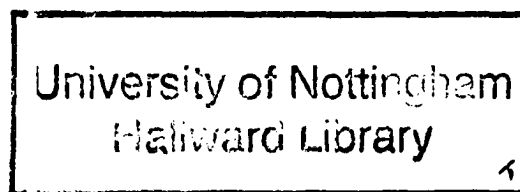




The University of
Nottingham

School of Education

ICT, EFL TEACHER DEVELOPMENT AND
THE REFORM OF COLLEGE ENGLISH IN CHINA:
AN IMPLEMENTATION STUDY



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ABSTRACT

The purpose of this study was to investigate ICT-related EFL teacher development in the context of Chinese national College English reform. Four aims were established. First, to examine the current situation in a specific institution from the perspectives of: 1) teachers' attitudes towards ICT use in the context of College English reform; 2) the integration of ICT in English classes; 3) provision of ICT support within current continuing professional development (CPD) programmes for EFL teachers. Second, to assess the suitability of the CPD policies and practices for EFL teachers as a way of supporting the national College English reform. Third, to identify key issues affecting the effective provision of CPD in relation to ICT for EFL teachers. Fourth, to suggest possible solutions to problems identified and directions for future research. The study employed a case study involving quantitative and qualitative methods in order to give an in-depth account of the process of implementation of the reform at particular point in time. The findings indicated that initially the majority of teachers had held positive attitudes towards ICT use in English teaching and the national reform, but their enthusiasm was waning in the light of inadequate support and training. The national reform had, however, stimulated the improvement of ICT competence of both teachers and students. At the same time, it had challenged EFL teachers to adapt to new teaching materials, student-centred classroom teaching and how to guide students in their autonomous learning. In terms of ICT-related CPD policies and practices, there existed a gap between the current policies in the provision of CPD and demand for this. Recommendations are made for future research and for improvements in policy and practice of ICT-related CPD for EFL teachers in China.

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KEY ACRONYMS

AAO	Academic Affairs Office
CALL	Computer-Assisted Language Learning
CBAM	Concerns-Based Adoption Model
CED	College English Department
CET	College English Test
CoP	communities of practice
CPD	continuing professional development
EFL	English as a Foreign Language
ELT	English language teaching
ESP	English for Specific Purposes
GER	gross enrolment rate
HE	higher education
HEIs	higher education institutions
ICT	Information and Communication Technologies
ICTLE	ICT for language education
IELTS	International English Language Test System
INSET	in-service education and training
LoU	Levels of Use
METC	Modern Educational Technology Centre
MOE	Ministry of Education
PCs	personal computers
PD	professional development

PO	Personnel Office
SoC	Stages of Concern
TD	teacher development
TMO	Teaching Management Office
TOEFL	Test of English as a Foreign Language
TESOL	Teaching English to Speakers of Other Languages
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Chapter One

Introduction

1.1 Background

Following its entry into the WTO in 2001 and successful bids for the Beijing Olympic Games in 2008 and Shanghai World Expos in 2010, China has become a world power with social and economic needs for professionals at different levels, among them qualified graduates who can use English competently. Of particular importance is proficiency in listening and speaking for effective communication in global interactions. However, the results of English language learning in Chinese higher education (HE) are generally recognised to have been disappointing in this respect, since most students graduated with ‘deaf and dumb English’ (Liu & Dai, 2003:8). It is clear that the old curriculum, syllabus and traditional pedagogy, i.e. prior to 2002, were not producing graduates with the level of English skills necessary to satisfy society’s needs and their personal needs for career development. This point will be discussed further in 3.2.3.

A further problem is that Chinese HE has experienced a rapid expansion of student numbers in the last few decades, and particularly in the last decade there has been a boom in enrolment. With more and more students coming into nearly 2000 higher education institutions (HEIs), the teacher-student ratio has increased sharply, particularly that of English as a foreign language (EFL) teachers and students whose majors are not English (for further discussion, see 3.2.1). To present this fact in a slightly different way, the rapid expansion of enrolment resulted in a great shortage of EFL teachers in colleges and

universities, with the EFL teacher-student ratio standing at nearly 1:200 in 2006 (Zhang, 2006).

In order to change the so-called 'time-consuming but low-efficient' (Li, 1998, cited in People's Daily, 2008) English learning situation in the country and solve the shortage of qualified EFL teachers, in 2002 the Chinese Ministry of Education (MOE) undertook a reform of College English, a basic and compulsory course for all college students in Chinese HEIs (further information on which will be provided in 3.2). A more economical and effective methodology in language teaching which was based on the use of ICT was recommended in the reform. There were two reasons for this emphasis on ICT. One was its potential to support and assist language teaching and learning. The other was that if ICT was used for self-access learning, this would make it possible to reduce teacher contact hours and thereby enable institutions to cope with the increase in student numbers and the shortage of EFL teachers (this point will be developed further in 3.3).

The present study started in 2006, when Chinese College English was undergoing reforms nationwide. The introduction of ICT made great demands on HEIs and the teachers as change agents, who have had to respond to a change in their traditional roles and pedagogy in the new computerised, Web-based English teaching and learning environment.

My own introduction to ICT-integrated instruction had come several years earlier when, in 2000, after teaching EFL for seven years in a Chinese university, I was chosen as an instructor of a new form of distance education: e-learning. Based on my own past teaching experience, many questions and doubts emerged concerning the reform. How did other Chinese EFL teachers feel about ICT-integrated English teaching? As teachers who had been used to teacher-centred language teaching for years, were they ready and willing to change their authoritative roles in class? Did they have enough ICT knowledge and skills to cope with the requirements of the reform? Had they been given enough relevant training or made a self-directed effort to develop their

knowledge and skills to meet the requirement of the reform? Several years on, what effect had the reform had on English teaching and learning? These questions aroused my curiosity and stimulated me to undertake a study of these issues. I therefore took as my research focus EFL teacher development in relation to the introduction of ICT in Chinese HE in the context of the reform.

1.2 Key terms

Three key terms used in this thesis are *reform*, *ICT* (Information and Communication Technologies) and *teacher development*. This section will discuss these and related terms, i.e., change, reform and innovation; ICT & ICT for Language Education (ICTLE); training, education and development in the Chinese context, and comment on conceptual differences between ICT in China and in other countries.

1.2.1 Change, reform and innovation

Change is often ‘a 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’ (Fullan, 2001:40). It has the meaning of replacement, transformation and substitution, but not necessarily advancement. Change can be directed either forwards or backwards, and real change involves changes in conceptions and role behaviour, which is why it is so difficult to achieve.

The word ‘reform’, as defined in dictionaries such as Chambers and Oxford, means: 1) to put or change into an improved form or condition; to amend or

improve by change of form or removal of faults or abuses; 2) to put an end to (an evil) by enforcing or introducing a better method or course of action. It is obvious, then, that 'reform' and 'change' are synonymous in some respects; for instance, they both mean that something becomes different from before; they are processes of shifting. Change is considered to be a process that does not involve planning (Kennedy, 1996, cited in Lamie, 2005); it may be conscious or unconscious, while reform involves a clear aim of improvement. Reform in education is not just putting into place the latest policy superficially. It means 'changing the cultures of the classrooms, the schools, the districts, the universities, and so on' (Fullan, 2001:7).

Innovation is defined as 'an idea, practice, or object that is perceived as new by an individual or other unit of adoption' (Rogers, 1995:11). It represents the programme or process being implemented, implying some deliberation and consciousness (Kennedy, 1996, cited in Lamie, 2005). It does not necessarily represent something major, large, or dramatically different. Hall & Hord (1987) argue that an innovation can be something introduced several years earlier or something not expected to arrive for several years to come. Further, they classify innovations into two types: 'product innovations', such as new textbooks or curriculum materials, and 'process innovations', such as different approaches to discipline, counselling techniques, or instructional procedures (p.9).

To summarise, change happens anywhere; it is not necessarily the result of someone's deliberate efforts, whereas reform emphasises the introduction of a *better* form or condition; and innovation is a deliberate attempt to introduce something new. These concepts will be discussed in more detail in Chapter 2.

In this study, reform is the key word, the specific aspect of reform in question being the introduction of ICT for the purpose of improving English learning in Chinese higher education, the broader context being the national reform of College English teaching (curriculum, pedagogy, learner assessment). As will become clear, this thoroughgoing reform has involved innovation as well as change.

1.2.2 ICT & ICTLE

ICT is a key concept in the thesis. This section defines the term and introduces a subsidiary concept, ICT for Language Education (ICTLE).

ICT, a well-accepted term in the West, is defined as ‘a diverse set of technological tools and resources used to communicate, to create, disseminate, store and manage information’(Wikibooks, n.d.). These technologies include computers, the Internet, broadcasting technologies such as radio and television, and telephony. ICT is often spoken of in a particular context, such as ICT in education, health care, or libraries. It is well known that ICT products and innovations change the way we connect, communicate and make sense of our world. They draw on Information Technology, Telecommunications and Data Networking technologies to solve problems innovatively.

In the field of education, ICT generally refers to the integrated use of computers and communications facilities such as the internet, Email, CD-ROMs and video conferencing within the curriculum to support teaching and learning. Commonly used acronyms referring to the use of computers in education are:

CAI (Computer-Assisted Instruction)
CAL (Computer-Assisted Learning)
ICAI (Intelligent Computer-Assisted Instruction)
ITS (Intelligent Tutoring Systems)
CMI (Computer-Managed Instruction)
CML (Computer-Managed Learning)
CBI (Computer-Based Instruction)
CBE (Computer-Based Education)
TEL (Technology-Enhanced Learning)
CMC (Computer-Mediated Communication)

(Levy, 1997:77-78)

According to Levy (1997), these different terms focus particularly either on special qualities of a programme (such as ICAI, ITS), or a way of learning (TEL), or the role of the computer (CMI, CML, CAI, CAL, ICAI, ITS). CMI and CML delegates the management function to the computer; CAI and CAL just highlight the computer’s ‘subservient, auxiliary’ role (p.78). ICAI and ITS shift the focus from the role of the computer to the use of intelligence techniques

in a variety of ways. CMC is concerned with communication between two or more computer users.

In the field of ICT use in language teaching and learning, especially computer use, Levy (1997) also lists numerous acronyms, such as CALL (Computer-Assisted Language Learning), ICALL (Intelligent Computer-Assisted Language Learning), and CELL (Computer-Enhanced Language Learning), TELL (Technology-Enhanced Language Learning). Among these, the most widely adopted and discussed is CALL, which has been used since the 1960s (Warschauer, 2004). Although CALL as a term has this widespread recognition and hardware and software used in language learning are operated in a computer context, it is more limited than the concept of ICT. The computer itself does not necessarily include the link to the Internet. In the past, we could not log in to the Internet without computers and computers served as a mere gateway to the resources of the Internet. However, it is important to note that, with the fast development of new technologies, the link to the Internet without a computer has become a reality (e.g. mobile users can get access to the Internet via their mobiles). In the Chinese context 'educational technology' and 'computer- or Web-based teaching', are two common terms when ICT is involved in education. According to Nan and Li (1998:4),

Educational technology is the collection of technologies and methods in educational and/or teaching and learning activities in the human society. Here technology refers to physical technology while methods refer to intelligent technology.

Educational technology, in the form of television, radio, video and audio cassettes, has been used in China for many years. The above definition suggests that 'educational technology' includes not only the newer digital technologies of computers, the Internet, Email, the World Wide Web, and wireless technology, but also the older technologies of print, radio and television that have been used extensively in both distance education and classroom instruction. Since the term 'CALL' cannot reflect the specific application of ICT in Chinese language teaching, 'ICTLE', 'educational technology' and 'computer- or Web-based language teaching' will be used henceforth.

1.2.3 Teacher training, education and development

Training, education and development are three common terms to refer to the process of teachers' professional growth. Sometimes training and education are not distinguished so clearly, since both are used to refer to 'identifiable learning activities in which practising teachers participate' (CERI, 1998:18). However, many scholars have attempted to distinguish between the three concepts. Widdowson (1997), for example, describes teacher training as solution-oriented, with the 'implication that teachers are to be given specific instruction in practical techniques to cope with predictable events', while teacher education is problem-oriented, with the implication of 'a broader intellectual awareness of theoretical principles underlying particular practices' (p.121). Richards (1990:xi) characterizes teacher education as involving teachers in 'developing theories of teaching, understanding the nature of teacher decision making and strategies for critical self awareness and self evaluation'. Lange (1990:250) describes teacher development as 'a process of continual intellectual, experimental and attitudinal growth of teachers' (cited in Hedge, 1998:132), some of which is generated in pre-professional and professional in-service programmes. Hargreaves and Fullan (1992a:462) observe that there are three approaches to teacher development. The first approach sees teacher development as 'knowledge and skills development'. This approach believes that helping teachers to develop better knowledge about their subject and acquire a wide repertoire of teaching strategies is central to teacher development. The second approach sees teacher development as 'a process of self-understanding which involves reflecting on one's personal and practical knowledge of teaching'. It acknowledges the importance of personal development in the professional growth of teachers. The third approach sees teacher development as 'ecological change'. It believes that teachers' working environment plays a very important part in the process and success of teacher development (ibid). This view is partially echoed in Tsui et al.'s (1996) conceptualisation of 'teacher development' as comprising three important facets: that is, the development of knowledge and skills, the development of collaborative culture, and the development of the teacher as a person, with the latter including the enhancement of teachers' self-confidence and capacity for critical reflection. Teacher development is a life-long process of growth, which,

according to Crandall (2000), may involve self-directed learning, and may sometimes be collaborative (along with others) and/or autonomous (on their own). Crandall points out that the important distinction between development on the one hand and education and training on the other is that ‘teachers are engaged in the process and they actively reflect on their practices’ (p.36). However, according to Wallace (1991), the distinction between teacher development and training or education is that development is ‘something that can be done only by and for oneself’ whereas the latter is ‘something that can be presented or managed by others’ (p.3).

In this study, the term ‘teacher professional development’ is a broader concept, signifying the development of teachers’ (individual or in group) skills, knowledge, expertise and other characteristics as a teacher. This may be as a result of ‘personal study and reflection as well as formal courses they volunteer to take’ (CERI, 1998:18). EFL teacher ICT-related development is defined in this study as the process by which EFL teachers obtain ICT knowledge and skills, and what they do to develop these skills and keep up to date. It covers both formal training and self-reflective processes in the acquisition of ICT skills, ICT pedagogy and ICT culture.

1.3 Focus of the research

This research focuses on EFL teacher development in the context of the recent Chinese national College English reform. The specific aims were as follows:

1. to examine the current situation in a specific institution from the perspectives of:
 - teachers' attitudes towards ICT use in the context of College English reform;
 - the integration of ICT in English classes;
 - Provision of ICT support within current continuing professional development (CPD) programmes for EFL teachers.
2. to assess the suitability of the CPD policies and practices for EFL teachers within the institution as a way of supporting the national College English reform;
3. to identify key issues affecting the effective provision of CPD in relation to ICT for EFL teachers;
4. to suggest possible solutions to problems identified and directions for future research.

The case university selected for this study has three features (for further information see 4.3). Firstly, it experienced the waves of higher educational institution amalgamation and enrolment expansion in Chinese higher education reforms in recent years. Secondly, it is one of the four pioneer universities which began the new distance (online) education/e-learning in China. Thirdly, it has been selected as one of 180 experimental HEIs in the Chinese national College English reform.

The research questions deriving from these aims were:

1. What are EFL teachers' attitudes towards the adoption of ICT in language teaching (ICT pedagogy) and the wider context – College English teaching reform in China?

2. What is the profile of the implementation of College English reform at present in relation to the integration of ICT in English teaching?
3. What are EFL teachers' experiences of CPD? How has CPD met their needs in relation to the national reform and specifically ICT use?

The first research question sought to identify EFL teachers' attitudes towards ICT use in education, particularly in language teaching, and towards the national reform at an individual Chinese HEI. The second research question focused on how the College English reform was being implemented and how ICT was being used in English teaching and learning. The third question focused on EFL teachers' experiences of CPD, particularly ICT-related CPD, and the extent to which CPD has met their needs in relation to the national reform.

1.4 Significance of the research

The significance of the research can be summarised as follows.

Firstly, Chinese HE has experienced development in the past decade on a scale which is different from other countries around the world (e.g. expansion of enrolment and institutional amalgamation – see further information in 3.2.1). The investigation of how, in a country the size of China, a national reform can be carried out and what sorts of problems this poses therefore has value for educationalists and policy makers concerned with the management of change both in China and elsewhere.

Secondly, the study was conducted in the context of the Chinese national College English reform, in which a central element is the wide-scale introduction of ICT for ELT. The long history of traditional pedagogy in this country and its substantial impact in terms of accepted conventions of learning and teaching make educational reforms in China more complicated. It is of

importance to see how the reform has influenced EFL teachers' thinking and practice and of broader significance to other countries who are trying to introduce similar reforms.

Thirdly, according to Gao & Li's (2007) survey of papers published in the key Chinese academic journals, there have been very few studies on EFL teacher CPD in Chinese HE in the last decade. This study sought to supplement previous research by focusing on EFL teachers' professional development in the context of ICT use in China. It is anticipated that it will make a valuable contribution to EFL teachers' ICT-related CPD by identifying the nature of teacher needs, which may be generalisable, and any gaps in current provision, which though of particular relevance to the institution concerned, may also have wider relevance.

1.5 Structure of the thesis

The thesis contains six chapters. Chapter 1 has provided a brief description of the background to the study, the focus and structure of the research, and its significance. Chapter 2 presents a detailed review of theories of innovation/change, the implementation of ICT in education and CPD for ICT, particularly ICT-related CPD for language teachers. A conceptual framework is put forward at the end of this chapter. Chapter 3 offers a historical description of EFL teaching and learning in Chinese HE, a detailed introduction to the College English reform which serves as the setting for this study and a background for EFL teacher development. Chapter 4 explains the rationale for the research design. The findings of the study are presented and discussed in Chapter 5. Chapter 6 summarises the findings and contributions, acknowledges the limitations of the study, and offers recommendations for further research.

Chapter Two

Educational Innovation: ICT Use and Continuing Professional Development

2.1 Introduction

Innovation/change has been a major theme in education over the last few decades. Teachers have not only been agents of change, they have themselves also been forced to change, an instance in point being the re-skilling necessitated by the introduction of ICT in education. A key factor in changed teaching and teacher change is, of course, as Fullan (2002) has noted, support in the form of teacher professional development. The three main areas of literature that will be considered in this chapter are theories of innovation/change, educational innovation, one particular form of innovation (ICT use), and teachers' continuing professional development.

The chapter consists of five related sections. Following this introduction, Section 2 presents a selective review of theories of educational innovation/change. Section 3 deals with the particular aspect of educational innovation we are concerned with in this thesis, the impact and practice of ICT use, particularly in language teaching and learning, and factors influencing implementation. Section 4 focuses on teachers' continuing professional development for ICT. It reviews the role of ICT in teacher development, elements of CPD, relevant models for CPD and ICT-related CPD for language teachers in the world as well as in China. The concluding section first discusses

limitations in the literature, then puts forward a conceptual framework for data collection and analysis in this research.

2.2 Theories of innovation/change

The study of educational innovations has become increasingly important in education research as many countries around the world have embarked on education reforms that aim to change both goals and practices in education. Since the study described in this thesis has been carried out in the context of sweeping changes in Chinese higher education, it seems appropriate first to consider theories which seek to explain how changes are processed. These provide a general background to understand Chinese national reforms which ask for changes in teaching and teachers. Three theories will be discussed: 1) the Theory of Diffusion of Innovations (Rogers, 1995); 2) the New Meaning of Educational Change (Fullan, 2001) and 3) the Concerns-Based Adoption Model (CBAM, Hall & Hord, 1987).

2.2.1 The theory of Diffusion of Innovations

Rogers' theory (1995) of Diffusion of Innovations explains how innovation passes from the innovator to other relevant individuals (adopters). Diffusion is 'the process by which an innovation is communicated through certain channels over time among the members of a social system' (Rogers, 1995:5). The four main elements involved in the diffusion are 1) the innovation, 2) communication channels, 3) time and 4) the social system.

Rogers defines innovation as 'an idea, practice, or object that is perceived as *new* by an individual or other unit of adoption' (Rogers, 1995:11, emphasis added). Newness is highlighted in this definition of innovation. The individual's reaction is determined by the perceived newness of the idea. 'If the idea seems *new* to the individual, it is an innovation' (ibid). 'Newness' of an innovation not only involves new knowledge, it also involves the process of developing a favourable or unfavourable attitude toward it and then deciding whether to adopt or reject it.

The second element, a communication channel, is 'the means by which messages get from one individual to another' (p.18). Rogers identifies two communication channels: mass media channels and interpersonal channels. Mass media channels involving a mass medium such as radio, television, and newspapers are often the most rapid and efficient means to inform the audience of potential adopters about the existence of an innovation. However, interpersonal channels involving a face-to-face exchange between two or more individuals are, according to Rogers (1995), more effective in persuading an individual to accept a new idea, especially when the individuals share similar socioeconomic status and education background. The choice of an appropriate communication channel is also important. As Rogers points out, the use of an inappropriate communication channel, such as mass media channels for complex new ideas, would result in a slower rate of adoption.

The third dimension, time, is involved in diffusion 1) in the innovation-decision process by which 'an individual passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation and use of the idea, and to confirmation of this decision' (Rogers, 1995:20). 2) in the innovativeness of an individual or other unit of adoption, the relative earliness/lateness with which an innovation is adopted, and 3) in an innovation's rate of adoption in a system, 'the relative speed with which an innovation is adopted by members of a social system' (Rogers, 1995:250).

Finally, a social system is ‘a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal’ (Rogers, 1995:23). The members in the system may be individuals, informal groups, organisations, and/or subsystems. The social and communication structure of a system facilitates or impedes the diffusion of innovations in the system.

An individual’s decision about an innovation is not a momentary act but a process that occurs over time, consisting of a series of actions and decisions. The innovation-decision process is described as a process through which an individual (or other decision-making unit) passes 1) from first knowledge of an innovation, 2) to forming an attitude toward the innovation, 3) to a decision to adopt or reject, 4) to implementation of the new idea, and 5) to confirmation of this decision (Rogers, 1995:161). The five steps usually occur in a time-ordered sequence (see Figure 2.1, below). The timescale involved will obviously be very different when the process is at the level of a single individual or of adopting units/organisations.

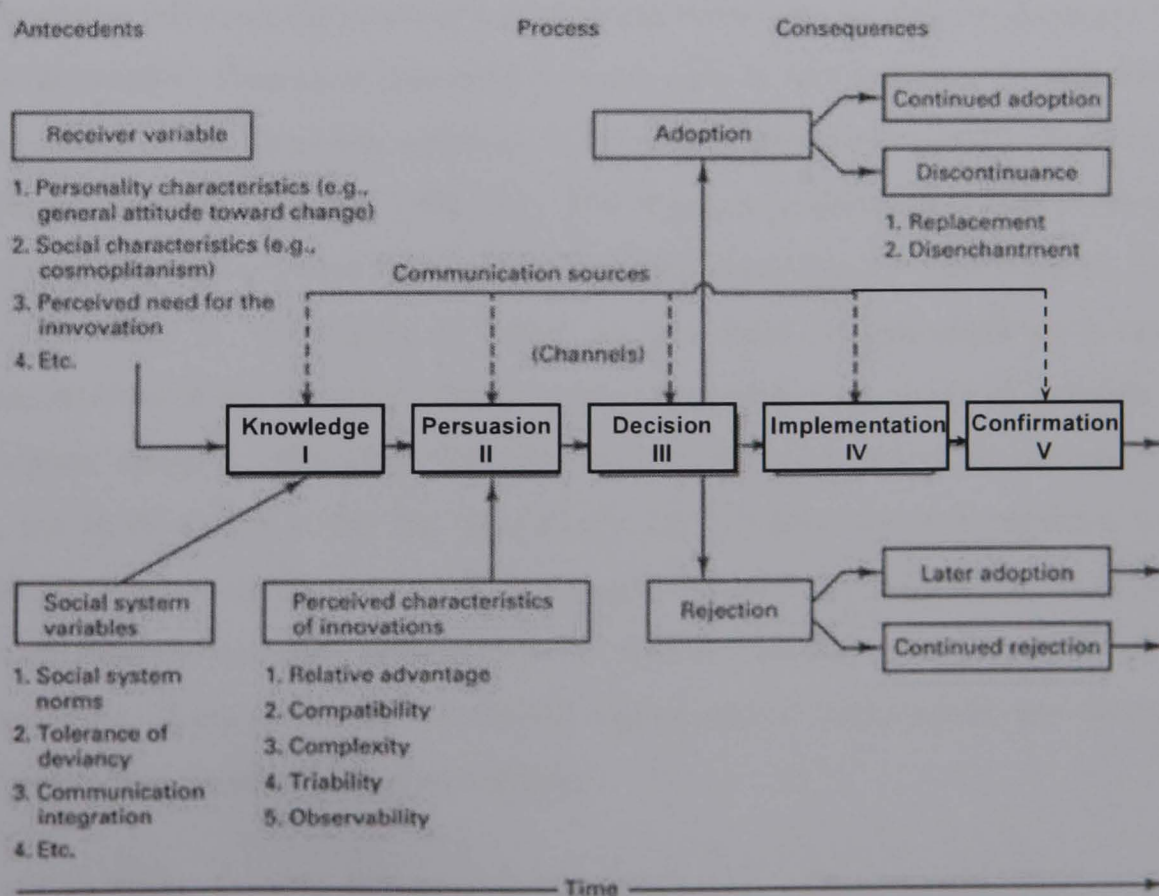


Figure 2.1 Diffusion of innovation model (adapted from Rogers 1995:163)

The innovation-decision process consists of a series of actions and choices over time through which an individual or an organisation evaluates a new idea then decides whether or not to incorporate the innovation into ongoing practice. The five boxes in the centre of the diagram represent the five stages in this process which lead to the embedding of an innovation.

In Stage I: Knowledge, the 'receiver' learns about the innovation from one of a number of communication channels. Two sets of variables are potentially influential at this stage: *receiver* variables and *social system* variables. Personality characteristics such as general attitude toward change, social characteristics and perceived need for the innovation comprise the receiver variables. Within a social system, the social and communication structure of the system, the system norms, opinion leaders and change agents all affect the innovation's diffusion in different ways.

At the Persuasion stage (Stage II), the individual/unit forms a favourable or unfavourable attitude toward the innovation. The perceived characteristics of the innovation influence the receiver's attitude and determine the rate of adoption of the innovation. Five such characteristics are seen to be important. 1) *Relative advantage* is 'the degree to which an innovation is perceived as better than the idea it supersedes' (Rogers, 1995:212). The degree of relative advantage is often expressed in terms of economic profitability, social prestige, or other benefits. 2) *Compatibility* is 'the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters' (Rogers, 1995:224). The more compatible a new idea or an innovation is, the more closely it fits the individual's life situation for it is regarded as familiar to potential adopters. Unless the new idea or its consequences has been recognized, the potential adopter may not realise that they have a need for an innovation. Karavas-Doukas (1998:41) argues that if innovations are to be accepted they must be judged by teachers

as being feasible in terms of time, resources and organisational constraints, as well as relevant in terms of teachers' perceptions of the needs of their students and acceptable in terms of their own teaching style.

If incompatibility in any of these three spheres (time, resources/constraints, and teachers' perceptions) exists, then levels of implementation may fall. 3) *Complexity* is 'the degree to which an innovation is perceived as difficult to understand and use; 4) *Trialability* is 'the degree to which an innovation may be experimented with on a limited basis'; and 5) *observability* is 'the degree to which the results of an innovation are visible to others' (Rogers, 1995:242-244). Except for complexity, the other four attributes of innovations are positively related to the rate of adoption.

These five perceived characteristics of an innovation will, according to the theory, affect its acceptance and subsequent adoption. Similar views are also held by Albirini (2006), who argues that a new idea or a new technology will be increasingly diffused if potential adopters perceive that the innovation: 1) has an advantage over previous innovations (relative advantage); 2) is compatible with existing practices (compatibility); 3) is not complex to understand and use (complexity); 4) can be experimented with on a limited basis before adoption (trialability) and 5) shows observable results (observability). In Mumtaz's review of the literature on factors affecting teachers' use of ICT (2000), it is implied that even if teachers are provided with up-to-date technology and supportive networks, they may not be enthusiastic enough to use it in the classroom unless given evidence that ICT can make their lessons more interesting, easier, more fun for them and their students, more enjoyable and more motivating (i.e., they are persuaded as to the relative advantage and observability of the innovation).

The potential adopters of an innovation have to learn about an innovation and be persuaded to try it out before making a decision to adopt or reject it (Stage III: Decision). Adoption covers continued adoption and discontinuance. Rejection nevertheless allows for later adoption or continued rejection. In the subsequent Implementation Stage (Stage IV), an individual/unit puts an innovation into use. However, one should notice that the adopters could also decide to either continue using the innovation or stop using it. That is Stage V: the Confirmation stage of the innovation-decision process.

In addition to the five attributes discussed above, other variables such as 1) the type of innovation-decision, 2) the nature of communication channels diffusing the innovation at various stages in the innovation-decision process, 3) the nature of the social system in which the innovation is diffusing, and 4) the extent of change agents' promotion efforts in diffusing the innovation, affect an innovation's rate of adoption (Rogers, 1995:206).

The innovativeness, 'the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system' (Rogers, 1995:22), determines the time needed in the process of innovation. Rogers identifies five categories of innovative adopters in his S-shaped curve of adoption: *Innovators*, *Early Adopters*, *Early Majority*, *Late Majority* and *Laggards* (see Figure 2.2 below).

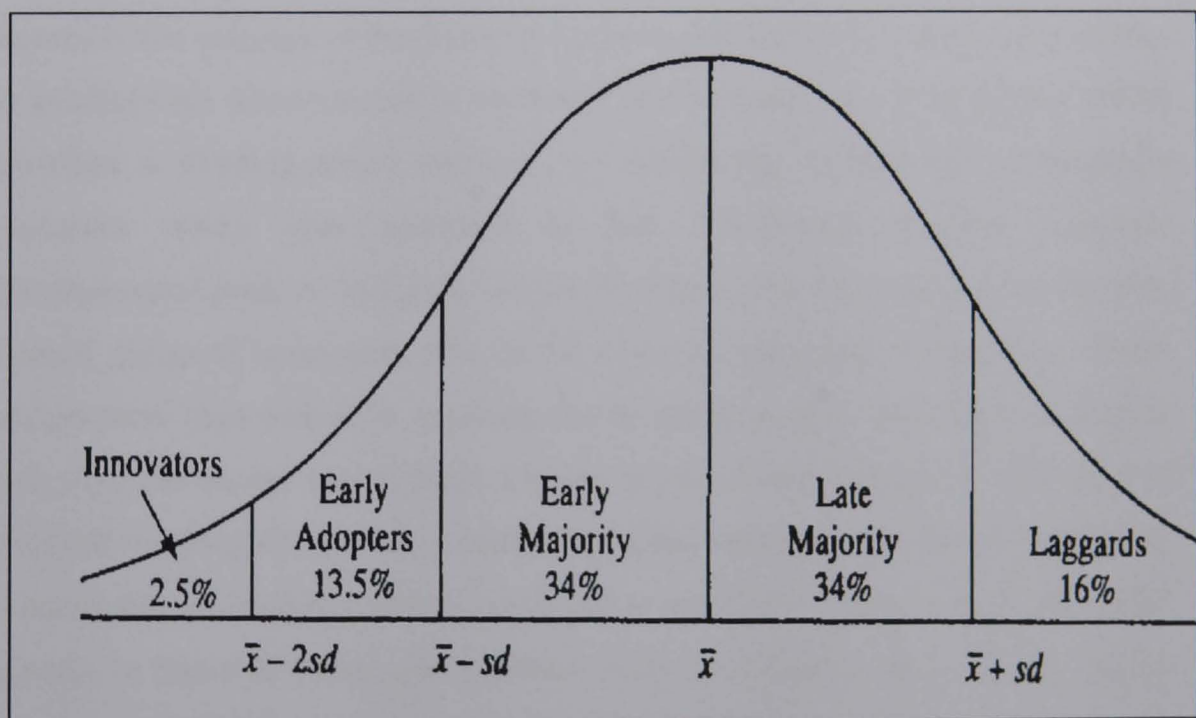


Figure 2.2 Five categories of innovative adopters (Rogers 1995:262)

In this Figure, *Innovators* are a small group of active information-seekers about new ideas; they are the first to adopt a new idea in their system. As pioneers, they need to deal with difficulties in the process such as unprofitable innovations and a certain level of uncertainty about the innovation when introducing new ideas to the members of the social system (Sahin & Thompson, 2006). The time they spend in deciding to adopt an innovation is much less than

the *Laggards* who are highly resistant to an innovation and may wait a long time before adopting it. *Early Adopters* are a little more cautious than *Innovators*. When the rate of diffusion increases, first the *Early Majority* and then the *Late Majority* 'come on board' (Sahin & Thompson, 2006:90). These two groups together make up fully two thirds of society (34% each). For Rogers, the *Early Majority* do not have a leadership role compared to the *Early Adopters*, but they have good interactions with other members of the social system. *Late Majority* individuals are sceptical about the innovation and its outcomes. Thus, the rate of adoption also determines the total time needed. When new ideas diffuse relatively rapidly, the S-curve is quite steep; when they diffuse relatively slowly, then the S-curve is more gradual. Rogers' categories explain why some innovations are adopted at rather rapid rates, while others take more time to be accepted.

Based on this concept of the S-curve, some researchers have carried out studies on professional development in computer and Internet use. Warschauer (2002) describes a developmental approach to integrating technology in language education which was analysed in two US-funded English language developmental projects in Egypt. In these projects, the first step was to develop a small group of innovators who could exercise leadership in that area. These leaders were then helped in reaching out to others around them both to deepen their own knowledge and to build a larger group of early adopters. 'The process involved working to develop a leadership cadre and then providing scaffolding to assist this leadership cadre to reach out to a broader group of early adopters' (p.416). In Sahin & Thompson's (2006) study on instructional computer use by faculty in a College of Education at an Anatolian university in Turkey, it is also suggested that faculty development efforts should target early adopters who are more likely to hold leadership positions in the social system.

A number of other studies have also shown that the uptake of new innovations follows the trend Rogers identified: first a small group of pioneers, then the majority and finally the laggards (see, e.g. Mandinach & Cline, 1994; Anderson et al., 1995; Shea et al., 2005; Sahin & Thompson, 2006). Mandinach and Cline

(1994) explored teachers' adoption of technology in a US high school. They identified four stages of teacher change in ICT-supported teaching. Anderson et al. (1995) compared early adopters and later adopters in Canadian higher education. In Shea et al.'s (2005) exploratory study of teachers' adoption of online learning in higher education in the USA, teachers were asked about their perceptions of their adoption of online teaching according to the five categories of innovative adopters. The result of the study showed that adopters in different categories perceived different barriers to their adoption of online teaching.

Based on Rogers' five categories of innovative adopters, Aviram (2004) suggests another categorisation of teachers and staff faced with the introduction of technology in schools. They are:

- the conservatives: technology is regarded as bad and destructive in education;
- the technocrats: only positive effects are assumed when computers and the Internet are placed in the classrooms;
- the moderates/reformists: there might be some positive effects in education using technology.
- The radicals/revolutionaries: technology will fundamentally change our culture, our relations and education.

(Aviram 2004, cited in Hansson, 2006:559)

Although the conservatives and the technocrats in Aviram's categories seem to be the laggards and innovators in Rogers' concept, the remaining two groups, moderates/reformists and radicals/revolutionaries, do not fit easily into Rogers' categorisation. One reason might be that Aviram's categories seem to be based on attitudes, ideas about ICT, whereas Rogers' categories are more descriptive, based on action. That being the case, it is not surprising to see these two sets of categories do not match perfectly.

Numerous researchers have adopted Rogers' theory of diffusion to support their studies on innovations (e.g., Karavas-Doukas, 1998; Rea-Dickins & Germaine, 1998; Lang, 2000; Knezek & Christensen, 2002; Tubin et al., 2003; Nachmias et al., 2004; Chambers & Bax, 2006; Sahin & Thompson, 2006) and his theory has also been used as a basis for some researchers to investigate the adoption of

technology in higher educational environments (Sahin & Thompson, 2006). For instance, all key aspects of Sahin and Thompson's study – their instrument construction, data collection, data analysis and data interpretation – were underpinned by Rogers' theory. Rogers' attributes of innovations and adopter categories were used in the construction of the research instrument. Moreover, specific survey items were used to classify faculty members according to Rogers' adopter categories. Results from their survey were also interpreted using Rogers' categories as the framework for describing both the current level of faculty adoption and suggesting interventions for moving the faculty to higher levels.

One important implication of Rogers' theory of Diffusion of Innovations is that the adoption of an innovation is not a momentary but an ongoing process that can be studied, facilitated and supported. However, there is ample evidence that the history of educational innovation is not very encouraging (Karavas-Doukas, 1998; Rea-Dickins & Germaine, 1998; Tubin et al., 2003). Karavas-Doukas' (1998) case study of the implementation of an EFL innovation, the introduction of their communicative language teaching in Greek public secondary schools provides evidence of factors that inhibited the educational reform process. Results from a questionnaire survey and interviews revealed that the lack of systematic and ongoing teacher training led to unfavourable teacher attitudes towards the innovation and limited and superficial teacher understanding of the approach they were asked to implement; as a consequence, the implementation of the reform was not satisfactory. Moreover, implementation was also hindered by non-existent communication with other colleagues and programme developers and lack of support within schools. The limited implementation of this particular EFL innovation was also due to its failure to take into account the constraints of the classroom and the wider educational context, verifying the importance of compatibility of an innovation in Rogers' theory.

Another research study into innovation (Tubin et al., 2003) explored ten innovative schools in Israel and analyzed the level of innovation in four main domains of innovation (i.e., time/space configuration, student role, teacher role,

curriculum). A core assumption underlying this study was that change resulting from technology adoption will develop from a preliminary level of alteration to the school's routine so as to achieve an initial assimilation of ICT, then go through a transitional level, and finally achieve far-reaching transformations in pedagogical practices and learning processes. The findings show that not all areas of activity are affected in a similar way. In fact, the significant changes did not take place in the four main domains but in sub-domains such as digital space that were relevant to the innovation focus. A conclusion might be that the assimilation and diffusion of ICT-based innovations within schools is a complex and gradual process, even under the most favourable conditions, such as highly motivated leaders, facilitative infrastructure, and sufficient human and financial resources.

2.2.2. The theory of New Meaning of Educational Change

The multiple dimensions of Rogers' concept of 'innovation' in education can also be seen in Fullan's theory of 'change'. Writing in 2001, Fullan argues that over the past decade, the process of educational reform has been much more complex than had been anticipated. He also states that the history of implementation research is not satisfactory. Because of the complexity of reform and because of the failure to take into account complexity, research is difficult and sometimes open to criticism. At the same time, it can be seen that planned change attempts rarely succeed as intended. The difficulty is that 'educational change is not a single entity even if we keep the analysis at the simplest level of an innovation in a classroom'. Innovation is 'multidimensional' (Fullan, 2001:39).

In Fullan's theory, change is understood as 'a 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' (Fullan, 2001:40). The theory acknowledges not only the complexity and multidimensional nature of change and the change process but also the existence of multi-agents (such as teacher, principal, student, district administrator, and government) involved in a change process.

Fullan may use a different term from Rogers ('change' and 'innovation' respectively) but both are concerned with 'newness'. Fullan argues that a change comprises at least three dimensions: 1) the possible use of *new* or revised materials (such as curriculum materials or technology), 2) the possible use of *new* teaching approaches (i.e. new teaching strategies or activities), 3) the possible alteration of beliefs (e.g., pedagogical assumptions and theories underlying particular new policies or programmes) (Fullan, 2001:39 emphasis added). As indicated above, newness is the key feature in Rogers' definition of innovation; and 'change' in Fullan's concept reflects a similar emphasis to Rogers' 'innovation'. Fullan claims that all three dimensions – new materials, approaches and beliefs – are necessary because 'they represent the means of achieving a particular educational goal or set of goals' (p.71).

It has been argued that educational change is a compound of complex and dynamic processes (Nachmias et al., 2004). It is likely to involve the change of teachers' beliefs and attitudes, transformation of teachers' behavioural patterns, changes in a school's identity, improvement of student performance and adaptation to environmental changes. Many researchers deal with factors assisting or inhibiting the success of educational change in general (Karavas-Doukas, 1998) and specifically in relation to ICT (Lang, 2000; Knezek & Christensen, 2002; Romeo & Walker, 2002; Loveless, 2003a; Loveless, 2003b; Tubin et al., 2003; Nachmias et al., 2004). Some emphasise organisational aspects and the means by which the organisation, typically a school, prepares itself for the implementation of change in its structure and activities (Cuban, 1996; Lang, 2000). For instance, from a study on teacher development of computer use in German schools, Lang (2000) concludes that learning in a social environment calls for collaboration, team learning, self-assessment and

project-based activities fuelled by substantial support. Others emphasise the teacher factor and the means by which teachers cope with the demand to change (Loveless, 2003a). Still others examine the contribution of factors outside the school to the implementation of ICT-based innovations (Nachmias et al., 2004). These studies have demonstrated the complexity, multidimensional nature, and multi-agents of change and innovation claimed by Fullan (2001).

Fullan (2001) also emphasises that change is a constantly changing process and the character of a change may vary at different phases of the change process: during the *initiation* of change (the process that leads up to and includes a decision to adopt or proceed with a change); the *implementation* of change (the stage that involves the first experiences of attempting to put an idea or reform into practice or the process of putting into practice an idea, programme, or set of activities and structures new to the people attempting or expected to change); and *continuation or institutionalization* (whether the change gets built in as an ongoing part of the system or disappears as a result of a decision to discard or through attrition) (pp. 50 and 69). Fullan's three phases of change process has some similarities with Rogers' innovation-decision process discussed in 2.2.1.

Among the three phases of change, one of the most difficult and complex phases is implementation, for 'it is the means of accomplishing desired objectives' (Fullan, 2001:70). Karavas-Doukas (1998) defines implementation as the extent to which changes have occurred at three levels in relation to a particular innovation. These three levels are: 1) change or revision of teaching materials, syllabi or curricula; 2) changes in teacher behaviour, e.g. new techniques, approaches or activities; 3) changes in beliefs and principles underlying new materials and approaches' (p.28). These three levels are quite similar to the three dimensions of Fullan's change (discussed above): new materials, new approaches and new beliefs. In Karavas-Doukas' study, the implementation process in an early state of development was very unsatisfying, because schools adopted simple applications for computer use very slowly. The non- or limited implementation of most educational innovations appears to be mainly due to the ignorance of the difficulties and complexities involved in actual implementation.

Moreover, implementation does not happen overnight. Bringing about educational change is a long, complex, anxiety- and conflict-ridden operation with many unforeseeable obstacles and problems (Fullan, 2001). Because of the nature of the complexity, an innovation or a change could take many years to implement fully (Lang, 2000).

Fullan (2001) states that the implementation of a change is influenced by three clusters of factors (see Figure 2.3, below). The first cluster comprises the nature or *characteristics* of the change: need, clarity, complexity and quality; to be specific, the perceived needs for the change, the degree of clarity about goals and means in the change process, the difficulty and extent of change required of the individuals responsible for implementation, and the importance of the quality and practicality of the change project (e.g. a new policy or a new curriculum). The second cluster consists of the *local characteristics*, which include – in the context in which Fullan was writing – the school district, the community, the principal and the teachers and the immediate social contexts for change. The third cluster consists of *external factors* such as government departments and agencies such as the ministry of education, regional institutions and other external partners that are involved in the broader socio-economic-political context. The implementation of a change involves a group of stakeholders such as students, parents and teachers in the change process.

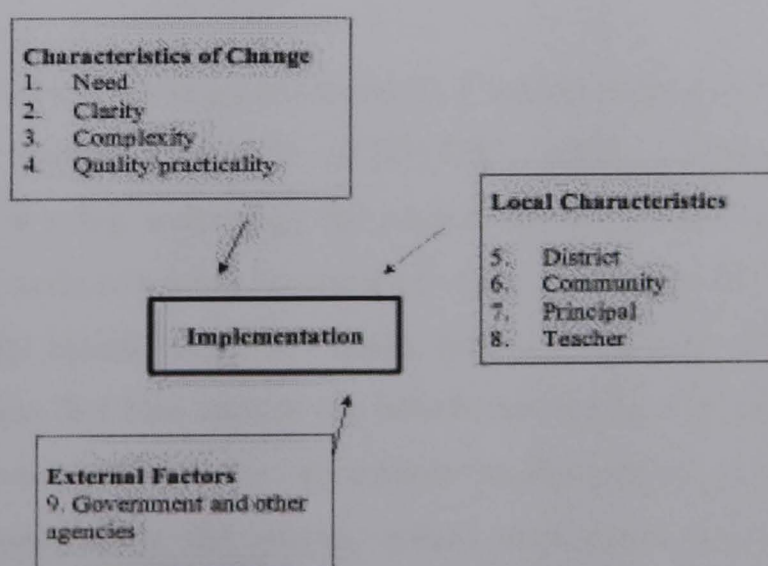


Figure 2.3 Conceptualisation of interactive factors affecting implementation (Fullan 2001:72)

Fullan's theory of change has been widely adopted in various studies on educational change (e.g. Ng & Tang, 1997; Nachmias et al., 2004; Chambers & Bax, 2006). Nachmias et al.'s (2004) study, for example, examined the factors (e.g., human, infrastructural, organisational, internal, external) affecting successful implementation of innovative pedagogical practices using technology within schools. Data from case studies in 10 Israeli schools indicated that infrastructure factors such as school climate and educational policy were the most influential factors in the innovation. Their findings also revealed that technical support was more important than the number of computers. Moreover, although it was essential for the success of the innovation that there should be a group of enthusiastic teachers, the attitudes of the staff as a whole was a less critical factor for the success of the innovation. Somewhat surprisingly, the data revealed that staff training was mildly necessary for the innovation. This is at odds with the conclusions of some researchers that teachers or teacher training was one of the main factors in implementing change (Karavas-Doukas, 1998; Mumtaz, 2000; Knezek & Christensen, 2002; Gu, 2004). In this specific study (Nachmias et al., 2004), it seemed that the management staff gained their knowledge from a variety of personal sources, as opposed to organised staff training. Another reason for the rather different findings of this study might be that Nachmias et al.'s definition of staff covers both management staff and teachers while other researchers emphasise teachers and their training.

In a study of a technology-enhanced ELT reform project at an eastern Chinese university during 1998-2003 (RTCTTEC, 2005), although teachers were interested in using technology for instruction, the project failed in its aim to expand the scale of teacher involvement. One reason may have been the deeply-held cultural beliefs which can hinder reform in teaching and learning. Deep-rooted norms in China include the beliefs that teachers should be in control of the classroom and deserve the utmost student respect. Therefore, the new teaching methods in the project, which emphasised teachers' provision of guidance and feedback rather than lecturing, ran contrary to these cultural norms and beliefs. Moreover, this learner-centred approach was extraordinarily challenging and demanding of teachers' time, energy and intellectual attention.

These factors discouraged teachers from subscribing fully to the reform. This study provides support for the view that when teachers implement an innovation, they tend to do so ‘at the margins of instruction, leaving core relationships and processes in place’ (Fang & Warschauer, 2004:315). It is therefore important to ensure that changes in materials and approaches are underpinned by changes in belief systems.

Fullan’s theory attempts to address the complexity of change in education and his work has been widely quoted in the educational literature in support of radical change. However, compared to Rogers’ theory which has been widely applied in different dimensions, it would seem that relatively fewer studies have applied Fullan’s theory empirically to data collection or the interpretation of results.

2.2.3 The Concerns-Based Adoption Model

The Concerns-Based Adoption Model (Hall & Loucks, 1975; Hall & Hord, 1987, 2000) is a popular model used to study the process of adopting innovations (see, e.g., Atkins & Vasu, 2000; Webb et al., 2005). The key feature of this model is the recognition that innovation needs to start with the concerns of the individual. The CBAM model has three diagnostic dimensions, Stage of Concern, Levels of Use, and Innovation Configurations, which represent key aspects of the change process experienced by individual users. The Stages of Concern (SoC) dimension addresses teachers’ perception of an innovation and how they feel about it. Levels of Use (LoU) address teachers’ actions in relation to the innovation. Innovation Configurations (IC) addresses the innovation itself (Hall & Hord, 1987:13-14).

In this model, Hall and her colleagues describe seven different stages of concern about the innovation: awareness, informational, personal, management, consequence, collaboration, and refocusing (see Table 2.1).

Table 2.1 Stages of Concern (SoC) about an innovation (adapted from Hall & Hord, 1987:60)

- **Stage 0 Awareness:** Teachers may be aware of the innovation but have little concern or involvement with it.
- **Stage 1 Informational:** Teachers have a general awareness of the innovation and are interested in learning more about it.
- **Stage 2 Personal:** Teachers are uncertain about the demands of the innovation, their own ability to meet the demands, and their roles within it.
- **Stage 3 Management:** Teachers are concerned about the administrative or logistical challenges of the innovation. They focus on the processes and tasks of the innovation and knowledge about information and resources.
- **Stage 4 Consequence:** Teachers' attention focuses on the innovation's impact on students.
- **Stage 5 Collaboration:** Teachers focus on coordination and cooperation with other teachers in implementing the innovation.
- **Stage 6 Refocusing:** Teachers consider exploring more benefits from the innovation and think of the possibility of major changes or replacement with a more powerful alternative.

Here, the concept of 'concerns' has been described as 'the composite representation of the feelings, preoccupation, thought and consideration given to a particular issue or task' (Hall & Hord, 1987:59). Stages 0-3 are linked to teachers' personal (individual) concerns and their features are a developing awareness of the potential of the innovation, accompanied by seeking information with Stage 3 broadening to concerns about management. The last three stages (Stage 4-6) focus on the impact of the innovation through developing an understanding of its consequences, collaborating with colleagues and refocusing work. The overall implication of the model is that if we wish to introduce and extend the use of ICT in education, for instance, it is important to

give teachers opportunities to get access to new technologies in a way that addresses their concerns (Davis, 1999).

Hall and his colleagues also distinguish eight levels of use of an innovation: non-use, orientation, preparation, mechanical use, routine, refinement, integration, and renewal (see Table 2.2). The shift from Level 0 to Level VI indicates behavioural stages in implementing the innovation.

Table 2.2 Level of Use (LoU) of an innovation (adapted from Hall & Hord, 1987:84)

- **Level 0 Non-Use:** The teacher has little or no knowledge of the innovation. They are not involved in it or take no action to be involved.
- **Level I Orientation:** The teacher takes the initiative to acquire information about the innovation.
- **Level II Preparation:** The teacher is ready for first use of the innovation.
- **Level III Mechanical use:** The teacher focuses on short term, specific use of the innovation but does not have enough time to reflect on their use.
- **Level IVA Routine:** The teacher makes few or no changes and has a stabilized pattern of use.
- **Level IVB Refinement:** The teacher changes the use of the innovation to increase both short- and long-term outcomes.
- **Level V Integration:** The teacher makes deliberate efforts to collaborate with their colleagues in using the innovation.
- **Level VI Renewal:** The teacher seeks major modifications or new innovations to improve the effects and impact of the original innovation after re-evaluating it.

It is assumed that if someone wants to change something, he/she has to change first. Therefore, for schools to improve, teachers must change. For teachers to change, 'there must be appropriate and promising practices and procedures (i.e. innovations) that they develop or adopt and, when necessary, adapt' (Hall & Hord, 1987:5).

CBAM has been widely applied and used as a framework in educational research from a broad variety of disciplines, some of which offer insights into the importance of concerns about technology integration (Atkins & Vasu, 2000; Moersch, 2001; Mills & Tincher, 2003; Webb et al., 2005). Webb and his colleagues' projects focusing on the provision of professional learning to support the use of ICT in teaching and learning in four Tasmanian primary schools showed that the participating staff members achieved significant and rapid progress through the more advanced concern: collaboration. They also found a group of colleagues functioning at the two highest stages: collaboration and refocusing. Mills & Tincher (2003) adopted LoU of CBAM in their project on technology professional development in a school district in the USA and divided K-12 teachers' use of technology into 5 levels (0-4): no use, unacceptable use, minimal use, moderate use and ideal use to determine their technology integration in classroom. Their findings showed that technology integration in this school was a developmental process.

CBAM suggests that teachers need time to alter their 'concerns' about the change and their concerns about level of use of an innovation develop gradually. It focuses on the adoption process of an innovation and emphasises that change is a process rather than an event, echoing Fullan's new meaning of educational change. One significant factor of CBAM is that the two dimensions discussed above are closely related. They provide a metric for the change process of individual teachers across time (Hall & Hord, 1987), taking into consideration both concerns and behaviours. CBAM also offers a unique way to track the progress of teachers in an innovation and to describe systematically the implementation of an innovation by an individual. In this sense, it is a powerful framework for assessing and tracing innovative progress at the level of individual teachers.

This section has presented relevant theories and models in educational innovation. Some reference has already been made in this discussion to innovation involving ICT, and this is the specific focus of the next section.

2.3 The implementation of ICT in education

ICT has been widely adopted in education for decades. In fact, overall computer applications in teaching and learning can be traced back to the early 1970s (Levy, 1997); and at the beginning of the 1980s, governments in many countries became increasingly interested in the potential contribution of ICT to education (Pelgrum & Law, 2003). ICT use in education now spans multimedia teaching, CMC (Computer-Mediated Communications), ICT-enhanced learning, computer-enhanced or technology-enhanced learning, computer-assisted learning and online or e-learning (Watson, 2002; Larsen & Lancrin, 2005; Dede, 2006; Zhao & Hao, 2006; Feng & Zheng, 2006; Andrews & Haythornthwaite, 2007; Spencer-Oatey, 2007; Skinner, 2009). One of the particular advantages of ICT is its flexibility and versatility. For example, ICT-related activities can be applied in almost every course in schools in the form of:

- broadcast material or CD-ROM as sources of information in history;
- micro-computers with appropriate keyboards and other devices to teach literacy and writing;
- keyboards, effects and sequencers in music teaching;
- devices to facilitate communication for pupils with special needs;
- electronic toys to develop spatial awareness and psycho-motor control;
- email to support collaborative writing and sharing of resources;
- video-conferencing to support the teaching of modern foreign languages;
- internet-based research to support geographical enquiry;
- integrated learning systems (ILS) to teach basic numeracy;
- communications technology to exchange administrative and assessment data.

(DCSF, n.d.)

Romeo & Walker (2002) summarise two perspectives on ICT use in education. The first focuses on the computer as a mechanism by which to deliver information. It is influenced by behaviourist learning theories. The second focuses on the use of computers as a system to enhance teaching and learning. This view, influenced by constructivism, is about 'exploiting technology's

versatility and uniqueness' to help the teacher establish powerful environments for students' learning (p.323). It is clear that as ICT becomes more prevalent in schools, expectations for corresponding improvements in education grow as well. ICT can be an effective tool for promoting practices shown to improve student achievement and school performance when used appropriately. However, ICT is not a panacea for the challenges facing the education community (Bliss & Bliss, 2003). This section discusses the overall impact of ICT in education, some issues which have occurred in ICT practice in language education (ICTLE) and institutional and personal factors influencing implementation.

2.3.1 The impact of ICT

A great deal of theoretical and empirical work over several decades has investigated the impact of ICT on educational processes. The adoption of ICT in education has affected the structure and functioning of schools, pedagogies in use, curriculum content and students' learning achievements (Tubin et al., 2003). In Tubin et al.'s survey of 10 schools in Israel, they found that the schools incorporated ICT in unique ways and succeeded in devising innovative classroom pedagogies and school system changes. The incorporation of ICT into the schools affected their functioning at multiple levels:

- New configurations of learning spaces and timetables were created;
- Innovative teaching methods were devised;
- Autonomous and active learning processes using the technology were adopted;
- Teachers' traditional roles were expanded to include personal and group tutoring and guidance functions;
- New ICT-based curricular solutions were generated.

