to this issue indicate the opposite, possibly because lecturers expended time on teaching preparation, while pre-service teachers were inclined to

waste time on entertainment. For example, more than half the pre-service teachers (n = 15) admitted they were addicted to social media, films and games. Pre-service teacher IS5.2 confessed: “Before sitting in front of my laptop, I intend to surf the internet to look for materials for my assignments. But later I was attracted by music, games and Facebook and spent longer time for entertainment”.

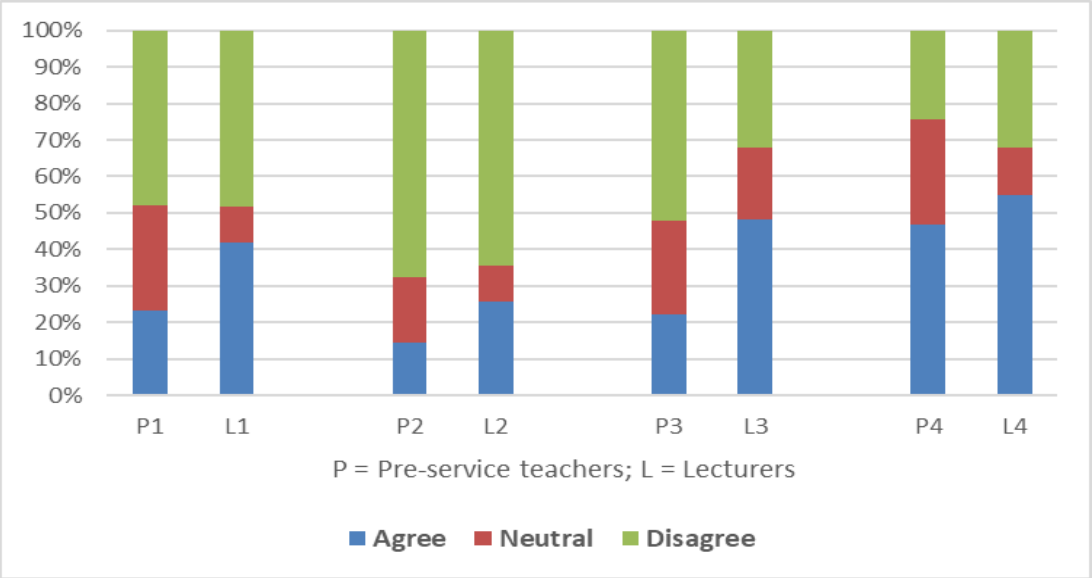


Figure 6.24 Challenges of ICT Use in EFL Teaching and Learning

P1, L1 = It takes me a lot of time to use ICT; P2, L2 = It is expensive to use ICT; P3, L3 = I believe that ICT increases my workload; P4, L4 = I cannot solve technical problems when they occur.

Responses to the second challenge, *it is expensive to use ICT*, indicated that more than half the pre-service teachers (67.7%) and lecturers (64.5%) did not believe that ICT was costly. The interviews provided more detail about the costs incurred by participants for their own basic ICT devices. Almost all the pre-service teachers had paid for their home or personal wifi/internet and 3G on their smartphones, but the cost was minimal. One pre-service teacher, IS3.1, stated: “I got financial support from my family to buy a laptop. It cost around 10 million VND (nearly AUD 600). Every month, I paid another VND 50.000 (nearly AUD 3) to share internet use at my boarding house”.

The third challenge, *ICT increases my workload*, received more negative responses from the teaching group in both the questionnaire and the interviews. Item three in Figure 6.24 and Table 6.8 shows that nearly half the lecturers (48.3%) recognised the benefits and advantages.

Lecturer IL8 commented:

> We not only lecture and do research at the university but also participate in training secondary teachers to upgrade their English proficiency and teaching methods. We will be overloaded if we have to attend ICT workshops and apply this knowledge to teaching.

Table 6.8 *Interview Data on ICT Challenges*

ICT Challenges	Subcategories	Pre-service n	Lecturer n
Time issues	To learn ICT use. To use ICT for teaching purposes. Addicted to social media, films, games.	9 3 15	1 4 0
Financial invest	Internet/wifi/3G. Other ICT devices: laptop, tablet, iPad.	27 20	6 12
Poor ICT competence	Students cannot solve technical problems. Lecturers cannot solve technical problems.	4 11	0 3
More workload		2	3
Network security	Hacker, virus, spam, cheat.	18	2
Teachers' ICT awareness	Poor ICT awareness/resistance.	10	2
Health issues	Eyestrain, backache and headache.	13	0

Pre-service teachers N = 28, Lecturers N = 12

Responses to the fourth challenge, *I cannot solve technical problems when they occur*, indicated that nearly half the pre-service teachers (46.6%) and more than half the lecturers (54.8%) did not have the ability to solve technical problems. Interestingly, more pre-service teachers complained about their lecturers' poor ICT knowledge and inability to solve technical problems than the other way around. Pre-service teacher 6.5 stated: "When technical problems happened, lecturers used to telephone an ICT technician to assist. They rarely solve the issues by themselves to save time for waiting". Pre-service teacher IS6.6 expressed disappointment with her lecturers' ICT skills, stating:

> Most of the lecturers in our faculty employed ICT in teaching but they mainly used them to show the lesson. I feel that some of them overused ICT when they showed all the content with many lines and a lot of words. We were bored because we can read them in our textbooks.

Lecturer IL11 spoke highly of pre-service teachers' ICT skills:

> In my view, some of these pre-service teachers got higher level of ICT than lecturers because they could design electronic lesson plans not only with PPT slides but also with video clip to take part in the competition at the university.

Both groups of participants also raised other challenges. Network security was mentioned by half the pre-service teachers. Although they acknowledged the benefits of being able to access valuable resources via the internet, they were warned by their lecturers about the threats of viruses, hackers and cheating. One lecturer (5) mentioned that she usually reminded her students to set up safe passwords in order to avoid hacking into their Facebook accounts. The second issue, ICT-related health concerns, was only mentioned by pre-service teachers. This may be due to them spending extended periods of time on their smartphones. The most common health problems were eyestrain, backaches and headaches. The third issue, raised by pre-service teacher 6.4, was low levels of ICT awareness on the part of supervising teachers at high schools that resulted in pre-service teachers being discouraged from using ICT.

Chapter Summary

The quantitative and qualitative data provided a clear picture of how ICT reform was occurring in EFL teacher education classes. Key aspects entailed lecturers' and pre-service teachers' perceptions of ICT usefulness, their levels of ICT confidence, frequently used ICT tools, and the purpose, benefits and challenges encountered when using ICT in their teaching and learning practice.

Both pre-service teachers and lecturers had positive perceptions of the seven TPACK domains and seemed to be aware of the benefits of ICT. Their self-ratings mainly indicated *useful*, with a small variation between the mean scores of pre-service teachers and lecturers. While pre-service teachers rated pedagogical domains highly, lecturers seemed more focused on technology domains.

There also appeared to be a gap between lecturers' and pre-service teachers' ICT perceptions and actual practice. The study participants reported limited ICT use in their teaching and learning practice, with the most frequently used ICT hardware and software identified as PC/laptop, projectors, speakers, online resources from the internet and smartphones. Pre-service teachers benefitted from these ICT tools in different

stages of their teaching, while lecturers gained a variety of benefits for lesson preparation, delivery, communication and students' learning autonomy.

Although the lecturers and pre-service teachers were aware of the benefits of ICT for EFL teaching practice, their confidence levels were not very high, ranging from moderately confident to confident. While lecturers had more confidence in their pedagogical and content knowledge, pre-service teachers only demonstrated confidence in their technology knowledge.

In summary, the lecturers and pre-service teachers welcomed the adoption of ICT in EFL teaching with enthusiasm. However, concerns about the pressures of pedagogical change and the need for improvements in ICT knowledge and skills were frequently raised. This may partly be attributable to internal challenges, such as a lack of time for learning ICT; wasting time on social media and games; costs incurred on purchasing ICT tools, overloading; network security; and poor awareness of ICT health issues. In addition, university resources, training and support were inadequate to support the changes in methods of teaching. The next chapter presents the findings on factors that affected the implementation of ICT in EFL reform.

Chapter 7:
Factors Influencing ICT Implementation

The two previous chapters described the ICT implementation process at the institutional and teacher levels. This chapter reports the findings on factors that influenced the implementation of national ICT policy in an EFL teacher education program at a university in Vietnam (Figure 7.1), derived from the quantitative and qualitative data. The chapter is structured into three parts, each with several subfactors, in line with the conceptual framework of the study. The role and responsibilities of the Vietnamese government and Ministry of Education and Training for the implementation of ICT in EFL reform are discussed next from the perspectives of the participants and in accordance with key aspects of the policy.

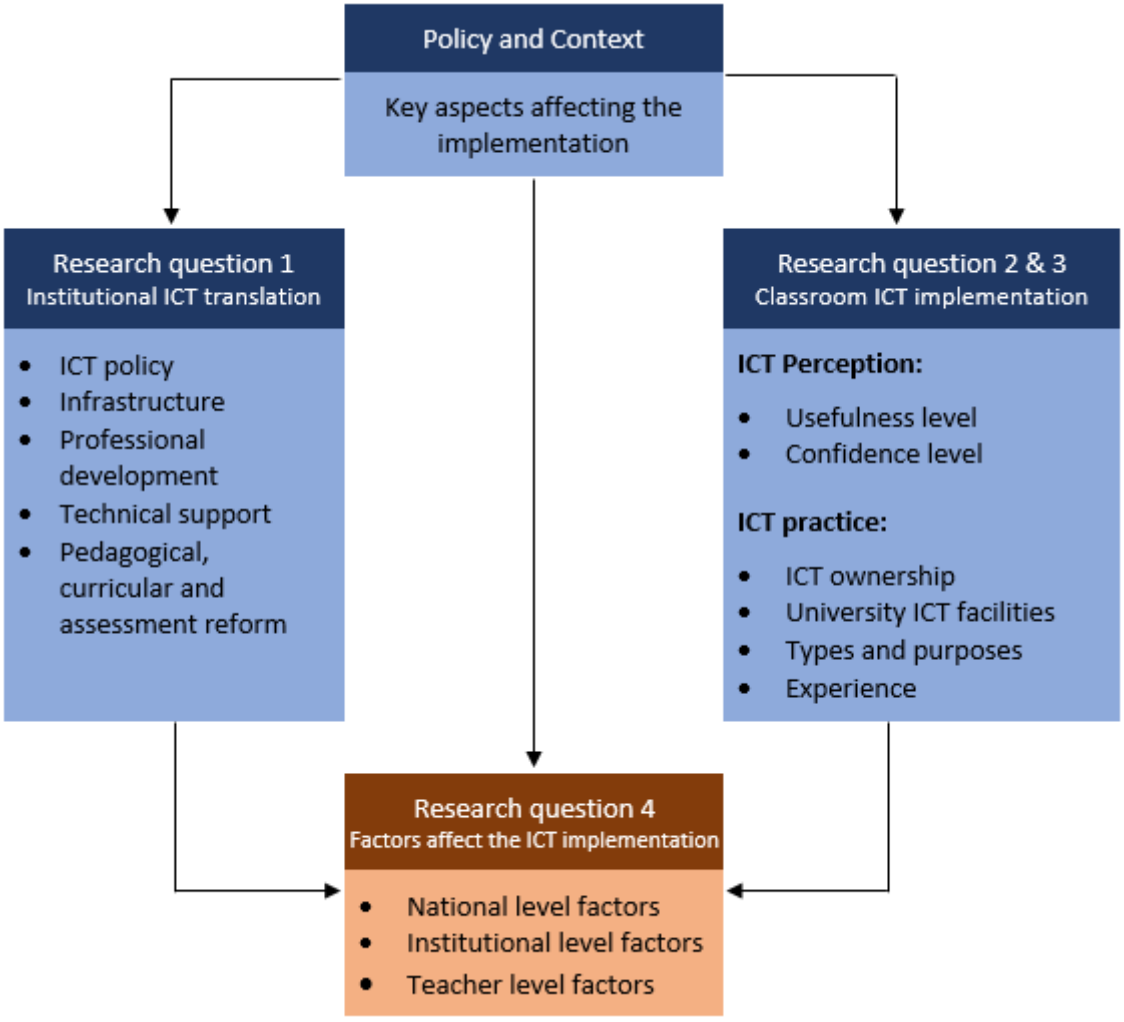


Figure 7.1 Organisation of the Findings Related to Research Question 4 and Thesis Discussion

The Role of Government and MOET

To understand the issues affecting ICT reform in EFL education in Vietnam, this study initially investigated key aspects of educational ICT policy, particularly in EFL teaching practice. The research participants were asked for their perceptions of national ICT policies in EFL teaching, as well as the roles of the government and MOET in the ICT implementation process. The quantitative and qualitative data showed that despite the noble goals of the national ICT policies, there were several inhibitors, namely, a lack of clearly defined objectives and explicit tasks, little support and encouragement, and no supervision or evaluation. Each of these are discussed below in further detail.

Lack of Clarity of ICT Policy

The first impediment identified from the qualitative and quantitative results confirmed weaknesses in the clarity and cohesion of MOET policies with regard to promoting ICT integration in EFL education. All the policy documents examined for this research targeted and addressed separate approvals and directions for ICT and EFL teaching in Vietnam. Most interviewees mentioned that the 2020 Project encouraged teachers at all levels to integrate ICT in their EFL teaching and learning practice, yet none of the policies considered the roles and responsibilities of educational leaders, teachers or students in the implementation process. This finding concurred with the research of Al Harbi (2014); Albugami (2016), who concluded that a lack of awareness and clarity around policy had led to a disconnection between national ICT policy objectives and their translation in the classroom.

Support and Encouragement

Collective evidence derived from the interviews with faculty managers and lecturers indicated that MOET did not provide sufficient support, encouragement or collaboration for the implementation of ICT policy at the university. In Vietnam, administration of the education system is highly centralised; MOET controls and oversees the curriculum and textbooks at all levels (Vietnamese Government, 2016). Earlier sections of the thesis identified that, with the exception of ICT resources and training sessions, there were no incentives for lecturers to use ICT. In this regard, Manager 1 commented: “We have no financial resources from MOET for rewarding the lecturers or pre-service teachers to feel motivated when they integrate ICT successfully”, signalling that a lack of ongoing support by the government and MOET contributed to minimal success in implementing ICT (Roblyer & Doering, 2012).

Oversight and Assessment

Oversight and assessment are critical elements of policy implementation. However, the current study found dissatisfaction amongst managers and lecturers with the role of MOET in terms of oversight and assessment at the university. Hakami et al. (2013) recommended that MOET put strategies in place to ensure effective deployment of ICT, rather than merely promoting its use. A lack of oversight has resulted in wasted ICT resources, as explained by Lecturer IL3:

> The faculty had received two computers labs for EFL teaching from 2020 Project Fund several years ago, then lecturers participated in training how to operate these facilities. However, these rooms were not exploited effectively and now are managed by the other department. We did not have any opportunities to present our feedbacks on the effectiveness of these facilities. Moreover, no ongoing support and formal evaluation were conducted by the Project after these facilities were equipped.

In general, the current study found the promotion of ICT featured prominently in EFL policies as a means of speeding up industrialisation and modernisation of Vietnam. MOET articulated the expectation for staff to be aware of the importance of ICT in education for improving the quality and outcomes of training, particularly in EFL education. However, most participants identified a lack of strategies for motivating teachers' use of ICT, inadequate support, encouragement, collaboration, oversight and assessment as barriers to successful translation of ICT in classrooms.

University Level

Multiple sources of data in this study identified the following major factors in relation to integrating ICT policy at the university: leadership, ICT infrastructure development, maintenance and support, ICT training for pre-service teachers' professional development for lecturers, clear plans and opportunities to practice pedagogical, curricular and assessment reform. These are further discussed below.

Leadership

Interpretation and dissemination of ICT policies by university leaders was the first major factor to emerge from an analysis of the data as a hindrance to achieving the stated goals and objectives. The findings indicated that the university and faculty managers demonstrated an awareness of the benefits of ICT for enhancing EFL teaching

and learning, suggesting that they would have been inclined to encourage and support ICT integration at the university. However, a quantitative and qualitative data analysis of the role of management in interpreting and translating ICT policies indicated a lack of proactive leadership and administrative support. In terms of an ICT vision and objectives, participants were not compelled to integrate ICT into their academic practice and pointed out the absence of any explicit institutional documents outlining the reasons, direction and expectations. This echoes Awidi (2013) findings on poor management commitment and support from institutional administrators due to a lack of purpose and direction for ICT implementation. Dang (2014) and Tondeur et al. (2008) suggested teachers would be more likely to use ICT in their classrooms if they had access to more specific ICT policies, and the need for a clear set of criteria to facilitate evaluation of ICT use.

As far as encouragement and support were concerned, the current study showed the university provided limited resourcing of ICT facilities with regard to computer labs (after the 2020 Project was released), EFL materials (IELTS and TOEIC) in the library, and few ICT training opportunities for lecturers. Furthermore, managers were not inclined to create opportunities for training or applying ICT. MOET's promise of rewards for excellence in ICT only paid lip service and penalties for non-compliant schools had never been enforced by the university. This finding is consistent with the study of Nguyen (2015c), who recommended school leaders become more active in leading ICT implementation in EFL teaching and learning practice, and reminded lecturers/teachers that they also have a role to play in proactively encouraging change.

Finally, lecturers were dissatisfied with the informal ICT evaluation processes that predominantly involved their own self-assessment at the end of every academic semester. There were no objective measures for assessing whether lecturers were using ICT successfully to enhance educational outcomes, and they were unable to devote time to improving assessment procedures due to high workloads preparing and delivering lecturers; undertaking research; improving their English proficiency and training in-service teachers. Hence, there were no reports available on lecturers' application of ICT in their teaching, nor the extent, purpose or effectiveness of ICT use, primarily due to a lack of incentives for ICT use and failure of the university to penalise teachers who did not engage with technology. This interpretation seems to support a study by Le (2015), who argued that Vietnamese people are not willing to adopt new technology unless they are forced to do so. It is therefore vital for institutional leaders to collaborate with

MOET in developing ICT integration processes, ranging from interpretation of policies to providing support and regular assessments for ensuring high levels of ICT practice.

ICT Infrastructure Development, Maintenance and Support

In addition to investing in general ICT facilities, such as websites, email, computers and the internet, educational managers were also required to organise and standardise learning spaces, such as language laboratories, audio-visual rooms and multimedia rooms (Vietnamese Government, 2012). This study found variations in ICT allocations at the university and general dissatisfaction with the available equipment and facilities.

In terms of ICT resources, the government focused on providing generic ICT hardware and software applications without considering their appropriateness for EFL teachers. For instance, a computer lab with 30 computers connected to the internet was used by students enrolled in numerous majors. Some pre-service teachers with access to three language labs and a computer connected to the internet, a projector and two speakers considered the facilities similar to other teacher education faculties. However, many participants felt they were under-resourced for integrating ICT into their EFL teaching despite the investments that had been made. This issue was confirmed by Dinh (2015), who supported Cuban (2009) findings on universities' investments in ICT infrastructure without considering how the applications would be used in classrooms. The limited availability of ICT tools and equipment for language education, such as standardised audio-visual rooms, multimedia rooms and educational software were also found to hinder teachers' attempts to integrate ICT into their teaching in developing countries (Celik, 2013; Hedayati & Marandi, 2014).

More than half the participants in this study were dissatisfied with the facilities. The internet played a key role in providing access to a wide range of resources for EFL teaching and learning, from online tools for audio lessons (Vocaroo, Voxopop, Voicethread), sharing teaching and learning materials (Google drive), and assessment (test generators) purposes. Document analysis showed that the network infrastructure was available across the whole university, with a middle total bandwidth of 70Mbps for teaching and research, however, many participants reported that the internet was unreliable and slow. This is a common problem in developing countries, especially in remote areas (Awidi, 2013; Le, 2015), where it has been shown to discourage ICT use for teaching and other activities on campus. In addition, the university did not offer

adequate maintenance and support. Most pre-service teachers reported frequent technical breakdowns and lengthy downtimes before technicians could resolve the problems. These results were consistent with the findings of Hoang (2015); Kozma (2011), who claimed that poor infrastructure, coupled with a top-down approach did not provide timely support and impacted negatively on lecturers' and students' interest in using ICT.

The government decreed that all lecturers and students have personal computers by the end of 2015 (Vietnamese Government, 2009). However, most participants in this study had purchased their own personal computers or laptops and were paying for monthly internet access. The university did not provide any government subsidies to equip lecturers with personal computers, and only 30 computers were available on campus for the entire student body. An earlier study by Awidi (2013) also identified a lack of government and university support for ICT ownership had contributed to lecturers' reluctance to use ICT and pre-service teachers' lack of technological knowledge (Gulatee, Vonganusith, Pagram, & Cooper, 2016).

While the university had made some attempts to provide a conducive ICT environment for EFL teaching and learning, the lecturers and pre-service teachers reported dissatisfaction with the unavailability of ICT tools dedicated to EFL teaching and learning, the poor quality and inappropriateness of available ICT applications, and a lack of funding support for ICT ownership.

ICT Training for Pre-Service Teachers and Lecturers

Training for pre-service teachers and teacher educators was a major objective of the ICT Development Strategy for promoting ICT use at all school levels (Vietnamese Government, 2009). ICT literacy was considered a necessity for the economic transformation of Vietnam, while from an educational point of view, ICT tools were seen as a valuable support for pedagogy in EFL classrooms. The quantitative and qualitative data indicated that lecturers and pre-service teachers had positive perceptions of the purpose, methods and content of ICT courses in the EFL teacher education curriculum. This was consistent with Nguyen (2015c) study on teachers' and educational leaders' awareness of the importance of professional development for technology-enhanced ELT and their views on ICT as a motivating factor for implementation.

The pre-service teachers in this study expressed satisfaction with the prerequisite course that offered basic ICT knowledge and skills for the use of online essentials, word processing, spreadsheets and presentation. However, classes were overcrowded, with 30-40 students per lecturer, double the Vietnamese Government (2009) guidelines. In addition, ICT instructors in the preparation course were not EFL trained and their students came from varying disciplines, resulting in poor outcomes. Most pre-service teachers reported that they had to take the final test more than once, costing them a significant amount of money and reducing the amount of time available for the second course focusing on ICT integration in EFL teaching.

The pre-service teacher group had positive perceptions of their instructor who applied a project-based approach and demonstrated the use of ICT tools for content preparation, delivery, evaluation and communication. However, due to limited time and inconsistencies in the basic ICT course, many pre-service teachers claimed they lacked opportunities to apply their knowledge in real-world classrooms – either in their individual teaching or practicum courses. This concurred with the study of Yuksel and Yasin (2014), suggesting pre-service teachers' ICT training was limited to two ICT courses that mainly relied upon theory and did not extend to application in the classroom (Sutton, 2011).

The findings of the current study were supported by the research of Goktas et al. (2008), Thompson, Schmidt, and Davis (2003) and Tondeur et al. (2012), who recommended the university develop a technology-integrated curriculum with a specific focus on an EFL context. The authors also proposed that pre-service teachers investigate and reflect on their roles as teacher educators and ICT role models, and use ICT to prepare, plan, teach and provide feedback in authentic environments. Furthermore, they emphasised the need for opportunities to use ICT in their teaching practice at the university and in high schools during their practicum courses, arguing that any knowledge and skills gained from ICT courses will go unutilised without understanding the reasons or feeling comfortable using ICT tools.

While many professional development programs had been organised by the 2020 Project, it was evident that not all lecturers benefitted from them. Half the lecturers reported that they had never participated in any ICT training workshops organised by MOET. In most cases, the selection process for training was believed to be unfairly controlled by managers. One lecturer observed certain lecturers regularly

attended workshops, while others were never given an opportunity. As far as the method of training was concerned, participants recommended improvements in the balance between content and duration of the training, as well as assessing lecturers' ICT knowledge and skills prior to designing the content.

At the university, ICT professional development had been attended by most lecturers (77.4%). However, the interviews brought to light that no official ICT training workshops had been held during the previous two years, apart from a few workshops organised by the Informatics department. In addition, some lecturers were unable to attend training due to a clash with their timetables. It would seem none of these issues are insurmountable with a commitment from MOET and the university to better planning for improved attendance (Albugami, 2016).

Pedagogical, Curricular and Assessment Reform

Since the Year of ICT (2008), MOET (Ministry of Education and Training, 2008a) and the Vietnamese government (Vietnamese Government, 2012) have attempted to encourage an innovative approach to methods, content and assessment of teaching and learning with ICT. However, at the time of this research no plans or guidelines for implementing ICT had been made available.

In the case of curriculum reform, the university had introduced two ICT courses, one of which focused on the integration of ICT into EFL teaching. Although managers and lecturers indicated they were satisfied with the quality of EFL teacher training, they suggested that the two ICT courses be fully integrated into the curriculum to enhance the use of ICT. The findings from the TPACK confidence indicator showed inconsistent levels of Technology Knowledge, Pedagogical Knowledge and Content Knowledge, consistent with a study by Goktas et al. (2008) that examined the opinions of educators, prospective teachers and K-12 teachers on the effectiveness of ICT courses.

All lecturers agreed that ICT integration was an important part of the university's plan at the start of each academic year. However, in the absence of any coherent plan for technology-based pedagogy and evaluation at faculty and institutional levels, only half the lecturers were able to clearly articulate their use of ICT tools in their detailed teaching plans. Moreover, there was no formal evaluation of lecturers' use of ICT and whether it was effective or not, contributing to a lack of feedback for improving practice and providing appropriate models for EFL education. As a result,

the pre-service teachers in this study only showed moderate satisfaction with their lecturers' ICT skills and knowledge.

In summary, there was a huge gap between the government's expectations of curricular and pedagogical innovation and actual practice due to the absence of clear guidelines and modelling in the classroom, compatible with the findings of Peeraer, Tran, and Tran (2009) in Vietnam nearly a decade ago. Although the participants in this study reported using different types of ICT tools at different stages in their teaching, no concrete ideas relating to ICT in assessment were forthcoming.

Teacher Level

ICT Perceptions

Perceptions of TPACK

EFL pre-service teachers' and their lecturers' perceptions of TPACK were determined by two key factors: levels of usefulness and confidence. Two questions guided each aspect. The following section reviews the major issues related to the usefulness of TPACK domains as perceived by pre-service teachers and lecturers.

Moderate Perceptions of TPACK Usefulness

A high level of agreement was evident in the standard deviation for the total TPACK score by pre-service teachers (0.66) and lecturers (0.65). It is also worth noting that all seven TPACK components attracted a positive mean score, reflective of positive perceptions by both groups of participants. For the most part, participants' self-assessments of usefulness across the seven domains were similar, although Technology Knowledge rated somewhat lower than the others. Positive perceptions of TPACK were a significant indicator of pre-service teachers' and lecturers' willingness to embrace ICT for teaching and learning purposes.

There were no significant differences in the overall TPACK scores for pre-service teachers and lecturers. The similarity between total mean scores of pre-service teachers (3.19) and lecturers (3.17) raises questions about how teaching experience might affect TPACK perceptions, particularly in view of Jaikaran-Doe (2016) assertion that younger teachers had higher TPACK mean scores than older teachers. It was understood from the interviews and focus groups that pre-service teachers received formal training in the form of two courses on ICT integration, while lecturers self-explored ICT in their teaching and attended institutional and national ICT seminars and

workshops. Differences between the two cohorts suggest that pre-service teachers had more opportunities to acquire deeper knowledge of technology integration.

On the other hand, the Technology Knowledge rating (2.54) of the pre-service group was significantly lower than their other technology-related ratings such as TPK (3.4), TCK (3.38) and TPACK (3.26), implying that they were aware of the importance of integrating technology knowledge with pedagogical and subject knowledge. However, the disparity of TK (and not CK and PK) may also be reflective of the structure of the EFL teacher education program with its emphasis on English knowledge and teaching approaches. According to Le (2011b), the main reason for emphasising linguistic knowledge is the heavy reliance on textbooks and the dominant traditional pedagogy in Vietnam. In addition, the ICT standalone courses may have been ineffective for teaching pre-service teachers about the role of technology knowledge, which aligns with the findings of Reyes Jr, Reading, Rizk, Gregory, and Doyle (2018), who argued that TK may not be specifically and purposefully targeted in educational programs and students have to actively master it. For this reason, Goktas et al. (2008) suggested that training be fully embedded in teacher education programs to maximise students' retention of ICT knowledge and skills.

Moderate Perceptions of TPACK Confidence

Generally speaking, the findings of the current study showed the two participant groups had a positive perception of their confidence in Technological Knowledge, Content Knowledge and Pedagogy Knowledge. The mean score of the highest confidence component, Technological Knowledge (TK) was not very high, only reaching confident level at 3.13. The survey results aligned with the qualitative analysis that showed the most familiar ICT tools reported by the two groups were Word, PowerPoint and email, inferring that neither pre-service teachers nor lecturers were particularly confident in their TK, as identified by Dinh (2015). In relation to the three TK criteria, participants only expressed confidence in the lowest level of *knowledge and skills to employ general ICT devices and applications*, signalling a need to develop their troubleshooting abilities and adjustment to new technologies in EFL teaching and learning.

It was unsurprising that the other high-ranking mean scores for PCK (3.04), PK (2.99) and CK (2.96) respectively were in the lecturer group, implying that lecturers placed a great deal of emphasis on improving their teaching approaches and English

knowledge. This concurred with Dinh (2015), who found lecturers were cognisant of not only suitable teaching approaches, but also subject matter when integrating ICT in EFL education. In addition, Hosseini and Kamal (2013) concluded that teaching experience correlated with knowledge of PK and PCK. Kazu and Erten (2014) and Koh, Chai, Hong, and Tsai (2015) determined that teachers' PCK ratings increased with age.

The overall TPACK self confidence levels of pre-service teachers and lecturers did not vary much. Given the influence of experience, it could have been supposed that the TPACK scores of pre-service teachers would be lower than the lecturers, however, the results did not show any significant difference (2.55 compared to 2.81). One possible explanation may be that more than half the lecturers (61.2%) had been teaching for over ten years, during which time ICT was not a priority, while pre-service teachers grew up around the World Wide Web and had received ICT training in secondary school. This echoes the findings of Yurdakul (2011), who found that teachers had average levels of TPACK and teaching experience or time spent using ICT tools did not affect their competency levels.

The other technology integration areas of TPK, TCK and TPACK were perceived as the weakest. The finding showed that both pre-service teachers and lecturers needed to improve their knowledge and skills in relation to successfully merging technological knowledge with pedagogical and content knowledge. The reasons for this may be attributable to ineffective ICT training courses for pre-service teachers, and a lack of both ICT resources for EFL teaching and learning and professional development for lecturers. According to the participants, successfully merging technological, pedagogical and content knowledge was only achievable through more intensive professional training, additional workshops on ICT integration, and EFL lecturers sharing ICT resources. More ICT facilities and additional technical support for EFL education were also recommended. Moreover, it was proposed that the university develop an ICT-integrated curriculum based on the TPACK framework (Hoang, 2015). Finally, Luik, Taimalu, and Suviste (2018) suggested that pre-service teachers be provided with extensive opportunities to observe lecturers and in-service teachers modelling ICT use before utilising technology in their learning and teaching.

Positive Perceptions of ICT Applications

The pre-service teachers and lecturers identified five applications that were most useful and used most confidently: word processing, internet browsing, projectors, social

network and mobile phones. Pre-service teachers used social networking applications most frequently, while lecturers were most confident with word processing and also found it the most useful. In a study by Gulatee et al. (2016), students perceived themselves highly competent in social networking, such as Facebook, and preferred to communicate with their lecturers and classmates via this platform rather than the University Course Management software (i.e. Blackboard).

High confidence levels of pre-service teachers in using social networks supports the research of Morgan (2012) and Grigg (2016), who established that students had a positive attitude towards Web 2.0 technology. On the other hand, email was perceived as the most convenient means of communication by instructors, with higher perceptions of usefulness and confidence.

The two applications with the lowest mean scores were web design and digital cameras. This may be because a digital camera was not available or accessible at the university, as reported by a large number of participants. Pre-service teachers were also least confident using a printer as it related to infrastructure, a common issue in schools in developing countries (Jaikaran-Doe (2016).

ICT Practice

It was apparent from the quantitative and qualitative results that both groups of participants believed they were already employing ICT in their learning and teaching and were eager to continue using it on a regular basis in the future. Although both groups rated themselves as satisfied with their ICT use, the types of ICT and purpose for using them differed. This could be viewed as consistent with Alahmari (2013); Kartchava and Chung (2015); Le (2015); Ngo (2016) and Nguyen (2015c), who concluded that ICT practices amongst teachers showed evidence of diversity in terms of ICT types, activities and benefits. Lecturers and pre-service teachers generally adopted an integrated approach to digital technology and reported using diverse ICT formats and applications in their EFL learning and teaching. These ranged from general ICT applications, such as word processing, internet browsing, PowerPoint presentations, emails, speakers and social networking to language-specific applications such as Audacity, Hot Potatoes, online dictionary and translation. Among them, word processing, internet browsing, projectors, social networking and mobile phones were not only considered the most useful; participants also expressed the most confidence in using them. Comparatively speaking, email was perceived as the most convenient

means of communication and gained the highest perceptions of usefulness and confidence in the lecturer group.

Interestingly, a high percentage of lecturers and pre-service teachers indicated they had never accessed a digital camera/camcorder or TV/Video player at the university. This is somewhat surprising, given that these ICT devices could assist pre-service teachers to record their ICT teaching practice at high school, where television was reportedly the most popular ICT tool. One possible reason for this disparity could be that nearly all pre-service teachers possessed smartphones and may therefore not have needed a digital camera. Another reason why teachers didn't access TV/Video players may have been that all classrooms were equipped with projectors. It is therefore likely that both groups of participants tended to employ ICT devices that were more easily available to them.