(Tubin et al., 2003:128)

ICT has also had an impact on teaching styles, learning styles and modes of learning.

2.3.1.1 Changing teaching styles of teachers

Since ICT was introduced in education, it has had a widespread effect on teachers' teaching styles. Teachers can use ICT in a variety of ways and for a variety of purposes. For instance, they can use PCs to prepare teaching materials or use the Internet and CD-ROM in teaching and set research assignments (UNESCO, n.d.). It is also common for teachers to use word processors to write and present their work; to use a spreadsheet to enter data collected in investigations and create charts; to create databases as part of investigations, search the database and sort data for problem-solving; they can also use hypermedia to write, lay out and present work for publication on the Internet; and use the Internet and CD-ROMs in their own research (ibid). All these adoptions of ICT have changed traditional teaching styles to a large extent. However, the resulting change in teaching style may be more problematic if instead of being voluntary it is imposed: if *new* materials must be used, *new* skills must be acquired and *new* ways of instruction need to be established (Fullan, 2001).

2.3.1.2 Changing learning styles of students

On the learning side, ICT provides many benefits for students, such as inexpensive printing, access to distance education programmes and internet connection. In addition, ICT can stimulate students' learning interest in hard-to-understand issues; e-mails, phone, video conferencing can bridge distances between students and teachers, or among students themselves; literacy barriers in communication may be broken down by using video and radio; and the Internet can widen students' horizons of their field and even their understanding of the whole world.

In formal learning situations, ICT is associated with significant changes in student learning styles. Lim & Chai (2004) argue that in an ICT-based learning environment, students have more autonomy over their learning processes as they have a substantial amount of control over their own pace of learning and

learning sequence. Furthermore, student group work and collaborative learning activities can be enhanced with the use of ICT; however, it cannot be assumed that students will automatically take up the opportunities for autonomy provided by ICT in the learning environment. First, they may lack a belief system that views knowledge as complex and evolving; they may view it as simple and fixed. When what they actually meet is not what they think, they may feel at loss and frustrated for they are not capable of self-modification. Second, they may lack the learning strategies to learn with ICT tools. Third, they may lack the motivation to make use of the additional learning opportunities offered by ICT learning (Lim & Chai, 2004:217-218). In such a situation, teachers play important roles in supporting and guiding students to take control of their autonomous learning. After all, the main intended beneficiaries of the innovative use of ICT in schools are the students (Bliss & Bliss, 2003; Tubin et al., 2003; Karagiorgi & Charalambous 2006). However, it is important to note that the development of learner autonomy presupposes the development of teacher autonomy (Little, 1995, 2000; Smith, 2003). If the prominence of learner autonomy is set as a goal in ICT-enhanced learning contexts, there also needs to be a focus on teacher autonomy, for learner autonomy and teacher autonomy are interdependent (Little, 1995).

2.3.1.3 Changing educational modes

In addition to the use of ICT in the traditional face to face mode of teaching-learning, its use in distance education and online education/Internet education have opened doors to more and more learners. ICT offers flexible access to better educational facilities, teaching resources, and new kinds of learning opportunities. Larsen & Vincent-Lancrin (2005) argue that with distance and online educational modes, ICT sets learners free from the limits of time, space and money, offering:

- facilitated access to international faculty/peers, e.g. with the possibility of online lectures or joint classes with remote students;
- flexible access to materials and other resources, allowing students to revise a particular aspect of a class, giving more access flexibility to part-time students, or giving remote and easy access to the library materials;
- enhancement of face-to-face sessions, as the availability of archived lectures online frees up faculty time to focus on difficult points and application and
- improved communication between faculty and students and increase of peer learning.

However, we have to acknowledge that these advantages only apply if certain conditions are met, such as sufficient ICT resources provided and the necessary ICT competence possessed both teachers and learners.

E-learning, also known as web-based learning, online learning, and technology enhanced learning, takes place in three contexts: self-access, instructed and distance learning (Levy, 1997; Bax, 2003; Zhao, 2007). E-learning is also used for teacher professional development. Online programmes are available to teachers at their convenience and provide just-in-time assistance. Moreover, they offer access to experts and archival resources which were limited in the past (Dede, 2006).

Watson (2002) claims that although e-learning has merits in creating new curricula and new learning environments in education, we should be equally alert to educational disadvantages. For instance, e-education itself cannot mask poor curriculum delivery or learning. Lack of ICT knowledge and skills threatens our understanding of the value of technologies. Zhao (2007) summarises the problems of e-learning in different learning contexts. For example, students who do not have good skills in self-management or self-instruction will not achieve their learning purposes in a self-access programme. Self-access study is assumed to be less interactive for it is likely to be an independent and individualised form of study (Zhao, 2007). Zhao (2007) also identifies the inability of distance learning to offer face-to-face interaction between students and teachers, the isolation and demotivation of students and its

lack of flexibility in content and learning methods. However, we should note that this is a limitation just derived from one model of distance learning. There are other models in which teachers can see and make contact with their students (e.g. skype, videoconferencing); even in previous print-based distance learning models, teachers may have had contact with students via telephone.

To sum up, the use of ICT in education has impacted on teaching and learning styles significantly. The next section deals with specific issues related to the use of ICT in language teaching.

2.3.2 Practice: ICT in language education (ICTLE)

This section reviews the literature relating to the use of ICT in language teaching and learning. Key areas to be discussed will include the following:

- Computer-assisted language learning (CALL)
- CALL in China
- The value of ICTLE
- Problems, difficulties, barriers and challenges of LCTLE, and suggested solutions, proposals or recommendations

2.3.2.1 Computer-Assisted Language Learning (CALL)

Computer-assisted language learning (CALL) was defined by Levy (1997) as 'the search for and study of applications of the computer in language teaching and learning' (p.1). The literature on ICT in language learning therefore naturally entails the history of CALL. This can be described in terms of three time periods: the 1960s-1970s, the 1980s, and the 1990s-present (Levy, 1997; Fotos & Browne, 2004; Warschauer, 2004).

When CALL first started in the 1960s and 1970s, language teaching was dominated by the audiolingual approach, an approach based on a behaviourist learning model and consisting of repetitive language drills and practice exercises. CALL therefore primarily took the form of drill-and-practice programmes and was regarded as a supplement rather than a replacement for classroom instruction (Fotos & Browne, 2004; Warschauer, 2004).

During the next decade: the 1980s, a different view was taking hold. Behaviourist approaches to language learning were challenged and gave way to communicative approaches, which were based on meaning-focused language use rather than formal instruction (Richards & Rodgers 2001; Fotos & Browne, 2004; Warschauer, 2004). Communicative CALL reflected the communicative language learning, and communicative language teaching approach – which put emphasis on the interdependence of language and communication (Fotos & Browne, 2004).

The early 1990s saw a different model of the computer, according to Fotos & Browne (2004), the computer used as stimulus, in reaction to criticisms that CALL was limited to mechanistic drills and lacked the ability to give learners essential feedback. The present stage of CALL, which arose in the mid 1990s, has been termed ‘integrative CALL’ (Warschauer, 2004) because in this period language teaching achieved full integration with e-mail, web browsers, video conferencing, and multimedia packages (Warschauer & Healey, 1998; Fotos & Browne, 2004).

The above historical outline is based on Warschauer & Healey’s (1998) summary of developments in CALL over the past 30 years, during which CALL has been through three main stages: behaviourist CALL, communicative CALL, and integrative CALL. Levy’s (1997) review illustrated these developments by introducing suitably representative CALL projects decade by decade. However, Bax (2003) offers a critical examination and reassessment of the history of CALL, pointing out that Warschauer & Healey’s categories contain inconsistencies and are based on unclear criteria. He suggests three different

conceptualisations based on Warschauer & Healey's categories – Restricted CALL (the underlying theory of learning, actual activities, teachers' role, and the feedback offered to students are all relatively restricted); Open CALL (compared with restricted CALL, this part is relatively open in all dimensions, e.g. attitudes to computer use are more open; focus of linguistic skills development is open and flexible) and Integrated CALL (integrated language, mixed skills and systems), compared to Warschauer and Healey's three phases of CALL. In Bax's view, our aim should be to attain a state of 'normalisation' in which the technology is invisible and truly integrated. He also describes a future for CALL: a time when teachers and students will use ICT naturally without fear or resistance. ICT will not be the centre of any lesson, but will be used appropriately in teaching and learning. Moreover, the role of ICT will be reflected in and integrated into all other aspects of classroom life, alongside course books, teachers and notepads. ICT will go almost unnoticed, just be an accepted part of the lesson. However, the future of CALL relies on many factors, including research in applied linguistics, change in the status of languages and language learning, and sociological changes in schools and education (Warschauer, 2004).

2.3.2.2 CALL in China

In China, CALL has also experienced three periods (Zhuang et al., 2007): the starting period (1980s), the developing period (middle-late 1990s), and the flourishing period (from the early 21st century to now). In the first period, computer facilities were simple and CALL software was very limited. Therefore, few CALL practices were adopted in EFL teaching. Then in the middle and late 1990s CALL developed quickly. There was more international exchange and cooperation in this field; multimedia teaching software in the form of CD-ROMs was designed collaboratively by institutions, companies and presses; and multimedia classrooms were used for instruction. From the turn of the century, CALL has flourished. During this latter period, three forms of CALL can be seen in China (Ma, 2003): in large multimedia classrooms (where it is used mainly for presentation), in web-based teaching centres (mainly for autonomous

and individualised learning), and in distance education. Web-based or campus Net-based (Intranet) language teaching and learning systems are highly recommended and used in many schools and universities. Each of these forms of CALL poses challenges for teachers, such as the effective management of large classes, the appropriate guidance and supervision of students for individualised self-access and autonomous learning, and the provision of sufficient interaction for learners in distance education.

Currently, multimedia-aided EFL teaching in China is found in four modes: the combination of in-class with out-of-class learning, online with offline, large-sized class with small-sized ones, and face-to-face instruction with autonomous learning. Such developments have brought about many changes to language classrooms in the past decades. Both the pedagogical approach and organisation of EFL classes have undergone extensive modification and change.

The view that computers serve as a mere assistant in language learning is challenged when higher technologies have been employed (Chen, 2005; Wang, 2007b). The reality is that the function of the computer is moving gradually from assistance to aid to autonomy in EFL teaching. Computer-assisted language learning tends to be autonomous language learning. As shown in Figure 2.4, educators/teachers give instruction to/teach learners/students with the assistance of computers (without Internet link), media, Web and traditional language lab (unequipped with computers). In this traditional CALL, learners are passive knowledge receivers rather than knowledge constructors in their learning process. However, Figure 2.5 shows that computers serve a major function in autonomous language learning. Designers design and produce computer-, media- or Web-based learning resources (designers can be teachers, computer experts or software specialists); learners/students operate and use computers, media or the Web for individual, autonomous language learning; that is, they interact with computers, media, the Web and courseware actively. In this context, learners are knowledge constructors. Computer-based autonomous language teaching and learning is facilitated with the development of artificial intelligence, digital technology, and information and Internet technology. The

computer has come to serve many major functions (not just as assistant, tutor or partner but as learning and teaching tool, resource and context as well). The computer has made it possible to conduct autonomous, individualised learning in a virtual situation (Chen, 2005).

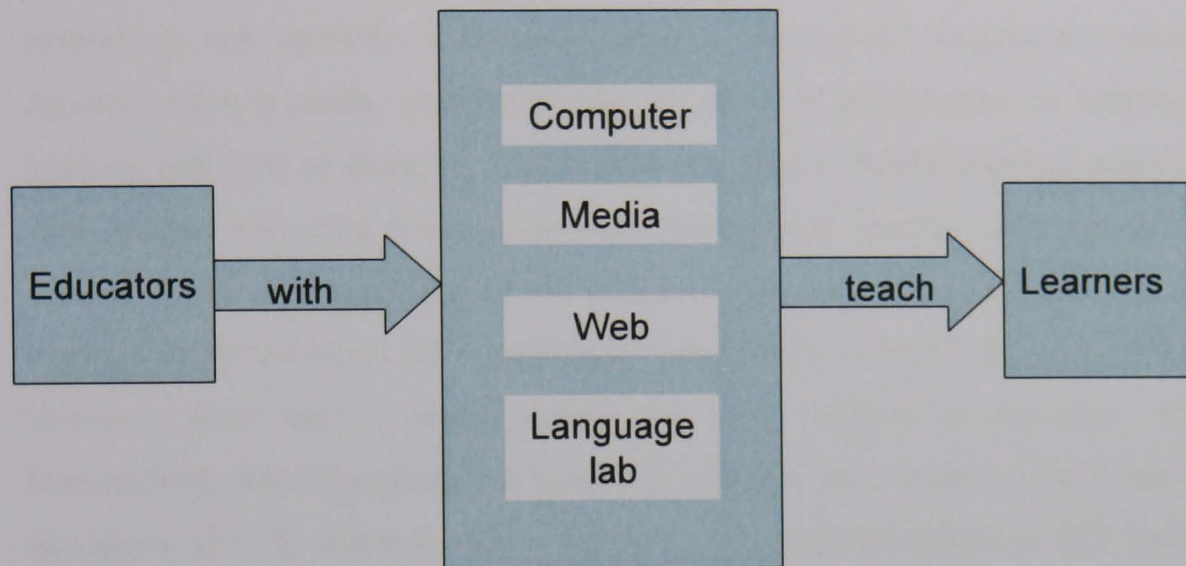


Figure 2.4 The CALL model (Chen, 2005:12)

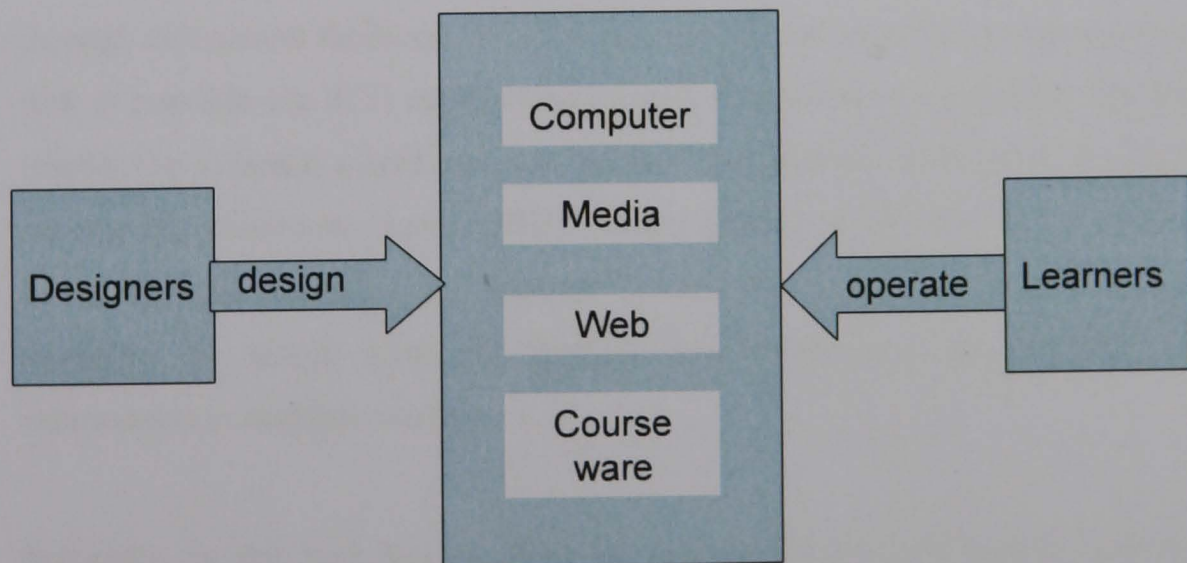


Figure 2.5 The computer-based autonomous language learning model (Chen, 2005:12)

2.3.2.3 The value of ICTLE

The effectiveness of ICT in language classrooms has been doubted by some researchers (Clark, 1991; Liddell, 1994; Zhao, 2007), who argue that there is no hard educational evidence in terms of learning benefits to be gained from employing any specific medium to deliver instruction. Scepticism mostly concerns how to make appropriate use of the new technologies in language learning and how to integrate CALL materials into different learning contexts such as the instructed class, self-access centres and distance learning in its various forms (Zhao, 2007). If the results of an innovation are invisible to teachers (observability), the adoption is undoubtedly affected (Rogers, 1995). However, there are so many reasons for us to believe in computer- and Internet/Web-based language teaching and learning. As a branch of ICT use in education, ICTLE certainly carries all the merits and advantages of ICT itself, and entails particular values in its own field.

First, ICTLE is considered a valuable resource. The computer can provide vivid pictures and sounds, which make language learning motivating or enjoyable; individualization and autonomous learning can be achieved with ICT resources; through self-access facilities, or self-study use, further practice or more time on task is possible via ICT; methods/activities/tasks unique to computers can free teachers to a certain extent and link teachers and students to learning resources outside the classroom (Levy, 1997). Beatty (2003) points out that as well as increasing the resources for learners outside the classroom, ICTLE makes available the search tools for finding that information, and presents the information in multiple media.

Secondly, in the new era of Web or Internet-enhanced language learning, learners are able to be more autonomous and focus their learning on the areas they are interested in. They can become creative because they can create their spaces and blogs on the Web, publish their ideas, communicate directly with the teacher through e-mail, and ask for feedback or advice. Based on his survey, Levy (1997:172) listed five interaction types available through the Web:

the students can interact with a website; they can interact with a 'form field' (fill in an interactive form on the Web); they can interact with a teacher or a student (e.g. exchange e-mail with their teacher or with keypals or work on a LAN (local area network, a computer network covering a small physical area, like a home, office, or small group of buildings, such as a school, or an airport); they can interact with a group (students participate in a LAN-based discussion group); they can use it as a learning environment (e.g. a MOO).

His argument is echoed by O'Connor & Gatton (2004). Based on their study, they contend that the great advantage ICTLE has over conventional classroom-based activities is that it offers enormous opportunities for students interacting with the target language. These interactions are controlled by the student but managed by the courseware curricula and carried by the microphone and headphones or by whatever is on the screen. Since the interactions are relatively private, many students who are silent in class are actively interacting with the material in target language. Further studies indicating the role of ICT in promoting learner interaction with materials can be found in, for example, Chappelle (2003) and Richards (2005).

Other advantages of ICTLE include its potential to involve learners in a variety of activities: communicating, the use of multimedia, Internet information searching, students' home-page construction, distance learning, test-taking, and so on. Other studies contend that an important outcome for students who use new media is that they develop a wide range of literacies and identities (Fotos & Browne, 2004).

In order to make ICTLE more effective, Chambers & Bax (2006) suggest that ICT should be integrated into the syllabus and that teachers should use computers in their teaching as often as the facilities allow. Other elements should be taken into consideration as well, such as teachers' need for both technical and pedagogical support, for development opportunities (in collaborative mode), for computing facilities which are readily accessible, and for software suited their students' particular needs.

2.3.2.4 Limitations of ICTLE

Just like other new technologies, ICT is a double-edged sword. On the one hand it brings countless benefits, values, and opportunities; on the other hand, ICT has its own limitations.

Levy (1997) lists several major barriers to successful use of CALL materials in his survey. These are: lack of time, funding, teacher training, reward/recognition, teaching staff perceptions of CALL, level of expertise required, lack of agreed standards, level of acceptance in wider context, publishing problems, problems organizing team work, professional intransigence and lack of information sharing, and lack of suitable software. Levy's analysis is supported by Beatty (2003), who implies that the cost of technology can be a barrier both to getting involved in CALL and maintaining the latest technology. Other problems, such as expertise and authoring programmes, centre on developing new CALL programmes. It is critical to overcome these obstacles in promoting efficient use of ICT in language education.

We turn now to such key problems of ICTLE identified in the literature as inadequate skills, emotional and cultural difficulties, and other issues such as material problems.

Inadequate skills

In terms of the skills language teachers need for ICTLE, different requirements have been put forward. Carnoy (2004) argues that it is essential to train teachers in basic computer skills. This is supported by the findings of a survey on four higher education institutions in central south China (Ma, 2003), which found that there was a pressing demand from these universities to train EFL teachers in ICT skills such as courseware design. With the nature of ICTLE changing and because of improvements in computer literacy among learners, advances in computer hardware and software, a better balance between pedagogy and technology continues to be a major challenge (Beatty, 2003). Carnoy (2004) also

points out that inadequate ICT skills result in the limitations of many authoring programmes, for example, true/false and multiple-choice questions are the most common low-level question types while higher-level synthetic, analytical and evaluative tasks are difficult to find.

According to Chapelle & Hegelheimer (2004), skills such as searching, evaluating, and re-purposing materials have always been crucial for language teachers. Furthermore, the fourth skill they mention, troubleshooting basic browser problems, is also essential for language teachers who want to use Web materials in their classes. They also contend that teachers should be expected to have at least a basic understanding of Web page design and creation, including how to insert hyperlinks and links to media files and Web page maintenance and updating. Creation of high quality online courses and related websites both require advanced knowledge; however, the ICT knowledge and skills which most teachers have seems insufficient to meet what is required (Hu, 2007).

Emotional and cultural difficulties

At the introduction stage of ICTLT, teachers are reluctant to use ICT, especially computers and the Internet. There may be some reasons for this reluctance, for instance, poor software design (this has been improved in recent years), scepticism about the effectiveness of computers in improving learning outcomes, lack of administrative support, increased time and effort needed to learn the technology and how to use it for teaching, and the fear of losing their authority in the classroom as it became more learner-centred. Similar reluctance on the part of students can be found in Hubbard's report (2004) that in computer-related language learning, frustration and anxiety were found in students doing collaborative web projects which required them to publish over the Internet. He & Zhong (2007) also revealed in their survey of two Chinese universities that students have not completely adapted to such aspects of the new multimedia environment as learning resources, learning and teaching paradigms or management and assessment of on-line learning. He & Zhong suggested reducing or re-channelling that anxiety in productive ways through critical reflection.

In another study of a technology-enhanced ELT reform project at an eastern Chinese university during 1998-2003 (Fang & Warschauer, 2004), cultural conflicts were identified. In China, cultural norms and beliefs mandate that teachers control the classroom and deserve utmost student respect. In this project, the expectation that teachers in ICT-enhanced classrooms would provide guidance, scaffolding and feedback rather than lecturing ran contrary to the cultural norms and beliefs. A learner-centred approach is also demanding of teachers' time, energy and intellectual attention. Hence, heavy workloads, a lack of financial and technological support discouraged teachers from devoting the extra time and energy necessary to fully implement the intended ICT-integrated approach. In order to achieve a broader diffusion of the reform, the authors recommended that education reformers needed to introduce greater incentives to encourage more teachers and students to accept ICT-based teaching and learning.

Problems with materials

The new technologies have equipped teachers and students with more teaching and learning resources and materials. Does more mean better? It should be acknowledged that too many materials are a new pedagogical problem in ICTLE. Even with access only to traditional teaching materials, teachers have had to be needs analysts and syllabus designers, and provide guidance on how to learn (McGrath, 2007). When much more diverse resources are available, teachers need to fulfil a number of roles at the same time, such as planning, researching, evaluating and selecting ICT-enhanced materials (ibid).

As for materials on the Web, how to browse through search results and locate suitable materials for teaching and learning, how to expose their students to the mass of materials on the Internet, help them select materials that contribute to the syllabus they are using and direct their language learning more effectively is a challenge for language teachers (Taylor & Gitsaki, 2004; Chapelle & Hegelheimer, 2004). Consequently, 'knowing how search engines work, performing searches, and letting students engage in canned searches i.e., searches that have been conducted and their results analysed, are important areas of expertise' (Chapelle & Hegelheimer, 2004:305). Therefore, computer search

tip sites were introduced in some training courses to both teachers and learners to enable them to cope with abundant information within a limited time.

In this section, the literature shows that ICTLE has brought about radical changes to traditional language teaching and learning; at the same time, its introduction has encountered challenges and problems (as discussed above). The next section discusses the factors that have been shown to influence the implementation of (ICT-related) reform.

2.3.3 Factors influencing implementation

Since ICT was introduced into education, it has brought benefits to both developing countries and developed countries. For instance, it has facilitated the connecting of rural schools to the outside world and more internal and external communication through the Internet; however, a number of issues still remain. For example, although ICT use in education is an encouraging trend in the new century, it is still hard to use ICT freely and proficiently and teachers are facing obstacles in actually using computers in their teaching. The reasons are manifold (Mumtaz, 2000; Warschauer, 2002; O'Mahony, 2003; UNESCO, 2003; O'Connor & Gatton, 2004):

- insufficient access to ICT facilities,
- unfavourable ICT policies,
- lack of technical support,
- insufficient and inefficient CPD,
- unfavourable appraisal systems related to ICT use,
- difficulty in changing deep-rooted roles of teachers as well as roles of schools and students,
- inappropriate beliefs and attitudes towards ICT use,
- lack of ICT knowledge and skills among teachers and students.
- poor ICT pedagogy.

All these issues hinder the implementation of ICT in schools. In Rogers' (1995) theory of diffusion of innovations, two potentially influential variables in the diffusion process are identified: receiver variables (such as attitude toward change and perceived need) and social system (individuals, groups and organisations) variables (see 2.2.1, Figure 2.2). In Fullan's (2001) new meaning of educational change, three clusters of factors influence the implementation of a change: the nature of the change, local characteristics and external factors (see 2.2.2, Figure 2.3). Both cover external and situational factors in change such as individuals, institutions and governments. Since influential factors within institutions are most relevant to my study, two sets of factors will be discussed in this section. They are institutional factors (e.g. ICT resources and facilities, ICT policies, commitment and support, ICT-related CPD opportunities, and appraisal) and personal factors (e.g. role change, attitudes and beliefs, ICT knowledge and skills and ICT pedagogy).

2.3.3.1 Institutional factors

UNESCO (2007) points out a number of factors/conditions for effective use of ICT in education:

- Political and financial commitment (at both government and school levels).
- Conducive policy and careful planning for integration of ICT into education.
- Adequate infrastructure (including alternatives to conventional infrastructure such as wifi and solar power).
- Equipment and ICT tools (such as desks, chairs, radios, televisions and computers) that are appropriate for local needs and are affordable in the long term.
- A system of ongoing professional development for teachers.
- Enthusiastic teachers, equipped with the skills required to make good use of ICT tools for enhancing education.
- Appropriate curricula that permit the use of ICT in teaching and learning.
- Institutional flexibility and monitoring and assessment systems.
- Adequate and timely technical support (trouble-shooting, maintenance and repair of equipment) in schools and learning centres.

Most of the above can be identified as institutional factors, which need to be in place before the educational benefits of ICT can be fully harnessed (Meleisea, 2007). O'Mahony's (2003) six-point model (see Figure 2.6), incorporates most of these conditions.

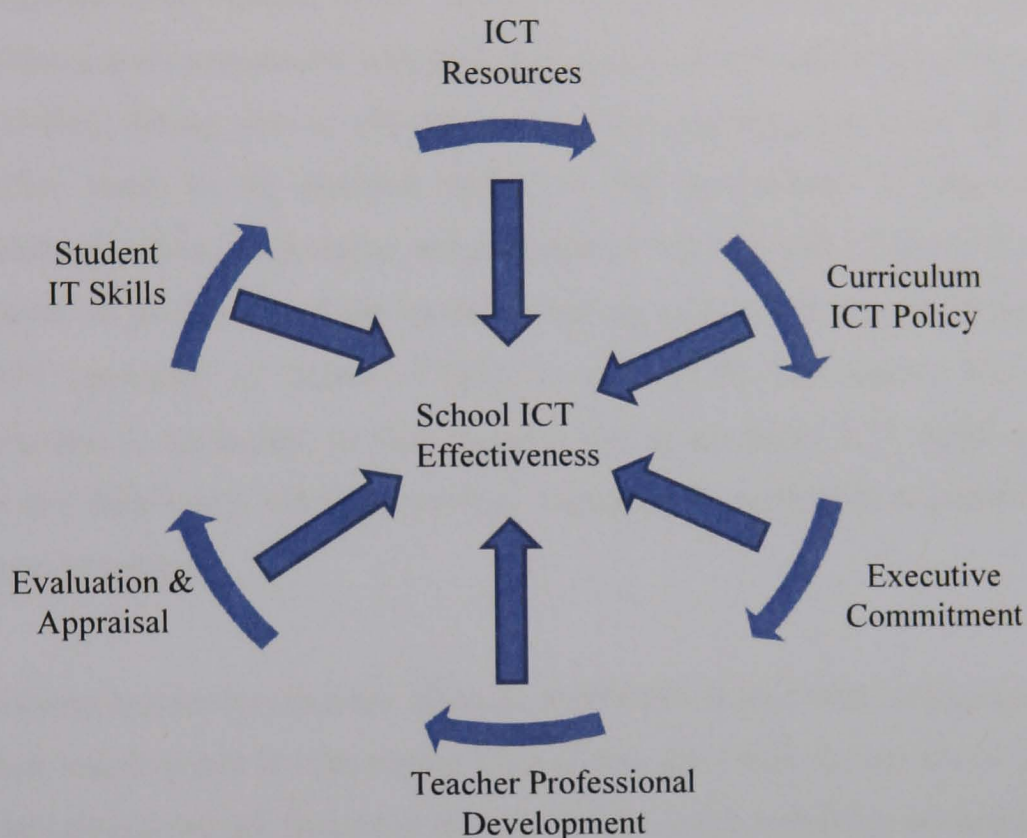


Figure 2.6 The school ICT effectiveness model (O'Mahony 2003:298)

The model indicates that effective use of ICT in institutions depends largely on six factors: ICT resources, curriculum ICT policy, executive commitment, teacher professional development (PD), relevant evaluation and appraisal and student ICT skills.

The first prerequisite for success with ICT use in institutions is the provision of sufficient, reliable and up-to-date resources. O'Mahony (2003) points out that these resources include network infrastructure, workstation and peripheral hardware, software, and human resources such as ICT coordinators. As for curriculum ICT policy, the institution must state clearly its intention and direction concerning the use of ICT, particularly in curriculum areas. Details of

this policy could include ‘a mandated minimum number of hours of ICT use, a target minimum qualification to be attained, or specific ICT-based assessment tasks’ (p.298). Executive commitment to ICT professional development should be expressed clearly and expectations such as minimum hours of ICT use and ICT-based tasks adopted in the classroom should be specified. Teacher professional development in ICT will, of course, enable teachers to gain more confidence and competence with ICT, but issues such as venues for training (on- or off-site), timing (on- or off-site) and content (productivity based or subject specific) need to be decided before a PD programme is implemented (O’Mahony, 2003). Evaluation and appraisal is necessary for it can give crucial feedback on all aspects of the model including staff ability and the availability of ICT resources or access. Finally, a cross-curricular student ICT skills programme is necessary so that students can grasp basic ICT skills such as keyboard familiarity, word processing, spreadsheets, presentation graphics, and Internet searching.

O’Mahony emphasises that the ultimate aim of this model is the improvement of student learning and it is therefore logical that the focus should be on student and situational factors. Since my concern is with institutional factors and teacher personal factors influencing implementation, I have developed two new models based on that of O’Mahony (see Figures 2.7 and 2.8, below).

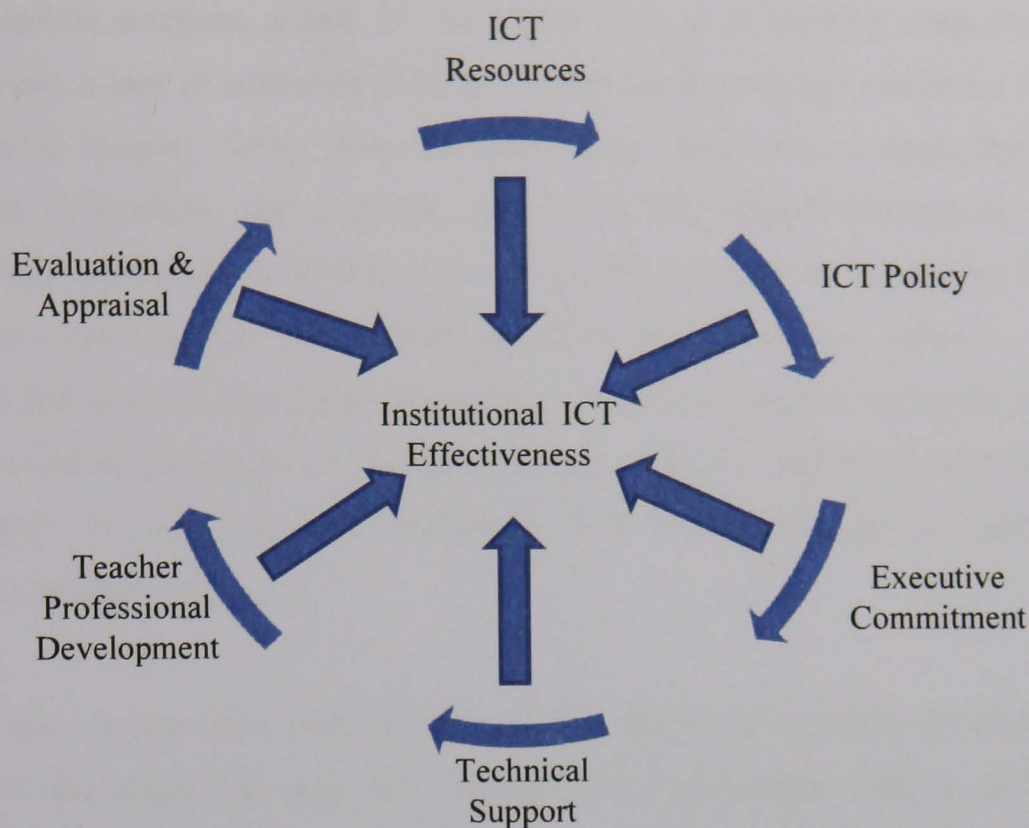


Figure 2.7 The ICT effectiveness model – institutional factors

Many studies show that institutional factors such as access to ICT facilities are a premise in implementation of ICT innovations (Warschauer, 2002; Hansson, 2006; Sahin & Thompson, 2006). In a project concerned with English teachers' professional development in Egypt (Warschauer, 2002), obstacles such as lack of access to ICT equipment were reported. Similar findings can be seen in another study exploring instructional computer use by faculty members in a College of Education in Turkey (Sahin & Thompson, 2006). It has been shown, not surprisingly, that accessibility and availability of computers are an important factor affecting the use of computers for instructional purposes. Therefore, administration should minimize barriers to computer access, especially in classrooms, that will lead to the higher level of observability of effect in the technology.

It is important to note that access is not only about access to computers and the Internet (Hansson, 2006). Even with access to computers, teachers face additional obstacles to using them creatively. For example, the most frequent barriers reported in Sahin & Thompson's (2006) study were a lack of

appropriate software, a lack of training in the use of existing computers and software, a lack of sufficient skills for instructional computer use and a lack of technical support. Other issues included huge class sizes, a centralized test-driven curriculum, and a school culture that discouraged innovation. These findings correspond to Williams et al.'s (2000) research on integrating ICT in professional practice in Scottish primary and secondary schools, which identified three distinct forms of teachers' needs for support: technical support (technical maintenance or trouble-shooting support), evaluation of resources (support in selecting and evaluating ICT resources) and a supportive organisational culture.

The point is that even with access to ICT, teachers also need to know how to handle the technology and fully exploit it for school use. CPD is critical to achieve this goal. At the same time, the presence of a coherent, consistent and committed ICT policy and development plan, institutional incentives and support for teachers to pursue CPD are also critical (Drenoyianni, 2004). Such a policy may take the form of promotion for teachers who innovate with ICT, as opposed to merely using it in the classroom, or simply making sure that teachers have adequate access to technology after training (Wikibooks, n.d.).

To summarise, institutional factors cannot be overlooked in the implementation of ICT in education. Like any major innovation, no large-scale ICT-related programme can succeed without institutional support. As O'Connor & Gatton (2004) state, 'without a real commitment on a broad institutional and personal front, even the most successful programme will lose ground' (p.223).

2.3.3.2 Personal factors

Individual factors that influence teacher take-up of ICT far outweigh the institutional factors (Veen, 1993, cited in Mumtaz, 2000). Teacher factors such as role change, beliefs about and attitudes towards teaching methodology, computer-handling technical skills and ICT pedagogy (ICT knowledge and

skills in managing classroom activities) are regarded as most influential in teachers' use of computers (Mumtaz, 2000) (see Figure 2.8).

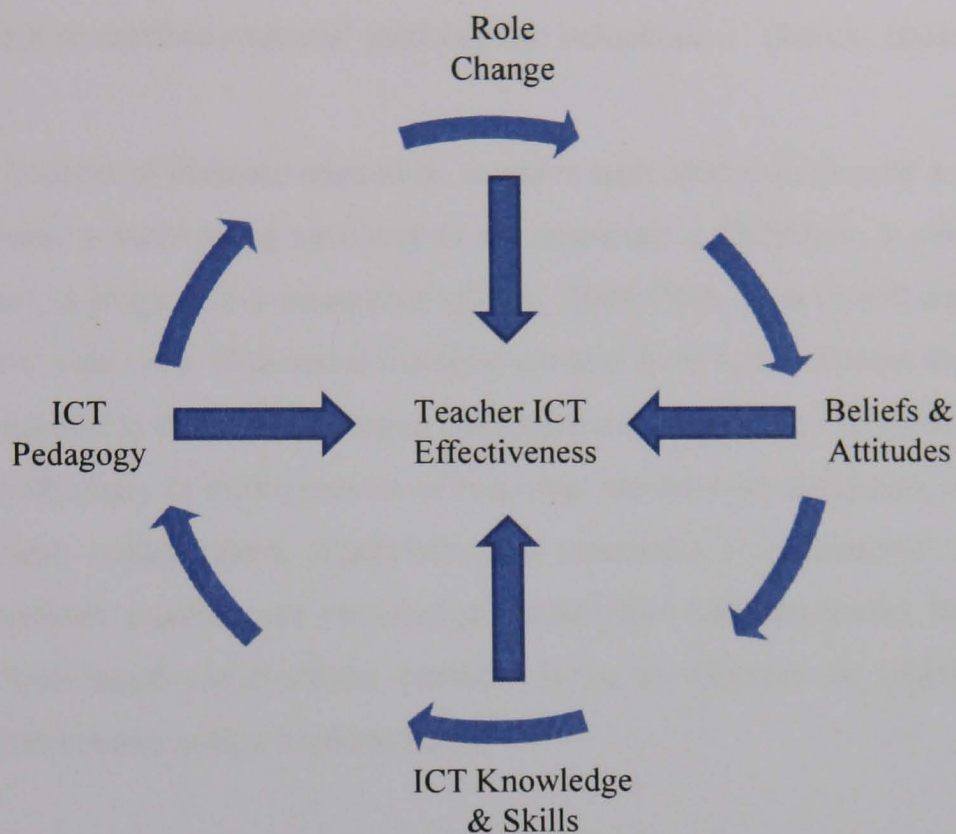


Figure 2.8 The ICT effectiveness model – teachers

Role change

ICT use in education requires reconsideration of teachers' role orientation. In traditional classrooms, teachers were instructors, taking on the role of an information dispenser, authoritative expert and fountainhead of information and knowledge. Since ICT has been introduced, the new technologies are used to stimulate more communication between teachers and students. Although ICT does not necessarily determine teachers' role change from lecture-oriented to learner-centred teaching (e.g. communicative language learning without ICT also required teachers to take on new roles within a learner-centred approach), the shift from teachers transferring knowledge to guiding learning processes in which students work individually and independently cannot be separated from the use and impact of ICT (Jager & Lokman, 1999). In ICT-integrated classrooms, teachers are expected to act as a guide, providing strategic support and assisting students in finding their own learning method and evaluating their

learning processes and outcomes (Jager & Lokman, 1999; Liao, 2005; Meng, 2005; Zhao & Hao, 2006). In so doing, teachers will also need to 'constantly reflect on their own role in the classroom, monitoring the extent to which they constrain or scaffold students' thinking and behaviour...' (Smith, 2001:43).

In the context of distance education, teachers have also experienced a change of role from 'a dominating authority to an organiser, a facilitator, a consultant, a designer, a judge and a researcher' (Peng, 2004:188). Liao (2005) summarises teachers' roles in a Web-based teaching context from four different dimensions: 1) in relation to their own personal development, teachers are reflective learners and researchers; 2) in the process of teaching, teachers are designers, developers, organisers, collaborators, supervisors and assessors; 3) in students' individual development, teachers are knowledge constructors and personality builders; 4) in a Web-based environment, teachers serve as mentors on ethics in Web environment and policy implementers.

One issue in all this is how teachers get used to their new roles. Teachers can make comprehensive use of ICT, but it needs time for them to change roles. Moreover, since ICT-enhanced learning is a new experience even for the teachers, teachers become co-learners and discover new things along with their students. In fact, after ICT has been introduced in the classroom, it can be argued that the teacher's role in the learning process becomes even more critical. A questionnaire survey aiming to find out students' expectations of teachers' roles in autonomous language learning in China (Wang, 2007b) found that students most expect teachers to fulfil the roles of counsellors, inspirers, trainers who provide specific training for students in learner autonomy on the basis of an analysis of students' needs, and developers of suitable materials catering for autonomous learning. With the introduction of ICT into classrooms, small-group instruction and one-to-one tutoring in an ICT environment has become more and more popular as a means to meet students' needs, and this new classroom dynamic requires the teacher to interact creatively with ICT and students.

Beliefs and attitudes

Educators and researchers (e.g. Kern 1995; Fang 1996; Becker, 2000; Higgins & Moseley, 2001) point out that teachers' beliefs are important determinants of teaching practices. Kagan (1992) argues that 'the more one reads studies of teacher beliefs, the more strongly one suspects that this piebald of personal knowledge lies at the very heart of teaching' (Kagan, 1992:85). Following a review of factors affecting teachers' use of ICT, Mumtaz (2000) concludes that teachers' beliefs about teaching and learning with ICT are central to integration.

As we know, ICT-learning has grown at a rapid pace and influenced the overall learning and teaching experience, but the adoption of new ways of teaching and learning in education institutions through ICT undoubtedly create conflicts between traditional and new styles, and tensions for both teachers and students. It seems that many teachers are initially reluctant to use ICT. Robertson et al. (1996) categorised what they see as teachers' resistance to computer use according to the following themes: resistance to organisational change, resistance to outside intervention, time management problems, lack of support from the administration, and teachers' personal negative perceptions of computer use. Although the purchase of ICT facilities is an administrative decision, using ICT has always been a teacher decision (Cuban, 1996); therefore, teacher resistance is the main obstacle to ICT use, and central to this is a concern about workload. Cuban's (1996) historical research on technology adoption in schools argues that teachers have resisted technology 'when the innovations under consideration contribute to the multiple conflicting goals they are asked to carry out daily for masses of diverse children' (p.15).

Mumtaz's (2000:320) survey reviews the factors that militate against teachers from using technology. These are:

- lack of teaching experience with ICT;
- lack of on-site support for teachers using technology;
- lack of help supervising children in their computer use;
- lack of ICT specialist teachers to teach students computer skills;
- lack of computer availability;
- lack of time required to successfully integrate technology into the curriculum;
- lack of financial support.

Change in beliefs requires change in the way teachers think about teaching and their teaching practices (Karavas-Doukas, 1998). On a more specific level, it has been argued that beliefs and attitudes are significant elements which influence teachers' adoption and integration of ICT in teaching (Fang, 1996; Jonassen et al., 1999; Becker, 2000). Jonassen et al. (1999) maintain that changed teaching practice requires the change of teachers' beliefs in learning and teaching. The transition from traditional teaching to teaching with ICT is more difficult than it may seem for 'it involves a shift in teaching paradigms, a shift in the way of thinking about teaching' (Poole, 1995:198, cited in Watson, 2001:183). Changes in beliefs are even more difficult compared with the change of teaching approaches, for they challenge the core values held by teachers concerning the purpose of their teaching; moreover, 'beliefs are often not explicit, discussed, or understood, but rather are buried at the level of unstated assumptions' (Fullan, 2001:44).

Teachers' attitudes toward ICT are multi-faceted. Their decision to adopt the new technology is based upon their ease of mastery of the technology, their trust in it, their flexible use in classroom management (Cuban, 1996). Numerous studies have focused on teachers' attitudes in large-scale changes/reforms/innovations. In Albirini's survey (2006) of the attitudes of high school EFL teachers in Syria, teachers were found to have positive attitudes toward ICT in education. Teachers' attitudes were predicted by computer attributes (e.g. the relative advantage of computers, their compatibility with teachers' current practices, their simplicity/non-complexity and the observability of good effect of practice), cultural perceptions, computer competence and computer access. He also points out the importance of teachers' vision of technology itself, their experiences with it and their cultural perceptions

concerning the adoption of ICT when this technology was introduced into schools. However, he did not analyse the effect of teachers' positive attitudes on their practical ICT use in the classroom. In Bliss & Bliss' survey (2003) of attitudes of elementary school teachers in the USA, 91% of respondents agreed that positive attitudes and self-confidence toward computers are a necessary condition for effective use of ICT in classroom. Nevertheless, due to inadequate professional development and support, fewer than 20% of the respondent teachers felt confident to integrate educational technology into their daily classroom instruction. Karagiorgi & Charalambous' (2006) study on the impact of ICT in-service training for pre-primary and primary school teachers in Cyprus concluded that training had a significant impact on teachers' attitudinal stance. Teachers reported that they had overcome fears about the use of ICT after training. A German study (Lang, 2000) has shown that since computers were introduced into the German educational system 25 years ago, teachers have formed positive attitudes towards computer use in learning and are confident in ICT use. However, teachers' demand for ICT training is still high.

Many factors may jeopardize teachers' willingness to accept the new method of teaching, such as their uncertainty over the outcome of the new method, lack of confidence in mastering it, and any initial failure to apply it successfully in the classroom (Gu, 2007). New knowledge and imposed changes can be 'a threat to the self-confidence, self-esteem and credibility that teachers have built up over many years' (Gu, 2007:30).

Francis-Pelton & Pelton (1996, cited in Albirini, 2006), in their study of the correlation between teachers' attitude and acceptance of technology, showed that many teachers' lack of knowledge of ICT and relevant experience of change lead to a lack of confidence in attempting to introduce ICT into their instruction. Moreover, lack of knowledge and skills in ICT-use resulted in negative or neutral attitudes toward its use in education. Teacher's ICT competence is a significant predictor of their attitudes towards ICT use (Berner, 2003, cited in Kim et al., 2008).

Fishman et al. (2003) maintain that professional development should fundamentally be about teacher learning: changes in the knowledge, beliefs and attitudes of teachers that lead to the acquisition of new skills, new concepts and new processes related to the teaching work. Therefore, teacher attitude change is a key aspect of the teacher training process (Karavas-Doukas, 1998). In other words, teachers' training/development should be directed towards changing teachers' beliefs and attitudes towards a reform or an innovation in order to bring about change in practice.

In sum, changes in beliefs, which are linked to and guide behaviour, are the most difficult to achieve, although there is an alternative: to impose a change in practice before teachers change their attitudes and wait for this change to take place. Changes in beliefs and understanding are the foundation of lasting reform (Fullan, 2001). Even so, changing teachers' attitudes is only a minor step towards successful education reform (Karavas-Doukas, 1998). Teachers' perceptions of ICT in education are not only influenced by the discourse of official documents and guidelines, but also by their own experiences of using ICT (Tubin et al., 2003). Therefore, a grasp of ICT knowledge and skills is necessary for teachers before they use ICT in practice.

ICT knowledge and skills

With regard to ICT knowledge and skills, it has become fashionable to refer to 'ICT literacy', one helpful definition of which is 'using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate and create information in order to function in a knowledge society' (ETS, 2002:2 cited in Drenoyianni, 2004:388). As illustrated in Figure 2.9, ICT literacy is represented as the development of five critical ICT proficiencies, each of which requires the integration and application of both cognitive and technical proficiency skills. This means that ICT literacy is more than the ability to operate a computer. It includes not only the acquisition of basic technical skills but a complicated set of capabilities related to 'collecting and retrieving, organizing and managing, interpreting and representing, evaluating and creating information' (ibid).

ICT Literacy

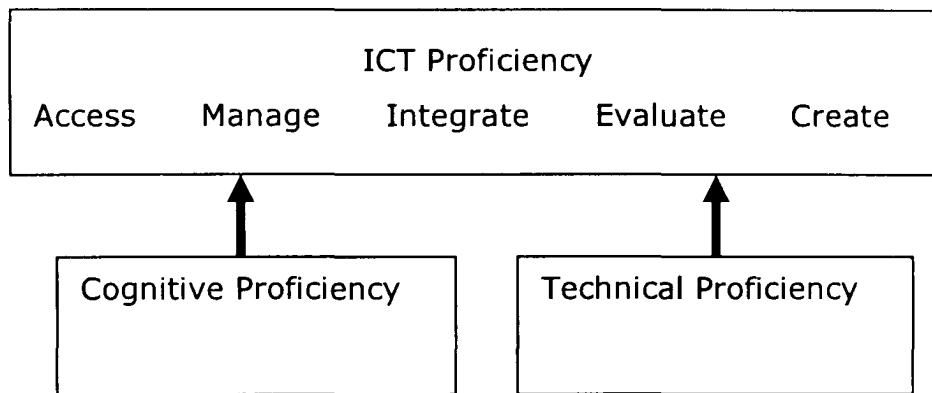


Figure 2.9 ICT literacy organisational scheme (Drenoyianni, 2004:388)

Zhang & Yang (2002) suggested five dimensions of ICT literacy that primary and secondary school teachers should have in the Chinese context: basic ICT literacy, applying ICT to teaching, ICT and teaching evaluation, ICT and CPD and lifelong learning, and awareness of ethical and legal issues in the ICT context. Warschauer (2002) has also put forward a perspective on what he calls 'new electronic literacies' (p.455) These include computer literacy (e.g. comfort and fluency in using computers), information literacy (i.e., the ability to find and critically evaluate online information), multimedia literacy (i.e., the ability to produce and interpret complex documents comprising texts, images, and sounds) and computer-mediated communication literacy (i.e., knowledge of the pragmatics of individual and group online interaction). While these researchers show similar understandings of ICT literacy, Zhang & Yang's concept of ICT literacy extends its application to CPD and highlights ethical issues; at the ICT proficiency level, however, it is not as complete as that of Drenoyianni or Warschauer.

ICT may have improved efficiency in certain respects, but its function is critically debated by many researchers. In terms of teachers' ICT knowledge and skills, Carnoy (2004) points out that teachers lack skills such as the use of software for data analysis. The lack of relevant ICT knowledge and skills is consistent with the findings of a project in Egyptian schools and universities (Warschauer, 2002), where it was demonstrated that even though there was a reasonable amount of computer equipment in these schools, teachers had little

knowledge of how to use it for instruction and other professional purposes. The general lack of computer skills was also one of the largest obstacles which hindered the spread of ICT-based learning in schools (ibid).

Since ICT has been widely adopted in language learning, Fotos & Browne (2004) advocate that ICTLE expertise for teachers includes both practical skills such as being able to design, implement, and evaluate ICTLE activities in their classrooms and a thorough understanding of IT theory. Fotos & Browne also recommend that teachers should know how to set up and operate a multimedia language laboratory. In addition, teachers should be familiar with ICT-related options not only within the classroom, but also 'at the institutional level, and even at the broader level of inter-institutional collaboration' (Fotos & Browne, 2004, p.3). Chappelle & Hegelheimer (2004) emphasise that all language teachers need to know how to use the Web as a resource for current authentic language materials in written, audio, and visual media formats. However, because it is difficult for teachers to create materials by themselves, as O'Connor & Gatton (2004) note, it is essential to the success of any ICTLE project that they choose the right courseware. Since materials available on the Web vary dramatically in quality, language teachers should be very critical in deciding which sources to trust and which Web sites to choose for students. This requires ability to assess the quality, usefulness, and appropriateness of Web materials. Hence, evaluating a large amount of information on the Web is a skill teachers need to possess (Chappelle & Hegelheimer, 2004).

Another key skill language teachers should grasp is how to train students to make use of an ICT-integrated learning context. Hubbard (2004) points out two general areas of learner training that have obvious relevance to ICTLE: learner strategy training and learner autonomy. He argues that learner training is essential for effective use of ICT, and therefore that teaching learners how to learn through technology should be a central part of teacher education. Hubbard's statement about learner training is further supported by other researchers. Chappelle & Hegelheimer (2004) add that teachers need the knowledge about how students learn with technology while working on

language-learning tasks. Furthermore, developing and carrying out such learning tasks require the teacher to hold a view of communicative competence. If, in pursuit of this goal of communicative competence, teachers decide to use CMC (computer-mediated communication), they need to know how to use communication tools such as chat rooms, bulletin boards, e-mail, and electronic mailing lists. In addition, teachers need to have an understanding of the types of tasks that may help learners to grasp the target cultural concepts.

In reference to China, Lai (2002) suggests four instructional technologies which EFL teachers should master in order to apply ICT effectively in their teaching: designing instructional courseware, Internet searching skills, full use of email for communication with students and creation of a teaching website. The following table lists the forms of ICT knowledge and skills which the writers discussed above feel that teachers should possess.

Table 2.3 Summary of ICT knowledge and skills recommended by writers

Writers	ICT knowledge & skills recommended
Lai (2002)	Instructional technologies: designing instructional courseware, Internet searching skills, full use of email for communication with students and creation of a teaching website
Warschauer (2002)	New electronic literacy: computer literacy, information literacy, multimedia literacy and computer-mediated communication literacy
Zhang & Yang (2002)	ICT literacy: basic ICT literacy, applying ICT to teaching, ICT and teaching evaluation, ICT and CPD and lifelong learning, awareness of ethical and legal issues in the ICT context
Chapelle & Hegelheimer (2004)	How to choose and evaluate materials on the Web; how to use communication tools.
Drenoyianni (2004)	ICT proficiency: collecting and retrieving, organizing and managing, interpreting and representing, evaluating and creating information
Fotos & Browne (2004)	ICTLE expertise: practical skills (to design, implement and evaluate classroom activities); IT theory
Hubbard (2004)	How to train students: learner strategy and learner autonomy.

The proposals listed in Table 2.3 show that not matter ICT is used in general or in specific field e.g. language education, teachers should apply ICT knowledge and skills to promoting teaching and their own development and promoting learning on the student's part.

Decades after the introduction of ICT in education, teachers' ICT ability seems to have moved beyond 'beginner' stage. However, the higher requirements such as setting up a multimedia language laboratory and building a website seem to be impractical for EFL teachers, for many of them have not grasped enough basic ICT knowledge and skills to be capable of this. In the study of ICT use at an English secondary school (O'Mahony, 2003), teachers complained that more sophisticated skills such as presentation, graphics, desktop publishing and web publishing were hard for them to grasp. The reasons include a lack of time, a lack of training and a lack of ICT resources in the classroom. However, one should note that even if the teachers were highly trained in computers and each student provided with a computer, teachers' ICT pedagogy might still not be good enough to produce significant gains in student achievement (O'Mahony, 2003).

ICT pedagogy

As Karagiorgi & Charalambous (2006) state, ICT is used not only as a basic operational tool but also as a communication tool, promoting the development of creativity, interactivity, cooperative learning, critical thinking and problem-solving. In other words, just knowing how to use ICT in the classroom is not enough. Instead, teachers must become knowledgeable about how ICT can support and enhance students' learning in the classroom, how ICT can provide more learning opportunities and be another vital learning tool for students. Teachers should be self-confident enough to integrate it effectively into their classroom. Hence, ICT pedagogy, defined as how to use ICT to promote pupil learning (McCarney, 2004), is a key methodology that teachers should grasp.