As far as the purpose of using ICT was concerned, the findings showed lecturers and pre-service teachers used ICT hardware and software for varying purposes, such as preparing for learning and teaching, presenting, evaluating and communicating. Interview responses showed that both lecturer and pre-service teacher groups were "concerned with turning technology into a powerful instrument for enhancing the learning process" (Alahmari, 2013) that included everything from lesson preparation (i.e. access to resources for extending their background knowledge), interactive and collaborative learning activities (i.e. group research projects) and delivery (access to computers, internet and projectors for presentations). Many teachers used learning management systems (e.g. Blackboard) as a mandatory tool for checking timetables, student lists, uploading learning resources, managing their classes, or other educational applications provided by their institutions.

Integrating the quantitative data and qualitative data (university documents and interviews) exposed positive reasons for pre-service teachers' and lecturers' use of ICT. The participants stated that although ICT implementation in EFL classrooms was optional (managers merely encouraged ICT integration at meetings), nearly all lecturers (96.8%) and a high percentage of pre-service teachers (88.9%) used ICT tools because they were aware of its benefits.

The qualitative data shed further light on the benefits of integrating ICT into EFL teaching and learning. Both pre-service teachers and lecturers pointed out that all teaching and learning processes were simplified and more enjoyable when ICT was

utilised, from preparation through to evaluation. This was in alignment with previous studies that investigated the advantages of ICT in language education (Alahmari, 2013; Dang & Nguyen, 2014; DuBravac, 2013; Kartchava & Chung, 2015) and found that ICT enhanced teaching content with images, animation and video clips that piqued students' interest and stimulated their engagement. Lecturers and pre-service teachers also claimed that educational games were effective tools for improving students' vocabulary. In addition, educational software allowed lecturers to modify their teaching depending on their students' abilities. For example, pre-service teachers made more progress when lecturers used Audacity to edit listening files suited to their students' listening abilities. Furthermore, the use of ICT in EFL classrooms has changed the role of teachers from that of lecturer to a facilitator of learning. By integrating ICT into the EFL teaching course, lecturers were able to assign project work to pre-service teachers as a way of enhancing classroom learning and enabling their students to take charge of their learning by participating in real-world projects. This differs from the findings of Carr (2010) and Kolikant (2010), who found that ICT had detrimental effects on students' intellectual abilities. These authors were concerned that ICT placed students' independent learning at risk and shortened their concentration span. However, using ICT in a learner-centered approach to language education focused on students' abilities has been shown to encourage student participation (Richards & Burns, 2012).

The semi-structured interviews and focus groups with the lecturers and pre-service teachers showed that ICT served as a bridge for connecting students' skills, acquired inside the classroom, to independent exploration of knowledge outside the classroom. This finding supports the research of Jayanthi and Kumar (2016), who argued that teachers are no longer the only providers of knowledge in the classroom, and pre-service teachers should select appropriate learning materials for students' ability levels and individual learning strategies to practise at their own pace. In addition, the lecturers' teaching outlines indicated that three times the amount of time had been assigned to self-study compared to theory. However, there did not appear to be any methods in place for checking whether students self-studied or not or how they spent the time allocated for self-study.

The interviews with the pre-service teachers revealed that they were confused about choosing reliable self-study materials. This may be due to their Confucian heritage, where teachers were the centre of the teaching and learning process. It can be concluded that pre-service teachers lacked the ability to distinguish between information

sources and locating useful information, as mentioned in several previous research studies (Dang & Nguyen, 2014; Ilogho & Nkiko, 2014). More support and guidance may therefore be needed for pre-service teachers to discern between available material that will positively impact the use of ICT in autonomous learning.

The emergence of new communication tools and social networking sites has revolutionalised teacher-student communication. Both pre-service teachers and lecturers were utilising email, Facebook, Viber and instant messaging to facilitate teaching and learning. Email was used by all participants to distribute learning materials, submit assignments, do assessments, post feedback and obtain advice after class. These advantages were also evident in the studies of Jayanthi and Kumar (2016) and Cheng (2012), who found EFL teaching and learning was enhanced beyond the classroom via social networking sites, whereby students discussed language issues with extensive groups.

ICT can be used in EFL education to improve language skills such as listening, speaking, reading and writing skills. This was confirmed in previous studies by Yunus, Lin, Lubis, and Ramli (2010) and Kartchava and Chung (2015), who found significant benefits in accessing available online listening resources for improving learners' language skills. Some of the pre-service teachers in focus group two reported witnessing improvements in their listening skills with the help of BBC, VOA and CNN resources. Another pre-service teacher (IS6.4) reported frequently using messenger chat and video call applications to connect with native English speakers.

Although ICT hardware and software applications undoubtedly had various benefits for EFL teaching and learning, the participants in this study also expressed some concerns. Both the lecturer and pre-service teacher groups were deterred by increased workloads and more time spent preparing lessons, learning how to use ICT and upgrading their knowledge and skills to make effective use of ICT. Consistent with this phenomenon, a study of ICT use in EFL education by Kolbakova (2014) found that ICT integration added to the workload and struggle for teachers from lesson preparation through to presentation. Another concern was related to financial investment, not only for ICT equipment, but also for ongoing, monthly internet access. All participants had purchased their own laptops or personal computers, smartphones and internet, a challenging undertaking for pre-service teachers in this study in particular, because most of them (83.33%) came from the countryside and were exempt from paying tuition fees.

Dang (2013) study found that the cost of a computer, somewhere between AUD 300 and AUD 500, was equivalent to one to two months' salary, and not all participants could afford to buy a computer and pay for monthly internet access, resulting in limited use of ICT facilities. Other barriers to using ICT reported by pre-service teachers were distractions and network security. Participants admitted spending significant amounts of time using ICT to look at Facebook, chat online, listen to music and play computer games. This was confirmed by Yunus et al. (2010), who reported that students spent more time on entertainment than English learning. Pre-service teachers were also concerned about issues related to information security that may be due to a lack of knowledge and skills to search for information and a lack of funding for antivirus software.

Chapter Summary

The factors impacting on ICT implementation as well as the relationship between these factors are presented in Table 7.1. The Vietnamese cultural, economic and political context has undoubtedly played a role in shaping education in Vietnam and influenced the success of ICT integration. At a government level, MOET has been responsible for formulating and deploying operational ICT policy in education, especially for EFL reform. At a university level, ICT policy needs to be translated into infrastructure development, training, technical support, pedagogical, curricular and assessment reform. Teacher trainers, responsible for supporting pre-service teachers in their integration of ICT, have needed to respond to pedagogical reform focused on increasing ICT use and enhancing their own ICT skills and knowledge. Finally, within the EFL classroom context, several factors were found to influence ICT implementation, including perceptions of ICT usefulness and confidence, ICT knowledge and skills, and current practice.

This study suggests that some components of the national ICT reforms in EFL education, approved by the government and MOET, have been translated by university leaders and positive perceptions of ICT prevail amongst lecturers and pre-service teachers. Yet, there appears to be a gap between government expectations and the actual practice of lecturers and pre-service teachers with regard to ICT implementation, due to several inhibiting factors at various levels. These include a lack of clarity surrounding policies, the absence of strategies for deploying policies, poor ICT translation at an institutional level, limited ICT confidence and few opportunities for practice. A multi-

pronged approach is therefore required to target the issues at different levels and phases of implementation in order to achieve more positive outcomes.

Table 7. 1 *Summary of Identified Barriers and Enablers*

Level	Enablers	Barriers
National		
	Presence of ICT and EFL policies.	Lack of clarity in ICT policies. Narrow understanding of ICT policy. More pressure for teachers. Lack of support and encouragement. Lack of supervision and assessment.
University		
Leadership	Verbal encouragement.	Lack of institutional vision and objectives. Inadequate support. Unofficial assessment. No models on ICT-based curricular and assessment reform.
Infrastructure	Presence of general ICT tools.	Lack ICT tools for language education. Low quality of ICT infrastructure. Lack of incentive for ICT ownership.
Training	Presence of ICT training for the lecturers and the pre-service teachers.	Inadequate professional development for lecturers. Inadequate practical applications in ICT training for pre-service teachers.
Support	Presence of technician staff.	Inadequate ICT maintenance and support.
Teacher		
ICT perception	Positive perceptions of ICT usefulness. Positive perceptions of ICT confidence.	Lecturer low confidence in technology related knowledge. Pre-service low ICT confidence. Challenges: Workload; Financial issues; Distraction and Information security.
ICT practice	General ICT tools.	Limited ICT practice. Ineffective support learner autonomy.

Chapter 8:
Conclusions and Recommendations

The previous chapters presented the findings on ICT policy implementation in an EFL teacher education program in Vietnam. This chapter provides an overview of the research and summarises the key findings. The implications and limitations of the study are presented, and recommendations made for improved implementation of ICT policy in EFL teacher education and future research. The chapter concludes with a summarised interpretation of the data in relation to the research questions.

A mixed-methods approach was used in the current study, including document analysis, survey questionnaires and semi-structured interviews. In the document analysis phase, national and institutional policies, and relevant curriculum and teaching documents were thematically analysed. Next, survey questionnaires were distributed to lecturers and pre-service teachers to obtain their views, perceptions and practices in relation to EFL teaching and learning with ICT. Following this, semi-structured interviews were conducted with faculty managers, lecturers and pre-service teachers to confirm, enrich and more deeply understand their roles and the impact of policies on effective ICT integration, beliefs and practice. In total, 121 respondents participated in the study, made up of two managers, twenty-nine university EFL lecturers and ninety EFL pre-service teachers. A summary of the research findings is presented thematically in relation to top-down implementation of ICT in the context of EFL teacher education.

Summary of Key Research Findings

Lack of Clarity and Management System for ICT Policy Deployment

In recognition of the importance of ICT, the Vietnamese government and Ministry of Education and Training (MOET) released a number of policies in 2008, the Year of ICT, to promote EFL proficiency in Vietnam. Data derived from the document analysis, questionnaires and interviews with faculty managers, lecturers and pre-service teachers confirmed that Vietnamese national policies had positioned ICT as a critical component of its national agenda to speed up industrialisation and modernisation and develop ICT human resources. More specific objectives focused on improving the quality of education and training, students' and teachers' EFL proficiency, and heightening the awareness of education staff about the importance of ICT in English-language teaching. National ICT policies emphasised the importance of operational

factors, such as infrastructure development, teacher training, technical support, pedagogical, curricular and assessment reforms, however, implementation of the policies was hampered by several constraints.

It was evident that the study participants possessed an inadequate understanding of the ICT policy implementation process. They were only able to provide a general description of the policy objectives, such as improving English competency and increasing ICT facilities, primarily because they were deemed too broad and lacked defined guidelines. This limited understanding infers that these stakeholders were not involved in the formulation, development or evaluation of the ICT policies, and as a result, had limited knowledge of the government's expectations or their roles in the implementation process. Similarly, participants' responses to the impact of ICT policy were vague and superficial, such as improving ICT competency to enhance the quality of EFL teacher education. Interestingly, several pre-service teachers and lecturers believed the policy would impose more pressure on them by increasing their workloads to meet the requirements, suggesting that ICT policy was deemed by the participants to offer both positive and negative outcomes.

In addition, participants suggested there was poor collaboration between the university and MOET, as well as within the university for supporting and evaluating the ICT implementation process. This not only applied to the uptake and use of ICT tools and equipment, but also to the quality of training sessions at both national and institutional levels.

Poor Interpretation and Translation of ICT Policy at the University

The study examined how ICT policy had been interpreted by the university from the perspectives of managers, lecturers and pre-service teachers. The university had met certain conditions for creating a conducive environment for ICT integration, such as providing general ICT tools, training for lecturers and pre-service teachers and technical support staff. Nevertheless, lecturers and pre-service teachers were concerned that a number of issues prevented them from effectively applying ICT in their EFL teaching practice.

Firstly, the document analysis and semi-structured interviews revealed there were no university strategies or guidelines for achieving the comprehensive list of goals and promoting ICT in EFL education. This may have been caused by a lack of leadership at the university in developing a set of objectives and actions. It was also

evident that there was a lack of encouragement, support and assessment systems at both university and faculty levels.

Secondly, the lecturers and pre-service teachers were dissatisfied with the availability, accessibility and reliability of ICT tools for EFL education, and the lack of funding and incentives for ICT ownership. In addition, the existing ICT infrastructure was installed without any consideration for their use or relevance to lecturers' and pre-service teachers' needs. Ongoing maintenance and support for dealing with frequent technical problems were deficient and wasted significant amounts of lecturers' and pre-service teachers' time.

Thirdly, ICT training courses contributed to positive perceptions of ICT benefits and the knowledge and skills of pre-service teachers by providing an overview of technology in teaching. However, professional development for lecturers raised concerns about the methods of conducting training and a lack of incentives for encouraging and increasing attendance. Furthermore, pre-service teachers did not appear to have adequate opportunities to practise their knowledge and skills in real-life classroom settings, and consequently they had difficulties translating their ICT skills in their practicum course and potentially, in their future teaching. Other limitations were inadequate ICT facilities and high school teachers' low awareness of ICT benefits, which meant their students weren't encouraged to integrate ICT in the schools where they undertook their practicum courses.

Moderate ICT Perceptions

Lecturers' and pre-service teachers' perceptions of their beliefs, knowledge and skills emerged from the online questionnaire. Both groups of participants had relatively positive attitudes towards ICT integration into EFL teaching and learning practice. Their value perceptions and confidence were within moderate range, indicating that pre-service teachers may potentially use technology with confidence in their future classrooms. However, such use may be limited to traditional methods and areas in which they were most confident, such as lesson preparation, organising their work and keeping records. While pre-service teachers perceived their skills and knowledge of technology to be of a high standard, this was contradicted by knowledge of technologies for English subject matter (TCK) receiving the lowest TPACK score.

The findings revealed that lecturers and pre-service teachers had positive perceptions of ICT usefulness in their EFL teaching and learning, although the score

was not particularly high at around “useful” level. This result signals a need for both groups to be more open-minded to ICT learning and practice in order to maximise the benefits commensurate with their perceptions. Professional development courses, provided by the university as a means of raising awareness of ICT benefits, were in short supply and both pre-service teachers and lecturers lacked opportunities to practice their ICT skills in actual classroom settings, robbing them of the chance to discuss and select the most beneficial and appropriate applications for their contexts. One example was noted by Dinh (2015), who observed advanced ICT users conducting ICT-based lessons in small academic groups where members discussed, evaluated and provided feedback on the impact and uses of ICT to improve current practice.

Generally speaking, lecturers and pre-service teachers expressed confidence in their use of technology knowledge, content knowledge and pedagogy knowledge. The lecturers had higher levels of confidence in pedagogical knowledge and content knowledge, placing a great deal of emphasis on improving their teaching approaches and English knowledge. However, neither pre-service teachers nor lecturers were very confident in their technology knowledge, indicating a deficit in their abilities to troubleshoot common technical issues and adjust to new technologies. Moreover, the limited abilities of both pre-service teachers and lecturers to merge technological knowledge with pedagogical knowledge and content knowledge due to a lack of TPACK confidence signalled a need for improvement.

As far as ICT applications were concerned, both groups believed the 13 applications under examination were useful for their teaching and learning. The standard deviations for software and hardware were within one standard deviation of one another. However, in the lecturer group, the standard deviation for web design was noticeably higher than the others, indicating a greater variation in perceptions of usefulness and confidence by the lecturers.

Limited ICT Practice

Both groups of participants in the current study used multiple ICT applications in the EFL teacher education program. Most respondents made frequent use of common ICT tools such as laptops, mobile phones, projectors and the internet and derived a multitude of benefits from PowerPoint, word processing software and online resources. Pre-service teachers were most confident in their use of Facebook, while lecturers were most confident in their use of word processing. Participants also reported using these

ICT applications and tools to assist their teaching and learning, including searching for information, planning and delivering content, presenting information and communicating with one another. Lecturers indicated they had more opportunities to use ICT for academic tasks than pre-service teachers. Both groups reported using ICT because they were encouraged by university leaders and believed that ICT was beneficial for their EFL teaching and learning.

However, the purpose and range of ICT tools used, as expressed by lecturers and pre-service teachers, were limited. Most participants did not use specific EFL-related ICT resources, such as Moodle, online audio tools, animation tools, online assessment tools or web 2.0 for improving skills and vocabulary. Nor did they use digital cameras or educational software and applications frequently, despite having undertaken training to use them. The main reasons cited were lack of guidelines, infrastructure, knowledge, skills and time. It was evident that ICT was not fully integrated into the EFL teacher education program, consistent with the findings of Kolbakova (2014) and (Dinh, 2015), who found there was a gap between ICT policies and classroom practice in Asian countries. The university should therefore develop a needs-based model and create opportunities for lecturers and pre-service teachers to give voice to their needs in terms of professional development.

Pre-service teachers expressed disappointment with the extent of ICT use in their practicum course at high schools, due to inadequate resources and low awareness of ICT benefits on the part of in-service teachers. This study suggests that poor communication between the university and participating schools has contributed to limiting the exposure of pre-service teachers and their experience with ICT.

In terms of fostering learner autonomy, previous research findings reported that ICT tools assisted independent exploration of knowledge outside the classroom. However, there were no strategies in place for checking whether students self-studied or not, or in fact how they spent the time allotted for self-study. Pre-service teachers were also confused when it came to choosing reliable online self-study materials because they lacked the ability to locate useful information and distinguish between information sources.

Implications

Recommended Guiding Principles for Effective ICT Implementation

This study provides an in-depth picture of the implementation of ICT policies in an EFL teacher education context in Vietnam. The findings can potentially serve as a blueprint for stakeholders seeking to facilitate the use of ICT in the EFL reform process. They may also facilitate ICT implementation in other educational systems with similar demographics. The barriers to current and future ICT implementation in EFL classrooms are presented below and discussed in the form of recommended guiding principles.

Government and MOET Level

Since 2008, the Year of ICT, a number of policies have been proclaimed to promote ICT and EFL proficiency. These policies stressed the importance of operational components, such as infrastructure development, professional development, technical support, pedagogical, curricular and assessment reform. However, the implementation process lacked the critical elements highlighted in the literature review: clearly defined objectives, explicit tasks, support and encouragement systems, supervision and evaluation (Table 8.1).

Table 8.1 *Government Level Issues and Guiding Principles*

Issues	Guiding Principles
Lack of clear and direct national ICT guidance. Lecturers' narrow understanding of ICT policy. More pressure for pre-service teachers and lecturers.	Developing long- and short-term objectives and a strategic plan. More policy dissemination channels. Time allowances for the change process. Improving lecturers' involvement in the implementation.
Lack of incentives.	Offering reward structure.
Lack of support, supervision and assessment.	Setting communication channel. Supervising and evaluating plan. Building assessment criteria and ICT standards.

Guiding principles developed from Balanskat et al. (2006).

All the government-related issues outlined above can be solved with clear guidelines for implementation, including timely support, oversight and ongoing assessment, and by addressing the relationship between these factors. A goal-oriented strategic plan providing reasons for the change and the necessary steps to accomplish objectives should define the roles and responsibilities of all stakeholders, provide access to resources and outline a timetable for achieving each step in the process. In addition,

the government needs to develop and disseminate further directives as a means of improving lecturers' and pre-service teachers' understandings of their roles in leading and contributing to the change process. Time allowances are vital for interpreting policies, understanding and considering strategies and for an agreed action plan to be put in place. Effective communication channels between local (teachers and the university) and central stakeholders (MOET and the government) via a hotline or email are crucial for recording and collating the needs of teachers and ensuring adequate support. The top-down leadership approach in Vietnam could be further extended by providing clear guidance and prescribed criteria for monitoring and evaluating the change process. For example, participants proposed different ICT standards for EFL teachers at different levels. In addition, Balanskat et al. (2006) recommended that policymakers focus on reward structures that encourage teachers to use ICT in their teaching practices.

University Level

University leaders and faculty managers are tasked with responsibility for increased support of ICT implementation within the institution. A number of recommendations are presented below for addressing university issues.

Inadequate Leadership Support

The first step is to develop an institutional policy or plan that specifies the reasons and ways in which ICT must be used. The literature (Dang, 2014; Tondeur et al., 2008) suggested that teachers are more likely to use ICT in EFL classroom teaching if they receive specific guidelines from their managers. Since lecturers expressed dissatisfaction with the current evaluation process that merely entailed self-assessment at the end of each academic term, a clear set of criteria upon which to base assessments will assist monitoring and evaluating implementation. The university should be tasked with developing a vision for ICT in EFL education that incorporates a mission for EFL educational delivery, with clear objectives to be achieved within a specified period of time.

The findings of this research support the study of Nguyen (2015c), who argued that school leaders must play a more active role in leading ICT implementation in EFL teaching and learning. Lecturers and teachers also have a responsibility to proactively encourage and implement change.

Table 8.2 University Level Issues and Guiding Principles

Sub-issues		Guiding principles
Ineffective leadership	Lack of vision and objectives. Inadequate support. Unofficial assessment.	Time for further communication and negotiation to develop objectives. Emphasis on the reasons and benefits of changes. Annual performance management procedures.
	No models on ICT-based curricular and assessment reform.	Build ICT integrated curriculum. Encouraging research to develop models. Setting incentives for ICT environment development.
Inadequate ICT infrastructure, maintenance and support	Lack of ICT tools for language education. Low quality of ICT infrastructure: network, computers, projectors. Lack of incentives for lecturers' and students' ICT ownership.	Consultant for special ICT requirements. More supervision on the equipped facilities. Partnership with the government and private business to seek additional sources of financial support for teachers' ICT tools. Leasing computers. Introducing different forms of support: online, telephone, face to face. Keeping a log of common technical problems to enhance teachers' skills. Issuing notes guides and manual.
Insufficient ICT training	Inadequate professional development for lecturers.	Developing a shared vision with MOET: Increasing number and quality of training. Based on lecturers' competence. Focusing on lecturers' needs. Encouraging lecturers' attendance. Incentive structure for participation and sharing experiences.
	Inadequate practical applications in ICT training for pre-service teachers.	Improve lecturers' role in modelling and facilitating. Reduced class size. Rescheduling to provide pre-service teachers more time to observe, practice and give feedback.

Guiding principles developed from Dang (2014); Khvilon and Patru (2002); Lim and Pannen (2012); Nguyen (2015c); Tondeur et al. (2008).

It is vital for institutional leaders to collaborate with MOET in developing an integrated ICT process that covers interpretation of policies, support and assessment to ensure the quality of ICT in practice. Previous researchers warned that change is a complex process and recommended allowing time for communication and negotiation with all stakeholders in order to develop a set of objectives accompanied by action statements and time limits for achieving the desired outcomes. They emphasised communication to clarify and explain the advantages to education in general and the

benefits to teachers and students in particular. One solution may be for the university to offer additional part-time, after-hours courses or practical workshops focusing on the anticipated changes, with lecturers and teachers who undertake these courses qualifying for a different pay scale. To maximise the full potential and engagement of university staff, annual performance reviews carried out by Heads of Department could provide a positive focus, contribute to a smooth change process and increase awareness of the work-related needs of the faculty and the personal needs of its lecturers.

Inadequate ICT Infrastructure, Maintenance and Support

Although general technologies, software and telecommunications networks were available, educators and student teachers in this study did not appear to have access to appropriate technologies for their specific subject area. There was no consultation with lecturers and pre-service teachers to determine their specific ICT requirements in relation to infrastructure, hardware, software and communication networks for successfully integrating their technology knowledge, content knowledge and pedagogical knowledge. Furthermore, they lacked opportunities to observe and experience classroom models demonstrating the required approach. The university was remiss in establishing and aligning appropriate ICT facilities with the expectations for EFL teaching and learning in order to effectively inform policy development. Only when this is achieved will resources be used efficiently to realise and sustain a well-structured plan for continued support, maintenance and regular evaluation.

This study showed evidence of dissatisfaction with the facilities provided, such as the internet connection, computers and projectors. It would be more cost effective for the university to lease computers and purchase a site licence for software, rather than buying them. In this way, providers will be more likely to update both hardware and software when they become obsolete and older models could be offered to lecturers and pre-service teachers at reduced prices.

Most pre-service teachers reported technical breakdowns and lengthy disruptions while waiting for technicians to resolve the problems. Lecturers preferred the previous arrangement that provided each faculty with a dedicated technician, because the centralised model was dysfunctional and unable to provide timely support. ICT technicians could be tasked with conducting training on the use of ICT for teaching and learning. They could also keep a log of reasons for technology failures in order to identify common causes and deliver workshops to demonstrate how to overcome and

address them. Technicians should continue to educate teachers when technology fails and boost their abilities and confidence to troubleshoot remotely via telephone or TeamViewer Support Community; this will free up technicians to deal with more complex issues. Furthermore, the university should periodically assess the effectiveness of its ICT devices for teaching and learning to facilitate improved educational outcomes and pinpoint potential problems before they occur.

Given the dire need for improvements to university ICT infrastructure allocations, maintenance and support, it is recommended that any measures be preceded by a careful evaluation of the ICT system as a whole. Key factors in developing guiding principles for the university must include 1) providing MOET with a review of ICT needs for EFL major; 2) developing a structured plan for ongoing ICT support, ongoing maintenance and progressive evaluation; and 3) seeking additional sources of financial support from government and the private sector for enhancing ICT tools.

Insufficient Practical Application of ICT Training and Inadequate Professional Development

In order to enhance ICT integration at all school levels, the Vietnamese Government (2009) emphasised training for pre-service teachers and teacher educators. While there was evidence in this study of adequate ICT preparation for pre-service teachers and several training sessions for lecturers, there were nevertheless concerns about the quality of ICT training.

Pre-service teachers expressed dissatisfaction with the prerequisite technology courses in relation to class sizes, users and final test fees. In addition, they lacked opportunities to apply their knowledge of ICT in real-world classrooms, due to limited time and inconsistencies in the basic ICT course. Several solutions were proposed. Firstly, lecturers who work directly with pre-service teachers should model and teach techniques for managing ICT in their teaching process and facilitate appropriate use of ICT by pre-service teachers. Secondly, the university should review the basic ICT course in terms of class sizes and align the content with EFL teaching in particular. Some pre-service teachers reported that in high schools with a shortage of ICT tools and equipment, EFL teachers mainly used basic ICT, such as Word, PowerPoint and the internet in their teaching practice. Thirdly, the ICT course should be arranged earlier in the academic year to ensure more opportunities are available for pre-service teachers to observe their mentors modelling effective ICT use before preparing, planning and

delivering teaching and providing feedback in an authentic environment. While ICT training sessions were organised at national and faculty levels, not all lecturers benefited, and a more equitable selection process needs to be adopted, together with appropriate methods of training.

Collaboration between institutional leaders and MOET will go a long way towards developing a common vision on training and upgrading pre-service teachers and lecturers for successful technology integration (Lim & Pannen, 2012). A national plan encompassing content, training methods and time allowances for ICT training would also address these issues. As far as professional development was concerned, the lecturers in this study suggested that their ICT knowledge and skills be assessed before designing the training content. Opportunities exist for MOET to increase the number and quality of ICT training sessions by balancing the content and duration of training. A strong commitment by university leaders to creating opportunities and encouraging lecturers to participate in training will also help to improve their ICT knowledge and skills. Training timetables, distributed to lecturers prior to the start of the academic year, will assist them to balance their teaching and training schedules. A further solution may be a reward and incentive structure for those who attend ICT training and subsequently share their knowledge at a faculty or institutional level. According to Khvilon and Patru (2002), professional development is a continuing event that should be focused on lecturers' needs and sustained by means of periodic updates.

Lack of Plans and Models for Pedagogical, Curricular and Assessment Reform

A number of options should be considered to solve these education reform issues. In the first instance, the top-down hierarchical structure of education in Vietnam places responsibility for policy coherence with MOET. The various elements, including curriculum development, pedagogical change and assessment reform, are interrelated and should therefore not be implemented in isolation. The first step is for MOET to provide specific guidelines on effective integration of ICT into EFL pedagogy and curricula, while the university develops appropriate actions for implementing the guidelines. Additionally, Free Open Source software should be adapted and modified so that they are suitable for EFL education and meet the needs of lecturers and pre-service teachers. In addition, further research is needed to identify other inhibitors and facilitators that affect the implementation of change, including the development of appropriate models for different regions.

Teacher Level

The findings showed that lecturers and pre-service teachers had limited ICT practice, as evidenced by their moderate perceptions of ICT usefulness, confidence and negative attitudes. In addition to the above recommendations, guiding principles are proposed for educational leaders and teaching staff (Table 8.3).

Table 8.3 *Classroom Practice Issues and Guiding Principles*

Issues	Suggestions for Lecturers and Pre-Service Teachers	Suggestions for the University
Moderate perceptions of TPACK usefulness.	Be more open-minded to ICT use.	Raise awareness of ICT benefits.
Moderate levels of TPACK confidence. Pre-service teachers' limited TPACK confidence. Lecturers' limited confidence in technology related components.	Participate in online training. Seek practice opportunities with classmates. Take up training opportunities from the MOET, the university and online. Seek practice opportunities for the ICT training content.	Increase the lecturer model and facilitating roles. Develop ICT-integrated curriculum. Increase lecturers' knowledge and skills in online uploading, sharing and managing learning content; online assessment.
Negative attitudes: Workload Financial issues Distractions Information security	Be eager to learn and use ICT. Build self-organisation and management skills. Seek support from the University.	Assess the impacts of ICT use in EFL to limit challenges. Collaborate with MOET to call for funding.
Limited ICT practice: at the university In the practicum course	Take advantage of available personal and institutional/school ICT facilities to learn and practice ICT.	Develop a needs-based professional development model. Apply TPACK framework to design and evaluate the training content. Establish university-school partnerships.
Ineffective support learner autonomy	Guide students to develop their learning journal with needs, goals, time management, learning strategies and assessment criteria.	Develop lecturers' teaching strategies to facilitate pre-service learner autonomy.

Guiding principles developed from Albion (2001); Chaaban (2014); Khan (2014); Koh and Divaharan (2011); Nurhadi, Purwaningsih, Masjkur, and Nyan-Myau (2019); Tanak (2018)

Firstly, ICT training and professional development courses should be based on the TPACK framework to improve both lecturers' and pre-service teachers' knowledge and skills and maximise ICT utilisation in their EFL teaching and learning practice

(Khan, 2014; Nurhadi et al., 2019). Based on the findings of this study and previous research, the following factors ought to be considered.

For pre-service teacher training, three main stages are recommended. The first stage applies to students who have recently passed the entrance examination and possess similar levels of content and technology knowledge, and in all likelihood, little pedagogical knowledge. Lecturers who model ICT should be trained to develop pre-service teachers' understanding of the TPACK content and foster positive attitudes towards ICT use. Albion (2001) and Tanak (2018) found tutor demonstrations effective at all ICT instruction stages.

The second stage should focus on the development of TK, TCK and TPK. Pedagogical modelling by lecturers should be designed to demonstrate how ICT tools can assist pre-service teachers' teaching methods, in other words, their technological pedagogical knowledge. Then, the focus should shift to the application of ICT tools to teaching English knowledge and skills. According to Koh and Divaharan (2011), content-based modelling supports pre-service teachers to formulate their technological content knowledge. Pre-service teachers will not only learn about instructional ICT tools (multimedia, presentation tools, collaboration tools and Web 2.0) but also practise how to use them in their EFL activities (Tanak, 2018).

In the final stage of TPACK development, pre-service teachers should be provided with opportunities to make connections between their TPK, TCK and PCK and formulate their TPACK through examples of ICT-integrated lessons. This will encourage them to design ICT-enriched EFL lesson plans that can be shared with other pre-service teachers and put into practice in their practicum course.

Professional development for lecturers must take account of learners' needs to avoid wasting time, effort and resources. For example, the lecturers in this study with previous teaching experience, pedagogical knowledge and content knowledge still lacked the necessary expertise to integrate technology into their EFL teaching. In addition, flexible modes of training, in the form of both offline and online models, will encourage and increase participation. To mitigate against the consequences of rapid changes in technology, ongoing training programs, workshops, seminars, conferences and action research will continuously update lecturers' ICT knowledge and skills. Lecturers should also be actively involved in their professional development through self-training and collaboration with other high-tech personnel.

University-school partnerships will facilitate increased collaboration on ICT integration for enhancing teaching and learning practice. Such interactions will potentially provide valuable information about ICT conditions in schools, teachers' ICT usage and their professional development needs to inform effective training programs (Chaaban, 2014).

Suggested Model for Effective ICT Implementation

This examination of ICT implementation in an EFL teacher education program at a university in Vietnam revealed that lecturers' and pre-service teachers' ICT perceptions and practices were influenced by various factors. These included the history and tradition of education, national ICT and EFL reform policies, the university environment characterised by top-down governance of MOET guidelines, and the lecturers' and pre-service teachers' TPACK.

The findings indicated that Vietnamese ICT policies were ambiguous in their prescription and guidance for integrating ICT into English teaching and learning, and the top-down hierarchical approach failed to disseminate plans and expectations. In addition, there was a lack of support, oversight and evaluation by MOET. At the university level, leaders had failed to interpret national policies or provide clear guidelines for EFL lecturers and pre-service teachers, and key components, such as infrastructure and support, training, curriculum, pedagogy and assessment had been poorly translated. All these issues affected lecturers' and pre-service teachers' beliefs and attitudes and resulted in limited ICT integration and practice by both the instructor and learning groups. In order to assist lecturers and pre-service teachers to develop their knowledge, skills and confidence in ICT and contribute to successful ICT implementation, the above suggestions are provided as the basis of a model for more effective ICT implementation at the university (Figure 8.1).