The literature shows that teachers are not skilled in applying ICT into their practice so as to achieve the improvement of students' learning (Gibson, 2001;

Watson, 2001; Bliss & Bliss, 2003; Loveless, 2003a, b; Drenoyianni, 2004; Law et al., 2005; Hu, 2007). For example, in Drenoyianni's study (2004) on designing and implementing a project-based ICT course in a teacher education setting in Greece, it was found that the problems encountered in ICT education are mostly pedagogical rather than technological. Studies in the UK (Webb, 2002; Webb & Cox, 2004) also indicate that teachers need to improve their ICT pedagogical knowledge in ICT-supported teaching. Research evidence from classrooms suggests that in most cases, those teachers who use computers in their classrooms cannot clearly relate the use of technology to their pedagogic strategy for their own subject (Watson, 2001).

It is important to note that the process of adopting new pedagogy can take a considerable time, involving complicated processes of undertaking experiments, evaluation, adjustment and re-routinisation (Gu, 2007). Therefore, ICT pedagogy is not likely to be adopted by teachers within a short period of time.

There is no doubt that, apart from teachers, the personnel who influence the implementation of ICT in education also include principals, technicians, students and other staff in schools. For instance, as discussed by O'Mahony (2003) (see Figure 2.5), student IT skills are also regarded as a key factor to guarantee ICT effectiveness in schools. Many studies show that students are not able to use ICT effectively and skilfully in their learning (Dwyer & Critchfield, 1978; Leuhrmann & Peckman, 1984; Carnoy, 2004). However, since the focus of this study is on teachers, I will not discuss other student factors further in this section.

To summarise, the literature has shown that there is agreement between researchers that ICT implementation in schools is a complex process, involving many factors (institutional and personal), but there is still uncertainty concerning the extent of each factor's involvement in the implementation of innovation and the influence of each factor on the level of innovation 'in different domains of the school activity' (Nachmias et al., 2004:305).

2.4 Continuing professional development for ICT

All serious educational reform efforts are bound to fail if the quality of teachers is not taken into serious consideration (Hargreaves & Fullan, 1998). With regard to continuous change in technologies, teachers need to keep up with developments in order to make selective use of ICT which they feel will benefit themselves and learners. However, the willingness and ability of teachers to integrate ICT into their teaching is largely dependent on the professional development they receive (Watson, 2001; Hu, 2007). Professional development helps teachers learn new roles and teaching strategies that will improve student achievement. Therefore, teacher professional development is a key factor in a successful innovation.

Carnoy (2004) argues that the role of ICT in education can be analysed in terms of changes in the management of the educational sector associated with ICT, changes in the work process, and changes in the training of educational personnel and of students associated with ICT. Since the focus of this study is ICT-related teacher professional development, this section will only consider the role of ICT in terms of changes in teacher development; elements of CPD, models of CPD and language teachers' CPD for ICT will then be discussed.

2.4.1 The role of ICT in teacher development

Davis (1999) proposes three interacting principles underpinning ICT in teacher education: pedagogic considerations, technical considerations and networking and collaboration considerations. These are further illustrated in Jung's (2005) study, which analyses a variety of approaches to ICT use in teacher training worldwide into a four-cell matrix (see Figure 2.10).

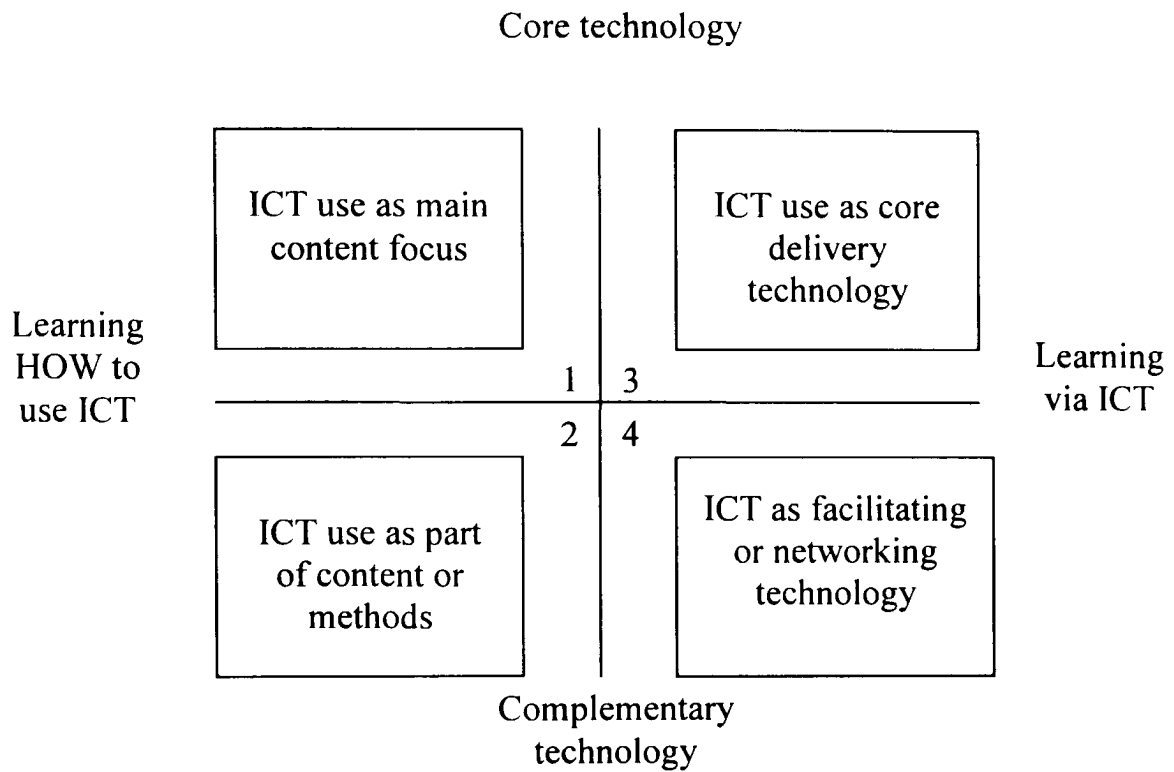


Figure 2.10 Categories of ICT in teacher training (Jung, 2005:95)

For instance, teachers can be trained to learn how to use these new technologies in their teaching (Categories 1 & 2) and they can be trained via ICT (Categories 3 & 4); in other words, ICT can be used as a core (Categories 1 & 3) or complementary focus or delivery method (Categories 2 & 4). In Category 1, teachers are trained in how to use ICT in the classroom; and this reflects that historical fact that ICT knowledge and skills has been the main content of training courses. Most of the early ICT teacher training programmes in the 1990's focused on Category 1, the emphasis being on basic technical skills used in the classroom (Jung, 2005). In Category 2, the focus of which is on the development of ICT-pedagogy integration skills, ICT is a part of training content and also one means of delivering training. An example of Category 2 can be found in a case study of ICT-pedagogy integration in training K-12 teachers in USA, in which teachers learned how to use ICT in their classrooms by actually being engaged in the process of ICT-integrated training. In Category 3, ICT is used as the major way of providing the learning experience of teacher training and digital technology has become the core delivery technology. The content of this approach does not necessarily focus on ICT skills but rather

covers a variety of ICT applications. In Category 4, ICT, particularly Internet and Web-based communication technologies, are used to support teachers' on-going professional development and networking.

It seems that European ICT training models for language teachers tend to correspond to three of Jung's categories for ICT in teacher training: ICT as part of content, ICT as core delivery and method and ICT as facilitating or networking technology (Peng & He, 2007). For instance, the Institute of Education, University of London offers a campus-based MA TESOL programme in technology and language teaching and learning (IOE London, n.d.), focusing on learning about ICT (learning how to use ICT). In Pemberton's (2009) study on a three-year MA TESOL microteaching project, online peer discussion of video-recorded teaching was used to support teacher development. In Australia, both learning about and with ICT were revealed as diversified approaches adopted to prepare and support beginning and experienced teachers to introduce and manage ICT in classroom learning activities (Pearson, 2003). The author predicts that increasing emphasis is likely to be placed on learning with ICT in future.

Although the importance of integrating ICT in education and teacher training/development seems to be increasingly recognised by governments and teacher training institutions throughout the world, and various ICT-integrated training environments have been created in many cases, research suggests that ICT is still used as the main content focus of teacher training (Potter & Mellar, 2000; Knezek & Christensen, 2002; McCarney, 2004). The reasons might be the limited ICT skills of teachers and limited resources in many nations. However, increasing emphasis is likely to be placed on learning with/via ICT, for ICT is expected to play a much greater role in course delivery, assessment, and communication in the future (Pearson, 2003). How to guarantee the effectiveness of language teacher development via ICT thus needs careful consideration.

In China, policy-makers recognise the potential of ICT for educational instruction and interaction as well as a means of supporting teachers' professional development. International cooperation is also increasingly popular, a recent example being the eChina-UK project, a Sino-UK collaborative e-learning initiative involving the MOE in China and the Higher Education Funding Council for England (HEFCE) with the aim of improving teacher quality via distance learning (including online distance learning) (Forrester et al., 2006).

This large and well funded collaborative project was, in fact, divided into several subprojects (Spencer-Oatey, 2007), each of which involved one or more UK HE partners and a Chinese HE partner. The project led by the University of Manchester with Beijing Normal University (BNU) was aimed at developing e-learning modules (at master's level) for in-service high school teachers, not specifically teachers of English in China. The second, which the University of Cambridge and Tsinghua University were involved in, was aimed at developing the ability of university teachers who were not teachers of English to deliver lectures in English and conference presentations in English. The remaining two subprojects, which were concerned to develop materials for TESOL teachers, were located at the University of Nottingham. One, in conjunction with Beijing Normal University (BNU), aimed to help secondary school teachers to upgrade their certificate-level qualification to BA level. The other, with Beijing Foreign Studies University (BFSU), focused on university teachers without an MA degree) (see <http://www.echinauk.org/> for more information). Nowadays many such opportunities for teachers' CPD are available worldwide.

2.4.2 Elements of CPD

A number of studies have shown that successful innovation projects in teacher training/development are likely to have the following characteristics (Karavas-Doukas, 1998; Williams et al., 2000; Bliss & Bliss, 2003; Webb et al., 2005):

- training takes into account teachers' existing knowledge and experience;
- there are opportunities for reflective and collaborative learning;
- training considers teachers' different needs and provides on-the-spot help;
- teachers are seen as change agents and not merely recipients of change;
- training projects are systematic, ongoing and long term.

Following a study of four Tasmanian primary schools in Australia, Webb et al. (2005) suggest that professional learning should be situated in the institutions in which the participants regularly work; should be closely aligned with the development of communities of practice; should focus on the development of new practices and/or the improvement of existing practices; and should be managed as a collaborative endeavour and as an on-going process rather than as an event or series of events. The findings of Williams et al.'s (2000) survey of primary and secondary teachers in Scotland supported Webb et al.'s argument in that good training turned out to be appropriate to classroom use; and offered opportunities to work and share ideas with other teachers.

When the desirable characteristics mentioned above are not present, problems occur (Charalambous & Karagiorgi, 2002; Pan, 2004). Charalambous & Karagiorgi (2002) identify several problems encountered in the implementation of two ICT in-service education and training (INSET) programmes in Cypriot primary schools. For instance, provision of ICT INSET appeared piecemeal, not linked to long-term professional growth and not related to classroom practice. A gap between the training/education opportunities provided and what teachers needed can be found in a number of studies (Potter & Mellor, 2000; Charalambous & Karagiorgi, 2002; Knezek & Christensen, 2002; McCarney, 2004; RTCTTEC, 2005).

Problems such as these occurring in the implementation of general teacher training/education have also been identified in the investigations of EFL teacher

development in China. In a survey (Pan, 2004) investigating the relation between the everyday teaching and the training provided, of the 88 secondary school teachers of English surveyed, the majority said they had little time to reflect and were unable to attend conferences or seminars and conduct peer observation because of their heavy workload. The findings also indicated that the training was still instructor-centred and the trainees were passive receivers. The programmes were monotonous and could not meet the teachers' individual requirements. In short, there are gaps between EFL teachers' needs and the teacher education programmes provided (Pan, 2004; Gao & Li, 2007). This argues for careful collection, processing and analysing of information about teacher needs before any programme can be conceived, planned and effectively managed.

2.4.2.1 Needs identification and analysis

The identification of needs is considered crucial to effective teacher professional development programmes because of its role in decision-making (Wlodkowski, 1985, cited in Zhou, 2004). In a case study of a university in East China (Gu, 2004), a needs-based CALL course for teacher education was designed for both MA graduate students and in-service teachers. The most critical needs identified were how to use ICT for personal and professional development (e.g. the grasp of ICT knowledge and skills to meet the requirements of the growing job market or demand for position promotion and improvement of teaching practice). Another good example of preliminary needs identification and analysis is an Egyptian programme entitled 'Computers in English Language Teaching' (Warschauer, 2002). The content of the programme was tied closely to the actual needs of teachers as identified through needs analysis. Teachers' needs include simple tasks such as the creation and use of e-mail lists for professional discussion, the use of office software to develop materials or prepare PPT, the use of the Internet for information or creating professional Websites. These two examples show the careful consideration of teachers' needs that is required before a programme is launched and during the CPD process.

The importance of this point is emphasised by studies which revealed a mismatch between the perceived and actual needs of teachers. An example can be found in Rhodes & Cox's (1990, cited in Potter & Mellar, 2000) study in UK primary schools of short INSET courses. Teachers just learned how to use hardware and software while what they wanted was the opportunity to explore the integration of the computer into the curriculum. This is consistent with the findings of McCarney's survey (2004) in 40 Scottish primary schools on effective teacher development for ICT. In his investigation, he found that teachers preferred ICT knowledge for pedagogic use (e.g. how to use ICT in the classroom; how ICT can support and enhance student learning as a natural part of the classroom activities; how ICT can provide more learning opportunities and be another vital learning tool for students) while previous staff development simply concentrated on technical skills. Similarly, in a 1999-2000 Texas study (Knezek & Christensen, 2002), it was also reported that there was a lesser need for training in how to use computers and a greater need to be trained in teaching techniques and strategies to integrate technology into the curriculum. Charalambous & Karagiorgi (2002) found the same problem in the implementation of two ICT INSET programmes in Cypriot primary schools, in which courses concentrated on the acquisition of skills in relation to hardware and software and emphasised technical issues whereas teachers were interested in the integration of ICT into their teaching. These studies show that the training/development programmes provided for teachers still tend to be in category 1 of Figure 2.10 while what teachers perceive as a need is in category 2: ICT-pedagogy integration.

Since teachers vary with regard to ICT background as well as personal and professional needs, it follows that ICT-related CPD programmes should be flexible enough to meet different needs (Charalambous & Karagiorgi, 2002; Gu, 2004). It has also been noted that staff at different points in their careers have different professional development needs (Huston & Weaver, 2008).

2.4.2.2 Modes of CPD (How?)

Because ICT is changing and developing so rapidly, mastery of new technologies necessitates a capacity for constant innovation and adaptation. The delivery of CPD programmes is spread across different modes, from informal mentoring to formal courses, from face-to-face to partial or wholly online interaction (Harlen & Doubler, 2007). For instance, teachers can gain ICTLE skills by taking courses in computer technology, or teaching themselves; their students, colleagues, relatives and the World Wide Web can also be used as resources (Hansson, 2006).

Williams (2005) reviews significant events of the last 25 years in schools and teacher education in England and looks ahead to the next 25 years. He concludes that the centrally-controlled national ITE/CPD system is increasingly inappropriate as a means to present what teachers need. Lock (2006) summarises the shortcomings of traditional CPD compared to the characteristics of innovative teacher development programmes (discussed earlier in 2.4.2):

- one-shot and one-size-fits-all workshops;
- use of the transmission model from experts to teachers;
- failure to address school-specific differences;
- just-in-case training;
- system-wide presentations that do not provide sufficient time to plan or to learn new strategies to meet the reality of their own classrooms.

(Lock, 2006:665)

Traditional face-to-face modes in the form of a few hours each week or several full days for teachers to learn a particular ICT skill tend to give way to a more flexible approach when technology is available. For example, Dede et al. (2005) have identified nearly 400 empirical studies of online teacher professional development courses in recent years. Widespread access to e-learning and mobile technologies enables the construction of networks of informal learning. Harlen & Doubler (2007) summarise some differences between online and face-to-face professional development and highlight the advantages of online modes:

- The freedom to study when and where convenient, within limits, is appreciated by practising teachers.
- Asynchronous communication gives time for reflection and leads to more thoughtful responses.
- Questioning by both facilitator and participants operates rather differently than in face-to-face interaction.
- The public nature of the communication through the Internet accentuates the need for encouragement and support for all types of response.

(Harlen & Doubler, 2007:476)

The main differences between online and face-to-face CPD are that online participants are involved more frequently than on-campus participants in reflecting on their learning and on the process of enquiry (Harlen & Doubler, 2007). Online participants feel that they are not working alone and appreciate the opportunities for collaborative learning.

However, most teacher CPD programmes in Asia and the Pacific provide courses in a face-to-face mode (UNESCO, 2003). It seems that the value of face-to-face training is still highly acknowledged in this region. A case study of online teacher training in a Chinese university (Wang et al., 2004) revealed that online teacher training consumed huge human and capital investment and the training resources could not be used in the long-term. Moreover, the teachers' learning environment was still unsatisfactory. This coincides with UNESCO's conclusion that 'running online courses can be costly and difficult to manage in countries where little experience and skills in this area are still the rule rather than the exception' (UNESCO, 2003:31).

In fact, there is an increasing tendency for CPD to adopt a blended learning approach incorporating online and face-to-face methods (Williams, 2005; Harlen & Doubler, 2007). Williams (2005) argues that with the fast development of technologies, there might be increasing diversity and flexibility in the delivery of CPD. From an online programme for elementary and middle school teachers aimed at developing their understanding of science and of teaching science, Harlen & Doubler (2007) found that teachers expressed a preference for a mixed CPD experience: a combination of online and face-to-

face courses. For example, the Master of Teaching (MTeach), a model of teachers' professional development developed at the Institute of Education, University of London, adopts a mixed mode which uses computer-mediated communication between participants as its central approach supported by some face-to-face interaction (Pickering et al., 2007).

In general, the delivery modes of teacher CPD programmes, as for any educational programmes, should be appropriate to particular purposes and needs. In relation to the development of technical skills at a very basic level, the face to face mode might be best because people can get instant help. When resources are available, the online mode may be seen as desirable in that it allows greater flexibility and encourages autonomous learning. Careful consideration is needed, of course, about what should be taught within each mode (within that kind of approach) and why and in what sequence (face-to-face component to online). As Pelgrum & Law (2003) state, diverse modes of CPD should be prepared to meet the diversity of needs.

2.4.2.3 Contents of CPD (What?)

As discussed in 2.4.1, previous studies have shown that CPD programmes in ICT have tended to concentrate on technical knowledge and skills rather than the pedagogic use of ICT (Potter & Mellar, 2000; Knezek & Christensen, 2002; McCarney, 2004). Teachers attended courses and learned ICT skills such as word processing and web page developing, but these skills were not placed in a pedagogic context. It has been argued that the contents of CPD programmes should be designed carefully (Zhang & Yang, 2002; Karagiorgi & Charalambous, 2006; Kim et al., 2008). Zhang & Yang (2002) contend that in terms of content design of educational ICT training, programmes should be based on an integration-oriented model, instead of the technology-oriented model. According to a questionnaire survey of College English teachers' computing competence and their practice in the field of CALL (Ma, 2003), most EFL teachers were not able to integrate ICT with language teaching effectively and had not received integration-oriented training. In one exception to this

general tendency, Karagiorgi & Charalambous (2006) designed ICT training programmes for use with Cypriot teachers in pre-primary and primary schools in which there was a progression from Jung's (2005) Category 1 to Category 2.

UNESCO (2003:20-23) summarises three main trends in content focus:

- Basic computer literacy, dealing with hardware and software/applications without necessarily being connected to teaching and learning;
- Basic computer literacy in support of teaching and learning activities;
- More advanced levels: contents that integrate the use of ICT and pedagogy, including the use of ICT in teaching specific subjects in the classroom, the use of the Internet as a pedagogical innovation and for collaborative activities, school and classroom management; online collaboration and networking.

The above trends correspond to the four categories of ICT teacher training (Jung, 2005) discussed earlier in 2.4. The first two trends fall in category 1, in which basic computer literacy and the use of ICT hardware and software for teaching/learning activities are covered. The third trend highlights categories 2, 3 and 4, namely, ICT and pedagogy integration, online learning environments, collaborating online and linking schools with the community.

In general, it seems that up to now, technologies have ended up being used most often in elementary applications (e.g. classroom teaching/learning) and professional development programmes are now tending to place more emphasis on more advanced levels such as pedagogy-based ICT use, the integrated use of ICT in curriculum, classroom management, online collaboration and networking (UNESCO, 2003; Chapelle & Hegelheimer, 2004; Karagiorgi & Charalambous, 2006).

2.4.2.4 CPD tutors/trainers (Who?)

Who should the tutors/trainers be? In theory, CPD programme tutors/trainers for ICT may be experienced colleagues, ICT specialists, computer educationists or

CALL experts. In fact, most trainers are sourced from outside the organisations and are ICT specialists. The poor training identified in Williams et al.'s (2000) study includes factors such as poor tutors, inappropriate training pace and too much information or jargon. Teachers tend to react negatively to training sessions on ICT skills delivered by computer specialists who do not know the context in which the teachers work and cannot say anything about how to use technology in teaching, whereas subject specialists who have computer expertise can do both things.

Key issues identified in teacher training on ICT use in Asia and the Pacific are the lack of tutors who have a pedagogic foundation; the need to build a training team that will comprise subject specialists, pedagogy specialists and ICT experts to ensure the development of pedagogy-based ICT skills; and the need to develop a critical mass of tutors who are skilled in the pedagogy-based integrated use of ICT (UNESCO, 2003). Since it is unlikely that a CPD programme tutor will be subject specialist, pedagogy specialist and ICT expert at the same time, forming a training team with different specialists involved might be a sensible strategy.

As for CALL software programmes, those creating them are often experts in computer programming, design or pedagogy, but are seldom experts in all three fields (Beatty, 2003). That means one aspect in a finished programme may be excellent, while others may be problematical. Beatty (2003) states that the development of 'perfect' ICTLE professional software normally involves many different people, including materials writers, content editors, graphic designers, sound designers, musicians, voice actors, marketers, animators, videographers and so on. Hence, the efforts of a single teacher may be disappointing when compared with professional products. Assembling a team of experts may be one solution to this dilemma in a school context, but we have to admit that even within academic institutions, 'this is not always practical and requires both resolution and organisational skills' (Beatty, 2003:157).

2.4.2.5 Evaluation of CPD (Why?)

To ensure the effectiveness of the effort put into CPD, it is recommended that evaluation is seen as an ongoing process initiated in the early stages of development and continued beyond completion (Bliss & Bliss, 2003). Fishman et al. (2003) have designed an iterative model (see Figure 2.11) and evaluated PD by using a combination of teacher reflection, classroom observation and ongoing assessment of student performance in the context of a standards-based reform in Detroit Public schools.

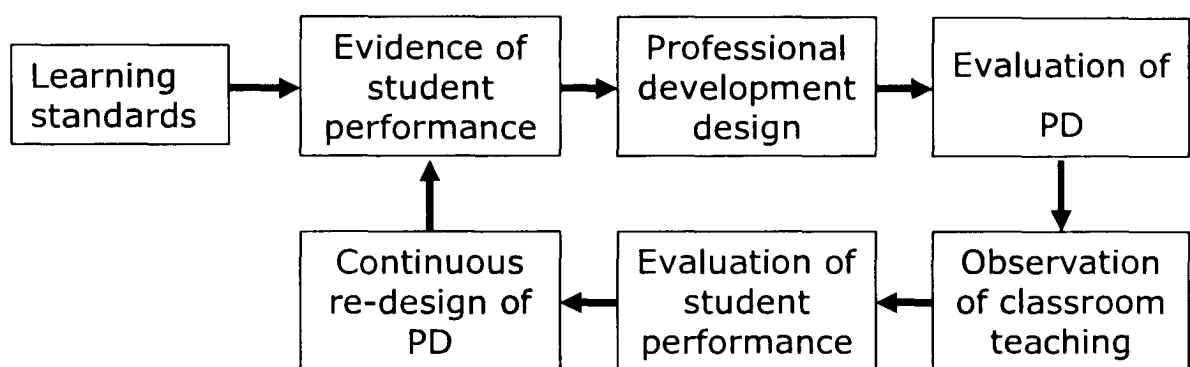


Figure 2.11 Iterative model for the evaluation of professional development (Fishman et al., 2003:648)

As shown in Figure 2.11, this model begins with the education standards, then evidence of current student performance (e.g. their classroom behaviours, tests arranged before and after PD) is identified. Next, professional development is designed to help teachers acquire the knowledge necessary to successfully enact the curriculum and improve student performance. Later, PD is evaluated by interviewing teachers about their general attitudes towards PD. Classroom teaching is observed to look for evidence of teaching behaviours that match what was taught in PD programmes and what teachers said they would try to do in post-workshop interviews. Finally, student performance is re-assessed. This model is iterative because students and curricula change; it is necessary to continually refine PD in order to further improve student learning (Fishman et al., 2003). Fishman et al.'s PD model links closely to student performance and achievement. Although students are not the primary clients of professional development, they are its ultimate beneficiaries. Impact on the classroom and

the improvement of student learning practice is the ultimate intended outcome of PD (Bliss & Bliss, 2003; Karagiorgi & Charalambous 2006). However, Fishman et al.'s PD model appears not to consider teachers' perceived needs, a crucial element in the design of a PD programme, as argued in 2.4.2.1. The revised model below shifts the focus from learner standards to teacher standards (in relation to ICT) to evaluate teachers' ICT-related CPD (see Figure 2.12).

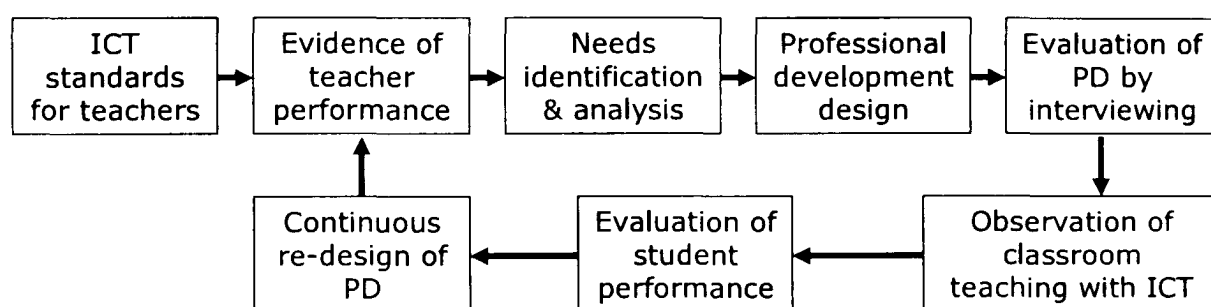


Figure 2.12 Iterative model for the evaluation of ICT-related CPD

According to ICT standards for teachers, teachers' performance and their workplace needs for ICT are identified and analysed; then a PD programme is designed to help teachers acquire ICT knowledge and skills to enhance students' learning. Later, PD is evaluated by observing and interviewing teachers. At the same time, students' performance is assessed to check if students have benefited from CPD and what improvements should be considered from students' feedback. Finally, the PD programme is redesigned and improved. The revised model for the evaluation of ICT-related CPD gives due emphasis to teachers' needs. At the same time, students' performance serves as a form of supplementary feedback and provides evidence for continuous redesign of the PD programme. In this way, PD is continuously refined.

2.4.2.6 Other issues

Other issues, such as the location and duration of CPD programmes, also merit consideration. Stager (1995, cited in Mumtaz, 2000:332) highlights the importance of both on-site (use of familiar computers/software) and off-site (reduction of school pressures) professional development. McCarney's survey

(2004) of teachers' perceptions of effective models of staff development in ICT found that teachers valued longer and in-depth courses which provide direct contact with a tutor and felt that courses outside the school are more beneficial provided that they do not take place in their own time. Cox et al. (1999b, cited in McCarney, 2004) also indicate that longer in-service courses were seen as more effective compared to short one-day courses, which failed to provide sufficient opportunity for breadth and depth of study. However, in two studies on teachers' training background and needs in Cyprus, the findings were rather different. Charalambous & Karagiorgi (2002) found that teachers preferred ICT INSET courses to be offered during working hours and be school-based. After-school sessions were not popular. This is echoed in Karagiorgi & Charalambous's argument (2006) that CPD is more effective when it is school-based and embedded in teachers' everyday work. Although there are some exceptions to this, in China, schools are seen as the prime site for offering relevant professional learning activities to teachers (Mo, 2007; Wong & Tsui, 2007; Zhang, 2007). In a case study exploring an effective approach to College English teacher professional development in China (Zhang, 2007), school-based CPD involving self-reflection and collaboration within groups and with professional researchers proved to be most effective compared to out-of-school training programmes. This is also echoed in Zhang & Yang's (2002) recommendation for school-based training with a combination of reflective and participant practice.

The discussion above highlights the need to rethink the design of CPD programmes in terms of modes, contents, tutors and evaluate the effectiveness of any new approaches adopted.

To sum up, teacher development must occupy the centre stage of any reform effort. In-service teacher development should occur not only before implementation, but, importantly, during the implementation process. It is only when teachers become skilled and confident in using a new idea/technology that a sense of ownership of the new idea/technology develops (Karavas-Doukas, 1998). Professional development programmes must educate teachers and help

them 'become adept at knowing when to seek change aggressively and when to back off' (Fullan & Hargreaves, 1992:23). Since the ultimate aim of teacher development is to develop teachers' capacities to deal with change, teacher PD programmes should be available, coherent, efficient and diversified to meet different needs. It is only through ongoing and systematic teacher development that we can make teachers 'agents of change rather than victims of it' (Karavas-Doukas, 1998:50) and motivate them to actively experiment and improve their teaching practices and their students' learning.

2.4.3 Models for CPD

A number of different approaches or models for teacher development have been proposed, among which the experiential learning model, the reflective learning model, collaborative learning and situated learning are popular and are thought to be effective.

2.4.3.1 Experiential learning

Fullan (1991) argues that the challenge of reform for teachers can be explained in the following terms: 'learning a new skill and entertaining new conceptions creates doubts and feelings of awkwardness or incompetence' (p.46). An understanding of the teachers' learning experience in the implementation process is a crucial factor for the success of a reform (Ng & Tang, 1997).

The notion of an experiential learning cycle was proposed by Kolb (1984). This describes a cyclical process of learning from 'Concrete Experience' through 'Reflection' (Reflective Observation) and 'Abstract Conceptualisation' to 'Action' (Active Experimentation) and on to further Experience (see Figure 2.13).

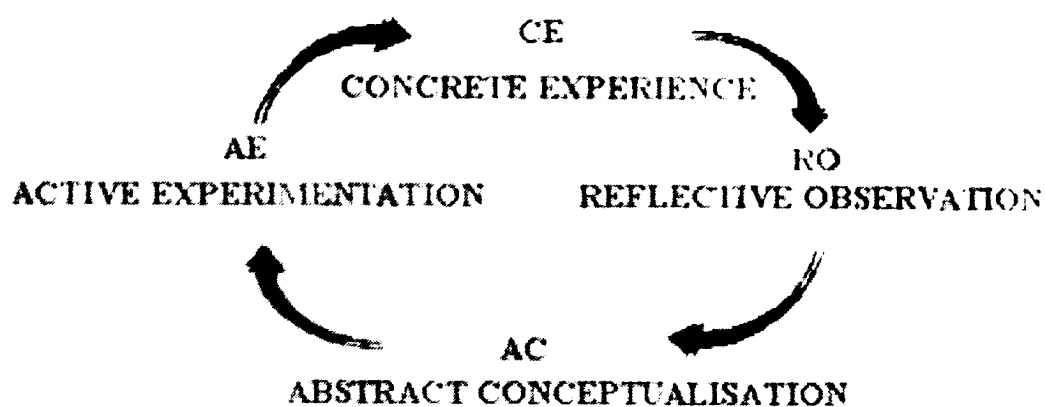


Figure 2.13 Experiential learning cycle (Kolb, 1984:42)

The experiential learning model, according to Atherton (2002), provides one of the most useful descriptive models of the adult learning process available. It incorporates a theory of experiential development as well as a theory of experiential learning. The most direct application of this model is to use it to ensure that teaching and tutoring activities give full value to each stage of the process. This may mean that for the tutor or mentor, a major task is to ‘chase’ the learner round the cycle, asking questions which encourage Reflection, Conceptualisation, and ways of testing the ideas (Smith, 1996).

The model has received some criticism. Rogers, for example, points out that ‘learning includes goals, purposes, intentions, choice and decision-making, and it is not at all clear where these elements fit into the learning cycle’ (Rogers, 1996:108). These can, of course, form part of the planning associated with experimentation. It is also criticised for a failure to pay sufficient attention to the process of reflection. Miettinen (2000) argues that Kolb’s experience and reflection occur in isolation while individuals need to interact with other humans and the environment in order to enhance the reasoning and conclusions drawn. However, it depends on how reflective observation is interpreted. Kolb (1984) himself admits that the model only puts emphasis on learning within the individual learner, not in relation to others.

The notion of ‘experiential learning’ can of course be applied to different kinds of learning through experience and the term is often used to refer to staff

training, education or development involving a structured learning sequence which is guided by a cyclical model or which is simply based on a (shared) experience from which implications for practice are drawn which may or not be related by the facilitator to a theoretical framework (i.e. not all parts of Kolb's cycle are present, though active experimentation is the intended outcome) .

2.4.3.2 Reflective learning

Although earlier writers such as Dewey (1933) drew attention to the importance of reflection, Schön (1983) has had a particular influence on our understanding of the theory and practice of learning by reflection through his distinction between 'reflection-in-action' and 'reflection-on-action' (Schön, 1983, 1987). Schön (1987) defines 'reflection-in-action' as 'happening where we may reflect in the midst of action without interrupting it. Our thinking serves to reshape what we are doing while we are doing it' and 'reflection-on-action' as thinking back on what we have done in order to discover how our knowing in action may have contributed to an unexpected outcome (p.26).The former represents the ways in which professionals interact with practical problems as they test out and modify their solutions within the specific contexts in which they work. The latter focuses on retrospective critical thinking, to construct and reconstruct events in order to develop oneself as a practitioner and person.

The concept of reflection was later developed and applied by Wallace (1991) to language teacher education. As we see in Figure 2.14, below, the model is based on two sources of knowledge: received knowledge and experiential knowledge. Received knowledge consists of facts, data and theories from traditional academic sources; in the case of language education, it refers to certain concepts from the science of linguistics that language teachers are familiar with (Wallace, 1991). Experiential knowledge relates to the knowledge of professional action (practical experience), which we can only reveal in the way we carry out tasks and approach problems (from the practitioner's own reflections and experience). Through integrating these two sources of knowledge, reflecting on them and

generating new knowledge from them in the course of a reflective cycle, course participants develop their professional competence.

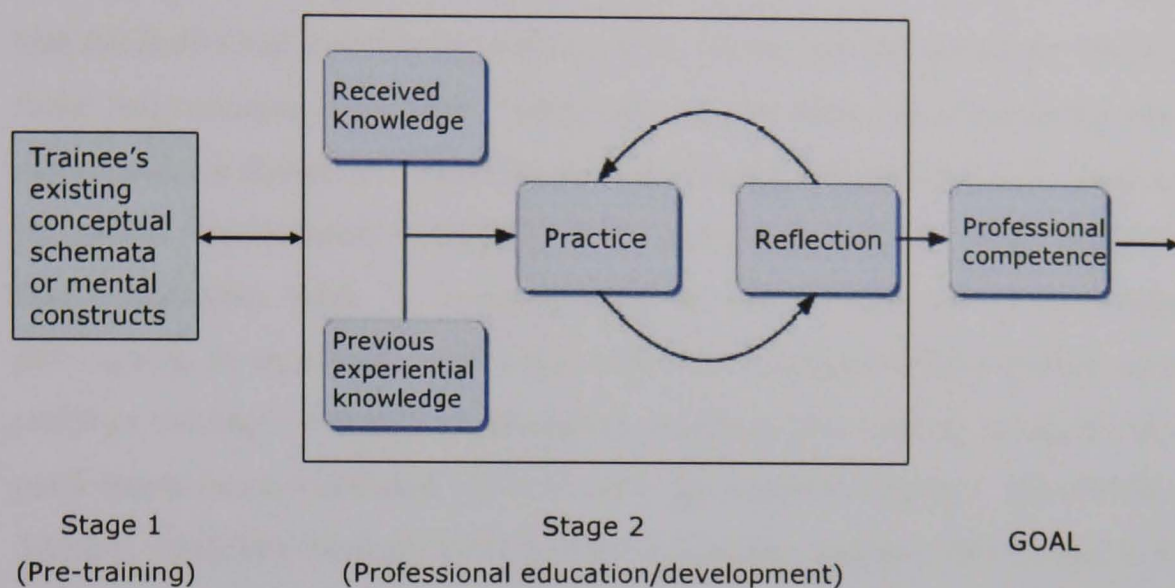


Figure 2.14 Reflective model (Wallace, 1991:49)

In this model, the process of professional development involves two stages: Stage one is the pre-training stage, in which participants decide to undertake a training course or PD. Participants will bring their existing experience and knowledge to the course or PD activities. At the stage of professional development/education (stage two), participants will integrate two sources of knowledge (their existing knowledge acquired through experience of learning and teaching and that acquired during the course) and put these into practice.

Wallace (1991) shows how the reflective approach can be applied in foreign language teacher training. In this model, in-service teachers evaluate inputs in terms of their knowledge of their own context and beliefs about teaching-learning and decide to change their teaching or not. Wallace's cyclical model involving practice after reflection and reflection after practice is valuable for professional development; however, for it to work well, 'improving the quality of reflection in professional education and development must be a major aim' (Wallace, 1991:54).

2.4.3.3 Cooperative / collaborative learning

Underlying the concepts of cooperative and collaborative learning is the belief that the individual benefits by working with others, but the difference between these two concepts is complex. Some scholars use them interchangeably while others make a distinction based on the relationship between the individual and the group. For instance, ‘cooperation’ is distinguished from ‘collaboration’ in that cooperative work ‘is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving’, whereas collaboration involves ‘the mutual engagement of participants in a coordinated effort to solve the problem together’ (Roschelle & Teasley, 1995:70). Nicholls (1997) offers a concrete example which makes the same distinction: in a cooperative situation, teachers share resources and swap lessons plans, but do not explore problems at a deeper level; in a collaborative situation, teachers work together to solve a problem by discussing and exploring possible solutions. Collaborative professional learning has been described as a ‘growth in practice’ model of PD that acknowledges teaching as an intellectual endeavour and as an outcome of teachers learning together (Lieberman & Miller, 1999).

Collaboration seems to put more weight on solving problems together and the concept has been widely used in educational research (Anderson et al., 1995; Kaye, 1995; O’Malley, 1995; Roschelle & Teasley, 1995; Dillenbourg, 1996; Miyake, 2007), particularly in teacher education (Head & Taylor, 1997; Cordingley et al., 2003; Cordingley et al., 2005; Webb et al., 2005; Chambers & Bax, 2006; Harlen & Doubler, 2007; Chen, 2008). For example, on the basis of ‘action research’ pilot projects focusing on the provision of professional learning to support the use of ICT in teaching and learning in four Tasmanian primary schools in Australia, Webb et al. (2005) report that there are significant advantages such as increased effectiveness and considerable cost savings when professional learning is undertaken as a collaborative activity and when teaching colleagues focus on specific class practices.

2.4.3.4 Situated learning & Communities of Practice

The situated learning model has been proposed by Lave & Wenger (1991). Rather than looking to learning as the acquisition of certain forms of knowledge, they see it as resulting from social relationships – or situations of co-participation – and specifically from a process of engagement in what they call ‘a community of practice’:

Learners inevitably participate in communities of practitioners and... the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community. ‘Legitimate peripheral participation’ provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artefacts, and communities of knowledge and practice. A person’s intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a sociocultural practice. This social process, includes, indeed it subsumes, the learning of knowledgeable skills.

(Lave & Wenger 1991: 29)

Lave & Wenger’s situated learning developed an idea that learning is a process of participation in communities of practice (CoP), which are defined by Wenger (2006) as ‘groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly’. Wenger et al. (2002) argue that ‘communities of practice are the basic building blocks of a social learning system because they are the social “containers” of the competences that make up such a system’ (p.225). They are different from other communities. For instance, they focus on a domain of shared interest; interact by engaging in joint activities and discussions and develop a shared collection of experiences, practices and ways of solving problems. In such communities of practice, not only the technical acquisition of skills required by a specific practice is addressed, but also the informal and social aspects of creating and sharing knowledge is emphasised (Gray, 2004).

CoP has become an important focus within organisational development and has considerable value when thinking about working within groups (Smith, 2009).

This concept has found a number of practical applications in business, organisational design, government, education, professional associations, development projects, and civic life. In education, it was first applied in teacher training and in providing isolated administrators with access to colleagues (Wenger, 2006).

Currently, there is a wave of interest in these peer-to-peer professional-development activities and CoP have become a major theme of professional development and been adopted in much research and practice (Schlager et al., 2002; Gray, 2004; Schlager & Fusco, 2004; Guldberg & Pilkington, 2006; Kazmer, 2007; Roberts & Lund, 2007; Stuckey & Barab, 2007). For instance, in a study of the experiences of coordinators of Alberta Community Adult Learning Councils in Canada, an online community of practice was designed to support informal workplace learning (Gray, 2004). In the community, newcomers were oriented into the skills and culture of the practice and experienced practitioners gained new insights into their own professional identities and the meaning of their work. In addition, interactions in the community helped learners to reconstruct the identity of collective community and stimulate motivations to build social and professional connection to colleagues. Situated learning and CoP have also been applied extensively in the field of e-learning (Kazmer, 2007). In order to examine a networked training course for non-traditional university students, Guldberg & Pilkington (2006) adopted CoP as a theoretical framework and found that the students in the e-learning course helped each other align the norms and practices of their individual workplaces with the e-learning community.

Arguments are raised at the same time that CoP 'lack the acknowledgement within social constructivist circles of the possibility that knowledge may be constructed without a relational context' (Roberts & Lund, 2007:489). In other words, they do not acknowledge the fact that knowledge can be developed by the individual without interacting with others (e.g. self-directed autonomous learning). Other doubts include the fact that CoP may be weak, or may 'exhibit power relationships that seriously inhibit entry and participation' (Smith, 2009).

Experiential learning, reflective learning, collaborative learning and situated learning are widely adopted models for learning and teacher PD because they recognise the value of experience, reflection, collaboration and exchanges within communities during the learning process. Unfortunately, these models are not a panacea to be used in all contexts for they only focus on the internal changes either within individual teachers or specific communities without consideration of external issues, such as whether there are enough resources for a certain scale of PD programme. Where there are issues of scale, the cascade model, which focuses much more on how large numbers of teachers can be trained, may be relevant.

2.4.3.5 The cascade model

Training programmes are normally designed to reach all possible trainees or a focused group of trainees (Zhang & Yang, 2002). However, time and cost factors mean that it is not easy to train a large number of teachers to grasp required skills. Where numbers are large and resources for an educational change are limited, the cascade model of training, in which those who are trained go on to train others, is attractive (Gilpin, 1997). Compared with other training models, the cascade model is more economical for 'it does not require long periods out of service and it uses existing teaching staff as co-trainers' (Gilpin, 1997:185). However, as trainee becomes trainer, the effectiveness of the training may be gradually diluted (Gilpin, 1997; Kadepurkar, 1997; Lamie, 2005). Gilpin (1997:189-191) lists some basic criteria to guarantee the effect of the cascade:

- The change itself must be seen as theoretically sound even by those who resist it;
- Attention must be paid to continuation;
- Co-trainers' efforts must be supported, not only by providing workshops, but by providing materials for teaching and training;
- The materials must be ready when the implementation process begins;
- The methodology employed in the cascade must be developed consultatively from the top tier down;
- The selection of participants for the top tier should be informed by geographical criteria;

- External support has to be wisely used;
- A cascade should be organised along the speed continuum, with the minimum of time lost between the successive tiers.

It is also stated that for cascade training to be effective, it must be supported by

- detailed trainer's materials
- lesson plans
- training resources
- central monitoring
- the trainers at each level must receive on-going professional development.

(The World Bank, n.d.)

For the World Bank the advantages of cascade training are that it

- is flexible
- is participatory
- is field based
- can train large numbers in a relatively short period,
- makes only moderate demands on professional training resources
- is cost effective
- empowering
- builds capacity at each level

(ibid)

The cascade system has been adopted in a number of different countries, among them India, Thailand, Malaysia, Japan, Vietnam and China (Gilpin, 1997; Kadepurkar, 1997; Zhang & Yang, 2002; Lamie, 2005; Wedell, 2005; Hamano, 2008). In a case study of an English language development project in Maharashtra, India (Kadepurkar, 1997), given the size of the population, it was physically impossible for training programmes to reach all 50,000 teachers directly. Therefore, a cascade model was adopted in two stages. The 220 trainees at Stage one were experienced teachers with at least five years' teaching experience, coming from all the geographical districts in India. At the second stage, the trainees from Stage one became trainers and conducted three-day training programmes with a total of 8,000 teachers within their own districts.

Considering the possibility of the 'diluted' effect, direct support to teachers was provided in this study through course books and manuals (Kadepurkar, 1997).

However, there are a certain number of problems which are known to exist in this model. The documented problems stated by the World Bank are:

- Concepts at the top of the cascade do not meet the needs of teachers at grassroots level
- Dilution of the initial training so that the recipient receives scant benefit
- Quality of teaching at grassroots level unable to achieve the objectives of the programme
- Success dependent on quality of the trainers

(The World Bank, n.d.)

Dilution is a frequently mentioned problem. Although trainers from the upper tiers of the cascade supervise the lower tiers, supervision may be slight at the lowest level and this is seen to be one of the weaknesses of the model (Smith, 1962, cited in Gilpin, 1997). When the model was adopted in the English resource and instruction centres in Thailand, the co-trainers had no previous experience as trainers; they therefore used what experience they had as trainees from a previous training programme. The effect of training was diluted. With regard to this disadvantage, it is suggested that cascade models of teacher development would be more effective 'if coupled with increased collaborative support from teachers within the same school' (Pelgrum & Law, 2003:68), i.e., if more than one teacher from the same institution is trained to provide training to other teachers within that institution.

As discussed above, the cascade model has many potential advantages for the rapid implementation of change on a large scale. However, it carries more risks of failure than conventional methods of in-service training because of the possible dilution of the content. Without the support of other phases of the change (e.g. planning, implementation and continuation stage), sustainability is unlikely to be achieved. Gilpin (1997) insists that local on-going support and the provision of clear materials for use in the continuation phase are essential.

2.4.4 ICT-related CPD for language teachers

As discussed above, the arguments for CPD for ICT apply to teachers of all subjects. English education is not an exception. As discussed earlier (see 2.3.1.1 & 2.3.2.2), with the introduction of ICT in language education, language teachers faced challenges in how to use ICT effectively in their practice. Figure 2.15, below, shows how Jung's (2005) four categories, which have been discussed in great detail in 2.4.1, can be adapted for language teacher CPD.

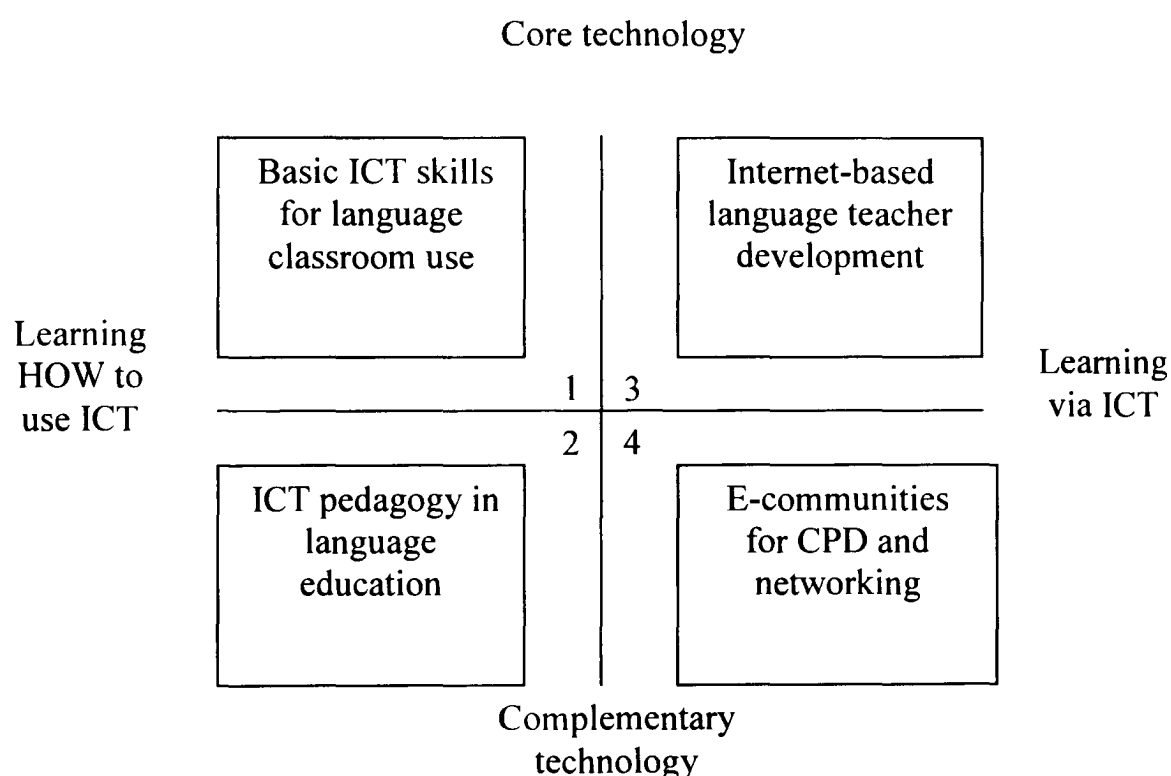


Figure 2.15 ICT categories in language teacher CPD (adapted from Jung, 2005)

In category 1, language teachers need to acquire basic ICT skills (e.g. word processing, PowerPoint, Internet literacy and other technical skills); learn design and development skills (e.g. the design and development of computer-based instructional materials); learn to select appropriate ICT tools and support students in the use of those tools for language learning; and learn to use ICT to develop new methods so as to promote students' language learning activities. Teachers also need to know how to use ICT resources to help students perform

real-life tasks on the Internet and solve real-life problems in a community of peers (Warschauer, 2004). Category 1 emphasises the development of basic ICT skills for language classroom use.

As Levy states (1997), the computer mainly serves as tutor or tool in language learning. When the computer serves as tutor, the teacher may 'have a minimal role or (be) excluded' (p.197). However, Fotos & Browne (2004) argue that technology will not totally replace the role of teachers; those teachers who do not use technology will simply be replaced by those who do. When the computer serves as a tool, many more demands are made on the teacher (Levy, 1997). Teachers should help the learner to determine whether the use of ICT is appropriate and how to make the best use of it. For instance, teachers must show students how to use the Web as a tool for learning the L2; they must become a researcher who explores the Web for resources and a 'framer' who establishes a frame through which the students can enter the Web (Taylor & Gitsaki, 2004). In addition, teachers may also be involved in assisting students as they work at the computer or be designers in designing tasks. At the same time, teachers are required to be capable of predicting the unexpected difficulties that occur in language teaching and knowing how to solve less complicated technical problems. It is also helpful for them to be familiar with computer set-up, software installation, and language laboratory management. Hence, it is suggested that teachers should be educated in basic ICT knowledge and skills such as computer set-up and maintenance, awareness of software applications for language-learning research, and be actively involved in the decision-making process concerning the language lab (Chapelle & Hegelheimer, 2004). However, there is a need to distinguish essential ICT skills that language teachers should grasp from merely desirable technical skills. Whether relevant support is available should also be taken into consideration.

Category 2 focuses on the development of language teachers' ICT-pedagogy integration skills, such as strategies and techniques of lesson planning, curriculum, classroom management and assessment. The opportunities afforded language teachers by technology require a better understanding of the principles

of language teaching integrated with ICT and a broader set of ICT skills in their teaching practices than ever. In category 2, teachers learn to be knowledgeable about ICT pedagogical issues such as developing collaborative materials (e.g. courseware design), managing students' autonomous learning and evaluating students' performance. In addition, language teachers need to be prepared to:

- use classroom CALL and put part or all of their course online,
- evaluate CALL materials and Web sites,
- participate in institution-wide CALL projects,
- use or administer multimedia language laboratories

(Fotos & Browne, 2004:11)

The need has never been greater for teachers with technological skills in integrating ICT fully in language education, who understand the capabilities and limitations of technology in teaching and can take responsibility for critically examining the options and implications of ICT (Chapelle & Hegelheimer, 2004).

In category 3, the Internet is used as core delivery means for language teacher development through, for example, ICT-based individual learning, on-line instruction by experts and self-reflection review (Pan, 2004). Course facilitators can make full use of the Internet and give support and help teachers have positive experiences with ICT and integrate it into their own teaching (Freeman, 1997, cited in Jung, 2005). ICT-integrated pedagogy is also adopted in an online learning environment. In this way, teachers can be trained as online course instructors and course developers via the Internet. Internet-based teacher training has provided a flexible and interactive training environment for teachers. Currently, many online CPD opportunities for language teachers exist (Chapelle, 2003; Zhao, 2007), but the most effective online training pedagogies for ICT needs careful consideration.

In category 4, ICT is used to support teachers' on-going professional development via e-communities and networking. The Internet can connect teachers to other communities and enable them to interact with expert groups. Interactive exchange with synchronous ICT, virtual situational learning, and cooperative learning with asynchronous ICT are highlighted (Pan, 2004).

Collaboration and information sharing among language teachers is encouraged. This approach to CPD focuses on three key themes: shared practice (i.e. more than just an exchange of practice, one that leads proactively into changes in practice); collaborative CPD, ‘which draws on the strengths of learning networks that are most effective when they are classroom-focused’; and scholarly reflection on practice, which regards ‘the fusion of theory and practice as being what teaching is about’ (Pickering et al., 2007:5-6).

As illustrated in Figure 2.15 above, the role of ICT has changed extensively and the functions of ICT can be explored further in language teacher development. With the new technologies, teachers are moving away from individual autonomy and isolation to new networks of collaboration, peer coaching, teamwork and mentoring (Hargreaves, 1994). This is because ‘powerful, significant and long-lasting professional development happens when teachers engage together to solve real problems and make new meanings for application in real classrooms’ (Johns-Shepherd & Gowing, 2007:117). Evidence for the truth of this in relation to PD for language teachers can be found in studies by Hall et al. (2007), Brown (2009), Davies (2009) and Sheehan (2009).

2.5 Conclusion

2.5.1 Review

This chapter began by reviewing theories relating to educational innovation/change. It then considered the implementation of ICT in education in terms of its impact and specific practices in language teaching and learning. Since the introduction of ICT in education involves change in all participants, it is important to identify factors influencing the implementation of a large-scale reform and research on these factors was described. This was followed by the discussion of continuing professional development for ICT in terms of the role

of ICT in PD, ICT-related CPD for language teachers and models of CPD. Finally, the conceptual framework for this research was presented.

As the literature testifies, a diversity of factors influences the implementation of an innovation. However, teachers' professional development is critical and is one of the premises of a successful reform. With this in mind, teacher needs for CPD should be identified and analysed before a CPD programme is designed and put into use. Other issues such as modes of CPD delivery, programme content, tutors and the evaluation of CPD also need careful consideration.