It is recommended that the government and MOET develop and adopt a multi-stage implementation process and strategy for ICT implementation in both cities and the countryside. Previous researchers (Drent & Meelissen, 2008; Fullan, 2007; Howlett et al., 2009) suggested amalgamating the strengths of top-down and bottom-up implementation into one model to ensure that government decision-makers take into consideration the needs and feedback of academic staff. Lecturers should be involved to enhance their autonomy in the ICT implementation process. Finally, evaluation of

policy implementation processes is vital for reviewing and overhauling existing policies where necessary.

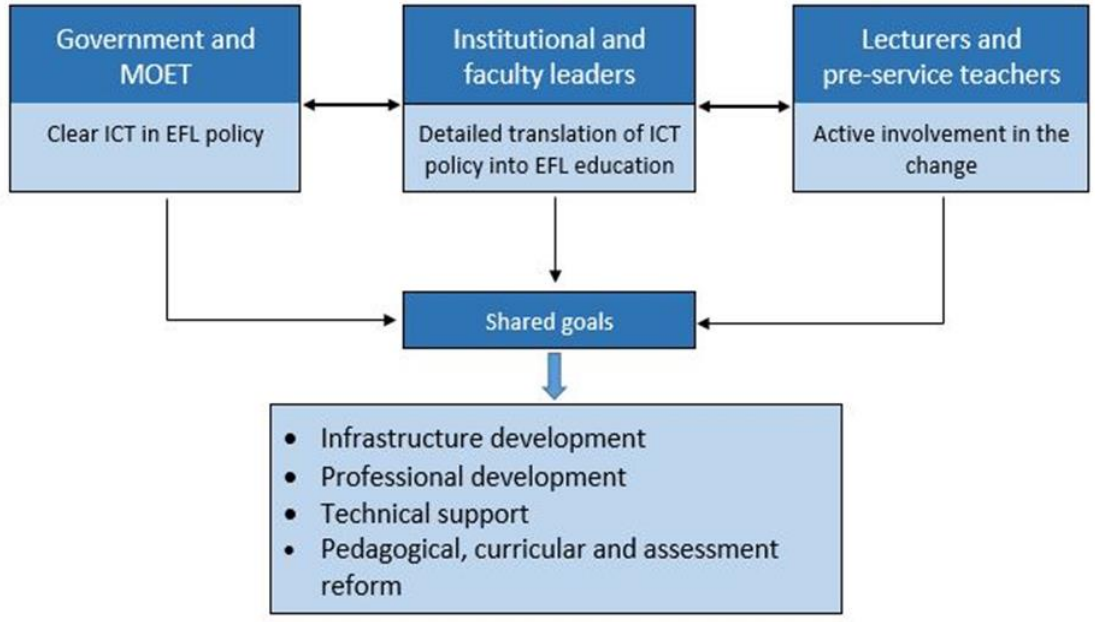


Figure 8.1 Proposed Model for Effective ICT Implementation

To support effective ICT integration, university leaders must contextualise national policy to suit their facilities and staff competence prior to establishing clear objectives. In addition, the university should open and maintain communication channels between MOET and their teaching staff with regard to the required resources, support and training. The TPACK model can be used to guide the development of training sessions, ongoing professional development and assessments. Institutional leaders should consider lecturers' workloads and provide adequate time for participation in training and preparation of lessons aligned with ICT policy objectives. Moreover, a results-based reward structure would encourage teaching staff to engage in the implementation process.

Lecturers and pre-service teachers should acquire a greater understanding of ICT policy and be compelled to comply with ICT implementation and EFL improvements. They should actively seek opportunities to learn and develop their ICT practice. Collaboration will facilitate engagement by other universities to develop ICT beliefs,

attitudes and practices amongst lecturers and pre-service teachers and generate more positive outcomes.

Limitations of the Research

Although this study makes a significant contribution to the development of ICT policy and teacher professional development, there are certain limitations. The first of these is the sample size. Ninety pre-service teachers and 31 lecturers completed the questionnaires, and 28 pre-service teachers (6 focus groups), 2 managers, 10 lecturers and two faculty managers participated in the interviews. The current study was also conducted in only one university in Vietnam. Although teacher education programs in Vietnamese teacher institutions follow the MOET core curriculum, each university's curriculum, tasks, activities and implementation plans may be slightly different. Therefore, extreme caution is advised in generalising the research findings to other settings.

The second limitation is the selection of participants. This study investigated only the perspectives of faculty managers, lecturers and pre-service teachers and did not engage with other stakeholders such as in-service teachers and MOET leaders. As a result, the research does not present a holistic picture of ICT implementation. However, teachers are the actual implementers and play the most important role in ICT integration, which is why the research was aimed at investigating the implementation of ICT-related policies in an EFL teacher education program.

The third limitation relates to the data collection instruments: document analysis of teaching outlines and plans, and responses to questionnaires and interviews. A possible limitation of self-reported feedback may be the subjective nature of the data. Nonetheless, this limitation was mitigated by using different sources of data to check reliability in the form of lecturers' descriptions and evaluations of their pre-service teachers' ICT practice and vice versa. Further research will remedy the abovementioned limitations.

Recommendations for Future Research

Based on the findings of this study, the following recommendations for further research are offered for consideration. Firstly, the current study was conducted in one university in Vietnam. Research at other educational institutions in Vietnam will enable confirmation of the findings by allowing for comparisons, thereby increasing the generalisability of the findings. Given that EFL teacher education in Vietnam is under

MOET's control, research that applies the same study procedure in different regions of the country will describe a bigger, more comprehensive picture of ICT implementation in EFL teacher training.

Similar studies might also consider the inclusion of EFL teachers from surrounding high schools, MOET policy makers and other institutional leaders. In this way, teachers can provide a contextual understanding of the ICT environment and their practice in EFL classrooms, while MOET participants can provide the views, attitudes and factors affecting ICT implementation through a government lens. These different perspectives can then be compared and contrasted to achieve a better understanding of the phenomena under study.

Future research could include different data collection methods, such as classroom observations and video recordings of ICT-based teaching practice. This will mitigate against the subjective nature of feedback in the questionnaires and interviews. Moreover, the data captured in this way will determine whether and to what extent teachers are translating their ICT knowledge and skills into their teaching practice.

Finally, further studies on other disciplines, such as mathematics and sciences within the same or other institutions will serve to broaden the findings for university administrators and MOET leaders to gain a better understanding of lecturers' and students' beliefs, attitudes, practices and suggestions. This could potentially inform future ICT policies, assist with modifications at different levels and enhance the coherence of policies.

Conclusion

This mixed-methods research investigated various stakeholders' perceptions of the implementation of ICT policy in an EFL teacher education program in the context of Vietnam. The investigation included the factors that impacted the implementation process. The underlying assumption of the research was that the government invested funding to promote the use of ICT to support education reform and economic growth. Linked to this is the country's transition to a knowledge-based society. Thus, the research was driven by the belief that successful implementation of ICT policy will contribute to improvements in the quality of teacher education.

The study was based on an educational change approach and used the TPACK framework to interpret lecturers' and pre-service teachers' ICT perceptions and practice. One of the key findings to emerge was that different groups of stakeholders had

different perceptions and experiences of the implementation of ICT policy in EFL teacher training. Numerous issues emerged at national, university and teacher levels that reportedly impacted on the implementation process. Specifically, the issues identified in this study included a lack of operational policy for directing, supporting and assessing deployment of ICT policies for EFL improvements, ineffective leadership, inadequate ICT infrastructure, a lack of maintenance and support, insufficient opportunities for practical application of pre-service teachers' ICT training, a lack of professional development for lecturers, the absence of defined guidelines on pedagogical, curricular and assessment reform, moderate perceptions of confidence in ICT and limited practice. These factors not only inhibited ICT implementation at the university, but also ICT implementation in the future teaching methods of pre-service teachers at high schools.

Recommendations have been made to inform practice and policy and enhance the use of ICT at the university and in other similar educational settings. In general, ICT implementation in any educational context has been shown to not only depend on infrastructure investment or any single factor, but on "a host of social and cultural elements operating together in complex ways" (Bax, 2011).

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Appendix A
Information Letters and Consent Forms for Managers, Lecturers and Pre-Service Teachers

Date

Dear the managers,

This letter is to request your agreement to support a research project being undertaken as part of the requirements of a PhD at Edith Cowan University. The title of the project is: *The investigation of ICT policy implementation in an EFL teacher education program in Vietnam.*

The purpose of this study is to investigate how stakeholders–the educational managers, lecturers and pre-service teachers in an EFL teacher training course at a major university in Vietnam perceive the implementation of the national ICT educational policy. To achieve this purpose, the current study compares the goals/objectives set out in the national ICT policy and identify possible factors impact the implementation process.

You are chosen to participate in this project because you are directly involved in the management of the EFL teacher education at the university. If you agree to take part in the study, you will be required to attend a semi-structured interview which will take approximately 30 minutes. If so, the interview will be conducted at a time and place convenient to you.

Participation is voluntary and you have the right to withdraw your participation at any time. All contributions you have made to the research will be removed and destroyed unless explicit permission is given for their use. This decision will not affect the relationship with the researcher or Edith Cowan University.

The information collected from you will be de-identified. It will then be stored securely in either locked cabinets or password protected computers and can only be accessed by the researcher and the researcher's supervisors. The data will be stored for a minimum period of five years, after which it will be destroyed. This will be achieved by shredding any paper-based data and erasing electronic data including audio recordings.

The data is maintained in a way that enables the researcher to re-identify an individual's data and destroy it if participation is withdrawn. This is done by using identification codes known only to the researcher. The identity of participants will not be disclosed at any time, except in circumstances that the researcher is legally required to disclose that information. Participant privacy, and the confidentiality of information disclosed by participants, is assured at all other times.

The data, including audio recordings, will be used only for this research, and will not be used in any extended or future research without first obtaining explicit written consent from participants. It is intended that the findings of this study will be reported in the researcher's doctoral thesis. A summary of the research findings will also be made available upon completion of the research.

It is expected that the findings from the study will contribute to the existing knowledge on ICT integration into EFL teacher education and could be used to support the Vietnamese Ministry of Education and Training and teacher education institutions in making informed decisions related to ICT policies and their implementation in EFL education.

The risks to those involved in this study are considered very low because of care taken with the construction of the study.

The research has been approved by the Human Research Ethics Committee of Edith Cowan University.

If you have any questions or require any further information about the research project, please contact:

Researcher: Vo Phan Thu Ngan, [redacted] or nganv@our.ecu.edu.au

Project supervisor: Dr. Jeremy Pagram, j.pagram@ecu.edu.au

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
270 Joondalup Drive
JOONDALUP WA 6027
Phone: (08) 6304 2170
Email: research.ethics@ecu.edu.au

If you have had all questions about the research answered to your satisfaction, and are willing to participate, please complete the Consent Form on the following page.

Title of the project: *The investigation of ICT policy implementation in an EFL teacher education program in Vietnam.*

If you need any further clarification concerning the project or the procedures to be used, questions can be forwarded by emailing: [Details provided]

Should you have any concerns or complaints regarding the study and wish to speak to an independent person, you can contact the following: [Details provided]

If you agree to take part in the research please read the conditions and sign the consent form below:

I _____ acknowledge that:

- I have received a copy of the information letter explaining the research study.
- I have read the letter and understand the information provided.
- I have been given the opportunity to ask questions.
- Any questions have been answered to my satisfaction.
- I have been made aware of how to contact the researcher and supervisor if I have further questions and an independent person if I have concerns or complaints.
- I understand that my participation will involve attending an interview (approximately 30 minutes)
- I understand that the information provided will be strictly confidential and that the identity of the participants will not be disclosed without consent. The information will be used only for the
- purposes of this research project.
- I understand that I am free to withdraw from the project at any time without explanation and that any data collected will be returned to me.
- I freely agree to participate in this research project.
- I can receive a copy of specific results or general results upon request.

Name _____ (please print)

Signature _____ Date_____

Date

Dear the lecturers,

This letter is to request your agreement to support a research project being undertaken as part of the requirements of a PhD at Edith Cowan University. The title of the project is: *The investigation of ICT policy implementation in an EFL teacher education program in Vietnam.*

The purpose of this study is to investigate how stakeholders–the educational managers, lecturers and pre-service teachers in an EFL teacher training course at a major university in Vietnam perceive the implementation of the national ICT educational policy. To achieve this purpose, the current study compares the goals/objectives set out in the national ICT policy and identify possible factors impact the implementation process.

You are chosen to participate in this project because you are directly involved in the training of the EFL pre-service teacher at the university. If you agree to take part in the study, you will be required complete an online questionnaire requiring approximately 20 minutes and may be requested to attend a semi-structured interview which will take approximately 30 minutes. If so, the interview will be conducted at a time and place convenient to you.

Participation is voluntary and you have the right to withdraw your participation at any time. All contributions you have made to the research will be removed and destroyed unless explicit permission is given for their use. This decision will not affect the relationship with the researcher or Edith Cowan University.

The information collected from you will be de-identified. It will then be stored securely in either locked cabinets or password protected computers and can only be accessed by the researcher and the researcher's supervisors. The data will be stored for a minimum period of five years, after which it will be destroyed. This will be achieved by shredding any paper-based data and erasing electronic data including audio recordings.

The data is maintained in a way that enables the researcher to re-identify an individual's data and destroy it if participation is withdrawn. This is done by using identification codes known only to the researcher. The identity of participants will not be disclosed at any time, except in circumstances that the researcher is legally required to disclose that information. Participant privacy, and the confidentiality of information disclosed by participants, is assured at all other times.

The data, including audio recordings, will be used only for this research, and will not be used

in any extended or future research without first obtaining explicit written consent from participants. It is intended that the findings of this study will be reported in the researcher's doctoral thesis. A summary of the research findings will also be made available upon completion of the research.

It is expected that the findings from the study will contribute to the existing knowledge on ICT integration into EFL teacher education and could be used to support the Vietnamese Ministry of Education and Training and teacher education institutions in making informed decisions related to ICT policies and their implementation in EFL education.

The risks to those involved in this study are considered very low because of care taken with the construction of the study.

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Should you have any concerns or complaints regarding the study and wish to speak to an independent person, you can contact the following: [Details provided]

If you agree to take part in the research please read the conditions and sign the consent form below:

I _____ acknowledge that:

- I have received a copy of the information letter explaining the research study.
- I have read the letter and understand the information provided.
- I have been given the opportunity to ask questions.
- Any questions have been answered to my satisfaction.
- I have been made aware of how to contact the researcher and supervisor if I have further questions and an independent person if I have concerns or complaints.
- I understand that my participation will involve completing an online questionnaire requiring (approximately 20 minutes) and may be requested to attend an interview (approximately 30 minutes).
- I understand that the information provided will be strictly confidential and that the identity of the participants will not be disclosed without consent. The information will be used only for the purposes of this research project.
- I understand that I am free to withdraw from the project at any time without explanation and that any data collected will be returned to me.
- I freely agree to participate in this research project.
- I can receive a copy of specific results or general results upon request.

Name _____ (please print)

Signature _____ Date_____

Date

Dear the pre-service teachers,

This letter is to request your agreement to support a research project being undertaken as part of the requirements of a PhD at Edith Cowan University. The title of the project is: *The investigation of ICT policy implementation in an EFL teacher education program in Vietnam.*

The purpose of this study is to investigate how stakeholders–the educational managers, lecturers and pre-service teachers in an EFL teacher training course at a major university in Vietnam perceive the implementation of the national ICT educational policy. To achieve this purpose, the current study compares the goals/objectives set out in the national ICT policy and identify possible factors impact the implementation process.

You are chosen to participate in this project because you are directly involved in the ICT preparation for EFL pre-service teacher at the university. If you agree to take part in the study, you will be required complete an online questionnaire requiring approximately 20 minutes and may be requested to attend a focus group discussion which will take approximately 30 minutes. If so, the interview will be conducted at a time and place convenient to you.

Participation is voluntary and you have the right to withdraw your participation at any time. All contributions you have made to the research will be removed and destroyed unless explicit permission is given for their use. This decision will not affect the relationship with the researcher or Edith Cowan University.

The information collected from you will be de-identified. It will then be stored securely in either locked cabinets or password protected computers and can only be accessed by the researcher and the researcher's supervisors. The data will be stored for a minimum period of five years, after which it will be destroyed. This will be achieved by shredding any paper-based data and erasing electronic data including audio recordings.

The data is maintained in a way that enables the researcher to re-identify an individual's data and destroy it if participation is withdrawn. This is done by using identification codes known only to the researcher. The identity of participants will not be disclosed at any time, except in circumstances that the researcher is legally required to disclose that information. Participant privacy, and the confidentiality of information disclosed by participants, is assured at all other times.

The data, including audio recordings, will be used only for this research, and will not be used

in any extended or future research without first obtaining explicit written consent from participants. It is intended that the findings of this study will be reported in the researcher's doctoral thesis. A summary of the research findings will also be made available upon completion of the research.

It is expected that the findings from the study will contribute to the existing knowledge on ICT integration into EFL teacher education and could be used to support the Vietnamese Ministry of Education and Training and teacher education institutions in making informed decisions related to ICT policies and their implementation in EFL education.

The risks to those involved in this study are considered very low because of care taken with the construction of the study.

The research has been approved by the Human Research Ethics Committee of Edith Cowan University.

If you have any questions or require any further information about the research project, please contact:

Researcher: Vo Phan Thu Ngan, [redacted] or nganv@our.ecu.edu.au

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If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

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If you have had all questions about the research answered to your satisfaction, and are willing to participate, please complete the Consent Form on the following page.

Title of the project: *The investigation of ICT policy implementation in an EFL teacher education program in Vietnam.*

If you need any further clarification concerning the project or the procedures to be used, questions can be forwarded by emailing: [Details provided]

Should you have any concerns or complaints regarding the study and wish to speak to an independent person, you can contact the following: [Details provided]

If you agree to take part in the research please read the conditions and sign the consent form below:

I _____ acknowledge that:

- I have received a copy of the information letter explaining the research study.
- I have read the letter and understand the information provided.
- I have been given the opportunity to ask questions.
- Any questions have been answered to my satisfaction.
- I have been made aware of how to contact the researcher and supervisor if I have further questions and an independent person if I have concerns or complaints.
- I understand that my participation will involve completing an online questionnaire requiring (approximately 20 minutes) and may be requested to attend an interview (approximately 30 minutes).
- I understand that the information provided will be strictly confidential and that the identity of the participants will not be disclosed without consent. The information will be used only for the purposes of this research project.
- I understand that I am free to withdraw from the project at any time without explanation and that any data collected will be returned to me.
- I freely agree to participate in this research project.
- I can receive a copy of specific results or general results upon request.

Name _____ (please print)

Signature _____ Date_____

Appendix B
Questionnaire for Lecturers and Pre-Service Teachers

Questionnaire for Lecturers

NOTES
In this survey, the term, ICT refers, but is not limited, to the following:
Computers and related devices (e.g. laptop, printer)
Mobile devices (e.g. tablet PC, iPad, iPod, smartphone)
Interactive whiteboard
Digital camera/camcorder
Internet (e.g. browsing and information sharing, online learning, communication via emails, blog, social networks, audio-/video- conference)
Educational software and applications
Other software (e.g. word processing, presentation, data management, webpage design/management)

SECTION 1: DEMOGRAPHIC INFORMATION

1. Gender: Male/Female 2. Date of birth:

3. What is your highest qualification in English language teaching you have?

4. How long have you worked as an EFL lecturer?

5. What is your current activity at the University?

(a) Only teaching EFL students
(b) Teaching EFL students with a faculty/department role

6. On average, how many hours/week do you have to teach at the University?

7. I own:

	a computer with internet access
	a computer without internet access
	I do not own a computer
Other electronic devices:	

8. Over the last two academic years, for how many hours in total have you received ICT training?

	No training	less than 10 hours	11 - 20 hours	Over 20 hours
At the institutional level				
At the national level				

SECTION 2: ICT IN EFL TEACHER EDUCATION

As part of the ICT and EFL improvement, the government has developed a range of policies to promote the use of ICT to improve English teaching and learning. These policies include a commitment to provide infrastructure and the expectation that educators would increase their use of ICT in teaching and learning.

1. What do you know about these policies?
2. How do you think these policies have impacted your lecturing experience?
3. What do you know about the university' s guidelines and purposes of integrating ICT in EFL teaching and learning?

4 & 5. Availability and Access to ICT at the University

Available (V)	ICT tools for EFL teacher education	How often do you access to ICT tools in a week?			
		None	1-2 times	3-4 times	Over 5 times
	Language Laboratory				
	Internet/wifi				
	Computer				

Available (V)	ICT tools for EFL teacher education	How often do you access to ICT tools in a week?			
		None	1-2 times	3-4 times	Over 5 times
	Mobile devices (e.g. tablet PC, iPad)				
	Interactive whiteboard				
	Digital camera/camcorder				
	Radio-Cassette / CD player				
	Projection				
	Overhead projector				
	TV-Video Player				
	Educational software and applications				
	Others				

6. How do you think the curriculum promotes technology integration in EFL teaching?

Please tick (V) the box that reflects your opinion	Strongly disagree	disagree	neutral	agree	Strongly agree
1. It presents technology integration as an important issue to improve my teaching approaches in the future					
2. It presents technology integration as a serious demand for the society's technological transformation					
3. It explains how to integrate technology into my teaching					
4. It provides me with adequate training and skills to integrate technology into my teaching					
5. Technology integration goals and objectives in the EFL teacher education program are clearly explained					

SECTION 3: ICT PERCEPTIONS, KNOWLEDGE AND SKILLS

	How useful do you consider it will be for you to be able to …					**How confident are you that you have the knowledge, skills and abilities to …**				
Please tick (V) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
TK (Technology knowledge)										
1. adjust computer settings such as installing software and establishing an Internet connection										
2. use computer peripherals such as a printer, a headphone, and a scanner										
3. troubleshoot common computer problems (e.g. printer problems, Internet										

	How useful do you consider it will be for you to be able to …					**How confident are you that you have the knowledge, skills and abilities to …**				
Please tick (V) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
connection problems, etc.) independently										
4. use digital classroom equipment such as projectors and smart boards										
5. use Office programs (i.e. Word, PowerPoint, etc.) with a high level of proficiency										
6. create multimedia (e.g. video, web pages, etc.) using text, pictures, sound, video, and animation										
7. use collaboration tools (wiki, Edmodo, 3D virtual environments, etc.) in accordance with my objectives										
CK (Content Knowledge)										
8. express my ideas and feelings by speaking in English										
9. express my ideas and feelings by writing in English										
10. understand texts written in English										
11. understand the speech of a native English speaker easily										
12. have the knowledge to teach English language skills such as vocabulary usage and conversation										
13. have the knowledge to teach linguistic knowledge such as knowledge of English sound, word-formation and syntax										
14. have the knowledge to teach cultural understanding of English-speaking countries.										
PK (Pedagogical Knowledge)										
15. have knowledge about general learning theories										
16. prepare, plan and deliver teaching										
17. manage a classroom learning environment										
18. evaluate students' learning processes										
PCK (Pedagogical Content Knowledge)										
19. select effective teaching strategies to guide students' learning in the EFL										

	How useful do you consider it will be for you to be able to …					How confident are you that you have the knowledge, skills and abilities to …				
Please tick (V) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
context (such as paring or grouping students)										
20. have knowledge about the ways students interact to negotiate meaning in English.										
21. adapt a lesson plan in accordance with students' language skill levels										
TCK (Technological Content Knowledge)										
22. take advantage of multimedia (e.g. video, slideshow, etc.) to express my ideas about various topics in English.										
23. use collaboration tools to work collaboratively with foreign persons										
24. have knowledge about technological applications for teaching English language skills										
25. have knowledge about technological applications for teaching English linguistic knowledge										
26. have knowledge about technological applications for teaching English culture										
TPK (Technological Pedagogical Knowledge)										
27. have knowledge about learning theories with ICT										
28. lead students to use information technologies legally, ethically, safely, and with respect to copyrights										
29. use ICT to manage classes										
30. prepare, plan and deliver teaching using ICT										
31. assess student learning with ICT										
TPACK (Technological Pedagogical and Content Knowledge)										
32. support students as they use technology to develop their language skills in an independent manner										
33. design real-life tasks through which students use ICT to learn English										
34. evaluate software, tasks and students' performance in a technologically-rich class										

	How useful do you consider it will be for you to be able to …					How confident are you that you have the knowledge, skills and abilities to …				
Please tick (V) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
35. use technological tools and resources to continuously improve the language teaching process										

SECTION 4: ICT USES

	How useful do you consider it will be for you?					How confident are you when you use the following ICT…?				
Please tick (V) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
In EFL teaching practice										
1. Internet Browsing										
2. Email Communication										
3. Data Projector										
4. Digital Camera										
5. Printer										
6. Social networking (e.g. Face book)										
7. Word processing (e.g. MS Word)										
8. Slideshow (PowerPoint)										
9. Spread sheet (e.g. Excel)										
10. Databases										
11. Mobile phones with internet access										
12. E-journals										
13. Web designing										
Others (specify)										

Are there any of these ICT tools that you do not currently use but would like to use in the future?
If so what additional support would you need to be able to apply ICT successfully in the future?

(a) ICT- related professional training at the University
(b) ICT facilities for EFL learning and teaching
(c) EFL lecturers' shares of technological resources such as learning and teaching materials
(d) ICT integration into EFL learning and teaching workshops by the youth union
(e) Other support

SECTION 5: FACTORS THAT AFFECT ON YOUR ICT USE

1. To what extend do you agree or disagree with the following statement?

Please tick (v) the box that reflects your opinion	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Rationale for ICT use					
1. I use ICT because I am aware of its benefits					
2. I use ICT due to my personal preference					
3. I use ICT due to the pressure from my lecturers					
Experiences of ICT use in teaching					
4. I do not have enough time to use ICT					
5. It is expensive to use ICT					
6. I believe that ICT increases workloads for teachers					
7. Technical problems often happen and waste a lot of time					
8. The speed of the Internet connection at university discourages us from using ICT					
Access to equipment					
9. The university offers adequate technology for EFL teaching					
10. I have limited access to university computers					
11. The computers rarely have technical problems					
12. Most of the university's computers have software that I can use for language learning and teaching practice					
Support for ICT use					
13. The content of ICT training meets my need					
14. I cannot solve technical problems when they occur					
15. The university offers adequate maintenance and support for technology resources					
16. The university offers workshops with open lab time specialised personnel available					
17. The university offers online tutorials and technical instruction during class time					
18. The university offers training for lecturers to upgrade their skills and learn new ones					

2. Are you aware of any other enabling factors for ICT use in your learning and teaching practice?
3. Are you aware of any other inhibiting factors for ICT use in your learning and teaching practice?

According to the research plan, I propose to conduct follow-up interviews of approximately 45 minutes. The times for these interviews will be negotiated to suit those who agree to participate and will be conducted at the university where you work. Should you volunteer, you will be provided with additional information when you are contacted and can withdraw your agreement to participate at any time. If you would like to participate voluntarily, please provide me with your contact details below:

Telephone: ……..

Email: ……..

THANK YOU VERY MUCH FOR YOUR COOPERATION AND SUPPORT!

Questionnaire for Pre-Service Teachers

NOTES
In this survey, the term, ICT refers, but is not limited, to the following:
Computers and related devices (e.g. laptop, printer)
Mobile devices (e.g. tablet PC, iPad, iPod, smartphone)
Interactive whiteboard
Digital camera/camcorder
Internet (e.g. browsing and information sharing, online learning, communication via emails, blog, social networks, audio-/video- conference)
Educational software and applications
Other software (e.g. word processing, presentation, data management, webpage design/management)

SECTION 1: DEMOGRAPHIC INFORMATION

1. Gender:	
	Male/Female

2. Date of birth:
3. Hometown: In the Countryside/ In the City

4. Educational background		
General education	In the Countryside	In the City
Primary school		
Secondary school		
High school		

5. I own:	
	a computer with internet access
	a computer without internet access
	I do not own a computer
Other electronic devices:	

6. How often was ICT used in your education to support your learning?

General education	Never	Sometimes	About half of the time	Most of the time	Always
Primary school					
Secondary school					
High school					

7. Application School:

	Public school	Private school	Gifted school
Primary School			
Secondary School			
High school			

8. How many weeks did you experience at your practice school?

9. How many teaching hours did you teach at your practice school?

SECTION 2: ICT IN EFL TEACHER EDUCATION

As part of the ICT and EFL improvement, the government has developed a range of policies to promote the use of ICT to improve English teaching and learning. These policies include a

commitment to provide infrastructure and the expectation that educators would increase their use of ICT in teaching and learning.

1. What do you know about these policies?

2. How do you think these policies have impacted your training to be an English teacher?

3 & 4. Availability and Access to ICT at the University

Available (V)	ICT tools for EFL teacher education	How often do you access to ICT tools in a week?			
		None	1-2 times	3-4 times	Over 5 times
	Language Laboratory				
	Internet/wifi				
	Computer				
	Mobile devices (e.g. tablet PC, iPad)				
	Interactive whiteboard				
	Digital camera/camcorder				
	Radio-Cassette / CD player				
	Projection				
	Overhead projector				
	TV-Video Player				
	Educational software and applications				
	Others				

5. How do you think the curriculum promotes technology integration in EFL teaching?

Please tick (V) the box that reflects your opinion	Strongly disagree	disagree	neutral	agree	Strongly agree
1. It presents technology integration as an important issue to improve my teaching approaches in the future					
2. It presents technology integration as a serious demand for the society's technological transformation					
3. It explains how to integrate technology into my teaching					
4. It provides me with adequate training and skills to integrate technology into my teaching					
5. Technology integration goals and objectives in the EFL teacher education program are clearly explained					

SECTION 3: ICT PERCEPTIONS, KNOWLEDGE AND SKILLS

	How useful do you consider it will be for you to be able to …					**How confident are you that you have the knowledge, skills and abilities to …**				
Please tick (v) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
TK (Technology knowledge)										
1. adjust computer settings such as installing software and establishing an Internet connection										
2. use computer peripherals such as a printer, a headphone, and a scanner										
3. troubleshoot common computer problems (e.g. printer problems, Internet connection problems, etc.) independently										
4. use digital classroom equipment such as projectors and smart boards										
5. use Office programs (i.e. Word, PowerPoint, etc.) with a high level of proficiency										
6. create multimedia (e.g. video, web pages, etc.) using text, pictures, sound, video, and animation										
7. use collaboration tools (wiki, Edmodo, 3D virtual environments, etc.) in accordance with my objectives										
CK (Content Knowledge)										
8. express my ideas and feelings by speaking in English										
9. express my ideas and feelings by writing in English										
10. understand texts written in English										
11. understand the speech of a native English speaker easily										
12. have the knowledge to teach English language skills such as vocabulary usage and conversation										
13. have the knowledge to teach linguistic knowledge such as knowledge of English sound, word-formation and syntax										

	How useful do you consider it will be for you to be able to …					**How confident are you that you have the knowledge, skills and abilities to …**				
Please tick (v) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
14. have the knowledge to teach cultural understanding of English-speaking countries.										
PK (Pedagogical Knowledge)										
15. have knowledge about general learning theories										
16. prepare, plan and deliver teaching										
17. manage a classroom learning environment										
18. evaluate students' learning processes										
PCK (Pedagogical Content Knowledge)										
19. select effective teaching strategies to guide students' learning in the EFL context										
20. have knowledge about the ways students interact to negotiate meaning in English.										
21. adapt a lesson plan in accordance with students' language skill levels										
TCK (Technological Content Knowledge)										
22. take advantage of multimedia (e.g. video, slideshow, etc.) to express my ideas about various topics in English.										
23. use collaboration tools to work collaboratively with foreign persons										
24. have knowledge about technological applications for teaching English language skills										
25. have knowledge about technological applications for teaching English linguistic knowledge										
26. have knowledge about technological applications for teaching English culture										
TPK (Technological Pedagogical Knowledge)										
27. have knowledge about learning theories with ICT										
28. lead students to use information technologies legally, ethically, safely, and with respect to copyrights										

	How useful do you consider it will be for you to be able to …					How confident are you that you have the knowledge, skills and abilities to …				
Please tick (v) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
29. use ICT to manage classes										
30. prepare, plan and deliver teaching using ICT										
31. assess student learning with ICT										
TPACK (Technological Pedagogical and Content Knowledge)										
32. support students as they use technology to develop their language skills in an independent manner										
33. design real-life tasks through which students use ICT to learn English										
34. evaluate software, tasks and students' performance in a technologically-rich class										
35. use technological tools and resources to continuously improve the language teaching process										

SECTION 4: ICT USES

	How useful do you consider it will be for you?					How confident are you when you use the following ICT…?				
Please tick (v) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
1. In EFL learning										
1. Internet Browsing										
2. Email Communication										
3. Data Projector										
4. Digital Camera										
5. Printer										
6. Social networking (e.g. Face book)										
7. Word processing (e.g. MS Word)										
8. Slideshow (PowerPoint)										
9. Spread sheet (e.g. Excel)										
10. Databases										

	How useful do you consider it will be for you?					How confident are you when you use the following ICT…?				
Please tick (v) the box that reflects your opinion	Not confident	Moderately confident	Confident	Extremely confident	Unable to judge	Not useful	Moderately useful	Useful	Extremely useful	Unable to judge
11. Mobile phones with internet access										
12. E-journals										
13. Web designing										
Others (specify)										
2. In EFL teaching practice										
1. Internet Browsing										
2. Email Communication										
3. Data Projector										
4. Digital Camera										
5. Printer										
6. Social networking (e.g. Face book)										
7. Word processing (e.g. MS Word)										
8. Slideshow (PowerPoint)										
9. Spread sheet (e.g. Excel)										
10. Databases										
11. Mobile phones with internet access										
12. E-journals										
13. Web designing										
Others (specify)										