Four limitations can be identified in the studies reviewed in this chapter. First, research on ICT-related teacher CPD in higher education is still limited. The majority of published studies were conducted in primary or secondary schools. Second, most studies reported in the literature have focused on teachers in general rather than language teachers (Tsui et al., 1996; Lang, 2000; Williams, 2000; Potter & Mellor, 2000; Charalambous & Karagiorgi, 2002; Bliss & Bliss, 2003; Niemi, 2003; Pearson, 2003; McCarney, 2004; Williams, 2005; Karagiorgi & Charalambous, 2006). Third, among those studies on language teachers at tertiary level, focuses were on the training programme or CPD project itself, such as the design or practices of the programmes (e.g. Warschauer, 2002, 2004; Forrester et al., 2006; Spencer-Oatey, 2007), but few studies to date have examined a large-scale reform/innovation and investigated the external and internal factors which affected the effective provision of ICT-related CPD for EFL teachers. Fourth, the subjects of most studies are teachers, students and management; very few studies involve IT coordinators or technicians (Nachmias et al., 2004), and no studies involving the full range of personnel (teachers, students, management staff and IT coordinators and technicians) were found.

In China, there have been a few studies on this topic in tertiary institutions but these universities are located in large cities such as Beijing and Shanghai or developed areas such as East China and South China where ICT facilities are more commonly available. Although the application of ICT in language teaching

and learning is widely recorded (Lai, 2002; Ma, 2003; Chen, 2005; Jin et al., 2005; Liao, 2005; Meng, 2005; Wang & Zheng, 2005; Feng et al., 2005; Feng & Zheng, 2006; Zhao & Hao, 2006; Zheng, 2006; Wang, 2007a; Wang, 2007b), there has been a very limited amount of research focusing on English teachers' education, particularly ICT-related CPD (Zhang & Yang, 2002; Wang et al., 2004; Forrester et al., 2006). For instance, a positive relationship has been shown between College English teaching using computers and a Network environment and the progress of students' self-directed learning (Li, 2007). However, further study is needed to provide insights into teacher-learner relations, technology implementation, teaching management and teacher CPD in such environments. From a methodological perspective, it is also noteworthy that although questionnaire surveys, individual interviews, focus groups and classroom observation are widely used in Chinese research studies, video recording is rarely adopted to supplement traditional classroom observation.

The above discussion suggests that my study on ICT-based EFL teacher professional development in the context of a large-scale reform involving a full range of representatives within the reform is of significant importance for the implementation of ICT in ELT in higher education in China and elsewhere.

2.5.2 Conceptual framework

At the beginning of this chapter (2.2), three theories/models were discussed: Rogers' diffusion of innovations (1995), Fullan's new meaning of educational change (2001) and Hall & Hord's CBAM Model (1987). Rogers (1995) and Fullan (2001) argue that educational change or innovation is a compound of complex and dynamic processes; in the long journey of change, implementation is not only a critical stage but also the essence of change; there are many factors influencing implementation, which should be taken into account to stimulate an innovation/change and maintain a high rate of adoption. Hall & Hord's CBAM

(1987) emphasises individuals' perception and behavioural progress in the implementation of an innovation and their reflection on the use of the innovation and collaboration with other teachers in the process. It highlights the importance of understanding teacher attitudes and skills so that support activities, such as staff development, coaching and provision of materials, can be directly related to what teachers perceive they need. The three theories/models offer useful perspectives for exploring the implementation process of an innovation/change.

This research started at a time when Chinese College English, a large-scale innovation, or a new change in Rogers' and Fullan's terms respectively, was taking place nationwide; a key recommendation of this innovation was the extended use of ICT. In other words, there should be a shift towards computer-based and Web-based language teaching and a new emphasis on autonomous student learning using ICT. Since my research focused on the implementation of the reform, teachers' attitudes towards the reform and their perceived needs for ICT-related CPD to meet the requirement of the reform, the three theories/models were particularly important in providing theoretical support in respect of the design of research methodology and research methods and guidance for my data collection and data analysis. Although Rogers' and Fullan's theories indicate both external and situational factors influencing the implementation, it was not appropriate simply to borrow one of their models since my research focuses on the influential factors affecting the implementation of a national reform particularly within institutions. Although Hall & Hord's concept of SoC and LoU had clear relevance as a powerful framework for the design or analysis of self-directed and grouped CPD programmes, in my study it was only used to assess and trace innovative progress at the level of individual teachers.

In the light of these arguments and based on Fullan's conceptualization of interactive factors affecting implementation (see Figure 2.3), I developed a model of factors affecting the implementation of this national reform (see Figure 2.16), which served as a conceptual framework for my study.

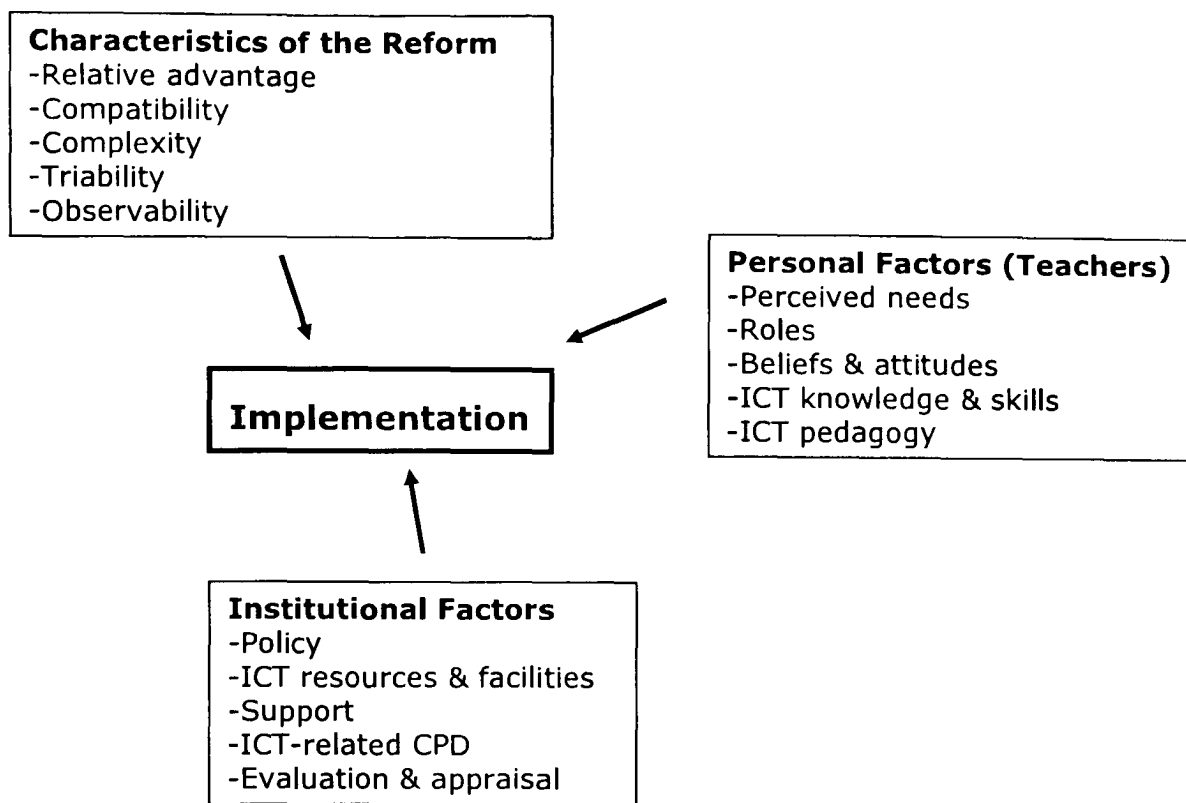


Figure 2.16 Factors affecting ICT implementation in the national College English reform

The perceived *Characteristics* of a reform are important because they influence the receiver's attitude and determine the rate of adoption (Rogers, 1995). I borrowed Rogers' five characteristics (relative advantage, compatibility, complexity, triability and observability) and used them to check how the features of the national College English reform influenced an individual's or organisation's decision to adopt (and to what degree to adopt) or reject it. Rogers' model predicts that the national reform would be smoothly implemented and increasingly diffused if 1) it had an advantage over the traditional one; 2) it was compatible with existing English teaching and learning practices; 3) its use was not too complicated for teachers and students; 4) it could be tried or experimented with on a limited basis before full implementation; 5) its benefits could be easily observed.

According to Fullan (2001), in addition to the characteristics of change, the implementation of a change is also influenced by external factors (see Figure 2.3). External forces include government departments and agencies, regional institutions and other external partners. The purpose of this study was to

examine the current situation of the reform in a specific institution and its relevant ICT-based CPD policies and practices for EFL teachers. I therefore narrowed down Fullan's external factors and only retained the *Institutional factors* since the institutional environment in which a reform takes place is critical to its success. Applying Fullan's model, a positive environment would be one where policies are linked to incentives and there are rewards when ICT is integrated in ELT, where there are sufficient ICT resources and facilities, and there is overall support, particularly technical support and relevant CPD opportunities. A key feature of the institutional environment would be the evaluation and appraisal of ICT-integrated classroom practice and ICT-related CPD.

The third cluster of factors which affect the implementation of innovation in Fullan's (2001) 'New meaning of educational change' comprises local characteristics. In Fullan's framework, situated forces operate at two different levels: at school district and community level, and at school level, through principals and teachers. Since the university in my study is felt to be representative of similar institutions which are under the administration of the central government (the MOE), district and community have little direct influence on the University. Principals, however, play an important role in determining policies for the implementation (supportive or not) and they are considered under institutional factors within my model because they are policy makers for their institutions.

The *personal factors* such as the characteristics of teachers who will implement government and institutional policy: their perceptions of whether there was a need for the reform, their role changes in the reform, their general beliefs in, attitudes toward and concerns about change, all decide their levels of use of ICT in their teaching. However, teachers cannot effect real change in this particular reform if they do not have enough ICT knowledge and skills to carry out ICT pedagogy in ELT, even if they are eager to change, and ready to change.

Figure 2.16 shows the key elements affecting the implementation of this specific reform, from the reform itself, the institutional environment in which the reform was implemented and the key implementers: teachers. This framework does not show the complicated diffusion process of innovation from the initiation stage to confirmation stage (e.g. Rogers, 1995) for my focus is on the implementation stage of the national reform; nor does it cover as many clusters of factors as Fullan (2001) does. For the reasons just given, the regional agencies such as the school district, the community and parents have little direct influence on the University and the reform itself. My framework highlights three typical strands of factors within a reform and helps understand how these factors influence the implementation and the possible relationships within each strand.

The following chapter presents contextual information relevant to the study.

Chapter Three

The Chinese Context: College English Reform and EFL Teacher Development

3.1 Introduction

Chapter 1 briefly introduced certain aspects of the Chinese context of particular relevance to this thesis. This chapter provides additional background information. It begins by outlining the Chinese higher education system, with reference to the teaching and learning of English as a foreign language. It then provides an overview of the reform of the national College English curriculum. Finally, it discusses the professional development of teachers, and particularly that of EFL teachers.

3.2 English teaching & learning in Chinese higher education

3.2.1 Chinese higher education

From the perspective of the relationship between the Chinese central government and HEIs, the development of HE in China can be seen to fall into three distinct periods: the pre-1985 period, the period between 1985 and 1992,

and the post-1992 period (Zhou, 2004). The characteristic of the pre-1985 period was centralisation; in the second period, the first round of structural reforms was carried out and the relationship between the government and the HEIs was redefined. The post-1992 period was characterised by ‘further decentralisation of the management of HE, the diversification of financial responsibilities and a dramatic system expansion in the form of widening participation’ (Zhou, 2004:24).

In general, Chinese HE expanded enormously following the Cultural Revolution (1966-1976). The number of institutions rose from 392 in 1977 to 1,908 in 2007 (MOE, 2008). Over the past two decades, particularly, the Chinese higher education system has experienced unprecedented changes, among them a rapid increase in enrolment and mergers between HEIs (Shi & Englert, 2008).

The expansion of enrolment in Chinese colleges and universities started in 1999 as a national strategy with an aim to improve the overall human resource capacity of the country (Yao et al., 2008). As shown in Figure 3.1, China’s GER (gross enrolment rate) increased nearly five times from 1990 to 2006. Before 1996, the GER was consistently lower than 7%. By 2006, it reached 22%, implying that HE in China had been transformed from elitism to mass education (Li & Min, 2001). It is predicted that this trend will continue and by 2010, the GER will reach 25% (Yao et al., 2008).



Figure 3.1: Growth of GER of HEIs in China (%) (Yao et al., 2008:5)

In the 10 years from 1998 to 2007 the number of HEIs nearly doubled (from 1022 to 1908); new students enrolled in 2007 reached 5,659,200 (of a total student population of 18,849,000). The student/teacher ratio climbed from 11.6 in 1998 to 17.28 in 2007, reaching a peak of 17.93 in 2006 (see Table 3.1). Table 3.1 shows the development in HEIs, enrolments and ratio of student/teacher over this period.

Table 3.1 Development of Chinese HEIs (1998-2007) (MOE, 2008a, 2008b)

Year	Numbers of institutions	Total number of students	Average No. of students per institution	Student/teacher ratio
1998	1022	3,408,700	3335	11.6
1999	1071	4,134,200	3815	13.4
2000	1041	5,560,900	5289	16.3
2001	1225	7,190,700	5870	18.2
2002	1396	9,033,600	6471	19.1
2003	1552	11,085,600	7143	17.0
2004	1731	13,335,000	7704	16.2
2005	1792	15,617,800	7666	16.85
2006	1867	17,388,400	8148	17.93
2007	1908	18,849,000	8571	17.28

Mergers between HEIs are another feature of Chinese HE. With the rapid shift of the Chinese economic system from planned economy to a socialist market economy, the system of HE moved dramatically towards institutional amalgamation and upgrades during the period from 1992 to 2005 (Shi & Englert, 2008). Some two- or three-year colleges without degree programmes merged together and upgraded to universities which could provide degree programmes. The statistics provided by MOE show that about 1083 institutions had merged into 431 new entities by the end of May 2006 (MOE, 2006).

China has both public and private HEIs. The public sector consists of two major components: regular higher education (Putong Gaodeng Yuanxiao in Chinese) and adult higher education (Chenren Gaodeng Yuanxiao in Chinese). The former caters to senior secondary school graduates and comprises conventional universities with both undergraduate and postgraduate degree programmes and short-cycle (two- or three-year) colleges without degree programmes (Wang, 2006). The latter targets working adults and specializes in adult HE such as Television and Radio Universities, workers' colleges, peasants' colleges, management training colleges, educational colleges and independent correspondence colleges, and provides both part-time and full-time programmes. At the same time, there are more than 1,000 new private-funded colleges and universities (Wang, 2006). This study will focus on the first group of public institutions, namely, conventional full-time and public-funded HEIs.

3.2.2 English language teaching and learning

China, the country with the largest population in the world, also has the greatest number of English learners in the world. Culturally, due to the pervasive influence of Confucian ideas, teachers are viewed as knowledge holders. Chinese students have been brought up to respect wisdom, knowledge and those who provide knowledge (such as parents, teachers and trainers). Teachers are authorities and seen first as subject specialists and then as teachers.

Compared with students in European and American countries, Chinese students are generally passive listeners following carefully sequenced instructions; they seem to be 'less autonomous, more dependent on authority figures and more obedient and conforming to rules and deadlines' (Hu, 2007). Students' modesty in front of their teachers also makes them readily accept teacher-centred methods in which teachers instruct and students receive knowledge rather quietly. In this traditional teacher-dominated language classroom, learners only need to make the lowest-level choices. According to Littlewood (1992), if

students are accustomed to a situation in which their teachers' role is to choose and decide and their own role is to accept and follow, there might be resistance to an attempt to change this balance.

Traditional beliefs of English language teaching (ELT) in China have been described in the following terms:

- though textbooks and classroom exercises are often tedious, there is no other way to learn a foreign language;
- grammar analysis is crucial to foreign language learning;
- the teacher should dominate the classroom while students listen passively and engage in exercises on command.

(Campbell & Yong, 1993:5)

Similarly, the term 'three-centeredness' has been used to describe the key features of Chinese traditional foreign language teaching: teacher-centredness, textbook-centredness and grammar-centredness (Yen, 1987, cited in Wu, 2005) and these still characterise many of today's EFL classroom. The teacher-centred classroom has normally limited the interaction between teachers and students, and restricted the interaction among students. The role of students in such a classroom is 'passive listener and note-maker' (Wu, 2005:5). At the same time, textbooks have been given importance and regarded as sources of knowledge, one consequence of which is the rote-learning of textbook texts. Grammar-centredness indicates that grammar is highly respected in the traditional English class. As Cortazzi & Jin (1996) point out, communicative competence has been neglected in English teaching. In reading classes, for instance, students are likely to be asked to read new words aloud, imitating the teacher's pronunciation; the teacher explain the entire text sentence by sentence, analyzing the more difficult grammar structures, rhetoric, and style for the students, while students just listen, take notes, and answer questions. Since traditional classes tend to emphasise English language knowledge, content, and exam results, exam-oriented English teaching is focused on grammar points, the expansion of vocabulary and understanding of sentences, and activities involving active interaction between teaching and learning are not so often organized. It is acknowledged that there are merits in such traditional EFL classes (Xu, 2004). For instance, students can build up a good foundation of grammar and teachers

often feel less pressured with traditional methods than other teaching methods in terms of the demands on teachers' own English listening and speaking proficiencies. Moreover, Xu (2004) argues that they are applicable when language-learning facilities are limited.

The disadvantages of the traditional method are summarised by Xu (2004:211) as follows:

- it pays too much attention to language forms and grammatical rules, but ignores language skills;
- it limits the quantity and quality of students' participation in conversational activities;
- the teaching process is rather mechanical, dull and fixed.

The traditional teaching approach has received numerous criticisms but the teacher-centred, textbook-centred and grammar-translation method is still widespread. That is mainly because deep-rooted Confucianism, with a history of over 3,000 years, has had such an influence on pedagogy, teaching content, the role of teacher and students and the role of education in society (Hu, 2007). However, it seems that the traditional pedagogy is changing. In Zheng & Davison's (2008) study which examined three English teachers' classroom practices by observing their process of teaching and learning, findings showed that except the grammar-translation method, a weak form of communicative language teaching method came to be another chief method applied in ELT.

3.2.3 ELT pedagogy in higher education

In Chinese HEIs, College English is a compulsory course for all college students. The goal of College English teaching is to provide society with students whose English competence can help them as useful tools. The 1993 National Curriculum indicated that developing students' ability to communicate in English should be regarded as a valid goal for English language courses.

However, standards lagged far behind what was expected. In the past decade, college students normally had 3-4 class hours of English a week during their first two years at university (Wu, 2001). Before they were admitted into colleges or universities, they had learned the language for 6-10 years. Currently they start to learn English in their Year Three in primary schools or even earlier, when they are only 4 or 5 years old. Even so, students' English proficiency is still limited. Although they can sometimes repeat memorized sentences or complete grammar exercises, most of them are very weak in listening and speaking; only a few can communicate fluently in English. 'Time-wasting and low efficiency', 'deaf and dumb English', 'a kettle of never-boiled water' – all these phrases have been used to describe English teaching and learning (Peng, 2007:28). Causes of these problems may be as follows.

- passive learning attitude and inappropriate learning methods;
- learning guided by test-oriented tendencies;
- little interest in English learning;
- little chance to practise listening and speaking.

This situation has become worse with the pressure of admission quotas booming at universities since 1999. On the one hand, the class size has greatly increased. On the other hand, not enough qualified teachers were employed. Overall, the large number of students, insufficiency of English teachers and facilities, dominance of conventional and teacher-centred methodology, and the imbalanced development of skills are the main difficulties and problems that our College English teaching is confronted with. Hence, ICT-integrated ELT, in which ICT functions as 'an integral or mediated tool to accomplish specific teaching or learning activities to meet certain instructional objectives' (Lim & Hang, 2003:50), is regarded as a good alternative to reform the traditional approach of teaching (Ma, 2003; Meng, 2005). As discussed in 2.3.2, ICT has numerous potential benefits in language teaching. Zhang (2004:217-218) summarises characteristics and advantages of ICTLT:

- turning to the student-centred learning
- arousing students' interest in learning
- creation and control of classroom atmosphere
- perfecting of results of classroom learning
- application of modern technologies to English teaching
- convenience for students in preparation, review and self-study
- reduction of burden and enhancement of efficiency for teachers

It seems that ICT can help change teacher-centred teaching and make student-centred learning possible. Dwyer (1996) analyses the differences between teacher-centred (knowledge instruction) and student-centred (knowledge construction) learning environments in terms of the attributes of each environment as shown in Table 3.2, below.

Table 3.2 Attributes of knowledge instruction and knowledge construction learning environments (Dwyer, 1996:20)

	Knowledge Instruction	Knowledge Construction
Classroom activity	Teacher-centred (didactic)	Learner-centred (interactive)
Teacher role	Fact teller (always expert)	Collaborator (sometimes learner)
Student role	Listener (always learner)	Collaborator (sometimes expert)
Instructional emphasis	Facts (memorisation)	Relationships (inquiry and invention)
Concept of knowledge	Accumulation of facts	Transformation of facts
Demonstration of success	Quantity	Quality of understanding
Assessment	Norm-referenced	Criterion-referenced
Technology use	Drill-and-practice	Communication (Collaboration, information access, expression)

Dwyer's conception of these two learning environments appears to coincide with the dichotomy between traditional teacher-centred ELT pedagogy and student-centred new pedagogy with the integration of ICT (ICT pedagogy), which has been advocated by the Chinese government in recent years (MOE, 2007). In Dwyer's conception, ICT can be used in both settings but the role of technology differs. ICT is considered as a tutor in the knowledge instruction setting, and as a tool in the knowledge construction setting (Dwyer, 1996; Gibson, 2001). In other words, ICT is likely to produce more possibilities for communication and collaboration in the knowledge construction classroom (Dwyer, 1996). Therefore, ICT represents the way forward for ELT (Zhang, 2004).

According to the new College English Curriculum Requirements (2007 version, hereafter simply the *Requirements*), it is clearly stated that colleges and universities should remould the existing dominant teacher-centred pattern of language teaching by introducing computer and Web-based teaching models. Teachers are required to implement teaching reforms which promote learner- or student-centred approaches. In short, the absolute authority of the teacher and the students' modesty was challenged. On the one hand, ICT in ELT was regarded as a threat by some teachers who were used to being the authority in the class. On the other hand, since ICT has enormous potential in providing more learning resources and makes highly efficient learning possible, more and more students turned to ICT for help. In an ICT-based learning environment, students seem to have more autonomy in their learning process as they have more control over their learning rate and learning sequence, which may not be possible in a traditional classroom. However, the opportunities for learner autonomy may not occur when students lose control of their learning process and cannot reflect critically, due to their lack of learning strategies with ICT or low learning motivation (Lim & Chai, 2004).

The MOE pointed out in its *Requirements* that the objective of College English is 'to develop students' ability to use English in a well-rounded way, especially in listening and speaking... and enhance their ability to study independently...

to meet the needs of China's social development and international exchanges' (MOE, 2007:3). This indicates that the main criteria for the success of English teaching and learning are whether or not the learners can really communicate in English effectively and learn autonomously. This basic difference between the aims and methods of traditional ELT and ICT-integrated ELT required under the new College English reform will be discussed in detail in the following section.

3.3 The College English reform

As discussed earlier in this chapter (3.2), because of its 'time-wasting and low efficiency', English teaching in Chinese HE is facing huge challenges and cannot meet the requirement of social and economic development in the 21st century (see 1.1). With the expansion of enrolment in colleges and universities, pressure was brought on College English teaching and EFL teachers. More qualified EFL teachers were needed. At the same time, teaching resources and equipment needed to be upgraded; teaching attitudes, beliefs and methodology needed to be renewed; changes in the syllabus and curriculum were necessary to improve teaching efficiency (Liu & Dai, 2003). These issues made the reform of College English teaching essential necessary.

The MOE is in a position to make educational policies and determine the goals, curriculum, course books, and even teaching methods throughout the country. The MOE started new reforms in College English teaching in 2002. In December 2003, four software-teaching systems were evaluated and approved by English experts and high-level educationalists for use in the reform (see 3.3.1). The MOE then held a net conference on 18 February, 2004, and proposed a period of piloting in 180 universities. At the same time, the MOE urged HEIs to adopt ICT and integrate ICT with EFL education in its National College English Curriculum (2004 version).

The reform of College English teaching has undergone three critical periods, namely, a period of research, a pilot-study period, and an experimental period. It then entered the fourth period: a period of full implementation (Zhang, 2006).

The first period started from the beginning of 2002, when in a seminar for management and teachers of Beijing Foreign Languages University on how to solve the inefficiency of Chinese students' foreign language learning and improve teaching, vice Premier Li Nanqing called for careful study and research (Guangming Daily, 2002). In the same year, Mr. Zhang Raoxue, the dean of the Higher Education Section of the MOE, published an article putting forward advice and suggestions on the solution to the existing problems in College English teaching. In the article, Mr. Zhang emphasised the importance of developing students' all-round practical language proficiency, and improving their communication ability. He also pointed out that a crucial step in this direction was to enhance teaching resources. Later, a series of conferences and seminars were held, which led to a consensus on why and how a reform should be carried out. This period, which is referred to as the period of research, built a solid foundation for subsequent phases of the reform.

The second (pilot-study) period, witnessed three big events, namely, the evaluation and approval by English experts and high-level educationalists of four sets of technologically-enhanced materials: software-teaching systems to be used for the new College English programme; the design of 'College English Curriculum Requirements for Teaching'; and the reform of College English Test (CET) Band 4 and Band 6.

The experimental period lasted from January 2004 to April 2006. 180 universities were selected to try out the four sets of software and hundreds of research projects were approved and undertaken throughout universities in China.

In May 2006, following generally satisfactory results from the first three periods, the Chinese MOE announced that the reform was ready to enter a new period –

full implementation. The College English teaching reform was ready it was felt, to be disseminated to Chinese HEIs in every corner of the country.

The ultimate aim of educational innovations is to bring about improvement in classroom practice so as to enhance student achievement. Many innovations are accompanied by a revision of the curriculum and syllabus and the development of new textbooks (Karavas-Doukas, 1998). China College English reform is no exception to this.

As mentioned above, the reforms include the use of new materials: four teaching software systems, designed by the four most famous publishing houses in China; the preparation of a new College English curriculum (2007 version) which suggests a computer- and Web-based College English teaching model; and the reform of evaluation criteria, in the form of the CET (2006, revised version). The next sections will discuss these three aspects of the national College English reforms.

3.3.1 Materials

As noted above, based on the new requirements of the College English curriculum (2002, experimental version) promulgated by the MOE, four software-teaching systems were developed and assessed and finally approved in December 2003. The four systems were:

- *Experiencing College English Teaching System*, Higher Education Press
- *New Era Interactive English Teaching System*, Tsinghua University Press
- *New Perspective College English Teaching System*, Foreign Language and Research Press
- *New Concept College English Teaching System*, Shanghai Foreign Language Education Press

The 180 colleges and universities who participated in the national reform in the experimental period were required to use at least one of the above four software teaching systems and give feedback after use so that the publishing houses could improve the systems. These four teaching software systems are quite different from traditional teaching materials such as textbooks and tapes. They have their own characteristics (MOE, 2007).

- They are all multi-functional, covering systematic teaching and learning materials which are suitable for both multimedia and classroom-based approaches. Textbooks, tapes, and CDs are available to meet different teaching and learning modes and environments.
- The function of these systems is to train students' communicative ability, i.e. to improve their listening and speaking so that they can use English freely in their future careers.
- The four systems provide for the combination of student-centred learning in classroom and autonomous learning after class with their teachers' support. 'Student-centredness and autonomy' are highlighted.
- Culture has been emphasised and interwoven into the teaching and learning procedure and contents so that students can be more familiar with both eastern and western cultures and culturally well-educated.
- Web-based teaching management systems are widely used to save teacher time and improve management efficiency.

In addition, each software system has its unique features. Details can be seen in Table 3.3:

Table 3.3 The four software teaching systems

Software systems	Textbooks provided	Other teaching and learning materials
1. Experiencing College English	Integrated skills book (Read and Explore; Write and Produce); Listening & Speaking book; Advanced book (for students at higher levels); Teacher reference book	Tapes, CDs (for teaching and autonomous learning on PCs and on Web), multimedia learning courseware, E-teaching materials, test database, learning website
2. New Era Interactive English	Reading, Writing & Translation; Viewing, Listening & Speaking	Tapes, online course CD-Rom, Web Learning system, Web assistant platform, test platform, learning resources database, computer- and Web-based teaching software package
3. New Perspective College English	Reading & Writing; Viewing, Listening & Speaking	Tapes, CDs, Web platform (learning, resources, test database and management)
4. New Concept College English	Integrated skills course (for reading & writing); Listening & Speaking	Web learning system, teaching assistant resources, web-based test, management platform

From Table 3.3, we can see it clearly that these four systems have produced various forms of teaching and learning materials to cater for the differentiated teaching facilities and resources in universities and blended learning (using a blend of technology-based and printed materials) of students at different levels. The key feature of these four systems is their suitability for computer or Web assisted English teaching and learning. A key question, of course, is whether the new technology can be fully exploited to meet individual, anonymous and collaborative learning. The next section will discuss this big change in ELT pedagogy.

3.3.2 ICT pedagogy

CALL has been practised in China since the mid 1980s (see 2.3.2.2). Now the computer plays a more important role in EFL teaching and learning and the advantages of multimedia-equipped and Web-based English teaching have been seen (MOE, 2007). With ICT, the teaching contents can be richer, the teaching modes can be more variable, a vivid language environment can be created, teaching resources can be fully exploited, and learning efficiency can be improved (Feng et al., 2005; Jin et al., 2005; Hu, 2007). With ICT, EFL teachers can combine the traditional teaching mode (blackboard + chalk) with rich and colourful courseware shown on e-screens and through Internet links. Students can undertake self-regulated study with personal computers (PCs); and self-evaluate and interact with peers, which might be expected to stimulate their learning autonomy to a degree. In addition, assignments can be submitted and checked via the Web, and the campus net (intranet) can be fully utilized for testing purposes. In a word, ICT seemed to open a new window for English learners.

Based on the computer and the classroom, the new College English teaching model is designed to help Chinese college students to achieve communicative, autonomous English learning so as to meet the needs of China's development and international exchanges in the 21st century (MOE, 2007). The computer- and classroom-based college teaching model recommended by *the Requirements* is as follows (see Figure 3.2):

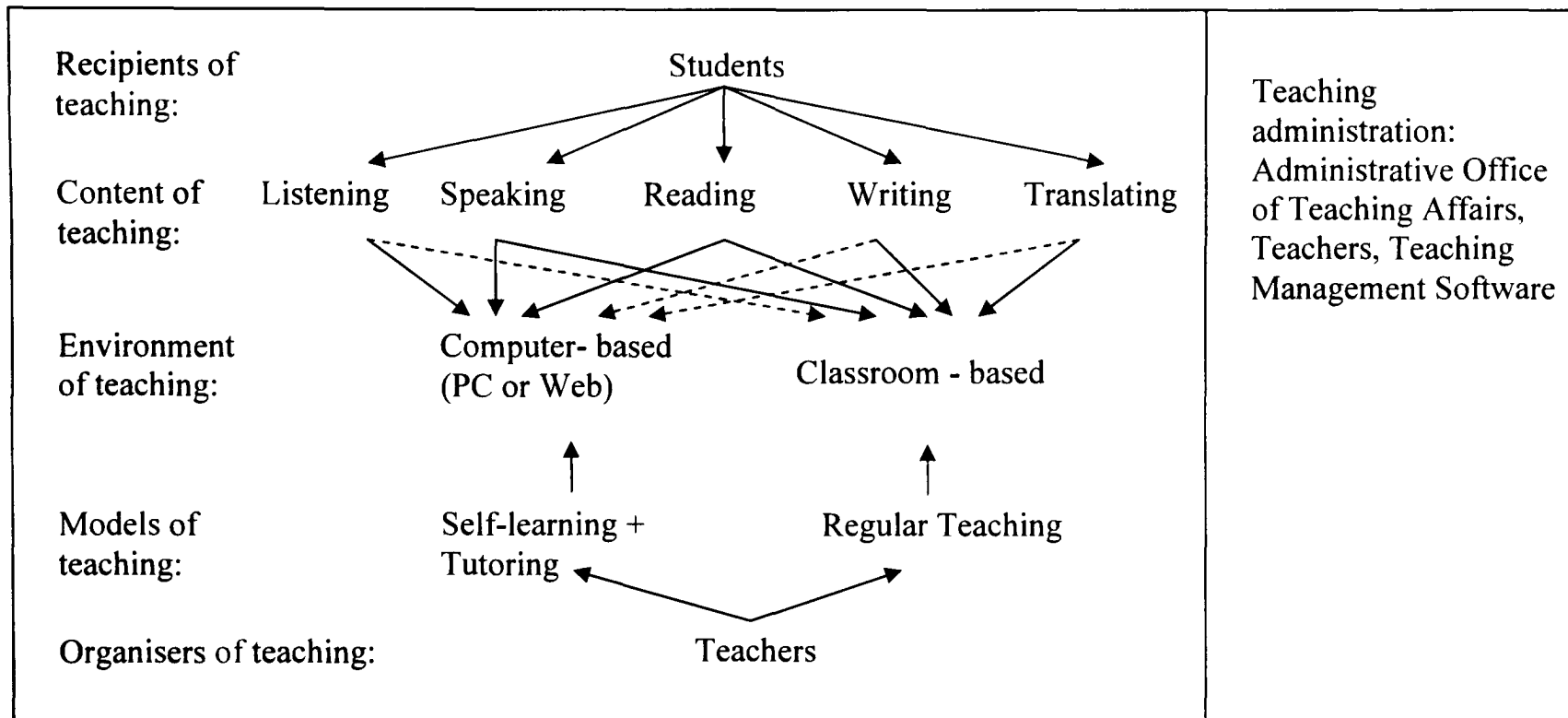


Figure 3.2: Computer- and classroom-based College English teaching model,
Source: MOE (2007) *College English Curriculum Requirements*: 33

As the diagram indicates, all the five teaching activities, listening, speaking, reading, writing and translating, can be undertaken in a computer- or classroom-based environment. The solid arrow indicates the form of teaching environment mainly used; the dotted arrow indicates a supplementary form of teaching environment. To be more specific, listening is done mainly on PCs or in a Web-based environment, supplemented by classroom-based teaching. Writing and translating are carried out mainly in the classroom, supplemented by individual work on computers. Speaking and reading are practised in both environments. Teachers, as organisers of teaching, do their normal classroom-based teaching, and tutor students in their self-access computer-based environment. Teaching administration is undertaken by the Administrative Office of Teaching Affairs, teachers, and teaching management software.

Due to the highly centralised Chinese system of education, the top-down intervention from the MOE seemed to be very effective in getting teachers to adopt computer- and Web-based English teaching. However, the changes involved in the implementation process have created challenges for most teachers. As Figure 3.2 shows, teachers serve as both organisers and administrators of teaching in the new teaching model (further information see 3.3.4). In addition, except for the regular teaching in traditional classrooms, teachers also need to arrange teaching activities in a computer-based environment and guide students in self-study, which is a new task for them. On the one hand, this challenges teachers' traditional roles in organising teaching; but on the other, teachers can carry out their teaching administration duties more easily since teaching management software is available to help, together with the Administrative Office of Teaching Affairs.

Another challenge comes from the intended process of computer-based English learning, in which teachers serve as tutors while students are learning autonomously (see the lower section of Figure 3.3, below).

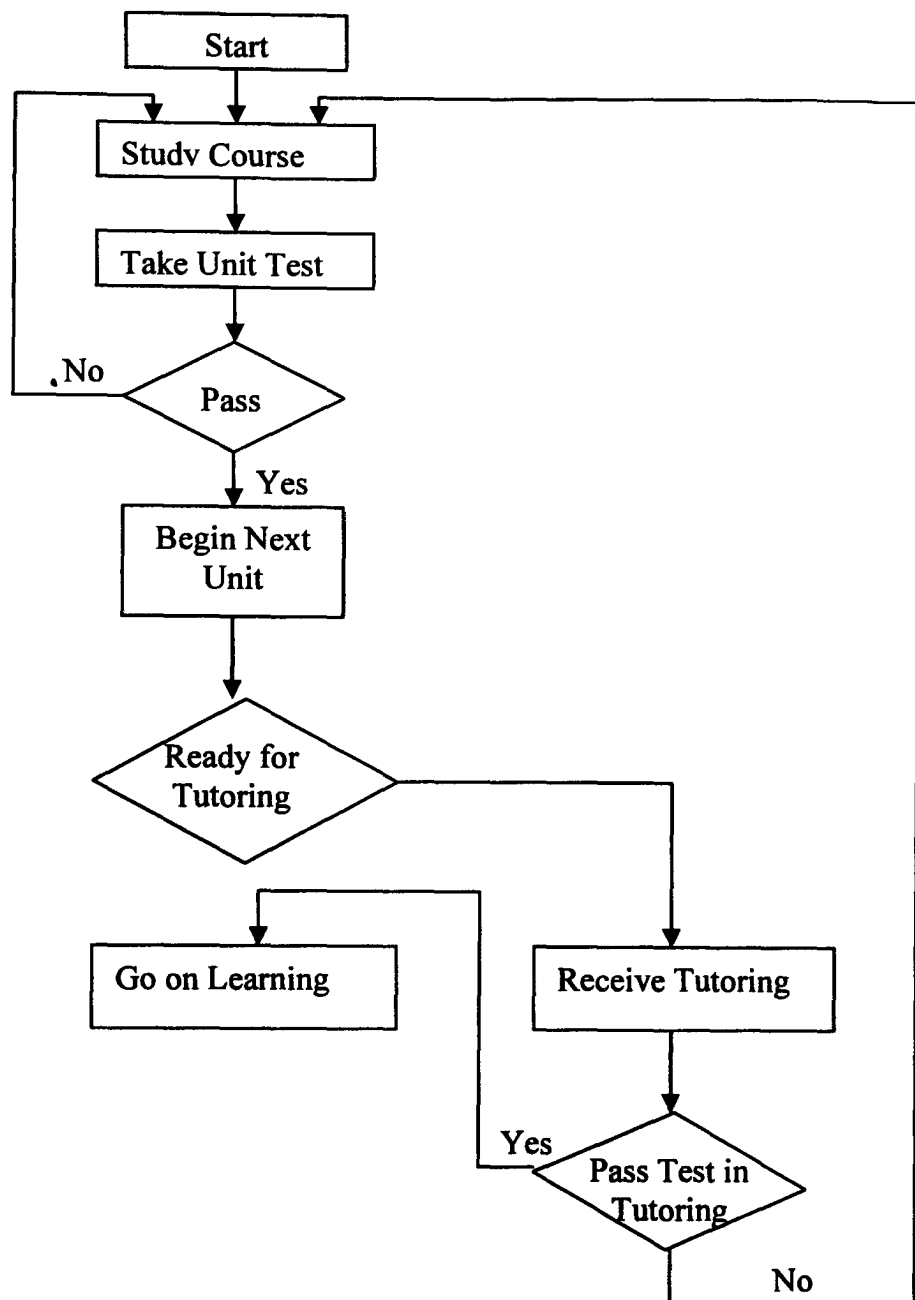


Figure 3.3 Process of computer-based English learning

Source: MOE (2007) College English Curriculum Requirements: 35

As the new requirements for College English state, the computer-based courses should be seen as equally important to those devoted to classroom learning and the credits students acquire via computer-based courses should account for no less than 30% of the total credits for College English learning (MOE, 2007).

When entering colleges/universities, students take a computer-based placement test and teachers determine their grade (1, 2 or 3), according to their test results.

Based on the results, each student will be given an account via the management system and is assigned a starting-point by his/her teachers (the course is differentiated according to level). After having studied for a certain period of time (colleges and universities can set criteria according to their own situation), students take a Web-based unit test designed by the teachers. If they pass the test, students automatically enter the next unit. If they fail, students have to return to the current unit and repeat the whole learning process. After studying a few units, students will receive face-to-face tutoring from teachers. The purpose of tutoring is to evaluate the effects of students' self-directed computer-based studies, gain some insight into their rate of progress and provide guidance and assistance as necessary. It could take the form of group work, comprising situational dialogues, role play, English opera and games. In principle, at least one hour of tutoring should be offered after every 16 to 20 hours of learning (MOE, 2007). After tutoring, teachers can check students' online learning by means of either oral or written tests, and then decide whether they can pass. If they pass, students can go on to the next stage; if they fail, the students will be required to go back to a certain unit (decided by the teachers) and revise it until they pass (MOE, 2007:35-37). In this process, teachers serve as designers as well as tutors for they need to design web-based tests which will allow them to assess if students are eligible to move on to higher level study.

This new computer- and Web-based model is based on the integration of self-study and classroom-based learning and emphasises the full use of computers and Web to achieve individualised and independent learning. A learning environment based upon student-centred and constructivist thinking with the aid of ICT, it is characterized by 'learning as a personal, reflective, and transformative process where teachers work as facilitators' (Mumtaz, 2000:329). As the traditional face-to-face classroom teaching model still has its merits in education, a blended (computer- and classroom-based) model has been suggested to meet the requirements of diversified EFL teaching and learning (MOE, 2004; Feng et al., 2005; MOE, 2006).

3.3.3 Evaluation

The College English Test, which was launched in 1988 by the Chinese Higher Education Division of the MOE, is a nation-wide standardised test to measure the English language proficiency of non-English majors (students in Chinese colleges and universities who are not majoring in English). Students prepare for this by doing a required course: College English for undergraduate students. Three levels of requirements are set for this course. They are: basic requirements, intermediate requirements and advanced requirements (see Appendix 1). CET Band 4 is designed to evaluate whether students have reached the basic requirements and CET Band 6 the intermediate requirements of the Curriculum after they have finished additional College English courses. There is no standard test designed to evaluate if college students have met advanced requirements at the moment. Every student whose major is not English is required to pass CET Band 4 and more able students may do CET Band 6. CET is composed of both written and oral tests and students' overall language proficiency in listening, speaking, reading, writing and translation are all evaluated. Normally college students will take only the written test while the oral test is designed for those students who have achieved rather higher scores in their written test, say, 85 in CET Band 4 or 80 in CET Band 6 (the actual score is decided by the National CET Band 4 and 6 Examination Committee).

CET is regarded as an extremely important exam and test results have been influential in HEIs in China since its inception. In most colleges and universities test scores are used as the only criterion to judge students' English proficiency and EFL teachers' teaching competence. A CET certificate is also of importance to graduates because most employers regard it as a compulsory qualification in recruiting new employees.

One problem in recent years has been that this large-scale exam, whose design was based on structuralism and whose format was predominantly multiple choices, has been found to constrain language teaching in a rather negative way. When China started the new round of innovation in College English reforms in 2002, experts agreed that the old CET design needed improving and efforts should be directed to alternative, more task-based test designs guided by

contemporary language testing theories. In the same year, the MOE designed a revised procedure for CET Band 4 and 6. In 2005, a new scoring system and scoring report system were adopted, in which no pass score is set; instead, report scores are set between 220 and 710, which is similar to TOEFL and IELTS. In 2006, nation-wide pilot exams were carried out and CET Band 4 Outline was revised and put into practice. This document explains that the newly-designed CET has retained the strong points of the old CET but the exam has been adjusted and improved so as to provide a more objective assessment of English learning in the new era. The differences between the old and new Band 4 Test are shown in Figures 3.4 and 3.5.

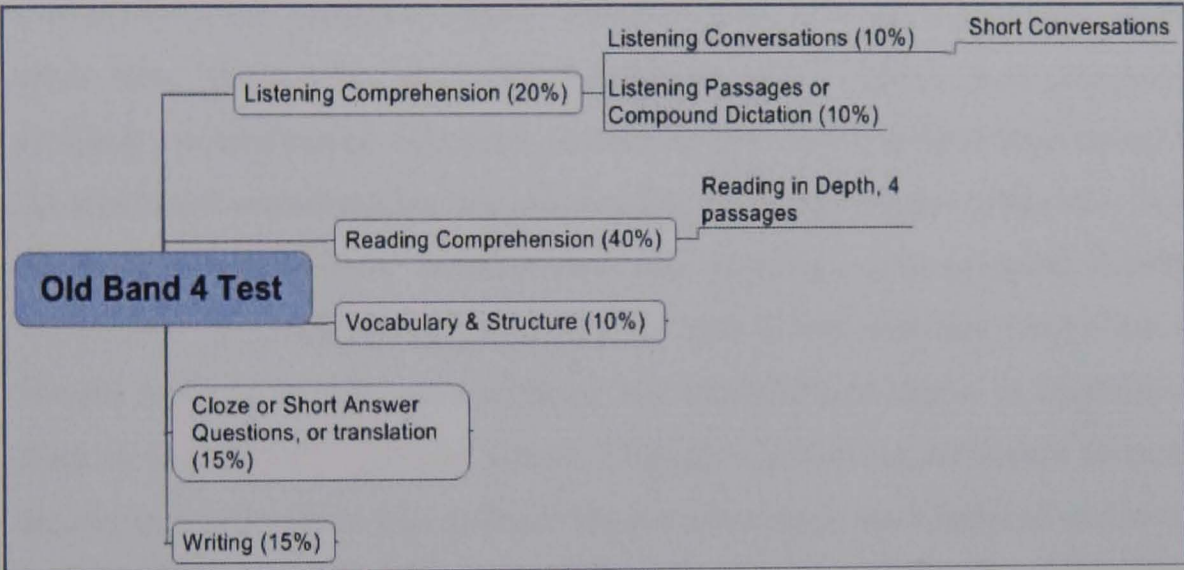


Figure 3.4 Old CET Band 4

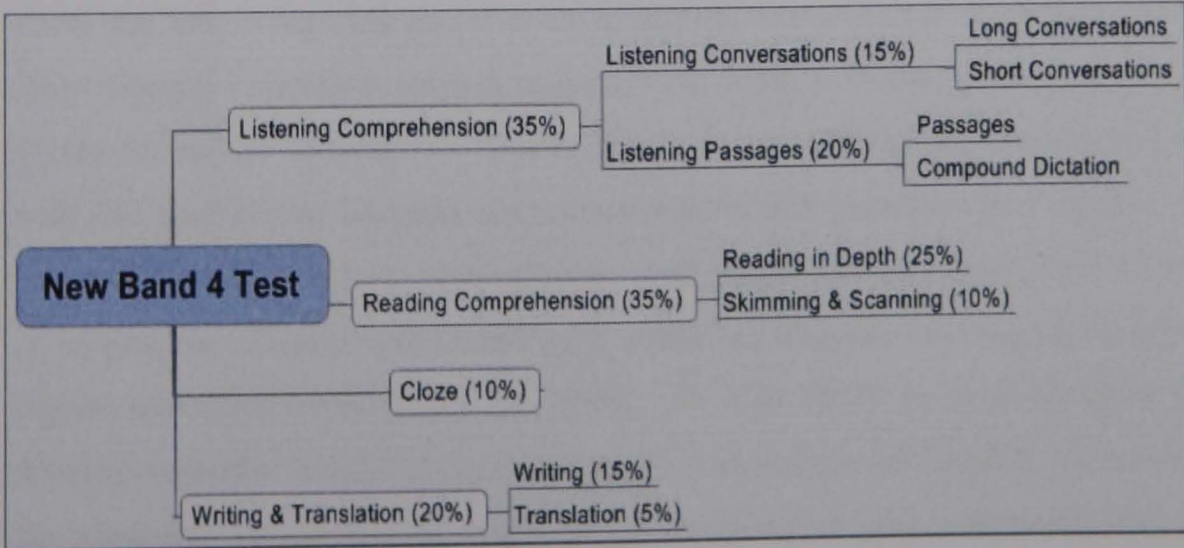


Figure 3.5 New CET Band 4

Figures 3.4 and 3.5 show that as an important part of the national College English reforms, CET has also been adjusted. The new Band 4 test now provides for a more balanced assessment of college students' all-round ability. For instance, in the new test, the importance of Listening Comprehension has increased from 20% to 35%. Students are required to listen to both short and long conversations while in the old test they just listened to short ones. Moreover, both listening passages and compound dictation (in which students listen to a longer passage three times and fill in the blanks with words and sentences) are covered in one test while in the old test only one of these was included. This change may make students feel that the listening comprehension part in the new test tends to be more difficult. It is probably because longer conversations or passages require students to listen more attentively. At the same time, those who are good at multiple choice rather than compound dictation are challenged. Secondly, skimming and scanning have been added to the Reading Comprehension test and Reading in Depth remains in the new Test. In this case, both students' reading speed and accuracy can be assessed. Thirdly, Vocabulary & Grammar is not a separate part of the test any longer but is merged with other parts such as cloze and translation (Chinese to English) in order to test students' flexible use of English. The last big difference between the old and new test is that multiple choice items have been reduced and more varied test formats are used to test students' real language ability rather than their examination techniques.

From the above big changes, it is clear that the revised CET is likely to be a more objective standard test and students' real English ability, particularly their ability to use the language in their future career, is highlighted. This is in line with the goal of the national curriculum reform that graduates are capable of communicating effectively in English in their future life and career. The reform of testing has already had a washback effect on English teaching in Chinese higher education (Wei, 2007; Li, 2008). ELT is likely to shift its focus to develop students' practical communicative competence of English. However, the emphasis on improving students' communicative and interactive ability challenges teachers who are used to traditional pedagogy and forces them to

consider the adoption of other pedagogies, e.g. ICT-integrated pedagogy, which is expected to be more effective than the traditional one.

3.3.4 Course design and administration

According to the objective of College English teaching (MOE, 2007), students should be trained to use English in a more practical way and communicate more effectively. Therefore, a new course system in which both required and elective courses are combined is recommended in the national reforms. Basic courses such as ‘Comprehensive English’ and ‘Listening’, which are designed to improve students’ basic language skills are not enough. According to the *Requirements* (MOE, 2007), English for practical uses, language and culture, and English for Specific Purposes (ESP) should be provided for students at different levels, especially those students who start from lower levels and those whose English is much better than that of the majority. The former should be well catered for and the latter should be provided with enough scope for further development. The MOE suggests that colleges and universities design their own College English course systems taking into account their different circumstances but all the courses need to be ‘individual-oriented’ (MOE, 2007:19).

The reform in course design has also brought challenges to EFL teachers. In the past, they were only required to teach basic English courses. In the new national reform, College English is not only a language course which provides students with knowledge about English, but also a course to broaden their horizons and learn about different cultures in the world. Therefore, teachers are also responsible for enhancing students’ cultural awareness. In addition, EFL teachers should have a good understanding of ESP to ensure that students at different levels receive adequate training and make improvement in their ability to use English for different purposes. This is a big challenge because most of them have not received relevant training.

EFL teachers also serve as teaching administrators and this role has become more and more important in the computer- and classroom-based new teaching model (see Figure 3.2, discussed earlier). Teachers should make efforts to guide and tutor students in their learning process, particularly in computer rooms where individual-centred, autonomous learning is highlighted. Figure 3.2 shows that teachers, and not just the administrative department, can also manage the classroom with the help of teaching management software. This software enables teachers to record students' academic scores and learning progress in computer- and Web-based autonomous learning systems, answer students' questions, solve their problems on the spot and analyse exam papers; and enhances teachers' communication with students via a Web assistant platform in terms of online problem-solving for students, course selecting, submitting and commenting assignments. The figure indicates a required role-shift from instructor to teaching organiser and administrator.

A specific College English Curriculum and teaching objectives guidelines for teaching in each college and university are normally designed by an administrative department, such as the Administrative Office of Teaching Affairs, within the college or university.

As discussed above, the computer- and Web-based English teaching and learning model aims to mobilise the initiative of both teachers and students and highlights the centrality of students and the guiding role of teachers. The *Requirements* also suggest that the new model should incorporate the advantages of the traditional classroom teaching model while fully exploiting ICT (MOE, 2007). This kind of change necessitates that teachers' classroom practice, professional and pedagogical knowledge, and professional learning must all undergo significant transformation.

3.4 EFL teacher development in China

There are many reasons for teachers to seek opportunities for professional development. As Bailey et al. (2001) point out, CPD can enable teachers to acquire new knowledge and skills. As an old saying goes, 'knowledge is power', which shows that knowledge can help teachers 'combat negativity' in their teaching contexts (Bailey et al., 2001:7). In the Chinese context, CPD can also lead to increased income and prestige.

Teachers pursue CPD in two complementary ways. On the one hand, change or innovation in society forces teachers to undertake professional development in the form of compulsory training programmes provided; on the other hand, they undertake self-directed and voluntary CPD to achieve their career goals.

In general, teacher education normally consists of pre-service and in-service education. Pre-service education is essential but not adequate for one to become a competent teacher (Guo et al., 2004). Most teachers have received pre-service training in a two to four-year programme at a teachers' college or university before they become teachers of certain subjects (a small number of teachers are transferred from other vocations). In pre-service training, regular courses occupy most of the time (3-4 years) while teaching practice takes comparatively little time (1-3 months). As a result, trainees lack teaching experience although they have some knowledge of pedagogy and educational psychology, which makes in-service education necessary and important (Guo et al., 2004; Wu, 2005). This study focuses on in-service CPD, including both compulsory training and self-directed development.

3.4.1 A brief summary of teacher development in China

As Chinese HE has developed, teachers' professional development has undergone many changes. After the birth of the new China in 1949, teacher development (TD) went through three distinct periods: the initial period, the fast developing period, and the modernized period (Guan et al., 2001a). The initial period (1953-1966) was characterized by the formation of an important regulation on teacher training in HEIs (1953), which indicated the start of TD in China. This training practice aimed to improve the quality of in-service teachers in HEIs and provide qualified teachers for some subjects at the early stage of the new-born country. During this period, TD developed steadily with the help of experts from the former Soviet Union until interrupted by the Cultural Revolution. The second period (1978-1993) constituted the resumption of HE and the formation of a nationwide TD network. During this period, two national and six regional teacher in-service training centres were built and a well-designed institutional training network was set up. The third period (post 1994) followed the introduction of the first Teacher Act, which emphasised the importance of further study, training and development of teachers, and pointed out that teachers have the right to seek development. Moreover, the Act specified that graduates from teacher education institutions such as normal schools, professional teacher colleges and normal universities ('Normal' denotes an institution which trains teachers) should be the main teaching force in schools and educational institutions (Zhou & Reed, 2005).

In 1995, the Teachers Act was passed and Regulations of Teacher Certification were set, which stated that the basic qualification for teaching was the possession of a teacher certificate issued by the government. The year 1996 witnessed the publication by the Ministry of Education of 'Training regulation for teachers in higher education', which stated the principles, forms and evaluation of training. At the 5th National Conference on Education (1999), another important document was issued, on extending the educational reform and improving quality-oriented education in an all-round way, in which teacher in-service training in schools and universities was stressed, with particular

emphasis on computer training (Zhou & Reed, 2005). These regulations and documents have provided a solid foundation for TD and stimulated the fast growth of TD in China.

Historically, there were three-level of in-service education providers in China: 1) provincial institutes of education or colleges of continuing education for high school teachers; 2) regional and municipal institutes of education or colleges of continuing education for middle school teachers; 3) county continuing education schools for primary and kindergarten teachers (Gu, 2007; Shi & Englert, 2008). Higher educational institutions normally have more freedom to arrange in-service education for their staff or collaboratively with other training centres.

Various forms of in-service teacher professional development exist in China. For instance, compulsory training modules for newly-appointed young assistant lecturers offer both theoretical and pedagogical frameworks, and for teachers with a Bachelor degree, MA degree and elite training courses are available. There are more TD opportunities for teachers to be visiting scholars or academic visitors within China or abroad (Guan et al., 2001b). Moreover, teachers can exploit summer or winter vacations to take part in short-term training seminars or international academic conferences in China or all around the world.

Compared with the aims of TD in western countries, teachers in China are more likely to attend CPD programmes with the aims of gaining a higher qualification and getting promoted (Gu, 2007). In-service teacher training courses in China tend to be more 'theoretical, academic and research-oriented' and more often than not do little to help achieve 'pedagogical' purpose (Sunderland, 1990:242, cited in Gu, 2007:24).

The fast development for TD in the past decades seems to be a reason for optimism. However, problems and difficulties have been noted. In an investigation of college teacher training in East China (RTCTTEC, 2005), the research team found that,

- there existed an imbalance between the opportunities provided and needed;
- most teachers attended training with the aim to get a higher degree;
- the training programmes failed to meet teachers' specific needs;
- the training modes were limited to, e.g., lectures given by experts.

Guan et al. (2001b) identified a basic problem in teacher education in Chinese HEIs. They claimed that shortage of funds for TD was a big hindrance. In addition, outdated, even fossilized training content and approaches could not meet the requirement of frequently changing and fast-developing higher education in China. What was worse, there was no effective assessment system to guarantee the quality of TD. Existing TD practices seem unable to match the fast development of higher education in recent years.

3.4.2 EFL teachers' professional development

The quality of teachers is the key to the outcome of a reform and therefore of language learning (Wu, 2001). When considering current practice and development in EFL teacher education in China, Qin & Zhang (2004) divide the basic skill components of the quality of EFL teachers into three kinds: command of the language, teaching techniques and the management of learning. This analysis coincides with the development needs identified by Wu (2001). However, traditional Chinese perceptions (by trainers and teachers) of language teacher education primarily relate to the desire to update knowledge of English (the first of Qin and Zhang's three components) and to secure promotion. This differs from priorities in the western world, which tend to focus on pedagogy (Gu, 2007).

Like the general teacher development in China which was discussed in 3.4.1, EFL teacher CPD in Chinese HEIs takes a variety of forms. In-service EFL teacher training includes degree education (which provides teachers with

opportunities to undertake master or doctoral studies) and non-degree training (Gu, 2007). In-service non-degree training or education may be organized locally, nationally or internationally. Colleges and universities can adopt various ways to promote EFL teachers' professional development, such as school-based seminars or workshops organised by experts invited from within China or abroad to train teachers in the same area. Teacher education centres have been set up in some key universities to organize national symposiums on certain issues. The symposium on College English teaching held by the Shanghai Foreign Language Education Press in 2004 is an example of a large-scale, short-term in-service training opportunity for tertiary ELT teachers. International co-operation and exchanges are other forms of in-service teacher training in higher education in China (Gu, 2007; Mo, 2007).

As for the CPD situation in the pre-Reform period, according to Xia's (2002) survey, the majority (84%) of EFL teachers stated that they had never had opportunities to receive further training abroad or attend relevant international conferences. In the early days of the reform, things were starting to get a little better. College English teachers have received more attention from the management than was the case in the past, but their opportunities for training are still limited hence their professional development has been affected (Liu & Dai, 2003; RTCCTEC, 2005; Yang, 2005; Xia, 2006).

From the perspective of training focus, there were also some inadequacies in teacher training programmes in China, for instance,

- Overemphasis on improving language proficiency instead of improving teaching methodology;
- Overemphasis on theoretical foundations instead of practical guidance;
- Overemphasis on subjective experiences of trainers in the past while ignoring the changeable reality;
- Overemphasis on lecture-giving instead of involvement in workshops

(Ng & Tang, 1997; Liu, 1999; Wang, 2001; Yang, 2005)

The consequences of these imbalances were that CPD programmes failed to meet teachers' increasing needs for more practical guidance in improving their pedagogy. For instance, in a report on teachers' needs in the process of EFL reform in Shanghai, teachers expressed the need for practical suggestions on lesson planning, classroom management and design of activities (Ng & Tang, 1997). The rather fossilized training modes (e.g. from expert to trainee by instruction without much interaction or participation) also affected the quality of training and reduced teachers' enthusiasm. In another survey conducted by the Chinese Foreign Language Research Centre involving more than 900 College English teachers in 48 higher educational institutions in China in 2002, teachers recognised the need to change traditional pedagogy and voiced their desire for up-to-date pedagogical knowledge (Zhou, 2002).

3.4.3 EFL teacher development for ICT

As discussed in 3.2.1, following the huge expansion of enrolment in Chinese HEIs which started in 1999, the ratio of college English teachers to students had reached 1:200 by 2006 (see 1.1). Compared with the previous English class size of 30-35 students, the present class size is much larger, with 50 or more students in a class (Gao, 2004). As a consequence, EFL teachers are facing a huge challenge to cope with large classes, which limit interactions between teacher and students, mixed proficiency levels and time constraints. These call for good classroom management, careful supervision of students' learning and assessment of individualised learning (Zhang, 2006).

The most obvious obstacle lay in teachers' limited ICT competence (He, 2005; Fan, 2005). It has been pointed out that the lack of systematic theoretical knowledge, insufficiency of practical operation ability, unfamiliarity with web resources and learning software, and failure to integrate ICT into lessons are common problems which have constrained EFL teachers from meeting the requirements of the new reforms (He, 2005).

Liu & Dai (2003) suggest that in the new ICT-integrated language education model, EFL teachers should have:

- an understanding of current teaching theories;
- excellent language skills including listening, speaking, reading, writing, translating, together with communication ability;
- knowledge of ELT pedagogy;
- ICT knowledge and skills integrated in language teaching.

(Liu & Dai, 2003:35-36)

With regard to teaching in a Web-based environment, Wang (2007a) summarises nine ICT skills that teachers should possess. These are: information sorting, resource combination, web tool application, web-based teaching design, web-based class management, learning evaluation, communication via the Internet, instruction in Web etiquette, and lifelong learning ability. Supporting Wang's argument, Mo (2007) emphasises ICT skills that EFL teachers need to grasp are: to search and integrate EFL-related online resources, to set up EFL online teaching platforms, to build databases for autonomous English learning, to apply web tools for communication and interaction with students to stimulate EFL learning and to explore the Internet for relevant research. These constitute an agenda for the design of ICT-related training programmes for EFL teachers.

As discussed earlier, EFL teachers' past training/education opportunities tended to focus on improving teachers' subject knowledge (language proficiency) and their formal qualifications, which is not enough to meet the requirements of the College English reform asking for ICT implementation. Therefore, with more emphasis on the integration of ICT in language teaching, EFL teachers' ICT-related professional development has become critical; for without qualified teachers with ICT literacy and ICT pedagogy, the integration of ICT in English teaching cannot be successful.

3.5 Conclusion

This chapter has briefly described certain key changes in Chinese HE, particularly in relation to the latest reform of English teaching and learning in HEIs: national College English reform. EFL teacher development in general and within ICT-equipped environments context has also been discussed. This provided the context for the study to be conducted.

To summarise, higher education in China has experienced huge changes in the last decades but the dominant EFL teaching model is currently still teacher-centred, which is deeply influenced by Confucianism. The national College English reform asked for a change from traditional teacher-centred pedagogy to student-centred pedagogy and the integration of ICT in EFL teaching, while there exist gaps between the expectations of the reform (student-centred pedagogy) and the current situation (teacher-centred pedagogy).

This chapter also concluded that research on teachers' CPD related to the application and integration of ICT in China is very limited. Since EFL teachers are playing a key role in the reform, teachers' ICT-related CPD are critical for the success of integrating ICT into English teaching and studies from teachers' perspective are essential. The next chapter will discuss the methodological issues in planning and executing this study.

Chapter Four

Research Methodology

4.1 Introduction

This chapter describes the research methods employed in this study and addresses important methodological issues associated with the research process. Methodology in this study is understood as a process which includes research design, data collection, data analysis and ethical concerns. Research methods refer to specific research techniques such as survey, classroom observation and interviews. The main points discussed in the chapter include the following:

- Research design: mixed methods & case study
- Selection of case study site
- Selection of participants
- Methods design
- Data collection process
- Data analysis
- Ethical issues

4.2 Research design

A research design provides a framework for data collection and analysis procedures. A particular choice of research design reflects decisions about the priority being given to a range of dimensions of the research process, which include the importance attached to:

- Expressing causal connections between variables;
- Generalizing to larger groups of individuals than those actually forming part of the investigation;
- Understanding behaviour and the meaning of that behaviour in its specific social context;
- Having a temporal (i.e. over time) appreciation of social phenomena and their interconnections.

(Bryman, 2008:31)

The adoption of a certain methodology by a researcher needs the consideration of research questions and research purposes (Silverman, 1993; Yin, 2003). The research aim and objectives of this study (see 1.3) required both the description of a macro social phenomenon, the national reform, and a detailed description of the context with the aim of finding answers to ‘how’ and ‘why’ questions in this context. A case study design incorporating mixed methods was therefore adopted.

4.2.1 Why mixed methods?

Research methods, whether quantitative or qualitative, have their own strengths and weaknesses (Bryman, 2004). For example, qualitative methods such as interviewing and intensive field observation are usually considered appropriate for understanding cultural values and social behaviours; they are, however, sometimes criticised ‘as being little more than journalism because of their ignorance of representative sampling and inability to give valid findings’ (Strauss & Corbin, 1998:28). Quantitative methods, which emphasise reliability

and replicability, are also criticised as ‘yielding shallow or completely misleading information or insensitivity to the people studied’ (Taylor and Bogdan, 1984:6). Therefore, a mixed strategy using both qualitative and quantitative methods was adopted in this study.

‘Mixed methods’ applies to research that combines alternative approaches within a single study. It has three characteristic features that set it apart from other strategies for social research (Denscombe, 2007:108),

- Use of qualitative and quantitative approaches within a single research project.
- Explicit focus on the link between approaches (triangulation); it emphasises the need to explain why the alternative approaches are beneficial and how the alternatives are to be brought together. Particular attention is given to the design of mixed methods research and especially the role of triangulation in justifying the use of the alternative approaches.
- Emphasis on practical approaches to research problems (pragmatist). It is ‘problem-driven’ in the sense that it treats the research problem – more specifically *answers* to the research problem – as the overriding concern.

This agrees with Lim & Hang’s (2003:59) argument that using multiple sources of evidence can develop ‘converging lines of inquiry’ and the finding or conclusion is likely to be ‘more convincing and accurate if it is based on several different sources and perspectives of information’. Within this case study, such triangulation was used to address the potential problems of validity and reliability.

To summarise, the mixing of methods can be a valuable research strategy for several reasons (Denscombe, 2007): first, researchers can improve the accuracy of their findings by using different methods to investigate the same subject; second, a fuller and more complete picture of the phenomenon can be provided; third, it can compensate for the weaknesses of different methods; fourth, within this strategy contrasting methods can develop the analysis, with one method being used to inform another; finally, information from one method can be used

as an aid to sampling: selecting a sample of people who will participate in the research through other different or contrasting methods.

Given the limitations of both qualitative and quantitative methods and with an awareness of the epistemological stances associated with both methods (Bryman, 2004), this research adopted the position that research methods are simply a means of accomplishing the aims and answering the questions of a study. The combined use of questionnaires and classroom observation, semi-structured interviews, and focus group in this study was an attempt to provide for methodological triangulation. In Flick's words, the combination of qualitative and quantitative methods 'has the potential of providing "an alternative to validity" through which the findings from one approach might have a chance of being validated by data from another' (Flick, 1998:230).

4.2.2 Why a case study?

A case study, as defined by Gerring (2004), is 'an in-depth study of a single unit where the scholar's aim is to elucidate features of a large class of similar phenomena' (p.350). Gillham (2000) points out that a case study is a study which investigates an individual, a group, an institution or a large-scale community to answer specific research questions. It entails investigation of specific research questions for corresponding answers. It is a process of finding out a range of different kinds of evidence, which may exist in the case setting, or has to be abstracted and collated so as to get the best possible answers to the research questions. Johnson (1994:20) emphasises that a case study is 'an enquiry which uses multiple sources of evidence. It investigates a contemporary phenomenon within its real-life context'.

Researchers point out that there are many advantages of case studies; for instance,

- Because case studies build on people's experiences and practices, the drawn data are seen to be strong in reality and more persuasive and more accessible. Furthermore, they can be linked to action and their insights contribute to changing practice.
- Case studies allow for generalisations from a specific instance to a more general issue. They allow the researcher to show the complexity of social life. Good case studies built on this always explore alternative meanings and interpretations.
- Case studies can provide a data source from which further analysis can be made. They can therefore, be archived for further research work. Indeed, case study may be a subset of a broader action research project.

(Cohen & Manion, 1994:123; Blaxter et al., 2006:73)

As stated earlier in this thesis, the foci of the research were to explore EFL teachers' attitudes towards ICT use in education, current contextual factors affecting their use of ICT in teaching, and ICT-related CPD programmes and their deficiency, which required consideration of teachers' attitudes and behaviours, and institutional management policies. A case study was considered an appropriate research approach to the current study for the following reasons.

Firstly, a case study is especially suited to social, and in particular, educational research. According to Yin (2003), case studies are distinguished from other research approaches when a researcher 'deliberately wanted to cover contextual conditions—believing that they might be highly pertinent to the phenomenon of study' (p.13). Cohen et al. (2000) also point out that 'situations are fluid and changing rather than fixed and stable: events and behaviour evolve over time and are richly affected by context' (p.22). Case studies can 'observe effects in real contexts, recognizing that context is a powerful determinant of cause and effects' (ibid). The current study was carried out in the context of the Chinese national College English reform, which is a changing and unstable situation; a case study, it was felt, could help explore the complexity of this process and identify its causes.

Secondly, compared with other research methodologies such as large-scale surveys or experiments, one of the primary virtues of a case study is the '*depth*

of analysis that it offers' (Gerring, 2004:348, original emphasis). Gerring (2004) also points out that a case study allows for the 'generation of a great number of hypotheses, insights that might not be apparent to the cross unit researcher who works with a thinner set of empirical data across a large number of units ...' (p.350). The case study approach can investigate people's beliefs and attitudes in detail, and thus help identify the relationship between their beliefs and their behaviour. Given the research questions of this study, which sought to identify the direct relationship between teachers' ICT-related pedagogy and their attitudes, and the relationship between the supply of current ICT-related CPD programmes and the demand for EFL teachers' use of ICT in English teaching, a case study seemed an appropriate approach.

Moreover, the case study approach also allows a researcher to be 'integrally involved in the case' (Hitchcock & Hughes, 1995:317, cited in Cohen et al., 2000:182) as a result of interaction over a period of time with the informants. This enables the researcher to view a thing or event from the participants' perspectives and help to gain insights when interpreting the data. Hence, the case study approach provides the researcher with a more holistic understanding of the informants' realities.

Although a case study allows the researcher to show the complexity of social life, to explore alternative meanings and interpretations, the very complexity of a case can make analysis difficult. Since various events, variables and outcomes in a case are often interwoven, it is hard for the researcher to show the connections among the data and at the same time not lose sight of the whole. Furthermore, with regard to the context of a case study, sometimes it is difficult to know where 'context' begins and ends (Blaxter et al., 2006:73). In addition, case studies have often been challenged for being 'soft' and relying on data that lacks reliability. These disadvantages can, however, be minimised through the selection of an appropriate case study site, a carefully designed conceptual framework, systematic methods of data collection and management of the data collection and analysis processes. The conceptual framework which informs

data collection and data analysis in this study has been discussed in Chapter 2 (see 2.5.2). The next section discusses the case study site selected for this study.

4.3 Selection of case study site

The institution selected for study was a key university in central south China. The national key universities are universities currently recognized as prestigious and receiving strong support from the Chinese central government. The specific site for the data collection was the College English Department (CED) of the Foreign Language School/College of the University. (The function of a college in Chinese higher education institutions is similar to that of a school in English universities. A college should follow the rules and regulations formulated by the University, but it has certain limited rights to draft its own regulations.) Further information on the University, the School and the CED can be seen in Appendix 2.

The site was chosen for a number of reasons, namely, 1) its pioneering role in national distance education; 2) its participation in the experimental College English reform; 3) its adoption of Campus Computer Networks and interactive network teaching platforms for English teaching; 4) its success in obtaining ICT-related research projects; 5) the established rapport with the University. These reasons are explained more fully in subsequent paragraphs.

First, the site was representative of ICT-integrated teaching models in Chinese higher education. In 1998, the University was selected as one of four experimental universities where online education schools were founded and distance (online) education started; it has therefore been regarded as a pioneer in the application of ICT in higher education during the last decade. College English was a basic course in online education in the University. This made it

possible during the fieldwork to find teachers who were actually integrating ICT in language teaching.

Second, the University was selected in February 2004 as one of 180 experimental HEIs who were asked to try out one of four College English software-teaching systems (see 3.3.1). From 2004 when the experimental reform started, to October 2007 when the fieldwork took place, three of these computer-based and web-based English teaching systems were adopted experimentally and used for all non-English major students. The specific use of these systems in the past four years can be seen in Appendix 3. The data generated in such a context was regarded to be relevant in the experiment with new technologically-enhanced materials: software systems for English teaching.

Third, the University was regarded to have offered ‘good practice’ in ICT-aided teaching for it had built the trunk network of its Campus Computer Networks and set up interactive network teaching platforms centred on multi-media courseware. The CED, which is in charge of English teaching for non-English majors from different schools and departments of the University, started to use the Campus Computer Networks and network teaching platforms in 1999 and was the first to have adopted a computer-based language teaching mode in the University. Moreover, campus networks were utilized to broadcast English for students to practise listening after class. In such a university where the use of ICT in language teaching and learning could be seen everywhere on the campus, it would be easier for the researcher to get enough data for the research.

In addition, the CED had a good reputation for encouraging teachers to use ICT in teaching. In the last ten years, teachers in this Department have completed several ICT-related research projects on EFL teaching funded either by the MOE, China or by the University. This seemed to indicate that teachers in the University were not only experienced in ICT-related teaching but in research.

Lastly, as a former staff member who had worked for over 10 years in the University, and built strong relationships with the staff in the CED, it was

relatively easy for the researcher to gain access to the department for data collection, and obtain support from the department leader and the potential participants. The next section discusses the selection of participants at different levels.

4.4 Selection of participants

A research sample is defined by Bryman (2004) as ‘the segment of the population that is selected for investigation’ (p.87). It is a subset of the population. Sampling may be based on a probability or a non-probability approach. In probability or random sampling ‘it is possible to specify the probability that any person, school, college or other unit on which the research is based will be included in the sample’ (Creswell, 2005:60). In non-probability sampling, on the other hand, it is impossible to state the probability of a unit being included. Non-probability sampling includes purposive sampling (Cohen & Manion, 1994). According to Creswell (2003), purposive sampling, as its name implies, refers to a sampling process in which the sample is selected by the researcher with a specific purpose in mind. That means the researcher would usually have specific predefined objects such as individuals or groups they are seeking. In exploratory research, most sampling methods are purposive in nature because we usually approach the sampling problem with a specific plan in mind (Aldridge & Levine, 2001). This study adopted a purposive sampling method. The samples chosen for each research methods will be discussed in the following subsections.

4.4.1 The questionnaire sample

Purposive sampling can be very useful for situations where a targeted sample needs to be reached quickly and where sampling for proportionality is not the primary concern. Doubts have been expressed about the generalisability of the findings of this kind of sampling (Bryman, 2004; Denscombe, 2007), since they depend on researchers' subjective judgement. However, this study aimed to obtain a deeper understanding of ICT implementation in a particular context rather than to generalise from findings, and this approach therefore seemed appropriate.

The sample size depends on the purpose of the research. This research aimed to understand EFL teachers' uptake of ICT use in their teaching and current ICT-related CPD policies and practices in the participating university. This required an in-depth case study; but given the obvious constraints of doctoral study, careful selection of participants was necessary. Given that the background to the research was national College English reform, the decision was taken to select for study only the 89 teachers who taught College English (an English course for non-English majors). They were asked to complete the questionnaire at the first stage of the fieldwork.

4.4.2 The classroom teaching sample

In the second stage of fieldwork, the study adopted various research techniques as part of a broadly qualitative approach, namely, classroom observation, semi-structured interview and focus group, to attain triangulation of method. Although 44 out of the 78 teachers who had completed the questionnaire had expressed their willingness to give further support, such as involvement in classroom observation, participation in an individual interview or focus group, practical considerations necessitated the selection of a smaller sample and 12

teachers were finally selected for more comprehensive study. There were five criteria for the selection of these 12 teachers: gender, age, academic title, years of teaching and College English teaching reform systems used (see Appendix 4). The following shows how this sample related to the large group of 78 in respect of these aspects.

The gender proportion of language teachers in China is always unbalanced; normally female teachers outnumber males in Schools of foreign languages in Chinese universities. The selected institution is no exception. The gender distribution of the 12 samples, male (16.7%) and female (83.3%), closely corresponds to that of the total population who completed in the questionnaire (male, 14.1%; female, 85.9%).

The sample was less stratified in age categories because only 17 teachers volunteered to participate in both classroom observation and interviews. Expressed as percentages, the respective proportions of the 12 subjects selected in each age category compared to the total population of 78 were as follows; the total 78 were: 22-25, null (discussed in 5.2.1); 26-29, 16.7% and 10.3%; 30-39, 50% and 48.7%; 40-49, 16.7% and 28.2%; over 50, 16.7% and 12.8%. In short, although the 40-49 year-olds were under-represented in the sample, and the younger teachers (26-29) were a little over-represented, the remaining subjects were broadly representative of their age groups.

In terms of academic status, qualified teachers fall into four categories in Chinese HEIs: teaching assistant, lecturer, associate professor and professor. Taking into account the distribution of academic titles across the total of 78 teachers, the researcher selected from the volunteers one teaching assistant, seven lecturers, three associate professors and one professor to participate in classroom observation and individual interviews.

Teaching experience is a key factor affecting teachers' attitudes towards ICT pedagogy and their use of ICT, and age was used as a basis for determining this. The profile of the sample, by years of teaching experience, was as follows: 1-2

years (8.3%), 3-5 years (25%), 6-10 years (8.3%), 11-15 years (25%), 16-20 years (0%) and over 20 years (33.3%). The sample was not highly representative of the total population in the Department, for of the seven teachers (out of the total of 78) with 16-20 years' teaching experience, none was willing to cooperate further with the research.

A similar problem occurred with the software teaching systems used by the 12 teachers (see Table 4.1).

Table 4.1 Teaching reform systems used by the 12-teacher sample

	Frequency	Percent	Valid Percent	Cumulative Percent
Experiencing College English	3	25.0	25.0	25.0
New Era Interactive English	3	25.0	25.0	50.0
New Concept College English	6	50.0	50.0	100.0
Total	12	100.0	100.0	

'*New Perspective College English*' is not listed in Table 4.1 because although there were nine teachers who used this textbook and VCD, none of them were willing to be observed.

4.4.3 The management and administrative staff sample

CPD for EFL teachers is a rather complicated process. It not only involves teachers, but other related functional departments and staff are inevitably involved. In addition, this study started in the context of Chinese national teaching reform, and in order to maintain the smooth implementation of this innovation, multi-departmental management was a necessity. Therefore, it was natural to go into related management departments or offices such as the Personnel Department, the Academic Affairs Office (AAO), the Modern

Educational Technology Centre (METC) and the College English Department (CED) for in-depth data.

The reason for seeking access to the Personnel Department was the critical role the Department plays in the University in relation to its overall management of teachers and administrative staff in the University, especially its function of faculty training. To be more specific, it is responsible for the recruitment of new teachers and the deployment of unqualified teachers, pre-service and in-service teacher training and the form and execution of relevant policies.

The AAO is responsible for teaching, research and innovation, and the management of teaching facilities, although specific responsibility for day to day use and maintenance of the latter falls to an affiliated centre: the Modern Educational Technology Centre.

The director of the CED was interviewed because he was seen as a key link between the University and EFL teachers. He was responsible for passing related policies about English teaching reform from the University to teachers; he was also in charge of selecting textbooks for non-English college students and had a limited role in the process of recommending EFL teachers for CPD.

Thus, besides EFL teachers, management staff including the Personnel Department Chief, the Dean of AAO and the Director of the CED were asked to take part in semi-structured interviews. With regard to the participation and support of IT coordinators in the context of ICT use in language teaching, an IT coordinator in METC and a language lab technician were also asked for their views about the reform.

4.4.4 The student sample

Students cannot be neglected in such a big change, so non-English majors from different schools under the University were invited to student focus groups to express their ideas and attitudes towards the integration of ICT in English teaching and learning. At the time of the fieldwork, September-December 2007, over 10,000 students were taking College English courses in their first and second year. Taking into account that the teachers for observation and interview were teaching different students from different schools, the researcher thought it appropriate to invite the students of these 12 teachers for focus groups. Firstly, they were of different majors, both in arts and science. Secondly, while their English teachers' classes were observed for at least two hours, the students' behaviour was observed as well. It was thus possible to compare what the students said with what the teachers said about their English teaching and learning. Moreover, the researcher could compare what she had seen to what she heard from informants. Since 'New Era Interactive English' teaching system was the only system thoroughly used to fulfill the aim of the College English teaching reform, the views of students who were involved in using this system were extremely important. Therefore, one student focus group was composed of six students using this system. Another six students from different schools participated in the second student focus group. 10 students out of 12 were from year 2006 and year 2007 (first-year and second-year students), two were third-year students. Five were girls, reflecting the gender distribution of the total student population in the University. Demographic information about the student focus groups is shown below:

Table 4.2 Composition of student focus groups

Student focus group A, B	Gender	Grade	Major	Systems used
A1	male	1	Software	College English, New Version & System III
A2	male	1	Maths	College English, New Version & System III
A3	male	3	Civil engineering	College English, New Version & System III
A4	female	1	Arts	College English, New Version & System III
A5	female	2	Chinese language and literature	System I & System III
A6	female	3	Physics	System I & System III
B1	male	1	Material science & engineering	System II
B2	male	1	Material science & engineering	System II
B3	male	1	Material science & engineering	System II
B4	male	2	Chemistry	System II
B5	female	1	Material science & engineering	System II
B6	female	2	Chemistry	System II

4.5 Methods design

From the discussion in 4.2.1, it is clear that mixed methods of data collection help the researcher ‘to see things from different perspectives and to understand the topic in a more rounded and complete fashion than would be the case has the data been drawn from just one method’ (Denscombe, 2003:84), and to build up a more detailed picture of the issues under investigation.

The study began with a small-scale questionnaire survey, which provided a basic understanding of EFL teachers' attitudes towards ICT use. However, questionnaires can only supply an overview of the phenomenon; more specific methods were needed to go into detail and obtain data underneath the context. Based on the information gathered from questionnaires, later classroom observation of the actual use of ICT, individual interviews with management staff, an IT-coordinator, a language lab technician and English teachers, and focus groups with teachers and students were used so that an overall picture could be established and triangulation of methods and sources could be achieved.

Figure 4.1 shows the three research questions and corresponding approaches used.

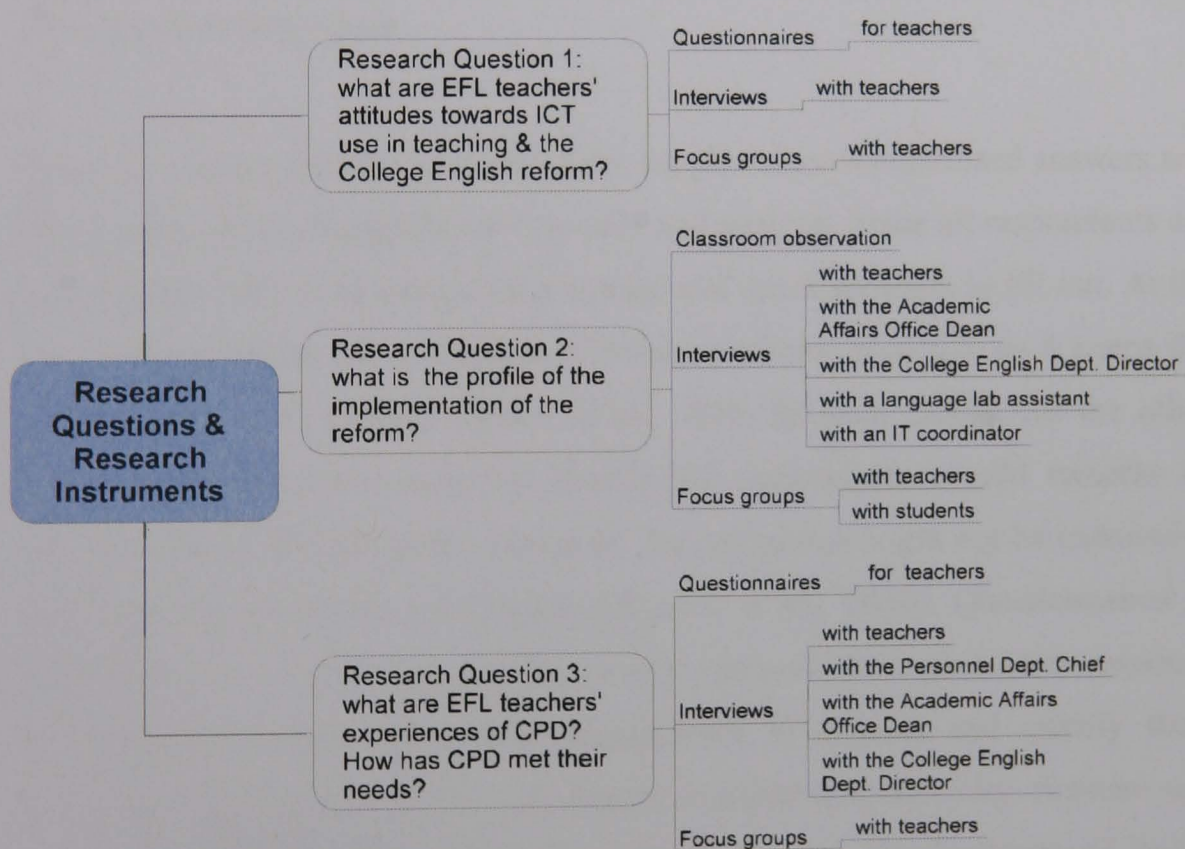


Figure 4.1 Research questions & approaches

The following subsections discuss the rationale for and design of these instruments.

4.5.1 The questionnaire

Aliaga and Gunderson (2002, cited in Muijs, 2004:1) describe what we mean by quantitative research methods very well: quantitative research explains ‘phenomena by collecting numerical data that are analysed using mathematically based methods (in particular, statistics)’. Quantitative research is especially suited to the testing of hypotheses (Cohen et al., 2000; Bryman, 2001; Muijs, 2004; Bryman, 2004). In quantitative methods, a questionnaire survey aims to collect a substantial amount of data and draw conclusions about the phenomenon under investigation (Bush, 2003). Moreover, questionnaires are regarded as a good way of collecting certain types of information quickly and relatively economically in terms of materials, money and time. Another advantage of questionnaires is that they are easier to manage compared with other research techniques.

In general, questionnaires in closed form supply rather standardized answers and are comparatively straightforward to code and analyse. Since all respondents are posed exactly the same questions, it is easy and quick for them to fill out. At the same time, it offers the advantage of being relatively objective as it keeps the respondents on the subject (Cohen et al., 2000; Bryman, 2004). On the other hand, closed questions leave no chance for respondents to add remarks or explanations to the categories; therefore, the categories might not be exhaustive and might be biased in some respect (Cohen et al., 2000). Questionnaires in open form are not restricted, and they enable respondents to give a free response in their own words; they allow respondents to explain and qualify their responses. Open questions offer the chance to achieve authenticity, richness and depth of response (ibid). However, they bring the disadvantages of being difficult to code, classify, interpret and summarise (Cohen et al., 2000; Bryman, 2004).

Questionnaires which include closed and open questions are commonly used in social science to serve different purposes. Precise written questions are formulated and then sent out to find answers to the issues that are of interest

(Blaxter et al., 2006). This is not as simple as it might seem. There are a number of issues to be considered when wording questions. When a questionnaire is not well laid out or appropriately presented, it is unlikely to get an adequate, high level of response. Because the researcher may not be present as the data are collected, the design and testing of a questionnaire are vital components of the promise of reliability (Bush, 2003).

In this study, with regard to the first research question (what are EFL teachers' attitudes towards the adoption of ICT in language teaching (ICT pedagogy) and the wider context – the College English teaching reform in China?) a questionnaire survey was felt to be appropriate for its ability to collect, code and analyse data on a certain scale. The survey aimed to present a brief description of how ICT was used by EFL teachers in this university to implement the national College English reform and what their general attitudes were towards the key requirement of the new curriculum. Respondents' answers to the questionnaires would also provide a better sense of focus in terms of the key issues associated with ICT use and ICT-related CPD for the later classroom observations and interviews.

The questionnaire was first designed in English and then translated into Chinese in order to guarantee accurate understanding of the contents. The drafting of the questionnaire was a long and careful process. I referred to some scholars' questionnaire surveys (e.g. that of Tony Fisher, Ling Hu) and designed my own based on part of them. The draft was sent to my supervisor and other teachers with similar background for checking. After having obtained feedback, I revised the wording and improved the layout many times in order to achieve clarity, concreteness, and completeness. With the purpose of checking understanding of the questions from the participants' point of view, a draft was sent to three Chinese tertiary-level EFL teachers for piloting. All were teachers in Chinese higher education pursuing a PhD or MA in the UK. They first completed the questionnaire, and then offered valuable suggestions for improvement (e.g. time needed for completion, the length of the questionnaire, words used in each question, etc.).

Two types of questions were mainly used in the questionnaire, closed and multiple-choice questions, a few of them with one open question at the very end (see Appendix 5). No other open questions were used because from the feedback of pilot study participants, this type of question would make too great a demand on the respondents in terms of time and energy, thus affecting the return rate. Altogether, the questionnaire consisted of 30 questions which were divided into three sections under the following headings:

- *Personal Information*
- *Uptake of ICT by English teachers*
- *Attitudes towards ICT use in English teaching*

Part 1 (15 questions) focused on collecting basic information about the respondents in terms of their name, age, gender, years of teaching experience, academic title, experience of computer use, relevant ICT competency certificate, and their involvement in the national College English reform. The purpose of collecting such information was to provide some necessary parameters that could be used as criteria to quantify the data generated by later questions. In other words, these items were to serve as variables in terms of which data generated from the following questions could be analyzed.

As indicated above, Part 2 (9 questions) concentrated on the existing ICT skills and knowledge that EFL teachers had. Its purpose was to examine barriers to EFL teachers' ICT use, benefits of ICT development and support from the institution; and to look at English teachers' past ICT-related training programmes and how they undertook related CPD.

The purpose of Part 3 (6 questions) was to identify EFL teachers' attitudes towards ICT use in English teaching. It consisted of three subsections, namely, 1) general attitudes towards innovation (6 statements); 2) views about participation in the national teaching reform systems (8 statements); 3) attitudes towards effects of, and use of, ICT in education (7 statements). A Likert scale was used to elicit responses to these 21 statements.

The questionnaire survey aimed to present a brief description of the current situation regarding the uptake of ICT by EFL teachers in a selected HEI. More specifically, it aimed to discover how ICT was being used by these teachers during the implementation stage of the Chinese national College English reform and what their general attitudes were towards the integration of ICT in language teaching – a requirement of the new national English teaching syllabus and curriculum.

4.5.2 Classroom observation

Observation may be regarded as the basic tool in classroom research. As a research method, observation is powerful, flexible and real because it can:

- give direct access and insights into complex social interactions and physical settings;
- give permanent and systematic records of interactions and settings;
- be ‘context sensitive and ecologically valid’ (Denscombe, 1998:156);
- enrich and supplement data gathered by other techniques (allowing triangulation and thus increasing reliability);
- use very varied techniques, yielding different types of data and with the potential to be widely applied in different contexts; and
- be used to address a variety of types of research questions.

(Moyle, 2003:174)

Observation can be either overt or covert; the observer can be the complete observer, the observer-as-participant, the participant-as-observer and the complete participant (some researchers divide these roles into participant, non-participant and semi-participant observation) (Cohen et al., 2000; Moyle, 2003). My role as a researcher was as a non-participant observer. Non-participant observation describes a situation in which the observer just observes what is going on in the setting but does not participate in it (Bryman, 2001). Non-participants usually enter the ‘scene’ of the research with knowledge of what to

observe and why to observe (Moyles, 2003). My first purpose was to check whether the ICT facilities available in each classroom agreed with the data emerging from the questionnaire survey and informants' descriptions in later interviews. Moreover, I wanted to identify how EFL teachers integrated ICT in English teaching in natural and real settings and how students were involved in ICT-integrated language learning.

Observation can be structured, semi-structured or unstructured (Wragg, 1999; Moyles, 2003; Bryman, 2004). Structured observation is also called systematic observation, in which 'the researcher employs explicitly formulated rules for the observation and recording of behaviour'; an observation schedule is used to observe participants for a predetermined period of time using the same rules. In unstructured observation no observation schedule is used but a detailed record is kept with the aim of developing a narrative account of participants' behaviour (Bryman, 2001:162-163). Structured observation has been criticised as being subjective and biased (Bell, 1999; Patton, 2002; Bryman, 2004). A researcher might therefore structure the observation partly, making audio-recordings and taking field notes at the same time (Moyles, 2003). I adopted semi-structured observation to identify specific use or non-use of ICT by EFL teachers and students in English classrooms with a pre-determined agenda so that I could have control of the data being collected; at the same time, the flexibility in semi-structured observation left me some opportunities for gathering data which emerged unexpectedly in certain classrooms and were of great value in answering the research questions.

Hence, in my classroom observation, a class observation summary sheet (see Appendix 7 & 8) and a commentary sheet (see Appendix 9 & 10) were developed to guide the observation process and at the same time provide a descriptive account of what happened. The summary sheet included details of the specific context such as teacher's name, students' level, major, number, course name, time period, textbook and software-teaching system used, lesson theme, lesson sequence, types of ICT available in the classroom, types of ICT used and the layout of the room. During observations, a record of events was

kept every five minutes using the commentary sheet to provide a relatively objective description of the teacher's use or non-use of ICT, the purpose of ICT use, and the classroom activities.

In order to gather more reliable data, researchers are recommended to record what they see by making field notes, and/or to use audio or video recording (Moyles, 2003). In my classroom observation, a digital video camera was placed at the back of the classroom to gather 'live', reliable data from 'live' situations so that the observer could reflect and compare with what was recorded in field notes. In China, interviewees or participants tend to be unwilling to be recorded and generally behave very cautiously and differently in the presence of a camera (Zhang, 2008). Video recording normally takes place after teachers have a chance to rehearse their teaching and when they feel confident when being video recorded, such as in a public teaching presentation. In that case, teachers know about the purpose of that recording very well. When teachers are asked to video their class, however, they are worried about how that recording will be used since it may leave evidence on the basis of which negative judgments may be made. Therefore, video recording is regarded as a threat to their 'face' or their future. Nevertheless, I successfully persuaded teachers and students involved in classroom observation to accept digital video. Since all the teachers and students had been well-informed that my focus was on the use of ICT facilities rather than how well they behaved in teaching and learning practice, they felt relaxed and behaved normally, so far as I could judge, when they were observed. Altogether 26 observations were carried out – 10 teachers were observed twice and two teachers three times, each time for one class hour (45 minutes). The observational data was used in a supplementary fashion (see Chapter 5), together with the other main data collected by questionnaire survey, individual interviews and focus groups.

One consideration in observation is that the presence of an observer may alter behaviour of the observed and lead to 'observer effects' (Cohen et al., 2003; Moyles, 2003). In order to avoid observer effects as much as possible, I took certain measures, such as avoiding eye-contact with the participants and wearing

unobtrusive clothing. I also chose my seat carefully. In most cases, I just crept into the classroom or language lab and sat in the back row or hid in a corner so that I was nearly 'invisible'. A further concern in observation is that data may be filtered through the researcher, which leads to difficulty in checking the reliability of data (Wragg, 1999; Denscombe, 2003). Gruyks (2003) indicates that researchers should present the readers of research with sufficient information, so that they can decide whether the findings of the researchers are adequately supported. In this study, I used both detailed field notes and video-recording in my observation to cope with these issues.

Classroom observation serves as a very important and useful research tool in my study. It allowed the gathering of rich data concerning the use of ICT in natural classroom settings through my own eyes and at the same time, through a camera lens. Just as Lim & Hang (2003:59) state, data sought naturally can better describe and help us understand what goes on in a particular context and 'can improve the provision of clues and pointers to other layers of reality', my classroom observation directly recorded what EFL teachers did (with ICT or without ICT). With this method, I have obtained natural and real data that could not have been obtained by other methods.

In summary, observation not only facilitated the collection of rich data in natural and real settings, it also helped to generate and refine questions to be used in interviews with teachers and students regarding an observed behaviour or action (Coleman & Briggs, 2003; Lim & Chai, 2004). Because of the issue of interpreting what is observed and of potential observer bias, observation is probably most effective when combined with other forms of data gathering, such as questionnaires or interviews because this allows findings to be validated through triangulation (Moyles, 2003). With respect to the current study, it was expected that from observation the researcher would be able to identify how ICT was integrated in language classrooms and the experiences of the teachers and students involved. It was also necessary, however, to take into account the way the teachers interpreted and understood their use of ICT in practice, and interviews, which could explain certain behaviours or actions (such as a

teacher's choice of a certain ICT type in class), were used for this purpose.

4.5.3 Semi-structured interviews

As a research method, interviews are seen as being able 'to gain explanations and information on material that is not directly accessible: perceptions, attitudes and values, matters which are difficult to obtain by alternative methods' (Partington, 2001:33) and to 'explore areas of broad cultural consensus and people's ... special understanding' (Denscombe, 2003:4). Bell (1999:135) points out that 'a skilful interviewer can follow up ideas, probe responses and investigate motives and feelings, which the questionnaire can never do'. The interviews allow participants to recount activities or incidents that have not been observed and thus can supplement observation data (Lim & Hang, 2003).

Robson (1993) classifies interviews in three formats: a structured interview, which is conducted with a pre-determined standardized set of questions; a semi-structured interview, in which the interviewer introduces the topics and then guides the process by asking questions that can be modified; and open-ended interviews, in which the interviewer raises certain topics but has few specific questions. Interviews can be conducted by different forms (individual or group) in different ways such as face-to-face or telephone interviewing. Therefore, interviewing is a flexible tool of data collection. The type of interview selected, however, should be aligned with the strategy, aims and research questions (Punch, 1998).

This study used face-to-face semi-structured interviews because they could yield information on EFL teachers' attitudes toward ICT use in ELT, their perceptions of the national reform, and their CPD experiences; they also allowed the interviewer to gain opinions from the management and administrative staff on the implementation of the reform and explanations of relevant ICT and CPD policies adopted. Moreover, in the face-to-face interview, the interviewees were

more likely to answer the questions in their own words, and the interviewer could respond by prompt questions to elicit the interviewee's clarification or expansion of the answers. In a word, semi-structured interviews helped obtain a variety of kinds of information I needed to answer my research questions.

Although semi-structured interviews potentially have great exploratory power in exploring in some depth people's viewpoints or opinions, interviewing people always takes a lot of time. In addition, interviewing requires skill on the part of the interviewer, for 'an interview is not a conversation' (Drever, 1995:4). It is difficult for new researchers to take notes and maintain the flow. To avoid leading questions is another challenge. How to stick to the interview schedule is also a problem. That means inexperienced interviewers may not have total control over the process. All these difficulties need time and practice for novice researchers at the very beginning. So researchers should carefully formulate the questions used and practise, if possible.

Keeping these points in mind, I formulated the questions carefully, discussed these with my supervisor and revised them many times in order to avoid problems such as leading questions. An interview schedule was then piloted with a Chinese EFL teacher sharing a similar background. Some questions were revised subsequently, the wording being improved to avoid vague expression. This was also a useful experience in learning how to control the process.

A second concern in relation to interviews is data quality. According to Patton (2002), it is difficult for the interviewer to share the private world of the interviewee. Interviewees can 'fabricate tales of self that belie actual facts' (Denzin, 1989:114). It is therefore important to establish empathy and rapport with those being interviewed 'if respondents are to disclose information to interviewers and ideally this is done over a period of time' (Denzin, 1989; Partington, 2001). In order to establish empathy and rapport with the interviewees, I asked friends in the University to introduce me to them, prepared small gifts and tried to accommodate interviewees' preferences (e.g. the time and venue they preferred). At the same time, all the interviews were recorded

with a digital recorder for later data sorting and analysis.

The interviews were conducted with teachers after the observation of their lessons. The aim was to explore their attitudes towards ICT use in English classes, their perceptions of the College English reform, which recommended the integration of ICT in English teaching and learning, and their understanding of current ICT-related CPD policies and their experiences of these. The interview was structured in two parts: Part A and Part B (see Appendix 11). Part A (7 questions) focused on teachers' ICT use in teaching, their understanding of the difference ICT had made to their teaching; who had influenced their use of ICT; the problems and barriers they had met and how they had tried to solve them; how they had gained ICT knowledge and skills and their expected ways of ICT use in teaching. Part B (5 questions) concentrated on their ICT-related CPD experiences in the context of the national reform, e.g. relevant support from the University, training opportunities, their CPD needs, their perception of what CPD forms/models would help them implement ICT-enhanced teaching.

Management and administrative staff, including the Head of the Personnel Department, staff in the AAO, the CED Director, an IT-coordinator and a language lab technician were also interviewed. Protocols for semi-structured interviews with management and administrative staff can be seen in Appendix 9. By interviewing the management staff, I tried to find out how these units supported EFL teachers' CPD in relation to ICT and their understanding of the national reform, the problems and difficulties they had met and the worries they had in the current situation. By interviewing the administrative staff, I tried to identify teachers' and students' problems and difficulties in using ICT in language teaching and learning from another angle and seek advice and suggestions from them.

Besides the individual interviews with teachers, management and administrative staff, focus groups were also held which involved both teachers and students (see 4.5.4 below).

4.5.4 Focus groups

Focus groups, as a research method,

... are a form of group interview that capitalizes on communication between research participants in order to generate data. Although group interviews are often used simply as a quick and convenient way to collect data from several people simultaneously, focus groups use explicitly group interaction as part of the method. This means that instead of the researcher asking each person to respond to a question in turn, people are encouraged to talk to one another: asking questions, exchanging anecdotes and commenting on each other's experiences and points of view.

(Kitzinger, 1995:299)

Kitzinger's definition of focus groups emphasises that this kind of group interviews rely not on a question-and-answer format of interview but on the interaction within the group. This elicits more viewpoints as participants struggle to understand how others interpret key terms or ideas and debate issues raised. As a general rule, focus groups are viewed as a particularly useful tool to explore people's knowledge and experiences, to examine both people's thoughts and the reasons behind those thoughts, and to effectively explore the attitudes and needs of staff (Kitzinger, 1995). The strength of the focus group technique is that it enables a group of individuals to share their views in a non-threatening environment, with the goal of learning about the factors that dictate a particular action or attitude (Greenbaum, 2000). There are several reasons for researchers to make use of focus groups in a study. As in semi-structured interviews, a focus group is able to elicit in-depth data with certain controls over the topics and boundaries of the content. Second, it provides flexibility to the interviewees to answer questions as fully as they want to (Robson, 1993; Denscombe, 2003). Moreover, if participants are students, they may feel more at ease when they are in a group, especially if the other students are classmates or close friends (Lim & Chai, 2004). There are, however, some concerns about applying focus groups to a study. The first concern is about reliability. Data collected via interview methods are 'unique owing to the specific context and the specific individuals involved' (Denscombe, 2003:137). Just like individual interviews, it is also relatively hard to generalise from focus group findings. This means that a

researcher must be cautious in making claims about the representativeness of participants' responses. It is therefore suggested that the outcomes be seen only as insights into the practice of a small number of academics in a particular university, at a specific point of time (Arksey & Knight, 1999; Patton, 2002).

In the study reported here, I invited 12 English teachers to take part in focus groups; they were then divided into two smaller groups of six. Similarly, 12 non-English major students were divided into two 6-member groups. Before the focus group, an invitation letter was sent out with a list of topics and questions to guide the group discussion. In the teacher focus group, in order to obtain a deeper and more thorough understanding of the relationship between teachers' attitudes towards ICT use in teaching required by the reform, their teaching practice, and the current ICT-related CPD policies and practices, three issues were discussed: 1) the impact of the national College English reform; 2) support from the University; 3) their expectations of CPD and their CPD practices. In the student focus group, with the aim of gaining further understanding of the application of ICT by teachers from students' points of view and students' use of ICT in language learning, three issues were covered: 1) ICT-integrated English teaching; 2) student use of ICT for English learning, and 3) students' expectation of ICT use in language education.

In order to create a relaxed atmosphere, the focus groups were arranged in a comfortable air-conditioned room and at a time convenient for participants; tea and snacks were provided. All focus groups were recorded with a digital recorder.

To sum up, in terms of methods design in this research, a questionnaire survey was first used to build up a profile of EFL teachers' attitudes towards ICT use in their own teaching; classroom observation then helped the researcher get a real and in-depth understanding of teachers' practical integration of ICT in their teaching; and semi-structured interviews and focus groups were used to compare what had been observed with what had been heard, and to explore the current CPD policies and practices from different dimensions.

4.5.5 Reliability, validity & triangulation

4.5.5.1 Reliability

Reliability and validity are regarded as the key tests in judging the adequacy of research. Reliability refers to the consistency of a measure of a concept (Bryman, 2004). It relates to the probability that by repeating a research procedure or method identical or similar results would be produced (Bush, 2003). Reliability is regarded as 'a synonym for consistency and replicability over time, over instruments and over groups of respondents' (Cohen et al. 2000:117) and is associated particularly with quantitative research (Bryman, 2008). Three prominent factors are involved in determining whether a measure is reliable or not: stability, internal reliability and inter-observer consistency (Bryman, 2004). Stability considers whether a measure is stable over time. Internal reliability concerns whether respondents' scores on one indicator are related to the scores on other indicators. Inter-observer consistency refers to whether members of the research team agree about what they see and hear.

The concept of reliability can be applied to different research methods. For instance, Johnson (1994:13) describes reliability in surveys as 'eliciting equivalent information from an identified population'. The results of a questionnaire, for instance, can be compared with other sources or the pilot study (Bush, 2003). In interviews, there is a need to ensure that, when two interviewers use the same schedule or procedure, they get similar results; or an interviewer obtains a similar picture using the procedures on different occasions (Wragg, 2003). In single-handed research when the interviewer and the researcher are the same person, reliability depends on a highly structured instrument. In a semi-structured approach, reliability may be compromised (Bush, 2003).

4.5.5.2 Validity

The concept of validity is used to judge ‘whether the research accurately describes the phenomenon which it is intended to describe’ (Bush, 2003:65). There are several different types of validity identified by writers on research methods in education such as descriptive validity, interpretive validity, theoretical validity, evaluative validity (Maxwell, 1992, cited in Cohen et al., 2000); face validity, concurrent validity, predictive validity, construct validity, and convergent validity (Bryman, 2004). The main distinction is between internal and external validity, the two types which can be addressed in both qualitative and quantitative methods (Cohen et al., 2000; Bush, 2003).

Internal validity, according to Cohen et al. (2000), seeks to ‘demonstrate that the explanation of a particular event, issue or set of data which a piece of research provides can actually be sustained by the data’ (p.107); it relates to ‘the extent that research findings accurately represent the phenomenon under investigation’ (Bush, 2003:66). Achieving internal validity is not easy, of course. In relation to survey research, for instance, Cohen & Manion (1994:99-101) indicate two potential causes of invalidity:

1. Respondents may not complete questionnaires accurately.
2. Those who fail to return questionnaires may have responded differently to those who did so.

In interviews, the main potential source of invalidity is bias. Cohen & Manion (1994) point out that the characteristics of the interviewer, the respondent, and the substantive content of the questions are all possible sources of bias for bias. In observation, researchers may also display bias (Bush, 2003). It is easy for them to make unconscious and subconscious judgments in interpreting data, which put validity of outcomes at risk. It is advisable to keep an objective record, such as video or audio recordings or photographs to improve validity (Coleman & Briggs, 2003). However, potential limitations cannot be entirely avoided; for example, interpretation is still a problem, as is selectivity.

External validity refers to ‘the extent to which findings from research can be usefully generalised’ (Brock-Utne, 1996:617). When different and contrasting methods of data collection yield identical results on the same research subjects, findings may be judged valid (Bloor, 1997).

Yin (2003) applies the concepts of reliability and validity to case study research and argues that the goal of reliability and validity in a case study is to minimise errors and biases. However, some scholars are sceptical about the application of these concepts to qualitative methods (Lincoln & Guba, 1985; Guba & Lincoln, 1994; Brock-Utne, 1996; Denzin & Lincoln, 1998; Patton, 2002; Bush, 2003). For instance, case study may be criticized in terms of its ability to produce generalisation for it does not match the survey approach (Bush, 2003). As a response to this, Lincoln & Guba (1985) and Guba & Lincoln (1994) have suggested four trustworthiness criteria for assessing a qualitative study: credibility, transferability, dependability and confirmability.

Credibility involves establishing credible or believable results from the perspective of the participant in the qualitative research (Lincoln & Guba, 1985). It depends more on the richness of the information gathered and the analytical capability of the researcher than on sample size (Patton, 2002). Techniques such as prolonged engagement, persistent observation, member checking and triangulation can help address credibility (Lincoln & Guba, 1985).

Because qualitative research typically entails intensive study of a small group or of individuals, instead of external validity or generalisability, *transferability* is used to refer to the degree to which the results of qualitative research can be transferred to other contexts or the degree of similarity between the research context and the context to which it can be transferred (ibid). Guba and Lincoln argue that thorough description of the research context can enable others to make judgements about the possible transferability of findings to other situations (Bryman, 2001).

As a parallel to reliability in quantitative research, Guba and Lincoln propose the concept of *dependability*. They argue that researchers can enhance dependability by adopting an ‘auditing approach’, which involves complete record-keeping of all phases of the research process in an accessible manner (ibid).

Confirmability, which parallels objectivity, refers to the fact that the researcher in qualitative research should show they have ‘acted in good faith’, not allowing ‘personal values or theoretical inclinations manifestly to sway the conduct of the research and the findings deriving from it’ (Bryman, 2001:276).

In my study, in order to increase reliability and validity, I adopted many measures. For instance, in order to reduce errors in questionnaires, I carried out a pilot study and revised the questionnaires following this (see 4.5.1). The validity of the questionnaire findings and of individual interviews, focus groups and observations were investigated by cross-checking (see Chapter 5). The concepts of reliability and validity may be relevant to some parts of my data (the questionnaire survey), but they are not so relevant to my qualitative data (observation, interview and focus group). Therefore, I feel that Lincoln & Guba’s (1985) trustworthiness criteria may be more appropriate to these aspects of my study. In order to enhance trustworthiness, I used a number of methods. For instance, with the aim of avoiding bias in observation, I made detailed field notes and used a video camera to record what really happened in classrooms (see 4.5.2). Both individual interviews and focus group were audio-recorded to compensate for any limitations of the interviewer’s memory; recording allows more thorough examinations of what people say and permits repeated examinations of the interviewees’ answers (Heritage, 1984:238, cited in Wang, 2006:139). At the same time, field notes were made during the interviews and focus groups to record the processes that could not be recorded by digital recorders. I also presented a detailed description of my research context (see Chapter 3) to let readers determine if my findings are applicable to their situations. I checked and rechecked the data throughout the study by myself; at the same time, I invited participants in my study as auditors to check the

transcripts and fieldwork notes to avoid potential bias or distortion. Most importantly, I used multiple methods and different sources of data in conducting this study (triangulation) to increase credibility.

4.5.5.3 Triangulation

Cohen & Manion (1994:233) explain the concept of triangulation in case study research as follows:

Triangulation may be defined as the use of two or more methods of data collection in the study of some aspect of human behaviour ... The use of multiple methods, or the multi-method approach, as it is sometimes called, contrasts with the ubiquitous but generally more vulnerable single-method approach that characterizes so much of research in the social sciences ... triangular techniques in the social sciences attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint.

Silverman (1993) has similarly argued that the use of multiple methods can avoid ambiguity or the partiality of data drawn from a single source. There are other ways to use triangulation in research. Triangulation can be employed more broadly to refer to an approach using 'multiple observers, theoretical perspectives, sources of data and methodologies', but the emphasis has tended to be on methods of investigation and sources of data (Bryman, 2004:275).

Based on Cohen & Manion's definition linking the notion of triangulation to a multi-methods approach, Bush (2003:68) classifies triangulation into two main types:

1. Using several methods to explore the same issue (methodological triangulation);
2. Asking the same questions of many different participants (respondent triangulation).