3 & 4. Availability of ICT tools and access to during teaching practice

Available (V)	ICT tools for EFL teaching practice	How many times have you benefited from ICT tools during teaching practice?			
		None	1-2 times	3-4 times	More than 5 times
	Language Laboratory				
	Internet/wifi				
	Computer				
	Mobile devices (e.g. tablet PC, iPad)				
	Interactive whiteboard				
	Digital camera/camcorder				
	Radio-Cassette / CD player				
	Projection				
	Overhead projector				
	TV-Video Player				
	Educational software and applications				
	Others				

5. Are there any of these ICT tools that you do not currently use but would like to use in the future? If so what additional support would you need to be able to apply ICT successfully in the future?

a) ICT- related professional training at the University
b) ICT facilities for EFL learning and teaching
c) EFL lecturers' shares of technological resources such as learning and teaching materials
d) ICT integration into EFL learning and teaching workshops by the youth union
e) Other support

SECTION 5: FACTORS THAT AFFECT ON YOUR ICT USE

1. To what extend do you agree or disagree with the following statement?

Please tick (v) the box that reflects your opinion	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Rationale for ICT use					
1. I use ICT because I am aware of its benefits					
2. I use ICT due to my personal preference					
3. I use ICT due to the pressure from my lecturers					
Experiences of ICT use in teaching					
4. I do not have enough time to use ICT					
5. It is expensive to use ICT					
6. I believe that ICT increases workloads for teachers					
7. Technical problems often happen and waste a lot of time					
8. The speed of the Internet connection at university discourages us from using ICT					
Access to equipment					
9. The university offers adequate technology for students (i.e. Labs, wireless access points)					
10. I have limited access to university computers					
11. The computers rarely have technical problems					
12. Most of the university's computers have software that I can use for language learning and teaching practice					
Support for ICT use					
13. The content of ICT training meets my need					
14. I cannot solve technical problems when they occur					
15. The university offers adequate maintenance and support for technology resources					
16. The university offers workshops with open lab time specialised personnel available					
17. The university offers online tutorials and technical instruction during class time					
18. The university offers training for pre-service teachers to upgrade their skills and learn new ones					

2. Are you aware of any other enabling factors for ICT use in your learning and teaching practice?

3. Are you aware of any other inhibiting factors for ICT use in your learning and teaching practice?

According to the research plan, I propose to conduct follow-up focus groups of approximately 45 minutes. The times for these focus groups will be negotiated to suit those who agree to participate and will be conducted at the university where you study. Should you volunteer, you will be provided with additional information when you are contacted and can withdraw your agreement to participate at any time. If you would like to participate voluntarily, please provide me with your contact details below:

Telephone: ……..
Email: ……..

THANK YOU VERY MUCH FOR YOUR COOPERATION AND SUPPORT!

Appendix C
Interview Protocol for Managers, Lecturers and Pre-Service Teachers

Interview Protocol for Managers

Interview code:	Date:	Duration:	Site:
Age:	Responsibilities:	Education:	Experience:

Main sections	Questions (main and probe)
National ICT policy and support	• Have you ever taken part in an ICT-based project? What was your role in that project? • What do you know about ICT policies for language teaching? • How do you think these policies impact the EFL teacher training at the University? • What role does the Vietnamese government and MOET play in facilitating the ICT implementation?
Policy translation	• Do you consider ICT a supplementary or a foundational component of the EFL teacher training program? Why? • Is there an overall plan for the integration of ICT into EFL teaching and learning at the University? If yes: Where can teachers find it? What is the specific objectives for ICT use at your faculty? Who is involved in this plan development? If no: Who makes the decision about how ICT will be integrated? • What did you do to support the ICT implementation process? • Are there any other types of support you plan to provide?
Resources	• What ICT resources are currently available for EFL teaching? • Do you think they are sufficient to support the integration of ICT? Why (not)? • Do you think there is sufficient financial support for the integration of ICT at your faculty? What is the source of these funds?
Training and technical support	• What ICT training have the EFL lecturers been provided? How often? Where? How efficient? • How do the curricular subjects prepare the EFL pre-service to integrate ICT into their learning and teaching practice? What course? How is organized it? How efficient? • Is there sufficient technical support for ICT integration into the EFL teaching? How is this support organized? How do lecturers/pre-service teachers access the support?

Main sections	Questions (main and probe)
	When do they access it?
Evaluation and assessment	• Is there routine evaluation and assessment of ICT integration? How is it organized? • Is there an investigation of teachers' and students' needs in relation to ICT resources, training and technical support? How is this assessment undertaken? • Is there a system of incentives, rewards or recognition for good use of ICT at the university? If a teacher uses ICT well in their teaching, are they rewarded? If a teacher does not use ICT in teaching, what are the consequences?
Suggestion	• What are the factors facilitating the implementation of ICT in EFL teaching? • What are the factors inhibiting the implementation of ICT in EFL teaching? • What do you suggest to overcome the inhibitors? • What are major requirements for supporting the implementation of ICT policy in EFL teaching?

Interview Protocol for Lecturers

Interview code:	Date:	Duration:	Site:
Age:	Responsibilities:	Education:	Experience:

Main sections	Questions (main and probe)
ICT beliefs and attitudes	• What do you think about the role of ICT in your teaching practice? Do you consider ICT a supplementary or a foundational component of the EFL teacher training program? Why? • How do you implement technology in your teaching approaches? What types of ICT facilities do you usually employ? What do you expect from integrating ICT in your teaching approaches? Are you satisfy with the results? • Can you give me an example of your ICT use in your classroom practice? • What are the benefits and challenges of your ICT integration?
National ICT policy and support	• Have you ever taken part in an ICT-based project? What was your role in that project? • What do you know about ICT policies for language teaching? • How do you think these policies impact the EFL teacher training at the University? • What role does the Vietnamese government and MOET play in facilitating the ICT implementation?
Leadership support	• Is there an overall plan for the integration of ICT into EFL teaching and learning at the University? If yes: Where can teachers find it? What is the specific objectives for ICT use at your faculty? Who is involved in this plan development? How does the plan affect your ICT integration? If no: Who makes the decision about how ICT will be integrated? • What did the managers do to support the ICT implementation process? • Are there any other types of support they plan to provide?
Resources	• What ICT resources are currently available for EFL teaching? • Do you think they are sufficient to support the integration of ICT? If so, why do you think that they are? If not, why are they not adequate/what additional facilities do you think are needed?
ICT training, technical support	For EFL lecturers • What ICT training have the EFL lecturers been provided? How often? Where? How efficient? • What additional ICT training do you plan to participate? For EFL pre-service teachers

	• How do the curricular subjects prepare the EFL pre-service to integrate ICT into their learning and teaching practice? What course? How is organized it? How efficient? • How do the pre-service teachers integrate ICT into their learning and teaching practice? What types of ICT facilities do they usually use? What is the purpose of their ICT use? How do you evaluate their ICT knowledge and skills? • What additional ICT training do you think is necessary for the pre-service teachers? • Is there sufficient technical support for ICT integration into the EFL teaching? How is this support organized? How do lecturers/pre-service teachers access the support? When do lecturers/pre-service teachers access it?
Evaluation and assessment	• Is there routine evaluation and assessment of ICT integration? How is it organized? • Is there an investigation of teachers' and students' needs in relation to ICT resources, training and technical support? How is this assessment undertaken? • Is there a system of incentives, rewards or recognition for good use of ICT at the university? If a teacher uses ICT well in their teaching, are they rewarded? If a teacher does not use ICT in teaching, what are the consequences?
Suggestion	• What are the factors facilitating the implementation of ICT in EFL teaching? • What are the factors inhibiting the implementation of ICT in EFL teaching? • What are your suggestions to overcome the inhibitors? • What are major requirements for supporting the implementation of ICT policy in EFL teaching?

Interview Protocol for Pre-Service Teachers

Interview code:	Date:	Duration:	Site:
ICT ownership	Practicum site	Total teaching hours/Practicum	Total hours with ICT use in practicum

Main sections	Questions (main and probe)
ICT beliefs and attitudes	• What do you think about the role of ICT in your undergraduate course? • How do you implement technology in your learning/teaching practice? What types of ICT facilities do you usually employ? What do you expect from your ICT integration? Are you satisfy with the results? • Can you give me an example of your ICT use in your learning/teaching practice? • What are the benefits and challenges of your ICT integration?
National ICT policy and support	• What do you know about ICT policies for language teaching? • How do you think these policies impact the EFL teacher training at the University?
Leadership support	• What did the faculty managers do to support the ICT implementation process? • Are there any other types of support they plan to provide?
Resources	• What ICT resources are currently available for EFL teaching at the university/in your practicum course? • Do you think they are sufficient to support the integration of ICT? If so, why do you think that they are? If not, why are they not adequate/what additional facilities do you think are needed?
ICT training, technical support	• How do the curricular subjects prepare the EFL pre-service to integrate ICT into their learning and teaching practice? What course? How is organized it? How efficient? • What additional ICT training do you plan to participate? • How do the EFL lecturers integrate ICT into their teaching practice? What types of ICT facilities do they usually use? What is the purpose of their ICT use? How do you evaluate their ICT knowledge and skills? • Do you think that lecturers' ICT knowledge and skills affect pre-service teachers' ICT integration? How? • Do you think your classmates affect your ICT use? How? • Is there sufficient technical support for ICT integration into the EFL teaching? How is this support organized?

Main sections	Questions (main and probe)
	How do lecturers/pre-service teachers access the support? When do lecturers/pre-service teachers access it?
Evaluation and assessment	• Is there a separate evaluation and assessment of your ICT integration at the university/in your practicum course? How is it organized? • Is there an investigation of students' needs in relation to ICT resources, training and technical support? How is this assessment undertaken? • Is there a system of incentives, rewards or recognition for good use of ICT at the university? If a pre-service teacher uses ICT well in their teaching, are they rewarded? If a pre-service teacher does not use ICT in teaching, what are the consequences?
Suggestion	• What are the factors facilitating the implementation of ICT in EFL teaching? • What are the factors inhibiting the implementation of ICT in EFL teaching? • What are your suggestions to overcome the inhibitors? • What are major requirements for supporting the implementation of ICT policy in EFL teaching?

APPENDIX D
Descriptive Results of TPACK Usefulness and Confidence for Lecturers and Pre-Service Teachers

Descriptive Results of TPACK Usefulness for Lecturers

Technology knowledge (TK)	Extremely useful (4) %	Useful (3) %	Moderately useful (2) %	Not useful (1) %	M	SD
TK1: adjust computer settings	22.6	58.1	6.5	6.5	2.97	.80
TK2: use computer peripherals	22.6	58.1	9.7	9.7	2.94	.85
TK3: troubleshoot common computer problems	25.8	45.2	16.1	12.9	2.84	.97
TK4: use digital classroom equipment	23.3	60.0	13.3	3.3	3.03	.72
TK5: use Office programs	45.2	51.6	3.2	0.0	3.42	.56
TK6: create multimedia	29.0	51.6	16.1	3.2	3.06	.77
TK7: use collaboration tools	19.4	38.7	25.8	16.1	2.61	.99
Content knowledge (CK)	4	3	2	1	M	SD
CK1: speak in English	29.0	58.1	12.9	0.0	3.16	.64
CK2: write in English	32.3	61.3	6.5	0.0	3.26	.58
CK3: understand English written texts	22.6	51.6	25.8	0.0	2.97	.71
CK4: understand native English speaker speech	35.5	51.6	12.9	0.0	3.23	.67
CK5: teach English language skills such as vocabulary usage and conversation	51.6	48.4	0.0	0.0	3.52	.51
CK6: teach linguistic knowledge such as knowledge of English sound, word-formation and syntax	45.2	48.4	6.5	0.0	3.39	.62
CK7: teach cultural understanding of English-speaking countries	54.8	38.7	6.5	0.0	3.48	.63
Pedagogical knowledge (PK)	4	3	2	1	M	SD
PK1: have knowledge about general learning theories	35.5	38.7	25.8	0.0	3.10	.79
PK2: prepare, plan and deliver teaching	71.0	29.0	0.0	0.0	3.71	.46
PK3: manage a classroom learning environment	25.8	67.7	6.5	0.0	3.19	.54
PK4: evaluate students' learning processes	25.8	45.2	29.0	0.0	2.97	.75
Pedagogical content knowledge	4	3	2	1	M	SD
PCK1: select effective teaching strategies to guide students' learning in the EFL context	41.9	54.8	3.2	0.0	3.39	.56
PCK2: have knowledge about the ways students interact to negotiate meaning in English	6.5	54.8	38.7	0.0	2.68	.60
PCK3: adapt a lesson plan in accordance with students' language skill levels	54.8	41.9	3.2	0.0	3.52	.57

Technological content knowledge (TCK)	Extremely useful (4) %	Useful (3) %	Moderately useful (2) %	Not useful (1) %	M	SD
TCK1: take advantage of multimedia to express my ideas about various topics in English	19.4	77.4	3.2	0.0	3.16	.45
TCK2: use collaboration tools to work collaboratively with foreign persons	25.8	58.1	12.9	3.2	3.06	.73
TCK 3: have knowledge about technological applications for teaching English language skills	32.3	54.8	12.9	0.0	3.19	.65
TCK 4: have knowledge about technological applications for teaching English linguistic knowledge	67.7	25.8	3.2	3.2	3.58	.72
TCK 5: have knowledge about technological applications for teaching English culture	38.7	48.4	9.7	3.2	3.23	.76
Technological pedagogical knowledge (TPK)	4	3	2	1	M	SD
TPK1: have knowledge about learning theories with ICT	19.4	58.1	16.1	6.5	2.90	.79
TPK2: lead students to use information technologies legally, ethically, safely, and with respect to copyrights	6.5	77.4	16.1	0.0	2.90	.47
TPK3: use ICT to manage classes	33.3	56.7	10.0	0.0	3.23	.63
TPK4: prepare, plan and deliver teaching using ICT	74.2	22.6	3.2	0.0	3.71	.53
TPK5: assess student learning with ICT	25.8	67.7	3.2	3.2	3.16	.64
TPACK	4	3	2	1	M	SD
TPACK1: support students as they use ICT to develop their language skills in an independent manner	25.8	61.3	12.9	0.0	3.13	.62
TPACK 2: design real-life tasks through which students use ICT to learn English	41.9	48.4	9.7	0.0	3.32	.65
TPACK 3: evaluate software, tasks and students' performance in a technologically-rich class	19.4	32.3	45.2	3.2	2.68	.83
TPACK 4: use ICT tools and resources to continuously improve the language teaching process	35.5	58.1	6.5	0.0	3.29	.59

Descriptive Results of TPACK Usefulness for Pre-Service teachers

Technology knowledge (TK)	Extremely useful (4) %	Useful (3) %	Moderately useful (2) %	Not useful (1) %	M	SD
TK1: adjust computer settings	10.0	46.7	28.9	14.4	2.52	.86
TK2: use computer peripherals	10.0	42.2	33.3	14.4	2.48	.86
TK3: troubleshoot common computer problems	6.7	35.6	43.3	14.4	2.34	.81
TK4: use digital classroom equipment	12.2	47.8	32.2	7.8	2.64	.80
TK5: use Office programs	30.0	54.4	10.0	5.6	3.09	.79
TK6: create multimedia	12.2	43.3	36.7	7.8	2.60	.80
TK7: use collaboration tools	6.7	28.9	26.7	35.6	2.07	.97
Content knowledge (CK)	4	3	2	1	M	SD
CK1: speak in English	25.6	60.0	13.3	1.1	3.10	.65
CK2: write in English	28.9	53.3	17.8	0.0	3.11	.68
CK3: understand English written texts	34.4	52.2	13.3	0.0	3.21	.66
CK4: understand native English speaker speech	42.2	50.0	6.7	1.1	3.33	.65
CK5: teach English language skills such as vocabulary usage and conversation	52.2	41.2	5.6	1.1	3.44	.66
CK6: teach linguistic knowledge such as knowledge of English sound, word-formation and syntax	42.2	48.9	7.8	1.1	3.32	.67
CK7: teach cultural understanding of English-speaking countries	58.9	34.4	5.6	1.1	3.51	.66
Pedagogical knowledge (PK)	4	3	2	1	M	SD
PK1: have knowledge about general learning theories	34.4	57.8	6.7	1.1	3.26	.63
PK2: prepare, plan and deliver teaching	71.1	26.7	2.2	0.0	3.69	.51
PK3: manage a classroom learning environment	44.9	44.9	10.1	0.0	3.35	.66
PK4: evaluate students' learning processes	38.9	52.2	6.7	2.2	3.28	.69
Pedagogical content knowledge (PCK)	4	3	2	1	M	SD
PCK1: select effective teaching strategies to guide students' learning in the EFL context	46.7	44.4	8.9	0.0	3.38	.65
PCK2: have knowledge about the ways students interact to negotiate meaning in English	6.7	46.7	45.6	1.1	2.59	.63
PCK3: adapt a lesson plan in accordance with students' language skill levels	47.8	46.7	4.4	1.1	3.41	.63