Nisbet & Watt (1984:85, cited in Bush, 2003:69) apply the concept of triangulation to case study research:

In order to guard against being misled, either in interview or by documents, you must check one informant against another, and test what they say against any documents which exist. Similarly, observations in one context must be checked against others in comparable situations. This process is called triangulation. The basic principle in data collection for case study is to check your data across a variety of methods and a variety of sources.

Their arguments are supported by Cohen & Manion (1994), who state that triangulation may be used in either positivist or interpretive research, but it is particularly valuable in case study research. Triangulation is also used to refer to a process of cross-checking findings deriving from both quantitative and qualitative research (Deacon et al., 1998).

This study adopted both quantitative and qualitative methods and sought to achieve both methodological triangulation and respondent triangulation. For example, in order to explore teachers' attitudes towards ICT use, a questionnaire survey and interviews were used; in order to understand what the ICT-related CPD policy was and how it was executed, the researcher obtained access to EFL teachers, management and administrative staff as well. Moreover, students' voice was also elicited in order to gain a range of insights into ICT-integrated English learning and the national teaching reform.

4.6 Data collection process

The data collection process started before the researcher went back to China at the beginning of September 2007. Both formal and informal contacts were used to obtain access for this research. In August 2007, telephone contact was made with the school Dean of Foreign Languages, the Director of the College English Department, and group leaders of the teaching sections for formal authorisation for access and official support. Emails and telephone calls were also used to contact teachers in the Department. These unofficial contacts offered the advantages of economy and efficiency in the negotiating process.

Figure 4.2 shows the process of data collection over the three-month period September-November, 2007.

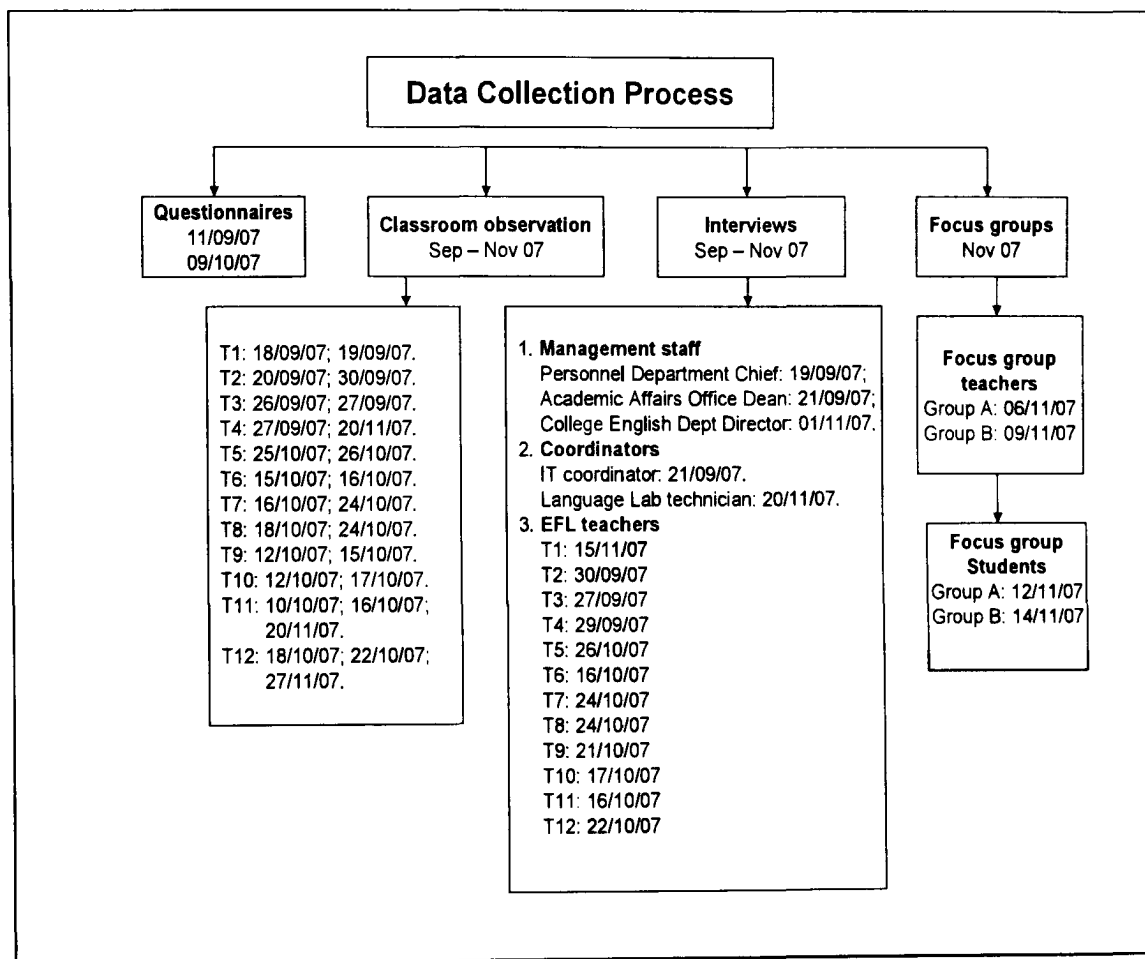


Figure 4.2 Data collection process

4.7 Data management and analysis

The data collected is of two types: quantitative and qualitative. The quantitative data came from the questionnaire survey. 78 questionnaires were returned; they were coded and inputted into SPSS and the statistical analysis software package SPSS 14.0 was then employed to analyse the data. Findings emerging from the questionnaires would inform the later classroom observations and interviews.

The qualitative data derived from classroom observations, individual interviews and focus groups. They were in a variety of formats: photographs, videos, fieldwork notes and interview transcripts. As discussed earlier in this chapter (4.5.2), in order to reduce observer bias and improve the reliability of qualitative data, field notes and video recording were used. Altogether nearly 10 hours of video recording were obtained. The data obtained from interviews (18) and focus groups (4) were audio-recorded.

According to Denscombe (2007), after data have been prepared and organised, the researcher needs to be thoroughly familiar with the data. This means reading and re-reading text data, or looking and re-looking at image data (photographs or videos). The process of transcribing and checking the transcripts and videos provided me with an opportunity to get a feel for the data, the details of what was said, what was done and what was observed. This process 'provides a necessary platform for the coding and categorisation of the data that follows during the analysis stage' (Denscombe, 2007:290).

Having become familiar with the data, the next stage of data analysis is interpretation. This involves developing codes, categories, identifying themes and developing concepts (Denscombe, 2007). Coding refers to 'classifying all the data into analyzable units by creating categories with and from the data (Coffey & Atkinson, 1996:26). It is an efficient link between data and our concepts and ideas concerning the answer to our research problems. Codes/labels in the form of initials or numbers were attached to the original data and these were later grouped into categories. Figure 4.3 shows this coding process. Based on the research questions, three categories within the data were identified and relationships between different categories and themes were analysed. An extract of a transcribed interview with coding, which was conducted in English, can be seen in Appendix 12.

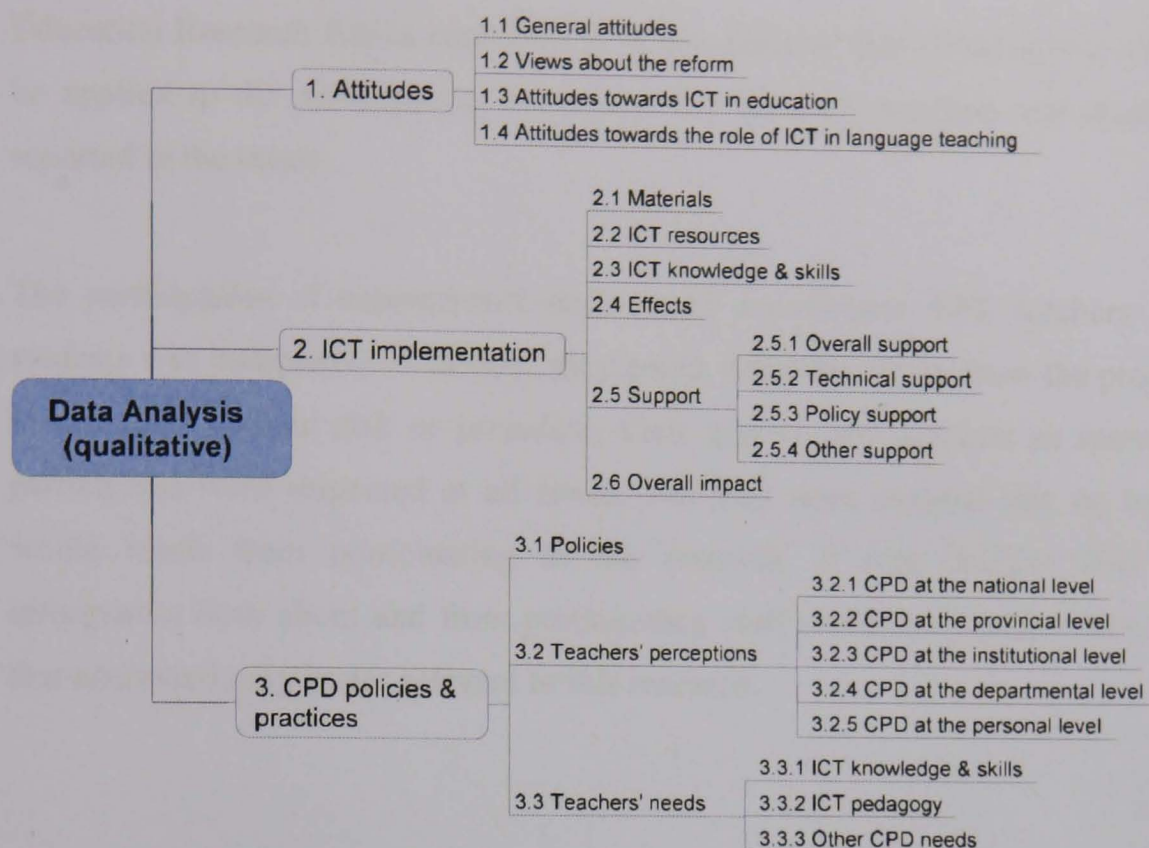


Figure 4.3 Coding process (qualitative data analysis)

With regard to the language issue, because most interviews were conducted in Chinese (one teacher indicated her confidence in expressing her ideas in English and volunteered to speak in English in the interview), both the transcription and analysis were carried out in the source language to minimise any loss of meaning during the analysis phase that could have occurred if the data was translated into English. However, after the analysis in Chinese, quotes from the interviews and the focus group were translated into English for the purposes of discussion and presentation. These translations were checked by several colleagues.

4.8 Ethical issues

Before obtaining access to the research site, a brief statement of the research aims and questions, proposed methods of data generation and access to participants were discussed with my supervisor and approved by the School of

Education Research Ethics coordinator. It was decided that pseudonyms would be applied to the participating institution and all staff, teachers and students reported in the thesis.

The participation of management staff, an IT coordinator, EFL teachers and students was completely voluntary; they could withdraw freely from the project at any time without risk or prejudice; their dignity and interests as research participants were respected at all times; and they were assured that no harm would result from participating in the research. It was decided that all information both about and from participating staff would be handled in ways that addressed only issues relevant to this research.

4.9 Conclusion

This chapter has described and provided a rationale for the research design and methods used. Given the research questions, a case study approach was adopted. Within this, four research methods were used. These were questionnaires, individual semi-structured interviews, classroom observation and focus group discussion for teachers and students. These methods enabled the researcher to explore teachers' attitudes and beliefs and to triangulate these with insights from students, other categories of staff, and the researcher's own observations. The next chapter presents the findings of the study.

Chapter Five

Data Analysis and Discussion

5.1 Introduction

The previous chapter described the mixed method approach (quantitative: questionnaire survey; and qualitative: observation, interview & focus group) to answering the research questions. In combination, these approaches provided a multidimensional profile of the case study institution. The research questions were:

1. What are EFL teachers' attitudes towards the adoption of ICT in language teaching (ICT pedagogy) and the wider context – the College English teaching reform in China?
2. What is the profile of the implementation of College English reform at present in relation to the integration of ICT in English teaching?
3. What are EFL teachers' experiences of CPD? How has CPD met their needs in relation to the national reform and specifically ICT use?

This chapter offers answers in each of these questions in turn and most of the headings used in data analysis resulted from the coding process which has been discussed in 4.7 (see Figure 4.3).

5.2 Attitudes towards ICT use and the reform

The first research question relates to teachers' attitudes towards ICT use in the context of the College English reform in China. This section discusses the findings of the first stage of the fieldwork: the questionnaire survey and subsequent interviews with 12 teachers and two teacher focus groups. It aims to present a brief description based on reported ICT use by College English teachers and the general attitudes of these teachers towards ICT in language teaching in a particular higher education institution at the time of the study. The subsequent analysis focuses on three aspects:

- demographic information;
- ICT use by EFL teachers;
- teachers' attitudes toward ICT use in English teaching.

5.2.1. Demographic information

At the time the fieldwork was undertaken, September 2007, there were 193 staff in the School of Foreign Languages in the University, 89 of whom were College English teachers (3 professors, 3.4% of the 89; 34 associate professors (38.2%); 51 lecturers (57.3%); 1 teaching assistant (1.1%)). 75 were female (84.3%) and 14 were male (15.7%). Six of the 89 English teachers were studying for MA/PhD degrees elsewhere in China or abroad and two were on sick leave. The remaining 81 teachers were asked to complete the questionnaire during group meetings at the first stage of the fieldwork; and 78 were returned (a return rate of 96.3%). Analysis of the returns revealed that there were many incomplete sections which would affect the validity of the analysis. Further efforts were

therefore made to contact the respondents once or twice again to achieve more complete responses and 78 more or less completed forms were eventually received. Observations were then carried out and 12 teachers whose classes were observed at least twice were invited for individual interviews; six of them also participated in a focus group. A second teacher focus group was composed of another six teachers who had expressed their willingness at the end of their questionnaires to participate in a group discussion. Information about the 12 teachers was presented in Appendix 4. The selection of participants involved in each form of data collection was discussed in detail in Chapter 4 (see 4.4).

Tables 5.1- 5.5 summarise the characteristics of the respondents in the survey in terms of their gender, age, academic title, years of teaching and years of computer use.

Table 5.1 Gender (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	11	14.1	14.1	14.1
female	67	85.9	85.9	100.0
Total	78	100.0	100.0	

The gender balance of English language teachers in China is never perfect, a reflection of the imbalance in the number of undergraduate students majoring in English language and education in Chinese Normal Universities, where thousands of future English teachers are trained. As a consequence, female teachers always outnumber males in schools of foreign languages in Chinese universities. The selected institution is no exception. Table 5.1 shows there were only 11 male teachers (14.1%) out of 78 respondents.

Table 5.2 Age (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20-25	0	0	0	0
26-29	8	10.3	10.3	10.3
30-39	38	48.7	48.7	59.0
40-49	22	28.2	28.2	87.2
over 50	10	12.8	12.8	100.0
Total	78	100.0	100.0	

Table 5.3 Academic title (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid TA	2	2.6	2.6	2.6
lecturer	44	56.4	56.4	59.0
AP	30	38.5	38.5	97.4
professor	2	2.6	2.6	100.0
Total	78	100.0	100.0	

*TA: teacher assistant; AP: associate professor

As for age, although six age categories were included in the questionnaire, the number in the first category, 20-25, was null. According to the Chinese higher education system, a student is normally around 22 years old when he/she graduates from university with a Bachelor's degree. With another 2.5-3 years' further study as a postgraduate, he or she can acquire a Master's degree. Master's degrees are the basic requirement to become a teacher in Chinese higher education institutions, and increasingly universities only recruit graduates with a doctoral degree. 25 may therefore be the youngest age when one becomes a teacher in a higher education institution. Among the respondents in the selected university, there were few (10.3%) newly recruited young teachers and relatively few (12.8%) over the age of 50 (see Table 5.2 above) because of the staff recruitment and retirement policy. On the one hand, experienced academics with higher degrees such as PhDs or those who could bid successfully for research projects with big funding were more likely to be recruited in recruitment than new graduates. On the other hand, teachers were encouraged to

retire at the normal retirement age (55 for females, 60 for males) so as to leave more positions open for highly qualified staff. Therefore, both young teachers and teachers over the age of 50 were relatively few in number.

In Chinese HEIs, in terms of academic title, qualified teachers fall into four categories: teaching assistant, lecturer, associate professor and professor. The vast majority of respondents were lecturers (56.4%) and associate professors (38.5%). The distribution of academic title status of the respondents was decided by the academic promotion quota policy in the University. Teaching assistants, if they perform their duties conscientiously, are naturally promoted after five-year's teaching to the status of lecturer, with only limited requirements. However, there is a much higher and stricter requirement if one applies for promotion from associate professor to professor. Therefore, lecturers and associate professors constituted the majority of teachers in the Department.

Table 5.4 Years of teaching (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-2	1	1.3	1.3	1.3
3-5	5	6.4	6.4	7.7
6-10	13	16.7	16.7	24.4
11-15	29	37.2	37.2	61.5
16-20	7	9.0	9.0	70.5
over 20	23	29.5	29.5	100.0
Total	78	100.0	100.0	

Teaching experience, specifically with ICT, is potentially a key factor affecting teachers' attitudes towards ICT pedagogy and their actual ICT implementation at work. As might be expected from the age distribution, respondents were in general well experienced, with few (7.7%) respondents having fewer than six years' experience, and a large minority (29.5%) having more than 20 years' experience. With regard to years of computer use, Table 5.5 shows that nearly 80% of the respondents to the survey reported that they had had experience of using computers for over five years; 18% of them had had more than 10 years'

experience of computer use. This familiarity with computers may well have been a factor in their use of ICT in their classrooms.

Table 5.5 Years of experience of general computer use (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 3-5	17	21.8	21.8	21.8
6-10	47	60.3	60.3	82.1
11-15	12	15.4	15.4	97.4
over 15	2	2.6	2.6	100.0
Total	78	100.0	100.0	

When asked about the availability of computers at home and in the office, the vast majority of teachers (98.7%) claimed they had computers at home, but a much lower percentage (67.9%) reported they had computers in the office. It was, however, clarified later in teacher interviews and focus groups that the ICT facilities they could use at work were limited. The next section will discuss how teachers experienced the use of ICT at work with such limited ICT facilities.

5.2.2 ICT use by EFL teachers

With regard to the mastery of ICT skills, an ICT competency certificate can be used as an indication that the owner has grasped one or two technologies to a certain extent. Table 5.6 shows the proportion of questionnaire respondents in possession of an ICT competency certificate (39.7%).

Table 5.6 ICT competency certificate (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	31	39.7	39.7	39.7
no	47	60.3	60.3	100.0
Total	78	100.0	100.0	

Such a certificate is not compulsory for work in the University. The Personnel Department Chief stated that teachers and staff were only required to take computer proficiency tests and have obtained relevant certificates when they applied for an academic promotion. The most common certificates the teachers reported they had obtained were Computer Grade Certificates (which were used to prove the computer proficiency of the holders) involving basic Windows operation and word processing.

As for EFL teachers' experimentation with ICT in teaching, only three out of 78 stated that they did not use ICT in their teaching (see Table 5.7), a finding supported by the interviews with the teachers. All the interviewees said they used ICT at work.

Table 5.7 Do you use ICT in your teaching? (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	75	96.2	96.2	96.2
no	3	3.8	3.8	100.0
Total	78	100.0	100.0	

Although the vast majority (96.2%) of respondents claimed they did use ICT in teaching, the survey revealed a number of perceived barriers to ICT-integrated classroom teaching. Table 5.8 summarises the common barriers identified by the respondents at work.

Table 5.8 Barriers to EFL teachers using ICT in teaching (n=78)

Barriers	Frequency	Percentage
a. ICT not available at all	55	70.5%
b. Lack of technical support	45	57.7%
c. Lack of skills	36	46.2%
d. Inaccessible when needed	34	43.6%
e. Lack of appropriate software	26	33.3%
f. Extra workload involved	23	29.5%
g. Lack of preparation time	14	17.9%
h. Cost of using	11	14.1%

It appears that the supply of ICT facilities in the University could not satisfy the demand, for the biggest barrier the teachers claimed that they were facing at the time of the fieldwork was ‘not available at all’ (70.5%). This is somewhat surprising given what teachers said about their experience and the claim by 96.2% that they used ICT in teaching. It was explained in later interviews with teachers that although they used ICT at work, it was still very limited compared with the requirement of the national curriculum because of the unavailability of ICT-equipped classrooms. The table also shows that around half the teachers confessed to a lack of ICT-related skills and techniques, the second and third biggest barriers for them to use ICT in teaching, which was confirmed in individual interviews and teacher focus groups. The first three biggest barriers identified here were consistent with the factors influencing ICT implementation which were discussed in 2.3.3. The literature shows that unfavorable institutional factors such as insufficient access to ICT facilities, lack of technical support and personal factors such as lack of ICT knowledge and skills are obstacles that teachers are facing to using ICT freely and proficiently in their teaching (Mumtaz, 2000; Warschauer, 2002; O’ Mahony, 2003; UNESCO, 2003; O’Connor & Gatton, 2004).

In the questionnaire, respondents were asked to identify from a given list ICT applications or hardware available at work. It emerged that all 13 listed could be

accessed by EFL teachers (see Table 5.9). This analysis, however, suggested that there was a significant diversity in the availability of particular items.

Table 5.9 ICT applications or hardware available for use at work (n=78)

ICT applications or hardware available for use	Frequency	Percentage
a. E-mail	72	92.3%
b. Internet	67	85.9%
c. word processing	64	82.1%
d. printer	53	67.9%
e. presentation software	45	57.7%
f. real time communication system (MSN, QQ, etc.)	45	57.7%
g. digital camera	45	57.7%
h. spreadsheets (Excel, etc.)	32	41%
i. scanner	30	38.5%
j. database	22	28.2%
k. art/graphics software	21	26.9%
l. fax	12	15.4%
m. video conference	6	7.7%

It seemed that the least available ICT for use at work were video conference, fax and art/graphics software. This is presumably because these were less likely to serve the function of language teaching in the classroom.

Respondents were also asked how they used ICT at work. Evidence from the survey indicated that the functions of teachers' use of ICT were diversified in their work context as well (see Table 5.10).

Table 5.10 Functions of ICT use in work context (n=78)

Functions of ICT use	Frequency	Percentage
a. to communicate with students via E-mail	64	82.1%
b. file management	62	79.5%
c. to search for and download resources for teaching	58	74.4%
d. to publish my teaching materials	39	50%
e. face to face instruction with some ICT use	25	32.1%
f. to publish students' work on the Internet	25	32.1%
g. Online discussion with colleagues about teaching	23	29.5%
h. Online instruction to remote students	9	11.5%

In terms of functions of ICT use, communicating with students via E-mail, file management and searching for and downloading resources for teaching seem to be most frequently used by the respondents at work. On the other hand, many fewer teachers (fewer than one third) used ICT as networking technology to communicate with colleagues online about teaching. If this is the case, then for work purposes EFL teachers appear to be predominantly using very basic functions of ICT most, which is Category 1 in Jung's model of the roles of ICT (see 2.4.1 and Figure 2.10) despite their claims concerning their experience in Table 5.5. The networking function of ICT tends to be underexplored (Category 4 of Jung's model) and communities of practice in an ICT environment seem not to be popular in the case university.

On the whole, these findings suggest that teachers seem to have great difficulty in obtaining and using ICT facilities at work. Does this affect their attitudes to the reform? Are there any other factors affecting their use of ICT in teaching? The next section presents the findings on teachers' attitudes towards ICT use in education, particularly in English teaching.

5.2.3 Teachers' attitudes

As Chapter 2 indicated, teachers' attitudes and beliefs have been identified as significant elements which influence teachers' adoption and integration of ICT in teaching (Kern, 1995; Cuban, 1996; Fang, 1996; Jonassen, et al., 1999; Becker, 2000; Mumtaz, 2000; Fullan, 2001; Higgins & Moseley, 2001; Bliss & Bliss, 2003; Albirini, 2006; Hu, 2007). In order to understand the teachers' attitudes towards the use of ICT (an innovation) in teaching, and the national teaching reform (another innovation), respondents' opinions were sought on three topics: innovation, the specific material packages: national teaching reform systems and the effects & use of ICT in education.

5.2.3.1 General attitudes

Tables 5.11-16 summarise overall attitudes towards new ideas, and new ways of thinking and doing things (SA, strongly agree; A, agree; N, neutral; D, disagree; SD, strongly disagree).

Table 5.11 I enjoy trying out new ideas (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	34	43.6	43.6	43.6
	A	39	50.0	50.0	93.6
	N	5	6.4	6.4	100.0
	Total	78	100.0	100.0	

Table 5.12 I seek out new ways to do things (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	20	25.6	25.6	25.6
	A	44	56.4	56.4	82.1
	N	14	17.9	17.9	100.0
	Total	78	100.0	100.0	

Table 5.13 I am suspicious of new inventions and new ways of thinking (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	2	2.6	2.6	2.6
	A	11	14.1	14.1	16.7
	N	19	24.4	24.4	41.0
	D	38	48.7	48.7	89.7
	SD	8	10.3	10.3	100.0
	Total	78	100.0	100.0	

Table 5.14 I feel the traditional way of life and doing things is the best (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A	9	11.5	11.5	11.5
	N	24	30.8	30.8	42.3
	D	38	48.7	48.7	91.0
	SD	7	9.0	9.0	100.0
	Total	78	100.0	100.0	

Table 5.15 I find it challenging to use new innovations (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	3	3.8	3.8	3.8
	A	16	20.5	20.5	24.4
	N	17	21.8	21.8	46.2
	D	38	48.7	48.7	94.9
	SD	4	5.1	5.1	100.0
	Total	78	100.0	100.0	

Table 5.16 I am usually one of the first to accept something new (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	11	14.1	14.1	14.1
	A	26	33.3	33.3	47.4
	N	24	30.8	30.8	78.2
	D	16	20.5	20.5	98.7
	SD	1	1.3	1.3	100.0
	Total	78	100.0	100.0	

As Tables 5.11 and 5.12 illustrate, teachers' overall attitudes towards new ideas and new ways of doing things seemed to be overwhelmingly positive; this conclusion is supported by Table 5.13 which indicates that only 16.7% were suspicious of new things.

However, Tables 5.14, 5.15, and 5.16 show rather lower percentages: around half of the respondents still felt the traditional way of life and doing things was the best; a similar percentage of respondents thought that using new innovations was challenging; but another half stated that they were one of the first to accept something new. In addition, it needs to be pointed out that the percentages of respondents who chose the 'Neutral' option were quite high (20%-30%), which may indicate the uncertainty of the respondents or their unwillingness to reveal their true opinion even though the questionnaire was confidential. Subsequent interviews with individual teachers indicated that those interviewed, at least, were very willing to accept ICT-supported English teaching, the new requirement in the curriculum.

5.2.3.2 Views about the reform

This part of the survey sought to identify teachers' experiences of their participation in the national reform — the overall impression of the reform, its side effects and the impact on students' learning. Tables 5.17, 5.18 present the respondents' opinions about the reform.

Table 5.17 It is a significant episode in my professional development (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	25	32.1	32.5	32.5
	A	40	51.3	51.9	84.4
	N	11	14.1	14.3	98.7
	D	1	1.3	1.3	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

Table 5.18 It is a highly fruitful experience (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	22	28.2	28.6	28.6
	A	48	61.5	62.3	90.9
	N	6	7.7	7.8	98.7
	D	1	1.3	1.3	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

The vast majority (see Tables 5.17 and 5.18) of respondents stated that the reform was both a significant and a highly fruitful experience in their professional lives, which was supported by the qualitative data (focus group). In the teacher focus group, interviewees expressed their positive attitude to ICT use in English teaching and the national reform although they admitted that it had brought huge challenges to them. This was verified during interview by the Director of the College English Department (CED),

To EFL teachers, on the one hand, the reform stimulated the improvement in their teaching quality, changed their beliefs from teacher-centred to student-centred, forced them to take full consideration of students' individualised needs in their teaching; on the other hand, the reform brought challenges to them. For example, how to spare more time and energy in learning sufficient ICT knowledge and skills to meet the requirement of computer- and Web-based teaching is one of the big challenges they had in the reform.

(Interview with Director of CED, 01/11/07)

A similarly large majority also felt (see Table 5.19) that the national teaching reform had improved students' learning, a finding which was echoed in the interviews and focus groups with teachers and students.

Table 5.19 It has improved learning among the students involved (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	15	19.2	19.7	19.7
	A	42	53.8	55.3	75.0
	N	10	12.8	13.2	88.2
	D	9	11.5	11.8	100.0
	Total	76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

In terms of ICT-use in classroom teaching and the national reform, did all EFL teachers feel happy about their own practice? The responses are presented in the following tables.

Table 5.20 I feel nervous in class teaching with ICT (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	4	5.1	5.3	5.3
	A	13	16.7	17.1	22.4
	N	24	30.8	31.6	53.9
	D	32	41.0	42.1	96.1
	SD	3	3.8	3.9	100.0
Total		76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

Table 5.21 It has added a great deal to my workload (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	4	5.1	5.3	5.3
	A	34	43.6	44.7	50.0
	N	19	24.4	25.0	75.0
	D	18	23.1	23.7	98.7
	SD	1	1.3	1.3	100.0
Total		76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

Table 5.22 It has involved too much of my time and energy (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	6	7.7	7.9	7.9
	A	38	48.7	50.0	57.9
	N	17	21.8	22.4	80.3
	D	15	19.2	19.7	100.0
	Total	76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

It can be observed from Tables 5.20-5.22 that participation in the national reform was not a pleasant process for all EFL teachers. More than half (54%) felt ill at ease when they taught with ICT in their English class, while nearly a quarter felt nervous, and 5.3% admitted to feeling *very* nervous. This anxiety was shown in the teacher interviews as well. As a lecturer admitted,

ICT sometimes scared me for I had not grasped it at all. My limited ICT skills made me lose face in front of my students. I would have preferred not to have to use the new technology for I was used to the traditional teaching methods which made me confident in class, and was fearful of the change to ICT-based pedagogy. I think I need to improve my ICT skills to cope with the change.

(Individual interview with Teacher 4, 29/09/2007)

A large minority effectively opted out of answering these questions by choosing the neutral point on the scale. Half (50%) of the respondents reported that the reform added a great deal to their workload, and more than half (57.9%) reported that they put too much time and energy into it. The findings in Table 5.22 were echoed in the individual interviews, in which four teachers out of 12 complained that more time and energy had been occupied by preparation since the reform started. This view was expressed in concrete terms by a young lecturer:

I can say, with ICT, my English teaching has become more vivid and easier to operate. The problem is, the lesson preparation was really energy and time consuming. I have to use twice or three times the hours preparing for a class hour with ICT compared with that without ICT after the reform started. For instance, I only spent two hours to prepare a traditional one-hour lesson. Now I need six hours if I am required to adopt the technologically-enhanced teaching material package: the new software teaching system.

(Individual interview with Teacher 5, 18/09/2007)

The view of this teacher appeared to be supported by other teachers. Three other interviewees pointed out that lesson preparation for ICT-integrated classes had become more difficult, complicated and time-consuming than for traditional classes; even a single effective PPT slide asked for skills and knowledge and extra time which traditional class teaching did not. One interesting dimension to this finding is that, if we compare this with the percentage of 'extra workload' as a barrier to the use of ICT in teaching (see Table 5.8), we find that fewer teachers chose it as one of the biggest barriers. Respondents may have seen additional work as an extra burden but it did not prevent them, i.e. act as a barrier, from using ICT. However, we have to note that the perceived attributes of this innovation (ICT use in language teaching) influence the implementer's rate of adoption (Rogers, 1995). If teachers cannot see the relative advantage of the reform compared with their traditional practice and if the new practice is relatively complex, they will hesitate to adopt it, even give up.

At the same time, the reform brought new theories, a new curriculum and new pedagogy. Karavas-Doukas (1998) has argued that sufficient communication with other colleagues would promote the implementation of a reform. As shown in Table 5.23, 75% of respondents reported that they interacted more with other teachers after the reform started and only 9.2% disagreed or strongly disagreed that it encouraged interaction. It was natural for them to solve any problems through group discussions when the reform was on the agenda. When teachers meet regularly, they are more likely to discuss their practices, identify problems of implementation and jointly develop action plans.

Table 5.23 It has encouraged more interaction with colleagues (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	10	12.8	13.2	13.2
	A	47	60.3	61.8	75.0
	N	12	15.4	15.8	90.8
	D	5	6.4	6.6	97.4
	SD	2	2.6	2.6	100.0
Total		76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

Table 5.24 It has changed the way I teach (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	13	16.7	17.1	17.1
	A	56	71.8	73.7	90.8
	N	5	6.4	6.6	97.4
	D	2	2.6	2.6	100.0
	Total	76	97.4	100.0	
Missing		2	2.6		
Total		78	100.0		

Following the introduction of the reform in the University in 2004, ICT was integrated into English classes. One general conclusion that we might draw from Table 5.24 is that, on the whole, the national reform has changed the teaching of EFL teachers, a finding which has parallels in the literature surveyed (see 2.3.1.1). This conclusion was further supported by the findings from the interviews. Two teachers described the change:

Teacher A: ICT made our class very vivid; I can explain language by pictures and sounds which were impossible when we taught only with blackboards and chalks. Teaching with ICT can leave students deeper impressions on language points. Moreover, it has set teachers free from presenting on blackboards, and it saved us valuable time in class.

(Individual interview with Teacher 10, 16/10/2007)

Teacher B: ICT helped build links between teachers and students, broadened students thinking space. Teaching with ICT is tridimensional, intuitive and visual, which couldn't be achieved in our traditional classroom teaching.

(Individual interview with Teacher 11, 21/09/2007)

The adoption of ICT in English teaching not only changed ways of teaching but also proved a pleasant surprise to teachers and students alike (see 2.3.1). However, there were those who felt that much had been lost, for in traditional small-scale classes, students could receive face-to-face instruction, and there was more interaction between teachers and students. Students had more chances to practise the newly-learned knowledge and could receive quick feedback from their teachers. In the student focus group, some students claimed that they had learned more in traditional small-scale classes than in large-scale multimedia classrooms or language labs for they could get timely feedback on their learning from the teachers and did more practice in small classes. At the same time, they recognised the advantages of learning English in ICT-equipped classrooms, where audio and video equipment made learning more interesting and vivid; both their eyes and ears had a chance to practise. It seems that students preferred the combination of these two teaching modes, an integrated approach recommended in the College English Curriculum *Requirements* (MOE, 2007, see 3.3.2).

This section has summarised teachers' viewpoints on the national College English reform and how the reform influenced their use of ICT in their teaching. Relating to the reliability of the data, we may be sceptical whether what teachers said can be trusted. However, based on the rapport between the teachers and myself during the fieldwork (also see 4.5), I have confidence that teachers expressed their opinions frankly. Moreover, with such a positive relationship and in such a favourable context, they regarded me as a valuable channel through which their own views and wishes could be expressed. The following section discusses their attitudes towards the effects of ICT from social, educational, institutional and personal perspectives.

5.2.3.3 Attitudes towards ICT in education

With regard to attitudes towards the effects of ICT in education, the next set of results sheds light on why teachers use ICT (if they do). Is this because of the requirements of the Information Age, the national curriculum, and the University, because English teaching and learning itself now requires ICT use, or is it a reflection of their professionalism? Tables 5.25-5.31 provide answers to these questions.

Table 5.25 Young people are growing up in a world where ICT is pervasive and my university is no exception (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	31	39.7	40.3	40.3
	A	41	52.6	53.2	93.5
	N	4	5.1	5.2	98.7
	D	1	1.3	1.3	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

Table 5.26 The National Curriculum says I have to use computers (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	16	20.5	20.8	20.8
	A	39	50.0	50.6	71.4
	N	16	20.5	20.8	92.2
	D	6	7.7	7.8	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

As Table 5.25 illustrates, the vast majority of teachers agreed that young people were growing up in a world where ICT is pervasive. This is something one has to accept. In terms of curriculum, however, many fewer respondents acknowledged that the National Curriculum required them to use computers (see Table 5.26). At the same time, there was a significant percentage (20.8%) of neutral choice; 6 (7.8%) held negative views. As a matter of fact, the new

curriculum requires the wide use of ICT to promote computer- and Web-based English teaching, and the provision of good learning facilities and better language learning environments for college students with the aim of improving students' listening and speaking proficiencies (MOE, 2007).

This indicates that around a quarter of the EFL teachers were not quite clear whether the new National Curriculum required them to make use of ICT, a finding confirmed by three interviewees (out of 12) who may have disagreed with the statement in Table 5.26 but said that this was not their reason for using ICT. They clarified that they just used ICT in their teaching out of students' and their own interest. It appears that the existing communication channel was not effective in spreading messages from the top management to individual teachers. If this is the case, the ICT implementation may not be fully effective because there were teachers who were not clearly aware of what the expectations of the reform were. The lack of appropriate and effective communication channels would result in a slower rate of adoption (Rogers, 1995).

The data showed that some teachers' concerns about the national reform were still at a very early stage (Hall & Loucks, 1979; Hall & Hord, 1987); that is, Stage 2 Personal: teachers are uncertain about the demands of the innovation, their own ability to meet the demands and their roles within it (see 2.2.3, Table 2.1). Most teachers' reports also showed that they were using ICT in class mechanically and they did not have sufficient time to reflect on its use (how to effectively integrate technology in their classroom) and did not know how to reflect either (Bliss & Bliss, 2003). It seems that teachers' level of ICT use was at Level III: mechanical use (Hall & Loucks, 1979; Hall & Hord, 1987) and they had little knowledge of 'reflection-in-action' or 'reflection-on-action' (Schön, 1983, 1987). This indicates that teachers' concerns about the national reform and their practical use of ICT should be addressed in terms of either providing more communication opportunities between the manager and the implementer or more support in their use of ICT in teaching and more CPD opportunities to develop their ability to reflect on their teaching.

Table 5.27 My university lays great emphasis on use of ICT (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	6	7.7	7.8	7.8
	A	28	35.9	36.4	44.2
	N	17	21.8	22.1	66.2
	D	24	30.8	31.2	97.4
	SD	2	2.6	2.6	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

Table 5.27 indicates that fewer than half of the teachers felt that the University laid great emphasis on the use of ICT by teachers and more than half held neutral and negative attitudes to this proposition. This suggests that, in the eyes of English teachers at least, the integration of ICT in English classes had not been highly emphasised in the University.

Table 5.28 My colleagues' use of ICT pushed my own use (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	3	3.8	3.9	3.9
	A	41	52.6	53.2	57.1
	N	11	14.1	14.3	71.4
	D	20	25.6	26.0	97.4
	SD	2	2.6	2.6	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

Table 5.28 shows that a little more than half (57.1%) of the respondents agreed that their colleagues' use of ICT influenced their own use. Yet in the first part of the questionnaire, when asked 'Do you use ICT in your teaching?', 96.2% of them reported they did. This difference may be caused by lack of communication among teachers. Although in Table 5.23, 75% claimed that the national reform encouraged more interaction with colleagues, this interaction obviously did not necessarily extend to discussion of teaching methodology.

The next three tables show why the teachers said they used ICT for teaching, learning and professional development.

Table 5.29 My students enjoy teaching and learning with ICT (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	19	24.4	24.7	24.7
	A	48	61.5	62.3	87.0
	N	8	10.3	10.4	97.4
	D	2	2.6	2.6	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

A large majority (87%, see Table 5.29) of the respondents expressed positive viewpoints on students' attitude towards ICT-integrated English teaching and learning, and this was confirmed by views expressed in the interviews and the focus groups.

On the one hand, teachers commented positively on some of the benefits that ICT had brought to students and their English learning. These included the provision of information in authentic scenes, flexible learning for students, encouragement of students' autonomous learning (Lim & Chai, 2004), and motivation and improvement of their learning, all of which were consistent with the findings from the questionnaire and the literature (see 2.3.1.2). The comment cited below from one of the EFL teachers is indicative:

ICT gains popularity among our students... actually I like it out of my heart. It did do benefit to students in my own classes.

(Individual interview with Teacher 12, 27/09/2007)

On the other hand, ICT was also reported to have distracted students in class, particularly in a lesson filled with PPT slides containing too many colourful pictures. Other views expressed related to some students' poor competence in ICT, or their inappropriate use of ICT. Student IT skills is one factor on which the effective use of ICT in schools largely depends (O'Mahony, 2003). Since students in the University are from different parts of China, some of them have

used computers for years; a few from underdeveloped rural areas had never used them before they came to the University. In the Interactive Teaching Base, where students learned English independently on computers (sometimes with the Internet), an IT coordinator noticed the diversity of ICT skills among students. Poor ICT skills affected some students' learning speed. Those who had grasped basic ICT skills were likely to play computer games in class or found it difficult to choose appropriate learning materials from a huge amount of resources on the Internet. Moreover, there were doubts among teachers and the management staff about students' autonomy and therefore whether they would be able to adjust to the more active role envisaged by the reform.

In terms of the effect of ICT integration in teaching, Table 5.30 shows that 70.1% respondents agreed that ICT held exciting possibilities for enhancing teaching. Of particular importance, perhaps, because of its implications for continuing professional development, is the finding that an overwhelming percentage (93.5%, see Table 5.31) regarded the use of ICT as an indicator of being a professional teacher. It appeared that, in their eyes, their ability to use ICT was an important element in their claim to be professional.

Table 5.30 ICT holds exciting possibilities for enhancing teaching (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	9	11.5	11.7	11.7
	A	45	57.7	58.4	70.1
	N	18	23.1	23.4	93.5
	D	5	6.4	6.5	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

Table 5.31 It is part of how I see myself as a professional teacher (n=78)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	25	32.1	32.5	32.5
	A	47	60.3	61.0	93.5
	N	4	5.1	5.2	98.7
	D	1	1.3	1.3	100.0
	Total	77	98.7	100.0	
Missing		1	1.3		
Total		78	100.0		

In order to gain an insight into any change in teachers' views about the importance of ICT for English teaching, all respondents were asked to indicate if they had used ICT in the first three years of the reform and how important they thought it. Their ideas were reflected in four degrees of importance (see Table 5.32).

Table 5.32 Views about how important ICT has been for my teaching in the last three academic years: Year 04-05, 05-06, 06-07 (n=78)

		Year 04-05 (%)	Year 05-06 (%)	Year 06-07 (%)
Valid	Did not use ICT	16.7	3.8	2.6
	Minor importance	17.9	7.7	0.0
	Moderately important	46.2	59.0	41.0
	Very important	16.7	26.9	53.8
	Total	97.4	97.4	97.4
Missing		2.6	2.6	2.6
Total		100.0	100.0	100.0

It can be observed from Table 5.32 that there was a significant reduction over time in the number of teachers who reported no use of ICT: Year 04-05 (16.7%), 05-06 (3.8%) and 06-07 (2.6%); and there was a corresponding upward trend in the percentages of those who reported that ICT had become moderately important and very important: Year 04-05 (62.9%), 05-06 (85.9%) and 06-07 (94.8%). Table 5.32 clearly demonstrates a trend towards increasing awareness of the importance of ICT use in teaching. This is consistent with the high percentages of respondents who indicated their positive attitudes towards the effects of ICT use in education, as summarised in Tables 5.29, 5.30 and 5.31.

In practice, teachers usually used ICT for class preparation and got students to use ICT during lessons or in their study outside of classrooms. Another normal form of use for ICT was to keep exam marks and assessment data. Teachers were also asked how frequently they used ICT in these ways. Table 5.33 shows changes in the frequency of these uses of ICT over the three years 2004-2007. It can be seen from the table whether the EFL teachers use ICT more frequently or less frequently in these ways compared to three years previously.

Table 5.33 Frequencies of the use of ICT in specific tasks over the period 2004-2007 (n=78)

	LF	SS	MF	Total	Missing	Total
Using ICT for class preparation (%)	6.4	37.2	55.1	98.7	1.3	100.0
Getting students to use ICT during lessons (%)	6.4	56.4	35.9	98.7	1.3	100.0
Getting students to use ICT in their study outside of classrooms (%)	5.1	44.9	48.7	98.7	1.3	100.0
Keeping marks and assessment data (%)	3.8	38.5	56.4	98.7	1.3	100.0

*LF = less frequently now; SS = stayed the same; MF = more frequently.

About half of the respondents said that they used more ICT over time in terms of class preparation and for keeping marks and assessment data; they also reported an increase over time in getting students to use ICT outside of classrooms. However, only one third of teachers claimed that they arranged for students to use more ICT during lessons compared with the situation three years before. In contrast, ICT was more widely used for students' study after class, i.e. searching for online information to finish their homework, and practising listening with materials saved on mp3 or mp4. This analysis appears to suggest that the limited ICT resources were used more for students' autonomous learning, which seems to correspond to the intention of the national reform.

In the final section of the questionnaire, respondents were asked to categorise themselves according to Rogers's (1995) identification of five categories of innovative adopters: innovators, early adopters, early majority, late majority and

laggards, and another added category, rejecters (non-users) (see 2.2.1). The categories themselves were explained in Chinese. The results are summarised in Table 5.34.

Table 5.34 Categories of innovative adopters (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Innovators	3	3.8	4.0	4.0
Early adopters	6	7.7	8.0	12.0
Early majority	39	50.0	52.0	64.0
Late majority	17	21.8	22.7	86.7
Laggards	9	11.5	12.0	98.7
Non-adopters	1	1.3	1.3	100.0
Total	75	96.2	100.0	
Missing	3	3.8		
Total	78	100.0		

The findings are at odds with Rogers's predictions of ideal adopter categories. According to Rogers, people may adopt an innovation at different points in time. In fact, studies (Rogers, 1995) have shown that the distribution of adopters over time tends to follow a bell-shaped curve (Chapter 2, Figure 2.2). In Rogers's categories, normally there were 2.5% innovators, 13.5% early adopters, 34% early majority, 34% late majority and 16% laggards. This adopter classification is not symmetrical and the five adopter categories are ideal types. Naturally exceptions can be found. In his conceptualisation, early majority refers to those who adopt new ideas just before the average member of a system, while the late majority adopt new ideas just after the average member of a system. In this study, the results of the survey were rather different from the ideal types (see Table 5.34). It seems there were more innovators, early adopters and early majority (64%) and fewer late majority and laggards (34.7%) among these teachers than in Rogers's categories when grouped in this way which, at 50%, were evenly distributed. This can be explained by the fact that the respondents in this study were unwilling to acknowledge they were left behind by others in the reform because of the Chinese 'face' issue, even in a confidential questionnaire survey. This was consistent with the finding reported in this study (see Table 5.16) that 47.4% of respondents saw themselves as among the first to accept something new.

The rather positive responses of many of the participants to this question might well lead one to the conclusion that EFL teachers in the selected university had welcomed the change: ICT-integrated English teaching and learning and the national College English reform. However, one teacher expressed her uncertainty about ICT use by saying:

To be honest, I myself have no strong will to use the new technology although I know it can help us solve many problems. I just follow others. When I see other teachers using ICT at work, I will use as well; but I use them passively and not completely.

(Individual interview with Teacher 7, 15/10/2007)

Moreover, as we shall see in section 5.3, this does not allow one to assume that the reform was smoothly implemented in the University.

The findings of the questionnaire seem to indicate that the University did not lay great emphasis on the use of ICT in English class (see Table 5.27). The self-report data were verified by those from the interviews with the teachers and the Dean of the Academic Affairs Office (AAO). The next section will discuss the role of ICT in the eyes of different respondents.

5.2.3.4. The role of ICT in language teaching

Chapter 2 has shown the huge advantages that ICT has brought to schools or institutions and to language teaching (Levy, 1997; Beatty, 2003; Tubin et al., 2003; O'Connor & Gatton, 2004; Fotos & Browne, 2004; Richards, 2005; Hu, 2007), but ICT is not 'a panacea' (Lim & Chai, 2004). The EFL teachers in this study regarded ICT as a supplementary tool when it was used in language teaching. In the interviews, teachers expressed their ideal use of ICT in the English class as 'getting whatever I want and whenever I need it.' This means that, as teaching tools, different kinds of ICT facilities should be available in each classroom; they should always be there when teachers need them. They should not be a privilege that teachers have to struggle to get and use. As one teacher put it,

There should be different kinds of ICT facilities available in the classroom: tape recorder, computer, Internet, overhead projector, E-screen, DVD, whiteboard, etc. You can choose the one you need and just use. If you feel it unnecessary in a certain class, just leave it there.

(Individual interview with Teacher 1, 15/11/2007)

This coincided with the view of the Dean of AAO, who defined the role of ICT in the University as follows,

ICT is only an assisted tool in the teaching process. It cannot replace teachers or students at any teaching episode. ICT facilities are provided in the classroom, teachers are not forced to use in teaching; they just use as they like, and leave it when they don't.

(Interview with Dean of AAO, 21/09/2007)

He also claimed that ICT use is more appropriate in some courses (e.g. Project Design, Physics) than others, for these students need vivid representation to help them better understand complex processes. Subjects such as Mathematics, however, would be taught more effectively if teachers showed the formula or equation on the blackboard step by step and at the same time explained how to arrive at the answer. In this case, traditional teaching tools such as blackboard and chalk would be better than PPT presentation. In his eyes, some components of College English, i.e. Reading, Listening and Speaking, would be most effectively taught and learned in ICT-integrated classrooms. Writing skills, on the other hand, could be learned by practice in non-ICT classrooms via face-to-face instruction by teachers. In the University, therefore, the 'Listening and Speaking course' was organised in language labs where ICT was adopted; and for the majority of students the 'Integrated course' focusing on intensive reading took place in traditional classrooms without any ICT facilities.

Although not all English courses were taught in ICT-equipped classrooms, when these were available, some teachers overused them. A student from the focus group described how his teacher used ICT in class,

My English teacher seldom used the blackboard after we had English class in a multimedia classroom. She put everything on the electric screen. The PPT slides sometimes went so fast that I couldn't catch up with the speed, so I don't think I have learned much in such a class.

(Student focus group A, 12/11/2007)

This confirmed Wang & Zheng's (2005) identification of problems arising in multimedia teaching, in which teachers depended too much on courseware and students spent too much time reading content on the E-screen, which caused eye tiredness and reduced their active involvement in class. Fortunately, teachers who overused the technology came to realise that ICT could not be totally relied on. ICT could not take the place of all traditional tools although it has brought huge advantages to its users. One lecturer admitted overusing ICT at the very beginning of the reform when multimedia classrooms were available. As she described it:

At that time I had a strange idea, ICT could replace everything; you could ignore the traditional face-to-face instruction. With ICT, I could assign homework for students online; students could submit them to me via Internet, and then I put the answers to the homework online as well. I depended totally on ICT. Now I realize that it is not perfect. The effect of teaching with ICT was not as satisfactory as I expected. I came to know that ICT is only an additional choice of teaching model; it couldn't completely replace the traditional one. Students still need face-to-face interaction, verbal or written.

(Individual interview with Teacher 5, 18/09/2007)

Therefore, it seems important for teachers to see what role ICT should play in their classes and how to keep a balance between the use of ICT and traditional tools.

This section has drawn on the questionnaire survey, individual interviews and focus groups to examine the attitudes of EFL teachers in the selected university towards ICT-integrated English teaching and the national College English teaching reform. Several important findings have emerged.

In this university, the biggest barriers to EFL teachers' use of ICT at work seem to be inaccessibility of ICT facilities; however, these are necessities and should

be accessible since computer and Web-based English teaching and learning were key elements in the new national curriculum. There is a famous Chinese saying, 'even the cleverest housewife cannot cook a meal without rice', which is similar to another saying 'one cannot make bricks without straw'. Without adequate ICT facilities, it is impossible for EFL teachers to carry on ICT-integrated teaching.

Although ICT competency tests were only compulsory for those who applied for higher academic promotion, most teachers appeared to use ICT as a tool in their teaching. The high percentage of ICT use does not necessarily mean effective or appropriate use of ICT. Teachers confessed to a lack of ICT-related skills and techniques. E-mail was the most common means of communication between teachers and students; word-processing, searching for supplementary resources for teaching and file management were still the basic applications. Teachers felt the need to develop their ICT skills and more technical support appeared to be in high demand.

Some EFL teachers appeared to be unclear about the requirements of the curriculum for English teaching. This might have been caused by the lack of appropriate communication channels, which would result in a slower rate of adoption (Rogers, 1995). Interaction and communication among teachers, and particularly the use of ICT for networking, was claimed to be insufficient, although they did say that they interacted more than before.

In terms of the effects of ICT use, teachers felt that it had brought an overall improvement to English teaching and learning. They used it more frequently than three years before for class preparation, assessment and record-keeping. However, from their point of view, the adoption of ICT in English classes has not been greatly emphasised by the University. And, perhaps as a consequence, there was less support from the University for ICT-integrated English teaching than teachers felt to be necessary.

5.2.4 Summary

The findings from the questionnaires and teacher interviews and focus groups provide a clear picture of the EFL teachers' attitudes towards ICT use and the College English reform. On the whole, teachers tended to welcome the adoption of ICT in language teaching and accept it as a professional requirement. Initially they had been optimistic about the effects of computer- and Web-based teaching and felt that it stimulated students' interest in learning. However, like other reform implementers, worries and stress concerning the change of pedagogy and need for improvement of ICT skills were frequently mentioned. There seemed to be a general conclusion that ICT should be combined with traditional classroom teaching so as to make full use of the advantages of these two teaching models.

The next section offers answers, based on interviews and classroom observation, to the second research question, which concerned the implementation of the reform.

5.3 Profile of the implementation of the reform

Questions such as how teachers used ICT in their classrooms could not be answered only by a questionnaire. They needed to be checked by using other research instruments, such as observation, and by reference to other respondents – students, and other staff at different levels. With this in mind, classroom observation, in-depth interviews with management and administrative staff, IT coordinators, teachers and focus groups with teachers and students were conducted. This section summarises the data collected from these sources in terms of:

- perception of new teaching materials: the software reform systems;
- availability of ICT resources;
- grasp of ICT knowledge and skills;
- effects of ICT-integrated teaching and learning;
- institutional and departmental support;
- overall impact of the reform.

5.3.1 Perceptions of new teaching & learning materials

As an experimental institution participating in the national College English reform, the University had been implementing the provisions of the reform for three years at the time the fieldwork was undertaken. As shown in Appendix 3, the use of Web-based teaching materials in the form of the four software reform systems in the past three years was limited to the full adoption of System II, 'New Era Interactive English'. Although the other three systems had also produced software packages, learning management systems and assessment systems (as suggested by the *Requirements*), only the use of System II in the University had met all the demands of the national *Requirements*. The other three systems were only used in part (i.e. textbooks and CD-ROMs) owing to lack of funding and ICT resources. In System II, the process of learning, in addition to teaching and coaching, could be tracked, recorded and checked, so it became possible to achieve a high level of interactivity, multimedia-use and operability.

The adoption of the four software teaching systems meant a great change for the teachers, students and the University itself. The next few subsections discuss how the systems were perceived by teachers in terms of their understanding of the systems, how they responded to them (challenges and worries), how they

saw them (as a stimulus to the improvement of ICT skills) and the graded teaching model (teaching differently according to students' differentiated language proficiencies – for further discussion see 5.3.1.4).

5.3.1.1 The software systems

The most frequently mentioned feature of the software systems in the interviews was the rich teaching and learning resources supplied by the designers for both teachers and students. On the one hand, the rich resources saved teachers and students time and energy in searching by themselves. The diversified materials aroused greater interest in learning English. On the other hand, both teachers and students complained that the sheer quantity of materials made them feel at a loss. How to use the materials flexibly may become a problem for teachers who are 'inexperienced, untrained or lacking in self-confidence' (McGrath, 2007:351). In the interviews, teachers stated that they could not use all the teaching content within the limited class hours but they were unsure how to select those suitable for face-to-face instruction and what amount of content should be covered. Students complained that they found it difficult to identify the important points in the materials. As one student stated,

In class, we just thought that each point the teacher mentioned was important to us, so we focused on everything all the time. But after class, I was still confused about what I really needed. Maybe I think I should grasp everything, but actually it seems that I have grasped nothing.

(Student focus group B, 14/11/2007)

Some students pointed out the insufficient interaction with teachers in class when new systems were adopted, for their teachers tried to cover as much teaching content as possible in class. Inevitably, perhaps, the teachers talked too much and returned to the old 'spoon-feeding', teacher-centred model. Another reason which was discussed earlier (5.2.3.4) was that teachers used PPT presentation most of the class hour and students were busy reading content on the E-screen, which reduced their active involvement in class. In classroom observation, I noticed that most teachers in language labs (where listening &

speaking courses were taken) and multi-media equipped classrooms (where reading & writing courses were taken) were busy teaching with an overwhelming amount of teaching materials. Although group work could be seen occasionally, communication among students and interaction between teachers and students were still limited.

As McGrath (2007) argues, the development of technologically-enhanced materials packages has raised issues concerning the design and evaluation of materials, e.g. whether the materials are resources 'from which teachers and learners can select, and which can be adapted and supplemented as necessary' (p.350). However, as far as I have observed, it seemed that teachers either lacked the ability to adapt the materials and use them efficiently or had little idea of what kind of materials could be used as a supplement. The easiest way for them to use this kind of materials was to finish as much as they could within limited class hours. In terms of the design of these software systems, it seems there is room for improvement. Students in focus groups reported that using some materials installed in computers was too complicated and that they wasted time in getting them work properly. As for System II, the version suitable for PC study was not available in the University. So the only place for students to learn autonomously was the Interactive Teaching & Learning Base. This constrained their autonomous learning because seats for students in the Base and time allocated for English study there were limited. Minor design problems such as a mismatch between words and sounds in the software, and user limitations in the system also occurred from time to time. As Warschauer (2002) suggests, the designers of teaching software systems need to involve experts in both the technical field and in pedagogy and curriculum. More expertise and emphasis on pedagogy and curriculum need to be emphasised.

5.3.1.2 Challenges and Worries

Most teachers in the focus groups expressed their worries about the challenges that the reform had brought. With the flexible credits system policy adopted in the University (for further information see 5.3.5.3), the decrease in teaching

hours for students made teachers feel stressed about undertaking the large number of tasks required within a limited time. The new curriculum asked for more focus on improving students' listening and speaking, and 'Listening Comprehension' constituted 35% of the new national College English Test Band 4 (2006 Revision). This brought big challenges for teachers. On the one hand, they needed to improve their own language skills; on the other hand, they were required to change their traditional teaching methodology to ICT-integrated pedagogy. The comment made by a lecturer in the focus group represented this point of view very clearly,

It is really a big challenge! In the past, both teachers and students focused on reading and writing. Now listening and speaking have been put in the priority of my teaching. How to grasp a corresponding teaching method is a headache to me. How to teach students to learn autonomously is quite new to me and class management of autonomous learning is another problem. These made me worried and stressed.

(Teacher focus group A, 06/11/2007)

These comments were echoed in the findings of the survey discussed earlier (see Tables 5.15 and 5.20), in which one third of respondents reported that these challenges made them feel nervous.

Teachers also expressed the view that the reform made them think about the difference between teacher-centred and student-centred classes, and about their role change from a knowledge conveyer to a resource supplier, from a classroom manager to a study assessor (Jager & Lokman, 1999; Meng, 2005; Zheng, 2006, Wang, 2007b). Teachers also felt that students were not ready for autonomous learning in this context. For instance, because students are not clear about their language levels and their learning goals they have not made practical learning plans and do not know how to evaluate their own progress (Zhao & Hao, 2006). In relation to developing students' capacity for autonomous learning, how to guide students to fulfil self-directed, self-motivated and self-evaluated tasks was also new to teachers as well. A lecturer using teaching System II commented:

According to a survey by us, what students need urgently is autonomous learning strategies in the new learning mode. But it is not only a new thing to students but to teachers. To be honest, being a teacher, I have no idea about how to guide students to learn more efficiently with better strategies. I haven't received this kind of training nor have I done some self-directed development in this field. This made me feel challenged and frustrated.

(Teacher focus group B, 08/11/2007)

This is consistent with Zheng's finding (2006) from her study on the effects of network-aided language learning that students lacked the skills to learn autonomously, and there was a high demand for teachers' supervision, guidance and assistance in autonomous learning classroom. As the above quotation illustrates, however, teachers may not have the necessary know-how. As Little (1995:180) pointed out, 'language teachers are more likely to succeed in promoting learner autonomy if their own education has encouraged them to be autonomous'; hence, to prepare teachers for the development of students' autonomy, teachers need to start with themselves (Smith, 2000).

From the discussion above, it can be seen that the reform has apparently brought new challenges to the teachers and these challenges consequently made some of them feel anxious. It seems that the University and the CED had anticipated some of the challenges the reform would bring, and had taken some measures, such as ICT training, to reduce the teachers' worries and anxieties in using ICT in class. The CPD opportunities provided by the University and the CED will be discussed in 5.4.2.

5.3.1.3 Stimulus to improvement of ICT skills

The general impression gained from the teacher interviews and focus groups was that teachers involved in System II improved their capabilities more quickly and widely than those using other systems. Although the former encountered more pressure and difficulties when involved in the reform, it seemed that they were likely to respond positively to this pressure by seeking to improve their ability to meet the requirements of the reform. These teachers were expected to

take full advantage of ICT since ICT facilities were always there for them to use if necessary. No matter whether they liked it or not, they were put into the multimedia teaching surroundings. There was no other choice for them but to face up to the change and adapt to it. As Littlejohn (2002:169) states, 'to bring about change, you have to create a sense of need and offer specific training in specific skills to meet that need'. Since the University was a member of the 180 experimental universities who took part in the first phase of the national reform, a need to integrate ICT with ELT had been created. However, it seems that EFL teachers' need for specific ICT knowledge and skills had not been met in terms of ICT-related training opportunities provided. One teacher who was chosen to teach with System II recalled how she started from a position of zero ICT competence and came to grasp some ICT skills from training courses or by self-study because of her deeper involvement in the System,

You know, I was a computer idiot when I was first selected to teach with this System. I even didn't know the computer keyboard typing. I had to turn to students for help when I didn't know the functions. Then I fought my way and learned gradually how to use it and other basic skills from training courses or by self-study. Now I am competent in using some ICT skills (such as PPT) for my teaching. I saw my own progress step by step. It is unimaginable!

(Individual interview with Teacher 11, 21/09/2007)

Those teachers who were only allocated limited ICT facilities for teaching had an excuse to stand by and wait until their demand for multimedia classrooms was met. Their attitudes to and use of the computer and Web depended on the availability of ICT facilities. Some of the reasons why teachers were not proactive in acquiring ICT skills were stated by one teacher, two thirds of whose classes were taught in traditional non-ICT classrooms,

There is no urgent need for us to learn ICT skills at the moment. We always think we still have time, for it will take long for the University to invest and build enough multimedia classrooms for us to use. If they were ready next semester, maybe I would start to learn in this vacation. But if ICT was unavailable at all, definitely I would not learn, for I couldn't put what I've learned into practice. So why should I learn now? Just wait and see...

(Teacher focus group B, 08/11/2007)

From discussion of this issue, it emerged that the involvement in the software teaching Systems seemed to be the major stimulus to teachers' acquisition of ICT skills and knowledge. The more they were involved, the more knowledgeable and skilled they became.

On the whole, the reform has stimulated the improvement of teachers' ICT competence. It also calls for a change from the kind of 'normal' teaching in which students with different language ability and ICT skills were taught at the same pace to a new teaching model in which students benefited from individualised, autonomous and cooperative learning. This has led to the concept of a 'graded' teaching model (a differentiated teaching method for teaching students at different levels), which will be discussed in the following subsection.

5.3.1.4 Graded teaching model

According to the *Requirements* (MOE, 2007), the teaching of College English should follow the principle of providing differentiated guidance for different groups of students and instructing them in accordance with their aptitude. All non-English majors have to reach what are defined as 'basic' requirements before graduation. Intermediate and advanced requirements are recommended for those colleges and universities which have more favourable conditions (see Appendix 1). The new technologies, ICT, may help realize individualised language teaching and learning which was required by the new curriculum.

From the student focus groups came a demand for more individualised teaching. Students from different parts of China have variable English competence and ICT skills and these can only be addressed by differentiated teaching. Managers within the University also seem to have realised the necessity of graded teaching. The Director of the College English Department (CED) revealed his worries about the situation,

A big change in the reform is graded teaching. If we didn't divide students' English proficiency into different grades according to their starting levels when they first entered the University, the consequence would be like this: students at higher levels would feel 'I haven't eaten enough', and those at lower levels would feel frustrated for they couldn't follow the teacher and were left behind other students.

(Interview with Director of CED, 01/11/2007)

This comment was supported by the Dean of the Academic Affairs Office. Although the *Requirements* explained that before they started the computer-based English learning, freshmen should take a computer-based placement test upon entering college to measure their respective starting levels, all freshmen in the University were grouped in Grade one before they started learning because this was administratively more convenient. The consequence of this was that students worked through the materials in the Learning Base at very different rates. Some students who finished earlier just played games there, thus wasting valuable class time.

As required by the *Requirements* (MOE, 2007), a College English course system should be designed according to the universities' circumstances and the guidelines of the *Requirements*. There can be a combination of required and elective courses in general English, language skills, English for practical uses, language and culture, and ESP (English for Specific Purposes) to ensure that students at different levels receive adequate training and improve in their ability to use English. According to the plan of graded teaching in the University, Basic English courses would be required for Year 1 and Year 2 students, but they would have more freedom to select from a course list other elective English courses which attracted them or would be of help in their own fields. All the courses, whether computer-based or classroom-based, should be fully individual-oriented, taking into account students with different starting points, so that students who start from lower levels will be well catered for while students whose English is better will have opportunities for further development. A key basic principle is that the College English course design should later provide for individualised learning for students in different majors to meet their differentiated needs for future career development.

However, the change in the course design would ask for a change in the teaching management system, and a change in the teaching and learning evaluation system in the University, since these were closely related. At the time of the fieldwork it seemed that the University was not yet prepared for these changes, as reported by the Director of the CED:

We are undertaking a reform in the course design now. It is very complicated for it involves the adjustment in many areas such as teaching administration, credit system, course arrangement, teacher training, qualification grant etc. We need a deep and thorough discussion with related functional departments under the University.
(Interview with Director of CED, 01/11/07)

5.3.2 Availability of ICT resources

As for the ICT available for teaching in the University at the time of the fieldwork, there were 15,777 seats in 136 multimedia classrooms, 528 seats in 7 Interactive Teaching Bases, and 1144 seats in 19 language labs (see Appendix 14). Some English classes were taken in the multimedia classrooms (this depended on the timetabling by the Teaching Administration Office), autonomous learning was arranged in the Interactive Teaching & Learning Base, and the 'Listening and Speaking' course was assigned to language labs.

ICT facilities for teaching in the University were still considered to be in short supply. In section 5.2, unavailability of ICT resources was reported to be the biggest barrier to ICT use (see Table 5.8) by the questionnaire respondents. In my observation on the 12 teachers' classes, 8 out of 26 class hours were spent in the traditional classrooms, in which no ICT facilities could be found. It is not surprising that all teacher interviewees expressed this worry. In the focus groups, many teachers complained that the number of ICT-equipped classrooms which could be accessed was 'extremely limited'. The following comment taken from an individual interview with teachers is indicative of the situation,

Since multimedia classrooms are so limited, some classes had to be arranged just after lunch, say, 1:30pm – 3:10pm. You know it's students' nap time so they always feel dozy. You can imagine how bad the learning effect is! Even I myself have become tired of giving instruction during this period of time.

(Individual interview with Teacher 6, 17/10/2007)

Some teachers in the focus groups talked of their efforts to get access to an ICT-equipped classroom and their willingness to teach in the evening if that was the only time such rooms were available. Most teachers stated that not only the 'Listening and Speaking' course should be taught in ICT-equipped classrooms, but also the 'Integrated course', which was normally allocated a classroom equipped only with blackboard and chalk.

However, according to the Dean of the AAO, it was unnecessary to use multimedia classrooms for classes in which teachers just copied textbook content on to PowerPoint slides. He stated that the ICT facilities available for teaching could meet the requirement for the moment, but as autonomous learning became more popular and teachers and students preferred to use ICT-equipped classrooms, it would become difficult to meet their increasing demand for multimedia classrooms. In my observation, I noticed that most multimedia classrooms in the University were rather big (some have over 300 seats) and the 'Integrated course' was normally arranged in non-ICT classrooms seating approximately 30 students. As long as ICT resources were limited in the University, it could be regarded as wasteful to arrange all English courses in ICT-equipped classrooms.

As for the Interactive Teaching Base, this was built primarily for the experiment of the national College English reform in 2004. The University invested a large sum of money in the Base to meet the requirements of the national College English reform. However, from the interview with an IT coordinator who is in charge of management and maintenance, it emerged that the Base was not exclusively used for College English teaching and learning. The functions of the Base were diversified. Except for the four hours per week (only two hours in Year 2004-2006) assigned for autonomous learning for students involved in System II, the course 'Computer Literacy' for all freshmen was taken in the

Base after registration in September each year (normally there are about 5,000 new students enrolled every year). A part of the national College Entrance Test paper allocated to the University was marked here as well. In addition, some training and conferences occasionally took place in the Base.

The *Requirements* (MOE, 2007) suggest that the credits students acquire via computer-based courses should account for no less than 30% of the total credits in College English learning. System II was designed for students to have at least 4-5 hours' independent-learning via specially-designed software for which Web and the intranet was a necessity. In the academic years 2004-6, only two hours for ICT integrated autonomous learning was arranged in the Base, a situation which had led to complaints from the teachers and students involved in System II (reported in teacher and student focus groups). After continuous negotiations with the Teaching Administration Office, students in Year 2007 were allocated four hours at a fixed time each week in the Base but this still seemed insufficient. Students asked for more flexibility. As one student put it,

We hope we could go to the Base for independent learning more freely, rather than on a fixed time every week. Sometimes you can't tell what will happen that day. If the Base could be accessed at any time even on weekends, that would be perfect!

(Student focus group B: 14/11/2007)

The *Requirements* also state that colleges and universities should explore and establish a Web-based listening and speaking teaching model and deliver listening and speaking courses via the intranet or campus network. Therefore, access to the Web or Internet is crucial to the reform. In my observation, however, the Internet was not available in those ICT-equipped language labs and multimedia classrooms. Failure to obtain Web access also appeared to be cited most frequently by all teachers and students in individual interviews and focus groups. One of the teachers in the focus group expressed it thus:

The reform is still 'on the surface'; it is not a real reform at all. It just means using so-called reform textbooks and VCDs in a language lab. No Internet access is available there, no mention of those traditional classrooms without any ICT facilities.

(Teacher focus group A, 06/11/07)

Another teacher who was using System I complained:

I think Internet access should be provided to our software system 'New Experience English' because it has network functions as well; if provided with network access, I'm sure our students could have learned better.

(Teacher focus group A, 06/11/07)

Although most teachers claimed there was no access to Internet in the classrooms, one interviewee pointed out that she had been able to access the Internet once successfully in a language lab. However, she was warned not to log onto the Net any more and never let her students know afterwards in case of a virus attack on the machines. In fact, most teachers were told that Internet access was not available in the language labs. One technician explained that although one or two labs were linked to the Net, Internet access was not encouraged during classes. On the one hand, she added, it would become difficult to prevent the misuse of access by students if they got to know; on the other hand, the software teaching system in the language labs would become more easily attacked by computer viruses and crash. In that case, normal teaching procedures would be affected even though anti-virus firewalls or other software was installed. According to her comments, this anti-virus software sometimes did not work. If we compare what the technician said with the comments of teacher interviewees, it appeared that teachers were not well-informed of Internet access at the teaching venues; even if they happened to know about it, they would be persuaded to keep it secret from the students. It is obvious that neither the letter nor the spirit of the *Requirements* were being followed in this respect, which state that 'the extensive use of advanced information technology should be encouraged, computer- and Web-based courses should be developed, and students should be provided with favourable environment and facilities for language learning' (MOE, 2007:17).

The few teachers who had the chance to use multimedia classrooms for the 'Integrated Course' or 'Reading, Writing & Translation' Course (teachers of LiDa experimental classes and teachers involved in System II, further information about LiDa Experimental classes can be found in Appendix 3) were luckier, for the campus network could be accessed if an application was

submitted. However, it was still unlikely that they would be able to link to the Internet freely when needed.

The lack of ICT facilities for students was also mentioned by both teacher and student interviewees. Table 5.33 showed that the distribution of ICT use inside and outside classrooms was imbalanced. This was explained in the interviews with teachers: since more teaching tasks were assigned to them in class after the new teaching systems were adopted in the University, they had to get students to use ICT more outside class. Students had to turn to extracurricular use of other available ICT resources. However, it was reported that only a few schools provided computer rooms for their staff and students. Those who had no computer rooms in their own schools had to go to the University library where there was a computer room with very limited seats and without microphones or earphones. This made it impossible to practise listening or speaking. An associate professor told the researcher that on the one hand, computer- and Web-based teaching and learning was strongly advocated, but on the other hand, the provision of ICT resources for his students was inadequate; what was worse, freshmen in some schools were not allowed to buy PCs for their own use in the dormitories. If some students had brought a PC with them, they were prohibited from getting access to the Internet in the dormitories. At the time of the fieldwork, each student was provided with learning VCDs by the Presses, together with textbooks, which enabled them to use their own PCs after class. However, according to a survey by a professor, there were only two or three PCs available in each of her classes. That meant most students could not make full use of their VCDs and practise and digest what they had learned even if they did not grasp what teachers had taught in class. This was seen as a huge waste by an experienced professor. Her comment coincided with the views expressed in a student focus group. This contradiction also made students frustrated. One student complained,

Without Internet, we were isolated within a closed small room. We couldn't search for useful materials for learning, or submit coursework online, or discuss problems with teachers via E-mail or MSN. What's the value of spending several thousands Yuan for a PC? We still have to go to the Net club to do these and we have to pay more there!

(Student focus group A, 12/11/2007)

Faced with insufficient ICT facilities and resources, teachers claimed to have taken countermeasures to supplement what was available. This was confirmed in my classroom observation. For instance, I saw two teachers who brought tape recorders and one teacher who brought his own laptop to the traditional classrooms without ICT facilities. Recorders could help students get used to natural English pronunciation and improve their listening to a certain extent but repeated rewinding and forwarding wasted precious time in class. Although students could enjoy pictures and sounds at the same time with the use of a laptop in class presentation, the problem was that the screen was not big enough for 30 students to see clearly. Moreover, carrying the laptop with leads and speakers added to the teachers' load. In one classroom observation, the teacher used two backpacks to carry teaching textbooks, handouts and laptop. The sound and video effect may not have been satisfactory but it was better than nothing.

Teachers' motivation for using new technology is crucial and better resources for teaching are regarded as an external motivating factor (Hansson, 2006). It was surprising to find out that many EFL teachers still maintained rather high motivation even in difficult circumstances. This motivation led them to seek ways to introduce technology in their teaching. Teachers also made an effort to compensate for the shortage of PCs and lack of Internet access for students after class. Signing up to a shared free e-mail account for communication between teachers and students appeared to be one method that was widely accepted and adopted. Teachers first searched for useful learning materials and downloaded them; then put them in the shared email boxes for students to download on to their mp3 or mp4 players so that they could practise freely in their own time. Students could also make full use of this shared mailbox and put forward their questions there for other students to discuss and for teachers to answer. In the

case of limited ICT facilities and resources, this was regarded as a useful supplement to learning by both teachers and students. However, the data did not show that EFL teachers had set up any Website for English teaching and learning. The reasons may be that few EFL teachers have grasped the ability to set up a website or the setting up and maintenance of a learning website is time and energy consuming, while few incentives or rewards were provided.

To sum up, limited resources within the University are a great impediment to the teachers' take-up of ICT in language teaching. Lack of computers and Internet access in the classroom can seriously limit what teachers are able to do with ICT. Limited resources results in lack of ICT integration, which in turn results in lack of sufficient ICT experience for both students and teachers (Mumtaz, 2000). Therefore, in order to keep teachers' high motivation in using ICT in English class, they need to be provided with adequate facilities (Hansson, 2006).

5.3.3 Grasp of ICT knowledge and skills

Apart from the issues discussed above, many of the interviewees also pointed out their lack of ICT knowledge and skills. The findings of the survey reveal that most EFL teachers were using very basic functions of ICT for work (see Table 5.10); this was confirmed in interviews and verified by classroom observation.

Table 5.8 indicates that lack of ICT skills ranked third in the teachers' list of the barriers to ICT use in teaching. It was also reflected in the teacher interviews and focus groups. Some teachers seemed to have no confidence in Web-based teaching. This might be because learning to use new technology is a long journey in which knowledge is accumulated day by day and they lacked the necessary energy and time. Another reason appeared to be the inadequate access

to the Internet at work, which stifled teachers' enthusiasm for learning. Teachers' lack of basic Web knowledge and unfamiliarity with software systems and management systems were also commented on by an IT coordinator in the Base and a technical assistant in the language labs. As the assistant put it:

Some teachers are so poor in ICT knowledge. They rely on us too much. Even for a minor and simple procedure in operation, they couldn't manage and had to let it be and turned to us. Some teachers misused the CD driver and destroyed their CDs completely. Some teachers didn't know where they should insert the memory disk and pulled out the mainframe and caused it to collapse in class. You can imagine how messy the class was!

(Interview with a technical assistant, 20/11/2007)

Both the IT coordinator and the technical assistant suggested that more training should be provided so that teachers at least grasp basic ICT knowledge and skills. Students in focus groups also put forward this suggestion as they felt the ICT competence of their English teachers was not good enough. However, the viewpoint of the Director of the CED appeared to be different. In his eyes, since sufficient training opportunities in different forms had been provided, most teachers should already have adequate skills for teaching and research and this should not be a big problem in the implementation of the national reform. The view of the Director of CED indicated that the University seemed to have followed the Curriculum Requirements (MOE, 2004, 2007) which state clearly that colleges and universities should lay emphasis on the training and development of College English teachers. Obviously there exists a lack of awareness here: the management was too optimistic about the ICT-related training effects, which resulted in an overestimation of teachers' ICT competence and an underestimation of the difficulty the reform has posed for them.

As for the ICT knowledge and skills of students, some teachers admitted that students' ICT competence is much better than their own and often asked for their help when encountering problems in class. The IT coordinator agreed that students' skills were becoming better and better with the dissemination of computers nationwide. Students in focus groups even asked for the opportunity

to be involved in the design of teaching and learning software. However, students' ICT levels also varied for some of them came from less developed areas where computers had not been widely used in schools.

It is perhaps a commonplace that young people are more likely to learn new technology and accept new things more easily than older people. Goodwyn, et al. (1997) grouped English teachers in their study into three distinct categories when they used ICT in classroom: 'the fearful', 'the unresolved' and 'the optimists' (cited in Mumtaz, 2000). 'The fearful' represent those usually older teachers for whom ICT is generally a threat and the cause of much anxiety. This older teacher generation is called the 'overhead generation' for they only know how to create overhead transparencies for their lectures (some do not even know how to do this), but do not know how to produce PowerPoint presentations (Hansson, 2006:557). In this study, the IT coordinator in the Base pointed out that young teachers had less difficulty in using the software system. Three young teachers showed confidence in their current ICT competence and said that they did not worry about acquiring new ICT skills. An older teacher, on the other hand, said that he found it harder to learn new ICT knowledge and skills in his 50s. However, this was not the case for all older interviewees. A professor who was to retire in two or three years stated:

I learned ICT skills out of my interest. I love everything that can improve my teaching and do good to my students. ICT is not an exception. I am one of those who first used ICT in teaching in my school. I dare say my ICT competence is even much better than some of the young teachers in the Department.

(Individual interview with Teacher 3, 18/10/2007)

I went to this senior professor's class and observed that she could use the ICT equipments skilfully. I also noticed that she was the only teacher out of 12 who used digital camera to record students' performance in class and reflected after class. The technical assistant in the language labs also felt that the grasp of ICT skills and knowledge had little relation to teachers' age. According to her observation, in many cases it was the younger teachers that came for help even

about matters which seemed just common sense. It seems that interest and enthusiasm rather than age is the key to a good grasp of new knowledge.

5.3.4 Effects of ICT-integrated teaching and learning

Evaluation of ICT impact can be challenging (Karagiorgi & Charalambous, 2006). The literature shows that effectiveness of ICT in language classrooms has been doubted (Clark, 1991; Liddell, 1994; Zhao, 2007) because there is a lack of hard educational evidence in terms of learning benefits to be gained from employing any specific medium to deliver instruction (2.3.2). In this study, it was reported that when multimedia classrooms were set up and ICT was integrated with English teaching in 1999 in the University, the ‘one to many model’ was widely adopted, i.e. teachers were lecturing through a video conference system in one classroom to several hundred – and even one thousand – students located in different classrooms in different teaching buildings. However, this was replaced in 2002 by the ‘one to one model’ (in which one teacher taught students face-to-face only in one multimedia classroom) because of dissatisfaction with the effects of the earlier model (see Appendix 15). Interviews with teachers, the Director of CED and the Dean of AAO helped to clarify the rationale for this change of policy. Firstly, after years’ of ‘spoon-fed’ teaching in middle schools, students could not adjust to the new teaching model. Secondly, interactions between teachers and students in that model appeared to be insufficient because teachers seemed more distant when they taught in another classroom via a closed circuit system. What was worse, some classes misbehaved because there were too few teachers to supervise them. At the time of the fieldwork, all the English classes were using the ‘one to one model’.

When asked about the effects of ICT-supported teaching and learning in this model, 10 out of 12 teachers in individual interviews indicated its advantages

and positive results, which were consistent with what was found in the survey (see Tables 5.19 and 5.30). As one interviewee who used System II put it:

In terms of teaching effects, my students improved quickly. If we use the results in College English Test as assessment criteria, my students ranked in the first group by achieving a high passing percentage in the university. Over 90% of my students passed the CET Band 4, and in some classes even 100% students passed the test.

(Individual interview with Teacher 5, 18/09/2007)

Testing, rather than serving as a medium to facilitate and promote language teaching, plays a dominant role in Chinese ELT, and dictates its performance (Gu, 2007). As discussed earlier in this chapter (5.3.1.2) and in Chapter three (3.3.3), a national test, CET Band 4, is widely used as a measure of college students' English competence and a pass in this test is regarded as a basic requirement for graduates by employers. College English teaching before the CET reform in 2006 was CET-oriented and the pass rate in CET of the classes that an EFL teacher taught had a direct influence on teachers' pay. It is understandable why some teachers still believed a high pass rate was a reflection of effective teaching.

The effect on students using different software systems was reported to be slightly different. Those who used System II said ICT-integrated English classes stimulated an improvement in listening and speaking. This was supported by the comments of the Dean of AAO and the Director of CED who had carried out a survey of what effect the software teaching systems had had on students. However, students using the other three systems were dissatisfied with the effect of the 'Listening and Speaking' course although it was undertaken in ICT-equipped language labs. It was explained in student focus groups that the large classes limited their interaction with the teachers. Only those who were actively involved in class activities derived real benefit. In addition, the layout of desks and chairs in language labs created a distance between teachers and students (see Appendix 16). In an observation of a language lab lesson, the teacher sat motionless and inscrutable in front of a computer on the platform – physically

and emotionally detached from the students below. She did not come down to the floor of the room in the whole hour. The transparent screens in front of each student were like barriers which separated them from their teacher. With the help of the video I recorded in observation, later I could view them again and again, and found that only four out of 10 teachers walked away from the platform to where students sat. It seems that interaction was constrained when teaching was arranged in this way and in this kind of room. Some students claimed they learned more in the traditional non-ICT classroom where they could have close face-to-face communication with the teacher than in the modern, well-equipped language labs.

Although most teachers showed optimism about the effects of ICT-integrated English teaching, one teacher expressed uncertainty in an interview about the long-term impact of ICT use in language teaching. According to Rogers (1995), if the results of an innovation are easily observed, the rate of adoption is positive. Similarly, in this study, if EFL teachers could not observe the results of ICT-integrated language teaching, it was unlikely that they would continue to use the reform. Hence, the need for research-based evidence was emphasised by the Director of CED,

Now what I am thinking about most is how much good ICT could bring to English teaching. No doubt any reform will promote teaching to a certain extent, but is the effect of the reform the same or different from that before it? Nobody could give an answer before the reform finishes. It needs continuous experiment and time to prove.

(Interview with Director of CED, 01/11/2007)

In the eyes of the Dean of AAO, generally speaking, the experimental reform was a success in terms of CET 4 when results were compared with those achieved by comparable students (in this university) previously. As regards English language proficiency, however, he felt that there had been a decline in standards. Firstly, compared with other universities in the province, the pass rate in CET Band 4 and 6 in this university was not the best; secondly, the English scores of graduates in the University in the Postgraduate Entrance Test was not

as high as in other key universities; thirdly, fewer students in the University than in other universities took international English tests such as TOEFL, IELTS and the results of these were not satisfactory. The validity of these evaluation criteria were questioned by an experienced professor who had taught College English for over 30 years. She pointed out that College English courses are only provided in the first and second year while the Postgraduate Entrance Test is normally taken in the fourth year when students are about to graduate. During this two-year gap, students can take elective English courses or simply study on their own. This raises the issue of the less direct effect of teaching on the development of students' capacity in their autonomous learning. It seems that the Dean was operating with an inappropriate criterion for assessment here. The obvious thing to do would be to compare previous scores with current scores rather than look at other universities, who were adopting teaching software systems as well. It also seems inadvisable to judge the effect of teaching only by tests. However, given the deep-rooted emphasis on testing in Chinese education (see 3.3.3), scores in testing may continue to be used as the main criterion by some managers and teachers.

5.3.5 Institutional and departmental support

5.3.5.1 Overall support

Since 1998, when the University first undertook online education, College English was one of the courses taught to distance students and students on campus via the Internet and the campus network. In the interviews with the Dean of AAO and the Director of CED, it was pointed out that the University had invested a large sum of money in *Yuan* in the ICT facilities in multimedia classrooms and built the Interactive Teaching Base. In order to support the national reform, the University had also spent a great deal on improving the equipment in language labs. Digital technology was installed in each lab in an

attempt to guarantee the smooth implementation of the reform. Another action to support the reform was to rebuild the English Park (a venue on the campus for students to practise oral English and communication ability) including fixing new, brighter lamps and equipping sound boxes of great power, so that students were provided with a more favourable environment and facilities for language learning, as suggested in the *Requirements*. Some EFL teachers also had opportunities to undertake teaching reform projects or were given research grants. Each project was allocated 8,000 – 20,000 *Yuan* (equivalent to 800–2000 pounds). In the view of the Dean of AAO and the Director of CED, the institution's support for the reform was sufficient.

Teachers acknowledged the support mentioned above but complained this did not go far enough. The availability of ICT facilities for both teachers and students were reported to be far from enough (5.3.2). As for the teaching reform projects provided as a support to encourage CPD, most teachers stated that there was a quota of only two or three per year, but there were nearly 90 College English teachers in the University. One experienced professor admitted that the chances of obtaining a project were more or less related to the applicant's academic title. Although more teachers could participate in the projects if invited to do so by the project leader, those involved were still the minority.

From the above discussion, it seems that the management staff saw support mainly in financial terms. Actually there were other kinds of support needed in the implementation of the reform, such as technical support, administrative support, positive policy, and appropriate communication channels, which will be discussed in the following subsections.

5.3.5.2 Technical support

Technical support is an important factor in using computer technology successfully (Mumtaz, 2000; Williams et al., 2000; Zhang & Yang, 2002; Zhao, 2007). In the survey, lack of technical support was reported to be the second biggest barrier to teachers' use of ICT in teaching (see Table 5.8). This was also

frequently mentioned in teacher interviews and the focus groups. In the Base, teachers stated that technical support from IT coordinators was sufficient and timely. During my visit to the Base, an IT coordinator came immediately when a technical problem occurred and solved it in a few minutes since the IT office was next to the interactive learning centre and they were available at any work time. The support from the technicians in the language labs, however, was reported to be disappointing. As discussed in 5.3.3, the IT coordinator and the technical assistant pointed out that EFL teachers' ICT knowledge and skills were not good enough. If the teachers had had more knowledge they would not have felt the need for so much support. As shown in Appendix 14, the language labs were managed by the School of Foreign Languages; the technical assistants were staff who had worked in the office as secretaries before then transferring to their current position after basic training. Their duties included showing teachers how to operate the machines, simple maintenance and minor repair of the equipment, such as fixing broken desks, headphones or microphones, and taking precautions against fire and theft. Many respondents complained about the unreliability of the technology for technical problems occurred quite often. If the computers broke down or the teacher control systems collapsed, they had to call the engineer from the factory which supplied the equipment. Repairs, even of simple facilities, also took some time and teachers complained about this. One lecturer described the problem she met one day:

There are 64 seats in the language lab, but the connection between 9 seats and the main control system failed. I have 58 students there! You tell me, what should I do? What's worse, some earphones were broken; I had to ask two students to share one set of earphones and microphones.

(Teacher focus group A, 06/11/2007)

During an observation of a one-hour 'Listening & Speaking' course in a language lab, the teacher had to use a loudspeaker and conduct plenary listening practice because a connection failure affected students' headphones. Faced with the malfunction of facilities in language labs, teachers reported that they moved to another language lab if one was available or changed to instructing without ICT. In the latter case, teachers had to act as a tape recorder or computer and read the whole text of a listening comprehension passage.

The lack of technical support seems to be associated with inadequate training not only for technical assistants but for teachers as well. As discussed in 5.3.3, teachers' lack of basic ICT knowledge and skills can actually cause technical failure as well. The limited number of language labs available for the 'Listening & Speaking' course seems to be another main factor. If all the labs were occupied throughout the day, machines were more likely to break down and even a qualified technician would have no chance to get into the lab and carry out the repair if students were having a class there.

In most cases, the aim of installing ICT equipment in the classroom is to promote effective teaching and learning. However, administrators need to be aware that simply installing equipment cannot guarantee an improvement in teaching-learning effectiveness; continuing technical training for staff (both IT technicians and teachers), technical support and updating facilities are also essential components of the successful use of computer technology (Zhao, 2007).

5.3.5.3 Credit system policy

The University adopted a flexible credit system in 2006 and reduced the required College English credits from 16 to 12 so that students would have more freedom and time to select the courses they preferred and earn corresponding credits. As a result, class hours for College English were reduced from four to three per week. However, this reduction of College English credits apparently contravened the College English Curriculum Requirements (MOE, 2007), and led to complaints from teachers and the College English Department. Many teachers could not understand why the University had reduced the 'Listening & Speaking' course from two hours a week to only one hour a week. One teacher observed:

Once every two weeks for 'Listening & Speaking' is far from enough. It could not meet the requirement of the new CET Band 4 at all, in which Listening part has been increased to 35%. Although teachers emphasised the importance of listening and asked them to practise more after class, who knows if they did or not? It's hard to say.

(Teacher focus group B, 08/11/2007)

Another consequence of the decrease in class hours for College English was the provision of fewer chances for teachers to teach in language labs. As the technician stated, more than one operating system for teachers' use was installed in the labs because they were equipped at different times by different companies, which led to more problems of maintenance and repair. Teachers pointed out that although they had all received relevant training on how to use the teaching systems when a new one was installed, this training was hurried and they had had not enough chance to familiarise themselves with the labs for they only came there once every two weeks. In addition, they might have to use different systems each time. Reflecting on how she felt when using a new operating system, one of the teachers stated:

I was really worried about the use of different systems in the language labs. You used this system this term and became familiar with it. Then next term you had to use the second even third kind of system, for they put a new one there or your teaching was scheduled in other language labs where different operating systems were installed. I had to force myself to adapt to it within a short period of time. In some cases, I was confused and pressed a wrong button and caused trouble. I had to ask for help. It was really a headache!

(Individual interview with Teacher 8, 16/10/2007)

The following quotation from the Director of CED also indicated his confusion with the credits reform:

I am afraid our university is the only one in our province where credits for College English course was reduced from 16 to 12, and it is even rare nationwide. Those universities who did reduce the credits, however, adopted other measures to make up for the insufficiency of class hours. But our university did nothing to compensate for the reduced hours in class; they made such a big change unilaterally without having discussed it with the College English Department.

(Interview with Director of CED, 01/11/2007)

According to the Director, other universities compensated for the reduced hours in class by inviting groups of native speakers to participate in a series of activities with students so that the students could improve their communication ability and learn more about English culture face to face. According to the *Requirements*, the credits students acquire via computer-based courses should account for no less than 30% of the total credits and should be equally acknowledged once students pass the exams. Therefore, those universities who reduced credits for College English just built more computer rooms for students to study autonomously. However, this University just reduced the credits unilaterally without putting in place any other measures. According to the Director of CED, this would be likely to have serious repercussions for English teaching and learning. He suggested the reform of course design should start as soon as possible.

The inadequate ICT resources, and particularly the absence of ICT facilities in small classrooms, limited the use of small-scale classes for English teaching; the limited number of seats in the Base for autonomous learning restricted the number of students who would experience the real experimental reform. It appears that the national College English reform and the credit reform in the University necessitated more ICT-equipped classrooms for ICT-integrated ELT and more self-access facilities for students to learn independently.

5.3.5.4 Other support

In terms of sources of support for ICT use, Table 5.35 shows that teachers tended to turn first to professional journals if they needed help in using ICT.

Interestingly, students ranked second instead of other staff and IT coordinators. This might be because students could often solve a problem in less time than it took to call a technician.

Table 5.35 Sources of support for using ICT (n=78)

	Frequency	Percentage
Professional journals	65	83.3%
Students	52	66.7%
Other member of staff	39	50%
IT coordinator	34	43.6%
Other	2	2.6%

Most teachers indicated in interview their embarrassment at the lack of personal ICT equipment and office consumables or stationery provided by the University and the School. As some teachers put it in the focus group:

Teacher A: Just imagine, around 70-80 teachers share only one office, only with two old computers produced in 1990... when they were broken, we sent for the IT coordinator, he even refused to come; he said there was no way to get them work properly, for too many viruses were there! (All other participants laughed.)

Teacher B: We have few office facilities to use, no paper, no pen, no free photocopying, nothing at all! We use all our own money to buy and use them for work...

Teacher C: I think we should be provided with more electronic equipment for us to use at work. Till now, we haven't got a free memory disk from the School and the University, no mention of laptops, while the colleagues in the neighbouring universities have got three free laptops already! Just see, I have to use my own computer, my own printer, my own money for photocopying...only for my work! (Others nodded and laughed.)

(Teacher focus group-B, 08/11/2007)

Other teachers complained that the workload had become heavier since ICT-integrated English teaching demanded more time and energy for class preparation, but with no increase in their rather low salaries or other forms of incentive. This point was echoed in the interview with the Director of CED. In his words, there was a limited budget in the Department and he had to report to the School before it was used. Although he recognised that the reform had

increased the workload for the teachers using System II, he stated that what teachers could get from the Department was praise and some opportunities to go to other universities or institutions for further study or training. Since better resources for teachers to use at work in general and higher teacher salaries in particular are important external factors to motivate teachers to use new technologies (Hansson, 2006), teachers felt frustrated and financially stressed in this situation, particularly the young married teachers. They stated they had to teach more class hours to support their families. Therefore, there was little time for them to develop professionally. Although most teachers showed great enthusiasm for the national reform and were active in integrating ICT with class teaching (5.2.3), the general consensus was that the very limited support was likely to reduce teachers' enthusiasm, affecting their active attitudes towards the reform and on the whole, would constrain its smooth implementation.

Another important form of support which teachers asked for was better cooperation and communication between the University and the School in relation to the national reform. As Karavas-Doukas (1998) has pointed out, good communications and a regular flow of feedback during the process of implementation can facilitate the effect of an innovation. Although both the Dean of AAO and the Director of CED stated that the University had provided strong support for the reform, it seems that teachers' communication with the staff who were in charge of specific operations was not as efficient as it might have been. Some teachers complained that much time was wasted in explaining why they wanted multimedia classrooms for English teaching to the member of staff in the Teaching Management Office (TMO), who had not received any written or oral instruction from his Dean or the teaching secretary of the School of Foreign Languages. Teachers had to go backwards and forwards between them before a multimedia classroom could be assigned. The time wasted in persuading and managing effective communication between the two secretaries could have been used in preparing better teaching materials for the students, as the teachers pointed out. The IT coordinator agreed and commented also on the strange phenomenon that EFL teachers had to ask for the use of the Interactive Teaching Base from the TMO themselves, an administrative procedure which

should be handled by teaching secretaries. Sometimes teachers were refused and therefore frustrated, which affected their moods in the class to a certain extent. In the IT coordinator's view, it seemed there was a need for team leaders who could coordinate room timetable arrangements and deal with the difficulties of teachers using different software systems. The Director of CED admitted that this level of coordination was lacking. Although in each software system there was one teacher acting as an organiser, he stated that they were volunteers without specific duties and without any financial allowance for extra work, which might have affected their enthusiasm and efficiency.

Cooperation between technical assistants in the School was also unsatisfactory, to judge by an interview with a technician in the language lab. Computer viruses which caused the collapse of all the computers in the language labs were seen as a big problem. To install anti-virus software was regarded as an effective way to prevent virus infection, the assistant reported, and the software should be upgraded from time to time to guarantee the latest form of protection in place to protect the computers. However, because of the difficulty of getting access to the Internet in each language lab, the upgrading became impossible. The task of arranging access to the Internet in the labs was the responsibility of another technician who had to maintain the normal operation of computers in the School offices (which are some distance from the language labs). The assistant did not even know when the technician would get the Internet connected. Although one or two language labs could access the Internet and teachers found it necessary to use the Internet, they were still told not to use it to avoid virus infection because the current software could not protect the computers, and this caused a great many complaints from the teachers.

If these comments are taken as even a partial reflection of the provision of facilities in the University and the School, it appears that, at the time of this study, circumstances made it difficult for teachers to use ICT in their teaching on an everyday basis and for their professional and personal development needs to be met at work.

5.3.6 Overall impact of the reform

Although the University was one of the first to adopt software teaching systems which were the core of the national reform, the number of classes participating in System II from 2004-2007 varied between 9 and 13 (2004, 11 classes; 2005, 13 classes; 2006, 10 classes; 2007, 9 classes). Altogether, six EFL teachers used this System. This means that of the 5,000 new students enrolled in each year, only 10 classes or so (approximately 300 students) fully experienced what was intended. Most students just used the other three systems. The effect of System II was reported to be positive by both teachers involved and the Dean of AAO in terms of CET 4 results, although this was not universally accepted, as noted above, as the only evaluation criterion for language teaching and learning. The Dean acknowledged the difficulty in expanding the use of System II to more students. Firstly, expansion meant a huge investment in new hardware and software resources and the current resources would be out of date after about five years' use and need upgrading, otherwise it would affect normal teaching. A rolling programme of upgrading on the scale needed would require a huge capital investment. A second problem he mentioned was that of computer viruses, which might attack the ICT facilities from time to time. How to guarantee the normal operation of the machines was a big challenge to the University. Thirdly, students should be educated how to use ICT more effectively and, at the same time, they should know how to use the equipment properly and take good care of it. Therefore training teachers and students not only for effective use of ICT in teaching and learning but in an operational sense was necessary. ICT-integrated teaching also necessitated closer cooperation between teachers and technicians.

The Academic Affairs Office Dean and the College English Department Director claimed that the College English reform had nevertheless had an impact on the University, the EFL teachers and the students involved. First, the reform experiment and computer- and Web-based English teaching had led to a significant change in English teachers' attitudes and beliefs from teacher-centred to student-centred teaching models. It had awoken their enthusiasm in acquiring

ICT skills and stimulated them to learn how to guide students' autonomous learning. At the same time, the reform had aroused students' interest in learning English and ICT knowledge and pushed them to adopt new aids to language learning. In both teacher and student focus group, mp3 and mp4 players and mobile phones were reported to have been used in English learning after class besides traditional tape recorders and radios. The independent learning ability of students who studied autonomously in the Base was enhanced and their listening and speaking ability improved faster than those who learned in language labs, according to the data provided by the Director of CED. However, as this Director, the IT coordinator in the Base and EFL teachers claimed, students' ICT competence and learning skills turned out to be diversified in the reform, which caused managerial difficulty and called for guidance in autonomous learning and graded teaching. In the viewpoints of the Dean of AAO and the Director of CED, on the whole the reform had brought good to the University and the overall teaching level and the quality of academic resources appeared to have improved.

5.3.7 Summary

As discussed above, reactions to the reform in the University were different at different levels. It seemed that the reform had received institutional, departmental and personal support in terms of huge investment, relevant policies and positive attitudes and beliefs. The effect of the new software teaching systems, on the whole, was also reported to be positive from the perspectives of management, teachers and students, but their lasting effect was doubted by management and teachers and it was recognised that continuous monitoring and continuing investment would be needed.

Successful computer integration always requires excellent facilities, technical back-up and financial resources (Mumtaz, 2000). The investment in building

ICT-equipped classrooms, an autonomous learning Base and language labs was large but it appeared far from enough, which limited the use of software systems and delayed the overall implementation of the reform. On the one hand, ICT facilities were in great demand; on the other hand, the current ICT resources were not fully exploited (e.g. the use of Internet), even wasted in a sense (e.g. non-use of learning CDs by students). Unavailability of ICT for teaching and learning was reported to be a significant constraint on the reform. Most teacher interviewees acknowledged the need for further ICT skills and knowledge but the demand was diverse. Technical support appeared to be another key factor in promoting the effective use of ICT resources and sufficient and continuous training was called for not only by teachers but also by IT coordinators, technicians and students. The teachers interviewed also felt the need for more institutional and departmental support (policy support, financial support, and management support). There was also dissatisfaction concerning communication between administrators, between the University and affiliated schools and departments, and in general between managers and users of the innovation. As Karavas-Doukas (1998) has noted, effective communication networks are essential if teachers are to clarify the meanings of the innovation, express their concerns and problems and find solutions to them (Karavas-Doukas, 1998). In this University, greater administrative efficiency would free teachers and leave more time and energy for their own teaching tasks, which would facilitate the smooth implementation of the national reform.

5.4 CPD policies and practices

This section focuses on CPD policies in the University, EFL teachers' experiences of the institution's CPD practice, and their views on how organised CPD had met their needs in relation to the reform. It draws on three data sources: the questionnaire survey of teachers, individual interviews with teachers and management staff and a focus group with teachers.

5.4.1 Institutional policies for CPD

In order to better understand the policies for CPD in the case university, an interview was conducted with the Personnel Department Chief. The following information was based on that interview and provided an overall picture of this department – how it operated and what kind of CPD policies it provided for teachers.

The Personnel Department is one of the most important departments in the institutional management structure of the University. Its functions cover the appointment of academic staff, academic promotion, staff training and appraisal. It is also responsible for staff salaries and welfare. Staff training includes pre-service training for newly appointed staff and in-service professional development for other staff. As discussed in 3.4.1, like in-service teacher professional development in other universities, CPD in this University takes different forms. Some teachers are sent as advanced visiting scholars to other nationally famous universities; specialized training, such as English proficiency test training is offered; and further study or training abroad opportunities are also provided. Appraisals involve annual assessment, academic title promotion assessment and some special Awards undertaken by the Teaching Assessment Base affiliated with the Academic Affairs Office. Classroom observation is used widely to evaluate teaching. An expert group composed of experienced and senior professors observe classes from time to time in order to guarantee the quality of normal teaching and provide supervision and guidance for inexperienced teachers or teachers who have received negative feedback from their students. Teaching contests in different skills, such as a multimedia teaching contest, are undertaken every year to select the best teachers from different schools and departments in the University. These teachers act as models for other teachers to follow.

A special office affiliated to the Personnel Department is responsible for the ICT competence certificate-test and the training for this test is available once a month in the University. A clerk is responsible for providing training materials.

organizing training and suggesting specific training modes for trainees. Staff pay a small sum of money for the textbooks and the training itself is free. In addition, the Personnel Department cooperates with the provincial Training Base for teachers in higher education and organizes some ICT training on certain topics from time to time.

According to the Personnel Department Chief, the budget for both pre-service and in-service training for staff in the University is 600,000-800,000 *Yuan* (60,000-80,000 pounds) per year, which includes the budget for ICT training organised independently by the University or co-organised by other organisations such as the Provincial Training Base. In addition to the training for ICT competence tests organised by the Personnel Department, the Academic Affairs Office has also provided different forms of ICT-related training, such as lectures given by experts in this field. Both teachers and technicians receive training together and exchange views on how to prepare PPT courseware. During the period 1998-2002, the University cooperated with some professional companies to provide technical support for teachers who taught distance (online) programmes. Normally the procedure went like this: scripts of the courseware were written by teachers; technicians designed the courseware according to the submitted scripts and communicated with course teachers frequently until they achieved mutual satisfaction. Since 2002, commercial companies have no longer been invited to participate in the courseware design. The course teachers themselves have been responsible for the whole procedure of courseware writing and designing. Teachers have thus been required to become not only course design experts but also courseware designers, which has required them to acquire more advanced ICT knowledge and skills. They cannot rely on the technicians any more but they can get a special budget from the University in the form of teaching reform project grants. Course teachers can obtain 8,000-12,000 *Yuan* (800-1,200 pounds) and use some of this money for ICT skills development. However, since the budget is limited, the number of teachers who can benefit from such project grants is also limited, according to the Dean of AAO.

In addition, teachers are given training on how to use new equipment when classrooms have been newly-equipped with ICT facilities or when new management systems are adopted. Moreover, the Dean stated that the Labour Union in the University would sometimes organise free ICT competence training for staff. Participation in this training is voluntary.

However, teachers appear to be unclear about the University's CPD policies. It was noted in 5.2.3.3 that teachers were not quite clear about the new curriculum in which ICT use in English teaching and learning was required; similarly, when asked about the CPD policies in the University, most teachers in the interviews and focus groups claimed that they knew little. Frequently used comments were: 'very limited, too little, no idea'. One interviewee even commented that the University and the School just let them develop by themselves without any help. The Personnel Department Chief, however, claimed that teachers had had more opportunities to be involved in CPD-related policy-making in recent years. When management departments finished drafting new CPD policies, normally teacher representatives would be invited for a meeting and required to give their comments on these from a teacher perspective. The draft would be revised according to their feedback. The final draft would be approved by the vice-President in charge of CPD in the University, and then promulgated to each school and department. Ordinary teachers would then be informed of new policies or relevant policy changes during meetings held in their own schools and departments. The obvious gap between the perspectives of the manager and the teachers could be explained by the fact that the policy makers appeared to take it for granted that the passage of policies from the management to teachers was smooth, while ordinary teachers were neither well-informed about relevant policies nor informed in a timely manner. Since open feedback channels between managers and users of the innovation will 'not only enable teachers to overcome the initial humps of implementation and increase their confidence but will also provide essential information to managers on the progress of the innovation' (Karavas-Doukas, 1998:39), management staff need to take the responsibility for keeping the channel open, transparent and smooth.

In the University, teaching and research are seen as the two main tasks for teachers. However, in most teachers' eyes, the University puts more emphasis on research than teaching. The dominant role of research was vividly summarised in the following statement:

I feel that academic development and research are always emphasised in the University and by the School. We are put under tremendous pressure to perform well in research. Each teacher's publications and research money they could get are always put in the first place in assessment and promotion. You will definitely fail if you have none of them.

(Teacher focus group A, 06/11/2007)

Although teachers admitted that teaching seemed to have regained some of its previous importance in the last two years, publications and research grants weigh more than favourable remarks on good teaching. This seems to be closely related to the positioning of the University. Being a key university and one of the 121-project and 985-project universities (see Appendix 2), the University positions itself as a research-orientated university. Therefore, the academic development and research achievement of each school decide their position in the University and how large a budget they get from the University. The view that academic staff need to be more research-led appeared to be widely accepted by the Deans of schools and departments. There has been substantial investment in some subjects and other measures have been adopted to attract elite research-orientated staff. The School of Foreign Languages is not an exception to this. Teachers felt that the School overemphasised the importance of research and spent a large sum of money on subject development regardless of the situation that the ordinary teachers were in (many were young female teachers with a heavy teaching load, limited income or responsibilities for young children) and it was very difficult for them to meet the expectations. The Dean of AAO was aware of this and suggested that the School should pay more attention to ordinary teaching and consider allocating more rewards for teaching reform and teaching research.

5.4.2 Teachers' experience and perceptions of CPD provision

Teachers' experience of CPD seems to vary according to the different roles they played in the University. The basic role of those surveyed was EFL teacher, but a few were leaders of teaching groups; one or two had senior academic titles such as professor; some were project directors who had obtained project grants; and some were pioneer participators in distance (online) education when the University was selected as one of four experimental universities to undertake distance education in China. These different roles meant that while some had experience of CPD at a national or provincial level, others' experience was limited to the departmental or even personal level. Each of these levels will be discussed in the following subsections.

5.4.2.1 CPD at the national level

Chapter three discussed the four periods of the national College English reform (see 3.3). In the second period, four software-teaching systems were produced by four key Presses to meet the reform's requirement for effective teaching and learning materials and sources. Since the reform called for a change in EFL teachers' attitudes and beliefs, roles and pedagogy, the need for teacher training was highlighted.

The four Presses who produced the four teaching systems are responsible for explaining their theories to language teachers and guaranteeing the appropriate and efficient operation of the systems. Therefore since 2004, the Presses have arranged free training courses in the form of seminars, lectures and workshops in the summer vacation each year for teachers who use their systems or plan to use them in the following semester. Normally the training lasts for around one week. All costs are paid by the Presses. The venues for training are famous cities or scenic spots that teachers can visit after training.

As for the training organised by the Presses, the Director of CED commented that some teachers benefited a lot from it while others did not. The training effect depends on the teachers' learning attitudes and the nature of the course arranged by each Press. With regard to the value of this CPD provision, teachers in the interviews and focus groups had different views, but the training provided more recently tended to receive more negative feedback. The following comments are representative:

Teacher A: The first time I participated in this kind of training, the Press arranged three-day lectures. But only one-day lectures were arranged for the latest one I took. It was reduced from rich contents such as the introduction to new teaching methods, discussion on academic issues, etc. to simple presentations by two or three experts. That's all! I felt that the Presses didn't organise the training as considerately and carefully as before.

Teacher B: There exist gaps between the trainers and the trainees. The trainees are basic College English courses teachers, who have great desire to learn new knowledge which they can put into teaching practice; while most of the trainers are professional researchers, who are good at theories and research. Therefore, what the trainers taught is not what the teachers wanted. It was really a pity!

(Teacher focus group, 06-08/11/2007)

The latter comment is in line with Bliss & Bliss' (2003) argument that some workshops in training programmes were delivered by professionals who were out of touch with the changing needs, interests and composition of teachers. Many tutors do not have a pedagogic foundation (UNESCO, 2003). The CPD opportunities offered tend to be fragmented, non-cumulative, and unrelated to issues of curriculum and student learning. On the other side, some teachers felt that the provision of travel opportunities for teachers was a good thing; after all, the chance for a free visit to famous cities and sightseeing for ordinary teachers were very limited. But if the Presses provided well organised and relevant courses, teachers were happy to receive professional CPD in this way and enjoy a free visit afterwards.

Each Press spared no effort to attract more universities and colleges to use its textbooks, CDs and system version. After all, there are nearly two thousand

universities and colleges in China and an average of 8,571 students per university in 2007 (see Table 3.1). This means there were more than 4000 year-one and year-two students per university who used College English course books/materials. This was a really big market for each Press.