Technological content knowledge-Pre	Extremely useful (4) %	Useful (3) %	Moderately useful (2) %	Not useful (1) %	M	SD
TCK1: take advantage of multimedia to express my ideas about various topics in English	40.0	52.2	6.7	1.1	3.31	.65
TCK2: use collaboration tools to work collaboratively with foreign persons	20.0	73.3	3.3	3.3	3.10	.60
TCK 3: have knowledge about technological applications for teaching English language skills	46.7	46.7	5.6	1.1	3.39	.65
TCK 4: have knowledge about technological applications for teaching English linguistic knowledge	70.0	23.3	6.7	0.0	3.63	.61
TCK 5: have knowledge about technological applications for teaching English culture	53.3	40.0	5.6	1.1	3.46	.66
Technological pedagogical knowledge (PCK)	4	3	2	1	M	SD
TPK1: have knowledge about learning theories with ICT	43.3	50.0	5.6	1.1	3.36	.64
TPK2: lead students to use information technologies legally, ethically, safely, and with respect to copyrights	22.2	75.6	1.1	1.1	3.19	.49
TPK3: use ICT to manage classes	41.1	53.3	4.4	1.1	3.34	.62
TPK4: prepare, plan and deliver teaching using ICT	76.7	21.1	2.2	0.0	3.74	.49
TPK5: assess student learning with ICT	45.6	47.8	6.7	0.0	3.39	.61
TPACK	4	3	2	1	M	SD
TPACK1: support students as they use ICT to develop their language skills in an independent manner	46.7	48.9	4.4	0.0	3.42	.58
TPACK 2: design real-life tasks through which students use ICT to learn English	47.8	46.7	5.6	0.0	3.42	.60
TPACK 3: evaluate software, tasks and students' performance in a technologically-rich class	22.2	38.9	35.6	3.3	2.80	.82
TPACK 4: use ICT tools and resources to continuously improve the language teaching process	45.6	46.7	7.8	0.0	3.38	.63

Descriptive Results of TPACK Confidence for Lecturers

Technology knowledge (TK)	Extremely confident (4) %	Confident (3) %	Moderately confident (2) %	Not confident (1) %	M	SD
TK1: adjust computer settings	19.4	58.1	22.6	0.0	2.97	.66
TK2: use computer peripherals	29.0	51.6	16.1	3.2	3.06	.77
TK3: troubleshoot common computer problems	12.9	58.1	22.6	6.5	2.77	.76
TK4: use digital classroom equipment	33.3	46.7	20.0	0.0	3.13	.73
TK5: use Office programs	51.6	41.9	6.5	0.0	3.45	.62
TK6: create multimedia	25.8	45.2	29.0	0.0	2.97	.75
TK7: use collaboration tools	10.0	33.3	43.3	13.3	2.40	.86
Content knowledge (CK)	4	3	2	1	M	SD
CK1: speak in English	9.7	71.0	19.4	0.0	2.90	.54
CK2: write in English	19.4	61.3	19.4	0.0	3.00	.63
CK3: understand English written texts	32.3	54.8	12.9	0.0	3.19	.65
CK4: understand native English speaker speech	16.1	61.3	19.4	3.2	2.90	.70
CK5: teach English language skills such as vocabulary usage and conversation	29.0	58.1	12.9	0.0	3.16	.64
CK6: teach linguistic knowledge such as knowledge of English sound, word-formation and syntax	19.4	48.4	32.3	0.0	2.87	.72
CK7: teach cultural understanding of English-speaking countries	9.7	51.6	38.7	0.0	2.71	.64
Pedagogical knowledge (PK)	4	3	2	1	M	SD
PK1: have knowledge about general learning theories	9.7	35.5	54.8	0.0	2.55	.68
PK2: prepare, plan and deliver teaching	32.3	64.5	3.2	0.0	3.29	.53
PK3: manage a classroom learning environment	25.8	58.1	16.1	0.0	3.10	.65
PK4: evaluate students' learning processes	25.8	51.6	22.6	0.0	3.03	.71
Pedagogical content knowledge (PCK)	4	3	2	1	M	SD
PCK1: select effective teaching strategies to guide students' learning in the EFL context	9.7	77.4	12.9	0.0	2.97	.48
PCK2: have knowledge about the ways students interact to negotiate meaning in English	22.6	48.4	29.0	0.0	2.94	.73
PCK3: adapt a lesson plan in accordance with students' language skill levels	41.9	41.9	12.9	3.2	3.23	.80

Technology content knowledge (TCK)	Extremely confident (4) %	Confident (3) %	Moderately confident (2) %	Not confident (1) %	M	SD
TCK1: take advantage of multimedia to express my ideas about various topics in English	19.4	54.8	19.4	6.5	2.87	.81
TCK2: use collaboration tools to work collaboratively with foreign persons	12.9	32.3	51.6	3.2	2.55	.77
TCK 3: have knowledge about technological applications for teaching English language skills	6.5	54.8	35.5	3.2	2.65	.66
TCK 4: have knowledge about technological applications for teaching English linguistic knowledge	9.7	54.8	32.3	3.2	2.71	.69
TCK 5: have knowledge about technological applications for teaching English culture	3.2	29.0	41.9	25.8	2.10	.83
Technology pedagogical knowledge (TPK)	4	3	2	1	M	SD
TPK1: have knowledge about learning theories with ICT	6.5	48.4	38.7	6.5	2.55	.72
TPK2: lead students to use information technologies legally, ethically, safely, and with respect to copyrights	9.7	29.0	54.8	6.5	2.42	.76
TPK3: use ICT to manage classes	10.0	46.7	43.3	0.0	2.67	.66
TPK4: prepare, plan and deliver teaching using ICT	19.4	77.4	3.2	0.0	3.16	.45
TPK5: assess student learning with ICT	9.7	54.8	32.3	3.2	2.71	.69
TPACK	4	3	2	1	M	SD
TPACK1: support students as they use ICT to develop their language skills in an independent manner	16.7	36.7	46.7	0.0	2.70	.75
TPACK 2: design real-life tasks through which students use ICT to learn English	12.9	41.9	45.2	0.0	2.68	.70
TPACK 3: evaluate software, tasks and students' performance in a technologically-rich class	0.0	22.6	41.9	35.5	1.87	.76
TPACK 4: use ICT tools and resources to continuously improve the language teaching process	12.9	41.9	41.9	3.2	2.65	.75

Descriptive Results of TPACK Confidence for Pre-Service Teachers

Technology knowledge	Extremely confident (4) %	Confident (3) %	Moderately confident (2) %	Not confident (1) %	M	SD
TK1: adjust computer settings	31.1	50.0	17.8	1.1	3.11	.73
TK2: use computer peripherals	26.7	50.0	21.1	1.1	3.03	.73
TK3: troubleshoot common computer problems	30.0	57.8	8.9	3.3	3.14	.71
TK4: use digital classroom equipment	35.6	53.3	8.9	2.2	3.22	.70
TK5: use Office programs	51.1	43.3	4.4	0.0	3.47	.59
TK6: create multimedia	34.4	42.2	21.1	2.2	3.09	.80
TK7: use collaboration tools	23.9	39.8	32.2	3.3	2.84	.83
Content knowledge (CK)	4	3	2	1	M	SD
CK1: speak in English	4.4	47.8	41.1	6.7	2.50	.69
CK2: write in English	8.9	36.7	50.0	4.4	2.50	.72
CK3: understand English written texts	6.7	52.2	36.7	4.4	2.61	.68
CK4: understand native English speaker speech	5.6	32.2	46.7	15.6	2.28	.79
CK5: teach English language skills such as vocabulary usage and conversation	10.0	48.9	33.3	7.8	2.61	.77
CK6: teach linguistic knowledge such as knowledge of English sound, word-formation and syntax	7.8	42.2	43.3	6.7	2.51	.74
CK7: teach cultural understanding of English-speaking countries	7.8	31.1	42.2	18.9	2.28	.86
Pedagogical knowledge (PK)	4	3	2	1	M	SD
PK1: have knowledge about general learning theories	7.8	23.3	65.6	3.3	2.36	.68
PK2: prepare, plan and deliver teaching	13.3	72.2	14.4	0.0	2.99	.53
PK3: manage a classroom learning environment	11.1	52.2	30.0	6.7	2.68	.76
PK4: evaluate students' learning processes	4.4	58.9	32.2	4.4	2.63	.64
Pedagogical content knowledge (PCK)	4	3	2	1	M	SD
PCK1: select effective teaching strategies to guide students' learning in the EFL context	2.2	45.6	36.7	15.6	2.34	.77
PCK2: have knowledge about the ways students interact to negotiate meaning in English	5.6	23.3	55.6	15.6	2.19	.76
PCK3: adapt a lesson plan in accordance with students' language skill levels	7.8	42.2	44.4	5.6	2.52	.72

Technology content knowledge (TCK)	Extremely confident (4) %	Confident (3) %	Moderately confident (2) %	Not confident (1) %	M	SD
TCK1: take advantage of multimedia to express my ideas about various topics in English	5.6	48.9	36.7	8.9	2.51	.74
TCK2: use collaboration tools to work collaboratively with foreign persons	4.4	41.1	36.7	17.8	2.32	.82
TCK 3: have knowledge about technological applications for teaching English language skills	8.9	43.3	43.3	4.4	2.57	.72
TCK 4: have knowledge about technological applications for teaching English linguistic knowledge	11.1	37.8	43.3	7.8	2.52	.80
TCK 5: have knowledge about technological applications for teaching English culture	6.7	22.2	45.6	25.6	2.10	.86
Technology pedagogical knowledge (TPK)	4	3	2	1	M	SD
TPK1: have knowledge about learning theories with ICT	7.8	48.9	35.6	6.7	2.58	.74
TPK2: lead students to use information technologies legally, ethically, safely, and with respect to copyrights	7.8	31.1	37.8	23.3	2.23	.90
TPK3: use ICT to manage classes	6.7	42.2	44.4	6.7	2.49	.72
TPK4: prepare, plan and deliver teaching using ICT	16.7	48.9	31.1	3.3	2.79	.76
TPK5: assess student learning with ICT	7.8	53.3	31.1	7.8	2.61	.74
TPACK	4	3	2	1	M	SD
TPACK1: support students as they use ICT to develop their language skills in an independent manner	2.2	47.8	48.9	1.1	2.51	.57
TPACK 2: design real-life tasks through which students use ICT to learn English	7.8	42.2	36.7	13.3	2.44	.82
TPACK 3: evaluate software, tasks and students' performance in a technologically-rich class	4.4	15.6	46.7	33.3	1.91	.82
TPACK 4: use ICT tools and resources to continuously improve the language teaching process	6.7	45.6	43.3	4.4	2.54	.69

Appendix E
Relationship between Demographics and TPACK Components for Lecturers and Pre-Service Teachers

Demographics and TPACK Components for Lecturers

Gender		**Male**		**Female**	
TPACK		Mean	SD	Mean	SD
TK	Useful	3.02	0.80	2.95	0.80
	Confident	2.96	0.68	2.97	0.78
CK	Useful	3.27	0.65	3.29	0.59
	Confident	3.00	0.72	2.94	0.59
PK	Useful	3.13	0.63	3.32	0.64
	Confident	3.12	0.68	2.90	0.60
PCK	Useful	3.05	0.62	3.30	0.53
	Confident	3.08	0.58	3.02	0.67
TCK	Useful	3.05	0.75	3.39	0.55
	Confident	2.68	0.84	2.50	0.67
TPK	Useful	3.08	0.62	3.26	0.59
	Confident	2.75	0.71	2.66	0.63
TPACK	Useful	3.00	0.66	3.18	0.67
	Confident	2.58	0.60	2.40	0.71
Teaching experience		**Under 15 years**		**From 15 years**	
TPACK		Mean	SD	Mean	SD
TK	Useful	2.83	0.92	3.14	0.64
	Confident	2.94	0.72	2.99	0.77
CK	Useful	3.26	0.65	3.31	0.60
	Confident	2.79	0.67	3.15	0.57
PK	Useful	3.22	0.71	3.27	0.56
	Confident	2.81	0.63	3.18	0.61
PCK	Useful	3.21	0.61	3.18	0.55
	Confident	2.85	0.70	3.24	0.59
TCK	Useful	3.15	0.80	3.35	0.48
	Confident	2.36	0.72	2.80	0.73
TPK	Useful	3.10	0.69	3.27	0.48
	Confident	2.57	0.70	2.84	0.60
TPACK	Useful	3.30	0.66	2.90	0.64
	Confident	2.23	0.74	2.73	0.66

Teaching load		**Under 10 hours/week**		**From 10 hours/week**	
TPACK		Mean	SD	Mean	SD
TK	Useful	2.98	0.87	2.98	0.74
	Confident	2.87	0.79	3.08	0.66
CK	Useful	3.34	0.63	3.22	0.61
	Confident	2.97	0.67	2.95	0.61
PK	Useful	3.34	0.58	3.13	0.67
	Confident	2.97	0.71	3.02	0.56
PCK	Useful	3.24	0.60	3.14	0.56
	Confident	2.96	0.70	3.14	0.61
TCK	Useful	3.22	0.76	3.27	0.51
	Confident	2.58	0.79	2.57	0.71
TPK	Useful	3.19	0.58	3.18	0.65
	Confident	2.56	0.73	2.77	0.56
TPACK	Useful	3.06	0.69	3.16	0.67
	Confident	2.50	0.80	2.44	0.69

Demographics and TPACK Components for Pre-Service Teachers

Gender		**Male**		**Female**	
TPACK		Mean	SD	Mean	SD
TK	Useful	2.60	0.92	2.53	0.83
	Confident	3.02	0.97	3.14	0.69
CK	Useful	3.02	0.97	3.31	0.62
	Confident	2.24	0.73	2.50	0.75
PK	Useful	3.36	0.75	3.40	0.60
	Confident	2.75	0.62	2.65	0.65
PCK	Useful	2.93	0.76	3.15	0.62
	Confident	2.07	0.73	2.39	0.75
TCK	Useful	3.32	0.87	3.39	0.60
	Confident	2.32	0.71	2.42	0.80
TPK	Useful	3.28	0.85	3.42	0.53
	Confident	2.66	0.76	2.53	0.77
TPACK	Useful	3.18	0.73	3.27	0.65
	Confident	2.18	0.64	2.38	0.73
Hometown		**From the city**		**From the country**	
TPACK		Mean	SD	Mean	SD
TK	Useful	2.55	0.75	2.53	0.86
	Confident	3.20	0.63	3.12	0.74
CK	Useful	3.29	0.67	3.29	0.66
	Confident	2.70	0.76	2.42	0.74
PK	Useful	3.38	0.70	3.39	0.61
	Confident	2.68	0.62	2.66	0.66
PCK	Useful	3.18	0.55	3.12	0.65
	Confident	2.58	0.74	2.31	0.74
TCK	Useful	3.24	0.73	3.41	0.60
	Confident	2.48	0.77	2.39	0.79
TPK	Useful	3.32	0.58	3.42	0.57
	Confident	2.69	0.74	2.51	0.77
TPACK	Useful	3.17	0.72	3.27	0.64
	Confident	2.38	0.67	2.35	0.73

Appendix F
Main Contents and Time Allocation for Basic ICT Course

Unit code	Time allocation			Unit objectives
	T	**P**	**Self-study**	
IU01 & IU02 Essential computer	10	20	40	Concepts and terms in ICT Basic components of the computer; distinguish input device and output devices Unit of measurement of speed and unit of measurement of memory Software classification Computer network and communication; Internet services, social networks and e-portals Safety rules when using computers Information security issues: access control, security of data; prevention malware Some basic issues related to law in using IT: copyright, license Change the configuration of the computer screen, view system information Install and remove application software Manage files and folders Some software utility: compression and decompression, anti-virus software, file format conversion Install and share printers over the network
IU03 Word processing	15	30	60	Know some different word processing software: Office Writer, OpenOffice Writer... Use Microsoft Word to edit, text format; set the printing options Prepare and process administrative documents according to set form
IU04 Spreadsheets	15	30	60	Excel spreadsheet structure, data organisation in the spreadsheet Basic functions and formulas to solve math problem Sort, filter and statistics data Create graphs Spreadsheet format and print option set Spreadsheet
IU05	15	30	60	Design and present presentation

Unit code	Time allocation			Unit objectives
	T	**P**	**Self-study**	
Presentation				Use Microsoft PowerPoint to create slideshows Use the controls during the slide show Set up a slideshow printing option
IU06 Web browsing & Communication	5	10	20	Concepts and terms related to Internet services, Internet service providers, websites Use web browser utilities; searching for information on the Internet Use e-mail; communication and data sharing facilities; Social Network Electronic commerce and e-banking

Note: T=Theory; P=Practice