Although the training provided by the four Presses received many negative comments from teachers, there were still some interviewees who felt they learned a lot. Some teachers mentioned that the training they received was really helpful in their ICT-integrated language teaching. One teacher who used System II and had once participated in the training organised by the Tsinghua University Press showed her satisfaction with what she learned in the training. As she put it:

Tsinghua organised the training well for us. You were required to attend each lecture and seminar. They taught you how to teach in the new computer- and Web-based system, the new pedagogy and how to use the CD-ROM and how to teach students to use. Good experiences from other universities were introduced so that we can share and learn. We also got to know a lot of latest news and information on new tendencies in EFL teaching. I really enjoyed it!
(Teacher focus group, 08/11/2007)

A senior teacher, who had been a vice Director of CED for years, commented favourably on the value of this kind of training. At least some parts of the training were helpful, she claimed, such as input on trends of EFL teaching and learning, relevant policies, newly-developed software and new teaching methodology. Sometimes these would stimulate teachers' thinking, creativity and change their attitudes and beliefs, she added. At the same time she showed her worries about teachers' attitudes towards the training. Many teachers just took it as a good chance to travel and did not realise that it was also a good chance to learn new ideas and knowledge. Some teachers even took their children with them to attend the training and were frequently absent from the lectures or seminars. In her eyes, the majority of teachers who had had opportunities for CPD in the summer vacation had not taken full advantage of this, although it was potentially valuable to them.

5.4.2.2 CPD at the provincial level

In terms of teacher development, each province has a related administrative organisation to organise training programmes for special purposes from time to time. For instance, the Provincial Training Base for Higher Education Teachers has cooperated with Intel Corporation and organised an ICT training programme 'Intel Teach to the Future' for EFL teachers with the aim of improving teachers' ICT knowledge and skills to meet the new requirements of the Information Age (UNESCO, 2003). The Programme provides a flexible, modular curriculum delivered by teachers for teachers. In other words, teachers rather than technologists become the future trainers. Intel has trained more than 6 million teachers in over 50 countries (Empowering Innovative Teachers, n.d.). This seems to be a case where the cascade model (see 2.4.3.5) for large-scale CPD programmes has been adopted successfully, regardless of its diluted effect (Gilpin, 1997; Kadepurkar, 1997; Zhang & Yang, 2002).

The University once had a chance to arrange this training on the campus in a summer vacation and teachers who felt the necessity to improve their ICT skills could apply. The University only needed to provide a computer room and arrange one or two technicians to help on the spot. The training was free for each participant and free textbooks were supplied as well. Intel approached ICT skills development in an integrated manner in which teachers integrated technology into instruction in order to enhance student learning. Some interviewees reported that their ICT skills improved to a certain extent after the training. Since the target trainees for whom the training was originally designed were neither teachers in higher education institutions nor EFL teachers, the programmes were not so closely related to ICT-integrated College English teaching. Teachers reported that they did not benefit too much. However, it was still regarded as a precious CPD opportunity for College English teachers when their CPD for ICT was limited. Some teachers who missed the chance complained that they had not been informed about the course beforehand; otherwise they would have attended without any hesitation. This indicates that teachers had a generic desire to improve their ICT knowledge and skills.

The Province also provides high-level CPD opportunities for young teachers. However, the applicants should be highly-qualified academics or productive researchers and the vacancies are very limited. The main training courses are in English and ICT. None of interviewees had been given this kind of opportunity.

5.4.2.3 CPD at the institutional level

When asked how often they had had the chance to attend training courses focusing on ICT knowledge and/or skills or ICT in education, a small minority of questionnaire respondents (14.1%, see Table 5.36) stated they had participated twice or more than twice. Almost half (45%) stated that they had never had the chance to take a training course, a rather shocking finding in an experimental university where a national reform calling for computer- and Web-based English teaching were being piloted.

Table 5.36 Frequency of attendance AT ICT-related training courses (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid more than twice	4	5.1	5.1	5.1
twice	7	9.0	9.0	14.1
only once	32	41.0	41.0	55.1
never	35	44.9	44.9	100.0
Total	78	100.0	100.0	

According to the Personnel Department Chief, the University has provided various opportunities for teachers' CPD (see 5.4.2.1). As far as ICT-related CPD is concerned, newly-appointed young teachers are asked to attend pre-service training programmes before they start teaching. These include teaching methodology, but also cover suitable dress in teaching and using one's voice in class. One teaching assistant mentioned that an ICT-related course had only been arranged for new teachers in the last year, for she did not receive this kind of training when she was employed in 2006. However, it seems that serving staff could attend the lectures on pre-service courses if they found them useful. One lecturer recalled her participation in several ICT-related lectures on how to

prepare professional PPTs. The effect was reported to be not altogether satisfactory:

The lecture was designed exclusively for recently-appointed teachers. The speaker's major was science; what he showed in the lecture were samples of his own field. To be honest, the PPT slides were professional and beautiful, but for teachers majoring in Arts and Social Science, especially for EFL teachers, I couldn't follow what he showed. They were less useful than expected.

(Teacher focus group, 06/11/2007)

Although the University had provided computer competence certificate training every month for teachers who wanted to be promoted to higher academic titles, those who had participated commented that the training course lasted only one hour during which the trainer just taught the trainees how to pass the certificate test successfully. As for those who had no plans to apply for academic promotion, this seemed to be of little use.

As regards the ICT-related lectures given by experts and others arranged by the Labour Union in the University, most teachers claimed that they did not know there were these kinds of CPD opportunities. On the whole, the majority of teachers in the interviews and focus groups still felt there were insufficient opportunities for CPD and complained that they were not given enough institutional support. The following comment illustrated this view:

I have been teaching in the University for more than 10 years. I happened to have got one chance for ICT-related CPD last year. That is the only chance for me in these years. It is really limited!

(Teacher focus group, 06/11/2007)

The above discussion indicates that information on CPD opportunities for EFL teachers was not well disseminated; courses were available on only an occasional basis; and only a few teachers benefited.

5.4.2.4 CPD at the departmental level

Since College English is a basic course for all non-English majors in the University, it might be expected that the University would take the main responsibility for College English teachers' CPD. However, as the Dean of CED claimed, the School of Foreign Languages also provided strong support for College English teachers' development. This took a number of forms.

Firstly, in 2004 when the reform had just started, teachers attended a course on how to teach students learning strategies. This was a one-week training programme in a famous key university; trainers were experts in learner autonomy in China and trainees were from colleges and universities all over the country. The course was arranged in the form of seminars, lectures, workshops and teaching presentations. The participants were unanimous about the benefits of the training. One associate professor succeeded in obtaining a teaching reform project grant after the training; one professor gave a lecture to teachers in the School with the materials and information she had brought back; others claimed that they had put what they had learned into practice and seen positive results. Because of the limited budget, only eight College English teachers were lucky enough to be selected to attend. In addition, the School provided training courses for teachers on normal teaching methodology and foreign experts were sometimes invited to give lectures and arrange workshops. However, at the time of this study, except for the small number of teachers who had attended the Intel training programme, very few teachers had received any training in ICT-related pedagogy.

Secondly, the School organised a series of ICT-related evening courses on different subjects. These were led by a qualified IT coordinator in the School. Basic ICT skills such as Excel, PPT, word file, and SPSS were introduced in the lectures. According to the comments from teacher interviewees, it seems that not many participated. They explained that the unsuitable time made them give up for they lived far away from the campus; some had to take care of children in the evening; others felt tired after teaching for many hours in the daytime. It

seems that after-school sessions were not popular, which echoes Charalambous & Karagiorgi's (2002) survey finding that teachers preferred ICT CPD training courses to be offered during working hours. In addition, the effect appeared to be unsatisfactory, for trainees had not been provided with a PC to practise on, nor were handouts available. The participants said that they forgot what they had been told soon afterwards and had to learn it again by themselves.

Thirdly, teachers were required to receive training on how to use new ICT facilities or software teaching systems once or twice each year so that they knew how to operate the equipment and systems. However, the training effect was reported to be unsatisfactory. On the one hand, the technician in the language labs stated that teachers still turned to her for help on operation even when they had received relevant training; on the other hand, teachers complained that they only learned passively in the training without chances to practise by themselves on the spot so they had no time to become familiar with the equipment/software before they used it. Another reason, as discussed earlier (5.3.5.3), was the infrequent use of the operating systems because of the reduction of class hours in the language labs. This sometimes caused problems for teachers in class and made them feel annoyed.

Although the College English Department has no special budget for teacher development, the Director stated that he still tried his best to seek opportunities or create chances for teachers' CPD. Since collaboration can involve teachers' engagement and lead to them solving problems together (Roschelle & Teasley, 1995), the best way was, according to the Director of CED, to create a cooperative/collaborative CPD environment in each teaching group and encourage teachers to communicate more with colleagues and solve problems together so that they could develop together.

It has been shown that CPD at departmental level includes collective lesson preparation meetings, lesson observations and post lesson conferences, open lessons/public lessons presentation and a mentoring system. Collective lesson preparation meetings provide, to a certain extent, an opportunity for teachers to

learn ways to develop their knowledge and put it into practice (Wong & Tsui, 2007). Cooperation in lesson preparation was highly recommended in the Department because the new teaching model called for new theories and new pedagogy and teamwork could realise this goal, as the Director stated. Teachers were also required to observe at least three of their colleagues' classes in each semester, trying to learn something from the visits. By observing each other's lessons and providing feedback, teachers become able to 'clarify the meanings of the innovation and identify its workable and unworkable aspects' (Karavas-Doukas, 1998:39). After the reform started, teachers who were experienced in computer- and Web-based teaching were invited to give public presentations of their lessons for their colleagues; and teachers seemed to be more active in discussing teaching methods and ICT-related pedagogy in staff meetings. As Littlejohn (2002) suggests, it is meaningful to investigate proposals for CPD requirements with academics experienced in the use of ICT for teaching and learning. Although these teachers did not necessarily form a fully representative view, their experience could offer insight into teacher development needs at a practical level. The Director of CED pointed out that the Department had a traditional mentor system under which a newly-appointed teacher is guided in their initial teaching by a more experienced teacher both in teaching and research, as well as being given informal peer support (Ng & Tang, 1997). The mentors were supposed to offer timely help and constructive advice when the young teachers had problems at work. Most young, inexperienced teachers welcomed this mentor system and were positive about this departmental support.

These activities discussed above were designed to form a supportive working environment for teachers and to allow them to take advantage of others who have diverse teaching styles and different strengths (Paine & Ma, 1993). Moreover, teachers could benefit a lot from the teamwork and develop professionally as a result of this. However, interviewees reported that they still felt there was insufficient communication among colleagues. Dissemination of good practice was limited. In most cases, teachers seemed to conduct their teaching work and their own CPD privately, which made them feel isolated. Even if a few claimed they did talk to colleagues, the communication was

limited within small groups. It seemed that community of practice on a larger scale had not yet been established.

5.4.2.5 CPD at the personal level

In the questionnaire survey, teachers were asked about their attitudes towards ICT-related professional development. Tables 5.37 and 5.38 indicate the respondents' use of ICT resources for self-directed CPD and the venues where this takes place.

5.37 Do you use ICT resources for your own professional development? (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	68	87.2	87.2	87.2
no	10	12.8	12.8	100.0
Total	78	100.0	100.0	

5.38 Location of ICT resources used for CPD (n=78)

Location for CPD	Frequency	Percentage
Office	7	9%
Home	66	84.6%
Computer room esp. for teachers	1	1.3%
Public computer rooms for both teachers and students	2	2.6%

As the tables show, a vast majority (87.2%) of respondents gave a positive answer to the question 'do you use ICT resources for your own professional development?' but surprisingly, the most frequently used venue was their homes, not their offices or workplace, computer rooms as might have been expected. However, since as we saw in 5.2.1, one third of teachers claimed there were no computers in the office and the biggest barrier to their use of ICT at work was non-availability (Table 5.8), it seems logical that most teachers had to use their own computers at home for CPD. There seemed to be neither any special computer rooms only for staff use nor one shared with students.

Although around half of the respondents claimed they had never attended any ICT-related training courses (see Table 5.36), more than two thirds of respondents stated that they had learned ICT skills by self-study (see Table 5.39). This response seemed to indicate that the majority of teachers held a positive attitude towards ICT and were willing to devote time voluntarily to learning to use it even if the institutional support was limited.

Table 5.39 Have you ever tried to teach yourself any ICT skills? (n=78)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	54	69.2	70.1	70.1
no	23	29.5	29.9	100.0
Total	77	98.7	100.0	
Missing	1	1.3		
Total	78	100.0		

Except for formal CPD programmes, generally teachers are left on their own to take care of their ICT competence development. There are many different forms of informal learning, including, in the case of teachers, learning from students or from one's own children (Hansson, 2006). In the interviews and in the focus groups, most teachers also claimed that they made individual efforts to develop professionally. In addition to learning from students and family members, some learned from friends and professional learning websites. One teacher using System II reported that she learned how to prepare professional PPT for teaching from a website and benefited a great deal. Some teachers just bought relevant ICT-related learning software and learned by themselves.

A few teachers appeared to have taken advantages of the valuable experiences gained from having earlier been teachers in distance (online) education. They had had opportunities to cooperate with ICT technicians in courseware preparation and developed their ICT skills quickly in the process. They were the early adopters of computer- and Web-based teaching. Some teachers succeeded in getting teaching reform project grants and obtained limited funding to develop themselves. Some teachers were invited to be writers of experimental textbooks or designers of the teaching software systems for the reform; they also

claimed they had developed professionally in the writing or designing process. A few were lucky enough to have won opportunities for further study abroad and received systematic training.

5.4.2.6 Other issues in CPD

As for resources for CPD, 'inadequacy' was cited frequently by many teachers. Apart from the limited ICT facilities for English teaching (discussed in 5.3.2), teachers also complained that they were not given adequate resources for CPD. As one teacher commented:

We don't have an IT room for teachers to use at the moment. Nearly 70 of us have to share two old computers in the office. If I want to use computers and Internet for CPD, I have to do it all at home. It is really frustrating!

(Individual interview with Teacher 8, 16/10/2007)

Gaps were also identified in terms of relevant library stocks for College English teachers. It was reported that most of the books and journals in the school resource Base were related to linguistics, translation, literature; there was a shortage of books and journals on new teaching theories and pedagogy, which they needed most for the national reform.

Lack of access to relevant sources of information for CPD or training was the most frequently mentioned dissatisfaction among teachers. Some teachers complained that they had had to give up some CPD opportunities because of unsuitable training times. Others pointed out most training programmes were not exclusively designed for teachers of Arts and Social Sciences, let alone for EFL teachers who were involved in the national reform.

Ongoing and systematic CPD policies can motivate teachers to actively experiment and improve their teaching practices (Karavas-Doukas, 1998). However, lack of systematic, continuous CPD was another key issue identified by the teachers. Although a wide range of forms of CPD provision were

potentially available in the University, such as compulsory induction training courses, seminars, conferences, overseas studies, and degree studies, most interviewees claimed that the ongoing support to follow up the training they received was nearly non-existent. This view was echoed by the Director of CED, who admitted that CED did not have a long-term plan for teachers' development for they were short of funding and had limited decision-making powers.

Overall, teachers' experience of CPD differed according to the opportunities they had obtained from the national Presses, the provincial Training Centre, the University, the School and the Department. With regard to teachers' perception of CPD provision at different levels, although the University had provided various CPD opportunities, the general impression from teachers was that College English teachers expected more than what the University was providing. Teachers called for more resources for CPD, better communications between colleagues and more continuity in provision. They also mentioned that the different needs of specific groups of teachers should be taken into account in further CPD provision in the University.

The next section will focus more narrowly on College English teachers' needs for ICT-related CPD in the context of the national reform.

5.4.3 Teachers' needs for ICT-related CPD

In the questionnaire survey, teachers' views on the content of the ICT-related training courses they had received at least once or hoped to attend indicated more or less their needs for CPD. As Table 5.40 illustrates, basic ICT skills for work were reported to be most useful. In the interviews and the focus groups, ICT-equipped classroom management was seen as a challenge and was in high demand. Teachers also expressed a desire for more information on how to

improve students' learning with ICT, which agreed with the findings shown in Table 5.40. Less than one third of the respondents considered that input on how to use ICT to further their own professional development was the most useful content of training programmes. There was least interest in related policy. This might indicate that EFL teachers had not yet acquired basic ICT skills; and expected to gain these from training programmes.

Table 5.40 Views on the content of ICT-related training courses (n=78)

Content of ICT-related training courses	Most useful (%)	Least useful (%)
Basic ICT skills (Windows, word processing, etc.)	83.3%	5.1%
Managing ICT in the classroom	69.2%	14.1%
Information on how ICT contributes to students' learning	53.8%	17.9%
Advanced ICT skills (database, graphics, etc.)	52.6%	28.2%
Using ICT for professional development	26.9%	39.7%
Developing ICT policy	12.8%	59%

In their ICT development process, ICT skills and ICT pedagogy enhancement were reported to be of great benefit to the respondents (see Table 5.41). In addition, this experience was felt to have supplied a chance to change their traditional practice and given them a better understanding of the role of ICT in English teaching and learning. It appeared to be a way to change or at least modify teachers' attitudes towards ICT use in teaching (Fishman et al., 2003; Karagiorgi & Charalambous, 2006).

Table 5.41 Benefits of the experience of ICT development (n=78)

	Frequency	Percentage
It enhanced my ICT skills.	48	61.5%
It enhanced my knowledge of how to use ICT in my teaching.	48	61.5%
It helped me to understand the role of ICT in teaching and learning.	39	50%
It helped me to change my classroom practice.	39	50%
It changed my attitude towards ICT use in teaching.	18	23.1%
It allowed me to have useful discussions with other professionals.	9	11.5%

The identification of needs is considered crucial to effective teacher professional development (Wlodkowski, 1985, cited in Zhou, 2004). The Director of CED stated that teachers' CPD needs were normally identified through informal talk between individuals and managers or group discussion at meetings. These needs could be categorised into teaching and research, personal and career. Because the managers were familiar with each teacher's educational background, training experience, teaching characteristics and research achievement, it seemed to be simple to allocate limited CPD opportunities to those who needed them most. However, teachers reported that they had little chance to express their wishes for CPD. Although there were staff representative conferences every year and teachers would be asked to put forward their requests, suggestions, and views before the conference started, it appeared that teachers' viewpoints and requests were not considered carefully by the senior management staff.

Common themes which were raised during the interviews with teachers were the challenges in terms of how to carry out the reform with limited ICT skills, how to deal with the overwhelming content of the new software systems and how to guide students to be more autonomous (see 5.3). Such challenges appeared to have caused considerable anxieties among most of the interviewees and generated a general demand for essential professional training.

5.4.3.1 ICT knowledge and skills

In the interviews, teachers put forward their desire for ICT knowledge and skills as a reaction to the *Requirements*. As discussed earlier (5.3.3), their grasp of ICT knowledge and skills was variable. As the Director of CED stated, College English teachers were required to possess basic ICT skills to meet the requirements of computer- and Web-based English teaching. In his eyes, knowledge and skills included the Windows operating system, basic Word processing, PowerPoint and data software such as Excel and SPSS, teaching software installed in the University teaching systems, knowledge of the Internet and how to take advantage of Internet for resources searching, downloading and uploading files, sending and receiving E-mails etc. According to him, the

majority of teachers had an adequate grasp of ICT skills for current teaching and research, although there were a few exceptions.

However, most teachers in the interviews strongly expressed the need for further ICT skills and knowledge. They requested that future training should be formal, regular, and continuous, and should meet the specific requirements of the national reform for English learning and their own personal development. Since teachers had different ICT backgrounds and aspirations, they needed more specialized training on certain software. Some teachers could use basic skills freely while others acknowledged that they had little confidence in their use at work. Therefore, they felt, differentiated training should be arranged for teachers with different levels of ICT skills.

From the data emerging from the interviews and focus groups, it seems that young teachers who claimed that they had possessed the basic skills had a stronger demand for more advanced ICT skills such as professional PPT design, teaching software design, study website design, database set-up. As one newly-appointed teacher put it:

I learned most basic ICT skills by myself rather than from ICT training courses, I am confident in using them freely and appropriately in my teaching. But for the more professional and advanced ones, I know I need technical support and formal training. For instance, I am thinking about setting up a special website for my students, so we have a shared space to exchange views on English teaching and learning freely; and share useful learning materials downloaded from the Internet. In this way, I am sure their enthusiasm in English study will be stimulated.

(Individual interview with Teacher 2, 29/09/2007)

However, the Director of CED considered that advanced ICT skills were unnecessary for language teachers; they could cooperate with technicians. What teachers doubted was whether there were enough technicians for them to turn to when designing materials. In addition, they had no confidence in cooperating with them effectively.

The national reform suggests that computer- and classroom-based teaching

models be used in English classes and states that this new model should enable students to select materials and methods suited to their individual needs (MOE, 2007). This seems to assume that teachers will be aware of the learning materials available on the Web and be capable of evaluating them (Chapelle & Hegelheimer, 2004) so that they can refer students to the most appropriate resources. However, teachers confessed in the interviews and the focus groups that they had difficulty finding their way through the vast array of Web resources. These teachers, whose students often came for help when they had no idea how to select suitable materials for English learning, particularly from the Internet, were eager to learn more about what was available and how to evaluate and classify these resources. Since the English teachers' role has changed in the reform from simple knowledge conveyer to information provider and strategies trainer, they also need formal training to improve their ability to select useful information and resources from the Internet before they can teach their students. The following comment indicates this kind of eagerness:

I lack Internet information sorting ability. I can say, many other colleagues have the same problem. When I searched for information online, I noticed an interesting phenomenon, that is: each piece of information is connected with many links; each link has a further link and so on. So in most cases I clicked the links one by one, further and further... In the end, I was totally lost and forgot completely what I was originally searching for. If I had the knowledge of how to find out the exact information I wanted, I would not have wasted so much time on the Internet.

(Individual interview with Teacher 4, 16/10/2007)

In addition, teachers claimed they were interested in the latest information about ICT-integrated English teaching within China and abroad, and wanted to know about the new trend in this field to guide their teaching and research.

5.4.3.2 ICT pedagogy

One of the objectives of the national College English reform is to promote the development of 'students' individualised study methods and autonomous learning ability' and the new curriculum requirements also call for a change of teachers and students' roles in English classes and emphasises 'the central

position of students and the leading role of teachers in the teaching and learning process' in the new teaching model, in which ICT should be fully employed (MOE, 2007:4, 19). Changes in roles and the change of teaching model undoubtedly call for changes in teaching methods and approaches in English classes. This was reported in teacher interviews as the biggest challenge for English teachers. As noted by Watson (2001), in most cases teachers who use computers in their classrooms cannot clearly relate the use of ICT to their pedagogic strategy for their own subject. Although the teachers in this study realised the necessity of role change in the new teaching model and seemed happy to change as requested, most of them claimed that they did not know how to adjust and adopt new teaching methods and approaches in ICT-integrated class teaching because of a lack of relevant training. In the observations of ICT-integrated classrooms that were carried out as part of the study, most teachers were seen to have changed little in their pedagogy. The interaction between teachers and students had not obviously improved. These findings are consistent with other studies (Zhao & Hao, 2006; Zheng, 2006). Based on my observation and what I was told in interviews, teachers, on the one hand, needed to improve their ICT skills and acquire more ICT-related knowledge; on the other hand, they had an urgent need for training in ICT pedagogy (using ICT skills in a pedagogic context) so as to use modern information technology, particularly network technology, more efficiently to promote students' learning. One newly promoted associate professor showed her lack of confidence in the new teaching model:

I graduated from a Normal University and I learned basic pedagogy and philosophy there. I have been teaching here for more than ten years and I found what I learned 10 years ago were out of date and couldn't meet the new requirement of the national reform. But I have little knowledge about how to teach in the new teaching model. Therefore, I think it's time for me to develop new teaching methods and approaches so as to achieve a satisfactory teaching effect.

(Individual interview with Teacher 4, 16/10/2007)

In addition, the reform highlighted the need for teachers to provide guidance for students in individualised learning (based on students' different needs for development in different specialities), autonomous learning (self-access/self-directed learning), and cooperative learning in an ICT context. The process of

students' autonomous learning, particularly based on the Web, involves selecting suitable materials, learning, self-testing and self-evaluation, getting feedback and tutoring from teachers and review. EFL teachers were faced with big challenges during this process. They needed to consider every aspect carefully such as learning resources, autonomous learning strategies, supervision, feedback, learning content analysis, discussion design, collaborative learning. However, many teachers were confused as to how to meet this requirement. A young teacher expressed her bafflement in the focus group:

We have done a survey at the beginning of the reform. It indicated that what our students need most was learning strategies. Learning autonomously is a new thing to teachers and students. Students don't know how to improve their English learning with computers. It seemed that there was more time for their English learning when ICT was integrated. But the effect was not as satisfactory as expected. To be honest, being a teacher, I myself have no idea how to guide them to learn better with learning strategies. It is a shame!
(Teacher focus group B, 08/11/2007)

Therefore, such aspects of ICT-related pedagogy as how to teach students of diverse abilities more effectively with ICT, and particularly how to enable them to learn individually, autonomously and cooperatively in an ICT-equipped context appear to be in high demand. As Smith (2003:2) argues, how to prepare teachers for engagement in 'pedagogy for autonomy' is a pressing but practical issue.

Although a few teachers had once had training in learning strategies (5.4.2.4), most College English teachers had not been given this kind of opportunity. Even for those who had, support following this training was non-existent. In most teachers' eyes, even if they had sometimes obtained limited CPD opportunities, CPD appeared to be a once-and-for-all experience. They wanted continuous CPD provision in the University and the School, particularly for ICT.

ICT pedagogy also includes the management of computer- and Web-based classroom teaching and learning. As discussed in 3.3, the national College English teaching reform was stimulated in part by the overall increase in student

enrolments and the relatively limited resources in recent years (MOE, 2007). ICT, particularly network technology, makes it possible to free English language teaching and learning from the constraints of time or place to a certain extent. English teachers who had been used to traditional classroom teaching for years had to learn to manage computer- and Web-based classroom teaching. This was a big challenge. On the one hand, ICT enabled them to manage their teaching more efficiently. For instance, they could adopt some management software to manage students' learning and teachers' tutoring; and the network-based teaching system could help them track, record and check the progress of students' learning in addition to teachers' teaching and tutoring. On the other hand, teachers were not familiar with 'the interactivity, multimedia-use and operability' (MOE, 2007) of these teaching systems, nor did they have relevant CPD opportunities to support them in making effective use of the Web, multimedia and other teaching resources.

For instance, teachers who used System II were required to manage students' individual study in the Interactive Teaching Base and provide guidance for their autonomous learning. One teacher admitted her lack of management skills in such a new learning model:

Class management is really important in the Base. You should keep their learning in good order, supervise each student's learning process, and give timely guidance for their computer-based learning, and so on. Sometimes I couldn't manage for I haven't relevant knowledge and experience.

(Individual interview with Teacher 11, 21/09/2007)

The Dean of the Academic Affairs Office also stated that interactivity in the new teaching model was not as he had expected. English teachers went to the Teaching Base as an inspector rather than a manager and guide for students. According to him, many teachers did not use ICT appropriately either for teaching, tutoring or class management. It seems there was very little interactivity between teachers and students there. Tutoring appeared to be insufficient and needed improving. Some students played games rather than engaging in autonomous English learning in the Base because of poor supervision.

5.4.3.3 Other CPD needs

In the College English Department, a large percentage of teachers only have a BA, according to the Personnel Department Chief. They were recruited in the 1990s when teachers were in high demand in Chinese colleges and universities. Most of them had not had or utilised personal development opportunities to gain further qualifications. These teachers felt inferior to their colleagues who had an MA or a PHD education. It was therefore not surprising that in the interviews and the focus groups, teachers also put forward their requests for other CPD opportunities in addition to CPD for ICT. The diversified needs included: further degree study, research training, and subject knowledge in order to teach ESP, and further theoretical knowledge in areas such as pedagogy and psychology. Some explanations for these wishes are offered below.

The need for research-related CPD appeared to be more prominent among young and middle-aged teachers. Since the University is a research-oriented university, research grants and publication are important. Teachers are required to be capable in both teaching and research. College English teachers were thus torn. Most college teachers have a heavy teaching load and are teaching-oriented. However, because the research role was emphasised not only at the institutional level but also at the departmental level, the teachers had to spend time and energy on research, since this served a critical role in their assessment and academic promotion. Therefore, research-related CPD, particularly training in research on teaching reforms, was in high demand among teachers.

Because of the credit reform in this University (see 5.3.5.3), College English teachers had to enhance their subject knowledge to survive in the reform. The reduction of credit for basic courses has resulted in the reduction of College English class hours per week for each teacher. Teachers were required to provide more advanced and practical English courses for their students to supplement the reduced class hours. In this case, ESP was regarded as an alternative subject and some teachers expressed a wish for ESP-related CPD.

Other teachers stated their desire for more theoretical knowledge to guide their practical teaching. They had noticed that the diverse abilities of their students in recent years had pushed them to make adjustments to their usual teaching methods and approaches. The latest pedagogical and psychological knowledge might help them find new ways to improve students' learning outcomes.

Based on the unsatisfactory training experience in previous summer vacations, many teachers were insistent that CPD trainers should be appropriately qualified and experienced. The literature shows that teachers tend to react negatively to computer specialists for they lack knowledge of the context in which teachers work (Williams et al., 2000). Teachers contended that the trainers need not be expert in ICT but their ICT competence should relate to ICT-integrated language teaching. They should have rich experience in language teaching, be familiar with the features of English teaching and learning and have a good knowledge of ICT-related pedagogy and psychology. They should be able to understand teachers' needs and train teachers as requested. In the interviewees' eyes, the ideal trainers would be experienced language teachers with a rich knowledge of ICT and have successfully integrated ICT with their own language teaching practice with good teaching outcomes. It has been suggested (UNESCO, 2003) that training teams be formed containing subject specialists, pedagogy specialists and ICT experts to ensure that teachers acquire pedagogically-based ICT knowledge and skills.

Training formats teachers asked for were lectures, seminar, workshop, and distance/online training. All these should be flexible and practical so that most teachers could participate. Some teachers also expressed the wish for short-term training in first-class universities inland and abroad. They wished to have opportunities to share their experience on varied issues internationally by presenting and participating in international CALL organisations. This kind of participation would allow EFL teachers in China to understand the future of ICT in language education rather than only implementing technologies and approaches designed abroad (Warschauer, 2002).

Besides formal CPD such as normal training courses, teachers also felt the need for personal CPD, a need noted by other researchers (Lang, 2000; Bliss & Bliss, 2003; McCarney, 2004). Teachers' self-studies play the most important role in their development of computer use in education (Lang, 2000); therefore, teachers should be encouraged to share responsibility for their own learning and investigation 'as part of their professionalism' (McCarney, 2004:66). However, CPD primarily 'relying on teacher personal time will never enable a culture of effective technology use' (Bliss & Bliss, 2003:97). Formal training opportunities are still the core of teachers' CPD.

One element in professional development is the media used. The media through which CPD might be conducted are: face-to-face interaction, video, audio, print or computers (with/without Internet), which can be combined in various ways (Fishman, et al., 2003). As discussed in 2.4.4, ICT, and the Internet in particular, can be used as a core delivery means for language teacher development (see Category 3 in Figure 2.15). In terms of the role of ICT in CPD, most teachers in the University seemed to use ICT for personal development (see Table 5.37). Face-to-face instruction dominated CPD training programmes; occasionally in training it was combined with computers. On-line instruction by experts (CPD trainers), however, was rarely reported. Category 4 of Figure 2.15 suggests that ICT can also be used to support language teachers' on-going professional development via e-communities and networking. Although EFL teachers in the University interacted and cooperated with colleagues more than before the reform, at the time this study was carried out E-communities and networking for collaborative CPD were non-existent.

To sum up, ICT-related CPD programmes which do not fully take account of the actual needs of the teachers, as in this case, are basically flawed. It is clear that the different types of training demanded by different groups of teachers suggested that there could be no one-size-fits-all training. It is worth considering teachers' feedback on the CPD opportunities they have obtained for this can have important implications for programme providers (Karagiorgi & Charalambous, 2006).

5.4.4 Summary

This section discussed the CPD policies in the University with particular reference to ICT, how EFL teachers felt about the provision of CPD and their actual experience, and their future needs.

Management staff claimed they had provided enough, varied kinds of opportunities for ICT-related CPD and that teachers had opportunities to be involved in related policy decisions. However, teachers only perceived limited ICT training opportunities, in which deficiencies existed, such as the concentration on the technical (which failed to meet teachers' diversified requirements) rather than the pedagogic. What they expected was 'needs-based training' (Karagiorgi & Charalambous, 2006:406) with more flexible training structures tailored to each teacher's needs for ICT CPD. At the same time, teachers wanted strong support from the University and the School to carry out self-development activities. Such support would include extra time for study/research leave, reduced workload, financial support, facilities such as an ICT-equipped learning Base for staff, resources such as suitable books, journals and learning software for CPD, and technical support. The CPD opportunities provided for teachers appear to be critical in any successful reform and teachers asked for a favourable CPD environment in which they could cooperate and collaborate with colleagues and IT coordinators to solve problems together and in which there was a smooth communication channel with management staff.

5.5 Further discussion

This section will present a further discussion of the implications of the study and offer some recommendations for policy in this field.

5.5.1 The role of ICT

One of the reasons for introducing ICT in this reform was to tackle manpower problems, which have been discussed in Chapters 1 and 3. The findings in this study showed that ICT makes it possible to tackle certain manpower problems in education. For instance, in the University, some courses (e.g. writing techniques) were arranged in big ICT-equipped classrooms in terms of lectures; other courses (e.g. reading and listening) were arranged in the autonomous learning centre where students could manage their own learning processes with the help of technology to meet diversified needs. Online education was adopted with one teacher instructing hundreds, even thousands of students at a distance. ICT allowed the University to cope with more students because teachers' teaching hours had been cut down, with an expectation that students could make up for the reduced class hours by doing self-access work. This is in line with some studies done before. For instance, in Feng et al.'s (2005) study, the new technology was proved to have saved the manpower in ELT to a certain extent when the traditional teaching model was combined with an ICT-integrated model. It seems that there are savings administratively when ICT is used in education; however, we cannot neglect that there are pedagogic costs as well.

Although ICT can help institutions cope with ever-increasing student numbers, the advantage of ICT in this respect only applies when certain conditions are met, such as provision of sufficient ICT resources (Warschauer, 2002; Hansson, 2006), the managed and supported change of teachers' and students' traditional roles (Smith, 2001; Liao, 2005; Meng, 2005), enough ICT competence grasped by teachers and students (Zhang & Yang, 2002; Ma, 2003; Drenoyianni, 2004; Lai, 2005), efficient technical support and reliable and cost-effective assessment/appraisal systems (O'Mahony, 2003; UNESCO, 2007).

ICT also has a potentially beneficial role to play in CPD (Davis, 1999; Jung, 2005). As shown in 2.4.4, Figure 2.15. Jung's (2005) model for teacher training was adapted for language teacher CPD. For convenience, the same figure is reproduced here as Figure 5.1.

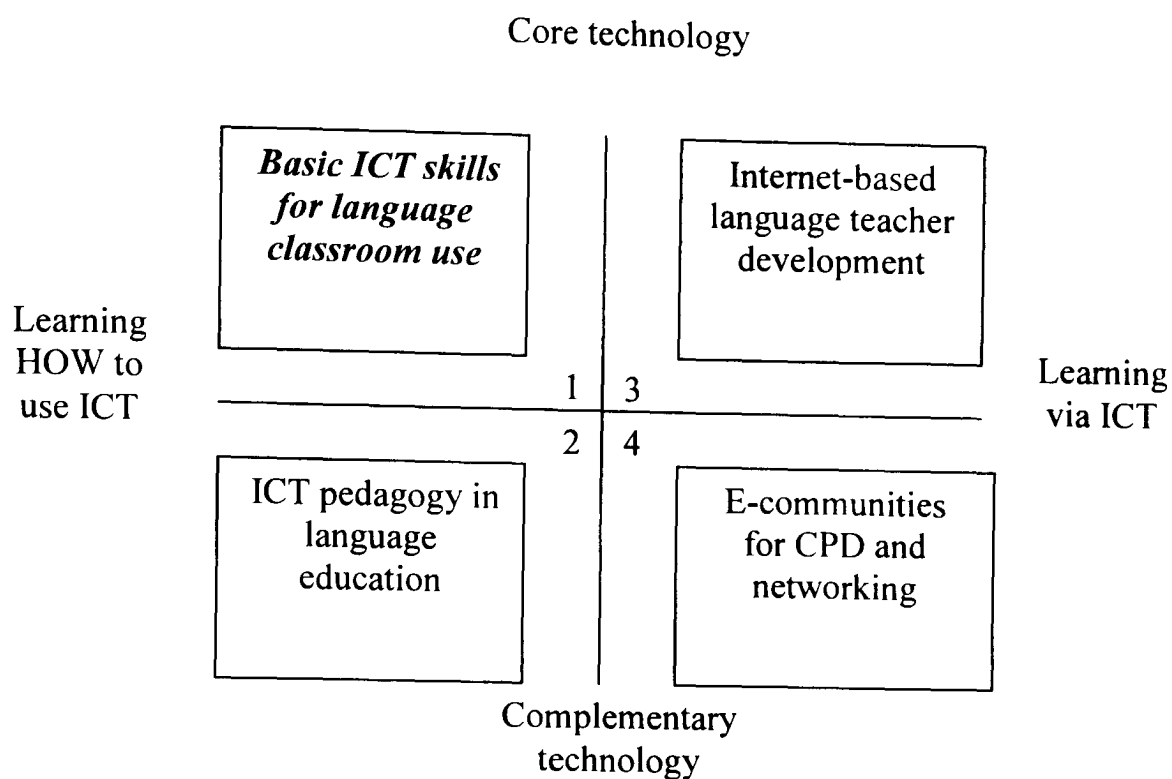


Figure 5.1 ICT categories in language teacher CPD (adapted from Jung, 2005)

EFL teachers in the University mainly acquired basic ICT skills for language teaching (Category 1); a few teachers were trained in general ICT pedagogy; very few had an understanding of ICT pedagogy in language education (Category 2). Basic ICT literacy was still the main content of training courses for EFL teachers; the integrated use of ICT and relevant pedagogy were neglected and in great demand. As a medium for CPD, ICT was mainly used for EFL teachers' self-directed development; Internet-based CPD training programmes were rarely identified (Category 3). The communication among teachers and collaborative CPD was limited and e-communities for CPD and networking (Category 4) were non-existent at the time of the study.

Given the emphasis within the national College English reform on the wide-scale introduction of ICT, we have no reason to be optimistic when most EFL teachers only had very basic ICT knowledge and skills. Since ICT could be much more fully exploited in teacher education (Pearson, 2003; Jung, 2005), teacher educators in China or elsewhere should therefore reconsider the means

by which they conduct teacher training. As discussed in Chapter 2, there were many opportunities for teachers' ICT-based CPD. A good example is a subproject under the eChina-UK project – Nottingham-BFSU (University of Nottingham and Beijing Foreign Studies University) – in which online communities of teacher learners for personal development were built and teachers were identified to have the willingness to engage in experiential exercises online within a learning community (Hall et al., 2007). Other examples can also be found, such as Johns-Shepherd & Gowing's (2007) study on professional learning based on school-to-school networks, which showed that learning networks can be a powerful and democratic form of professional development.

McConnell (2006) argues that learning communities have the potential to foster both cooperative and collaborative forms of learning. Powerful, significant and long-lasting professional development happens 'when teachers engage together to solve real problems and make new meanings for application in real classrooms' (CUREE, 2003, cited in Johns-Shepherd & Gowing, 2007:117). For those responsible for coordinating ICT-based CPD, setting up e-communities and networking for teachers to communicate may be an efficient way to promote collaborative CPD. To stimulate teachers' reflection during their training process is another effective measure to improve the quality of training programmes (Wang et al., 2004; Zheng, 2006). Given that teacher development – in a continuous sense – is inevitably a largely self-directed process, how to stimulate and support teacher autonomy, and prepare them to engage in 'pedagogy for autonomy' (Smith, 2003:2) should also be given careful consideration.

In large-scale reforms similar to those in China, sufficient and continuing investment is a big challenge to the reform planners. How to make use of limited money and reduce the disadvantages of lack of funding is of great significance. Training for teachers that would not cost much would be a good use of money. As discussed in 2.4.3, the cascade training model is an economical way to train more teachers when funding and resources are limited (The World Bank, n.d.).

Just as Pelgrum & Law (2003) suggest, it would be more effective coupled with collaborative support from teachers within the same communities of practice (e.g. a few teachers are trained first and then they provide training to their colleagues within the same institution).

5.5.2 The role change of teachers

This study showed that teachers had a general awareness of the principle that teaching should become more student-centred, in which students would be more responsible for their own learning (the student-centred teaching model required by the reform). The majority of teachers held positive attitudes towards ICT use, which – in the context of self-access use of resources by learners – also has implications for the role of the teacher as instructor. As discussed in 3.2.2, Zheng & Davison's (2008) study indicated that the influence of Confucianism seems to be weakening in the new era with the change of teachers' role in the classroom. However, teachers were not certain about their own ability to meet the demands of student-centred teaching and lacked sufficient ICT knowledge and skills to implement ICT-integrated language teaching. Consequently, the teacher-centred model and exam-oriented teaching and learning still dominated English classrooms.

ICT use in education requires reconsideration of teachers' role orientation (Mumtaz, 2000; Meng, 2005). In ICT-enhanced teaching and learning, the teacher's role becomes more critical and how to help teachers cope with changes of role is of great significance (O'Mahony, 2003; Liao, 2005). Since the advantages of role change should be observable and noticeable to teachers, we need to provide opportunities for teachers to experience the role change. Although the transmission model from experts to teachers still dominates training programmes (Lock, 2006), we could provide training opportunities for teachers in which the training itself is learner-centred; this is because teachers should first experience student-centred learning and be encouraged to reflect in

action and on action (Kolb, 1984) if we want them to get used to their new roles in the student-centred model. As Peng & He (2007) suggest, if teachers are required to teach with ICT, they should be trained how to use ICT pedagogy in ICT-supported training surroundings. At the same time, favourable conditions, such as the availability of appropriate materials must be provided (McGrath, 2007). Since role change is a long process (Liao, 2005; Meng, 2005), teachers also need time to change and need help to change.

5.5.3 Learner autonomy and teacher autonomy

The assumption behind an ICT-based learning environment is that students will have more autonomy. The national reform provided new curriculum requirements, introduced a revised national testing system (CET) and ensured that technologically-enhanced materials were available; at the local level, the University built an Interactive Learning Base (the autonomous learning centre) for students to learn independently; EFL teachers were encouraged to guide and support students in their autonomous learning. The scale of using technologically-enhanced materials, the ICT resources and facilities provided, the specific training of students' learning strategies and the guidance that teachers could provide in autonomous learning all affect learner autonomy. However, it cannot be assumed that students will take responsibility for their autonomous learning (Lim & Chai, 2004). This study identified that students were not ready for autonomy and teachers were not providing the support students needed. As we mentioned in the literature review, because of the deep-rooted traditional (teacher-centred) learning style in China, students were used to gaining knowledge transmitted from their teachers (Wu, 2005); students had little experience in learning autonomously and felt at a loss when they were asked to do so (Hu, 2007); they were viewed as passive learners and lacked the motivation and strategies to adapt to autonomous learning (Xu, 2004). Nevertheless, the specific training of students' learning strategies and the

guidance that teachers could provide in autonomous learning can help improve learner autonomy (Liu & Dai, 2003).

The findings in this study also showed that teachers had little knowledge of autonomy, which is consistent with a study Chen (2006) carried out with a group of Chinese secondary school EFL teachers. This revealed that the trainees expected from the web-based training programmes the capacity to facilitate learner autonomy and reflection. Therefore, CPD facilitators need to consider teachers' needs for knowledge of autonomy when designing specific training programmes. Since learner autonomy and teacher autonomy are interdependent (Little, 1995), teachers need to be autonomous first before they could help their students learn autonomously in an ICT-based environment.

5.5.4 An implementation model

In Chapter 2, I proposed a conceptual framework to analyse factors which affect the use of ICT in the national College English reform (see Figure 2.16). Again, for convenience, this is represented here as Figure 5.2.

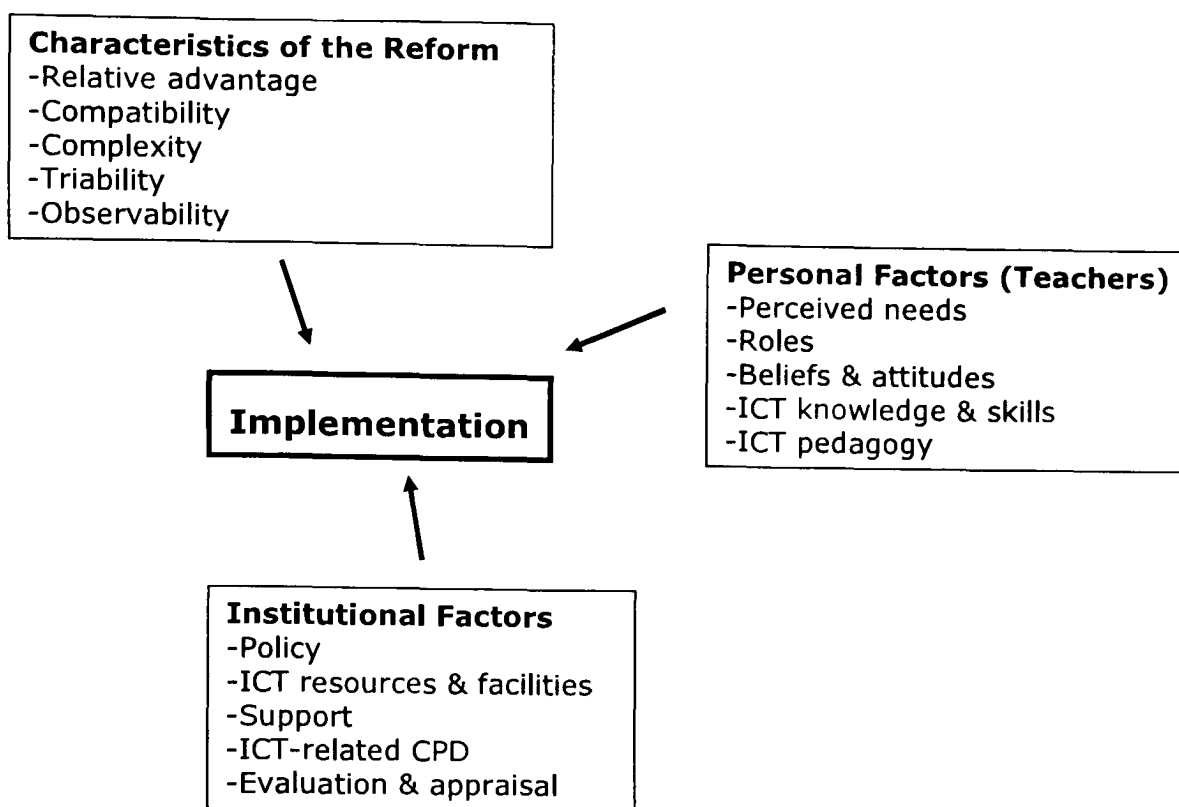


Figure 5.2 Factors affecting ICT implementation in the national College English reform

The findings in this study showed that these three clusters of factors were all important, but they were not equally important. It could be concluded that although teachers play an important role in the implementation of a reform (Fullan, 2001), in top-down educational change/reform they tend to be passive implementers. The features of the reform and the context in which teachers carry out the reform seem to be more critical. What emerges from this research is a hierarchical process of innovation rather than the flatter, more democratic model reflected in Figure 2.16. In the revised model, each level constrains the next down (see Figure 5.3). The top level, the characteristics of the reform, is most important since it influences what kind of policies the local institutions will adopt to meet the requirement of the reform; the overall policies within the institution then influence teachers' attitudes towards the reform and their teaching practices in the classroom.

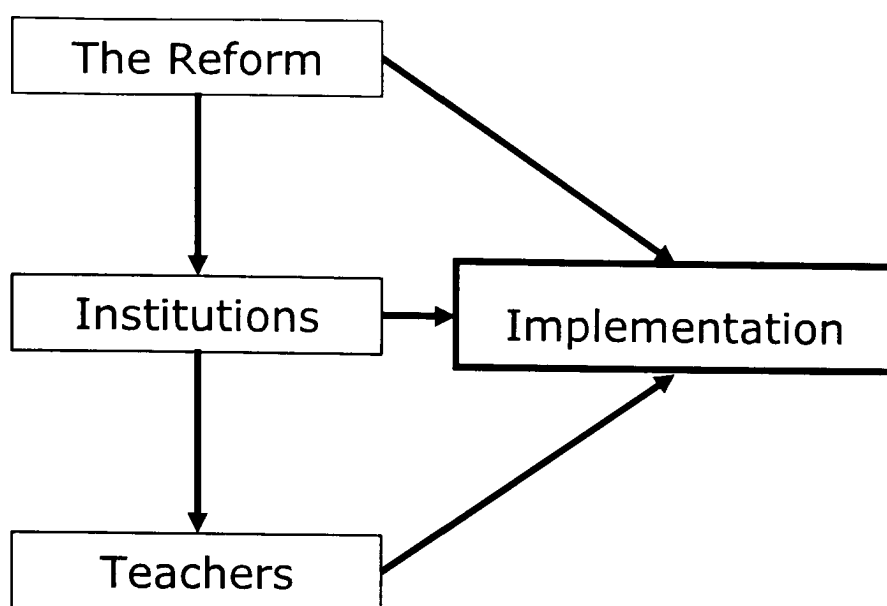


Figure 5.3 Relationships of factors affecting implementation in top-down educational reforms

The single-way of diffusing an innovation from the top to the ground as shown in Figure 5.3, however, is problematic. The problems such as the lack of sufficient ICT resources for teachers and students to use, limited ICT skills grasped by both teachers and students and limited training opportunities for teachers, which were identified on the ground, could not be fed back to the top – the reform planners or policy makers – and remained unsolved. It definitely affected the effective implementation of the reform and delayed the rate of diffusion.

At the early stage of the national College English reform, the MOE was trying to assess the extent to which the reform was operating at the institutional and teacher levels and identified some problems such as that a few institutions paid little attention to the reform and were not ready for it; and the quality of College English teachers was one of the key worries in undertaking ICT-based ELT. However, there is a need to continue research of this kind when the reform moves on. It is of necessity to present a model like Figure 5.4 shown as follows.

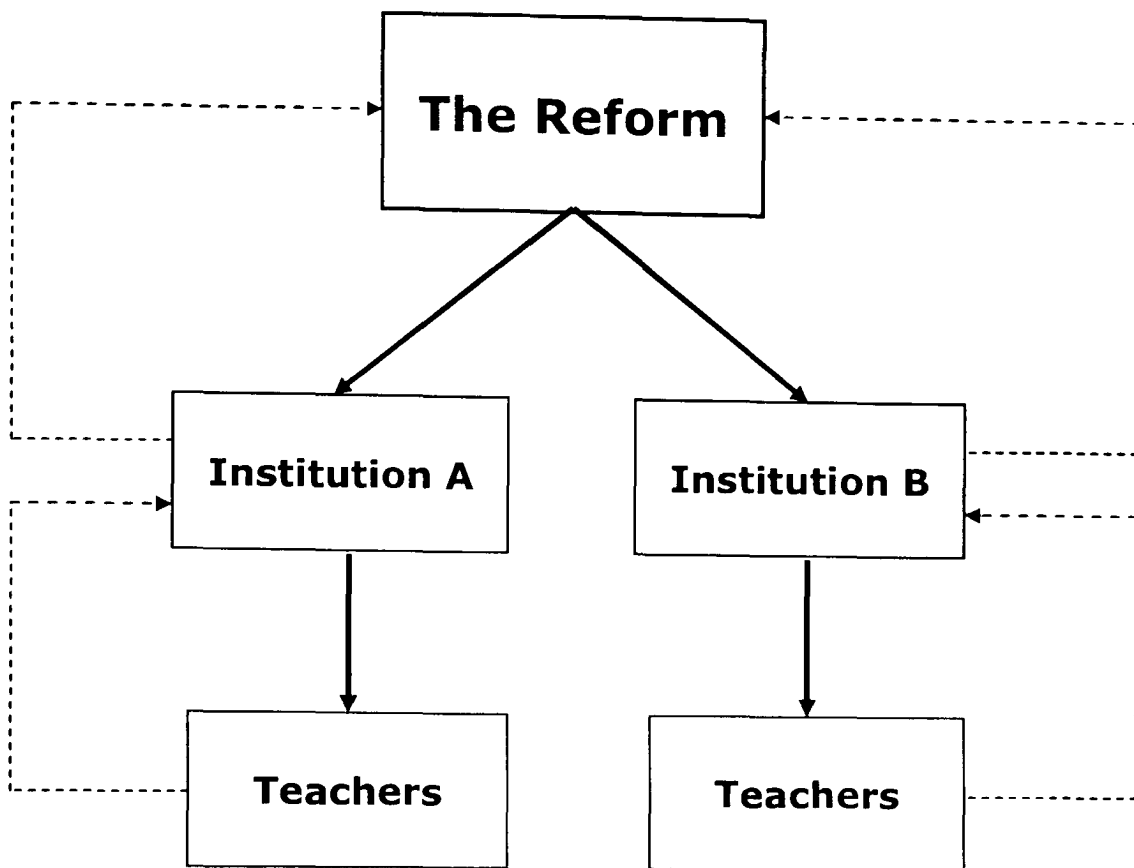


Figure 5.4 An implementation model in top-down educational reforms

Figure 5.4 shows us that the diffusion of a reform is dynamic rather than stable; in a circular process rather than a linear one. After the reform has been passed from the top to the local institutions and then to the key implementers (teachers), there should be an effective channel to transfer teachers' feedback to their institutions so that the managers can make some adjustments; similarly, the difficulties and problems that different institutions have met in the implementation can be fed back to the top level – the policy makers – who can revise/adjust policies correspondingly. This model applies when a reform is in its early implementation stage and informs adjustments or improvements from time to time to help the reform go smoothly.

As discussed in the literature review, there are two linked kinds of innovation: innovation of product and innovation of process (Hall & Hord, 1987). In this study, the required products (ICT-based curriculum requirements, ICT-enhanced materials: teaching software systems, etc.) were in place and appeared to be fit for the purpose of the national reform despite some minor problems with the

software and function. However, lack of sufficient ICT resources for teachers and students in the local university was also a product issue, which hindered the smooth implementation of the reform. The problems in this study also lay in the process, such as lack of appropriate communication channels and a coordinated administration network. As Karavas-Doukas (1998) has pointed out, good communications and a regular flow of feedback during the process of implementation can facilitate the effect of an innovation. Therefore, when looking at the process of an innovation, we should consider whether the products (software systems, nature of the technology which is available, students' experience of using it, the textbooks themselves) are really fit for the purpose of the innovation and how effective these products are in the process of innovation.

As Shi & Englert (2008) argue, in a country such as China, the rapid increase in HE enrolment and institutional amalgamation will obviously have an effect on the implementation of large and wide-scale reforms. The increased number of students in HEIs necessitates more financial and human investment; the merger of colleges and universities makes the administration and coordination more complicated; conflicts will occur when teaching-oriented institutions amalgamate with research-oriented ones. Insufficient consideration on the part of educational planners of existing contextual realities and sustainability is likely to result in unsuccessful classroom practices (Wedell, 2009). The findings in this study showed that the University was not funded appropriately when the enrolment of students was increased and the University was amalgamated with the other two colleges. Therefore, HEIs should be funded at a level which is consistent with the rapid increase in student numbers and the nature of the proposed reform (Liu & Dai, 2003). Policy makers need to foresee the potential problems and make a careful plan before a reform is put into practice. Within local institutions, management should consider how to stimulate teachers' motivation through favourable policies (e.g. the provision of more CPD opportunities). More effective communication networks and higher administrative efficiency can make the implementation smoother.

5.5.5 An ICT-based CPD model

In Chapter 2 (2.4.3), a number of different models for teacher development have been proposed (such as the experiential model, the reflective learning model and the collaborative learning model). These models recognised the value of experience, reflection or collaboration in teacher development but did not specify the use of new technology or fully consider the context in which teachers' professional development can be promoted. Based on the findings of this study, a desirable ICT-related CPD model for EFL teachers is put forward (see Figure 5.5).

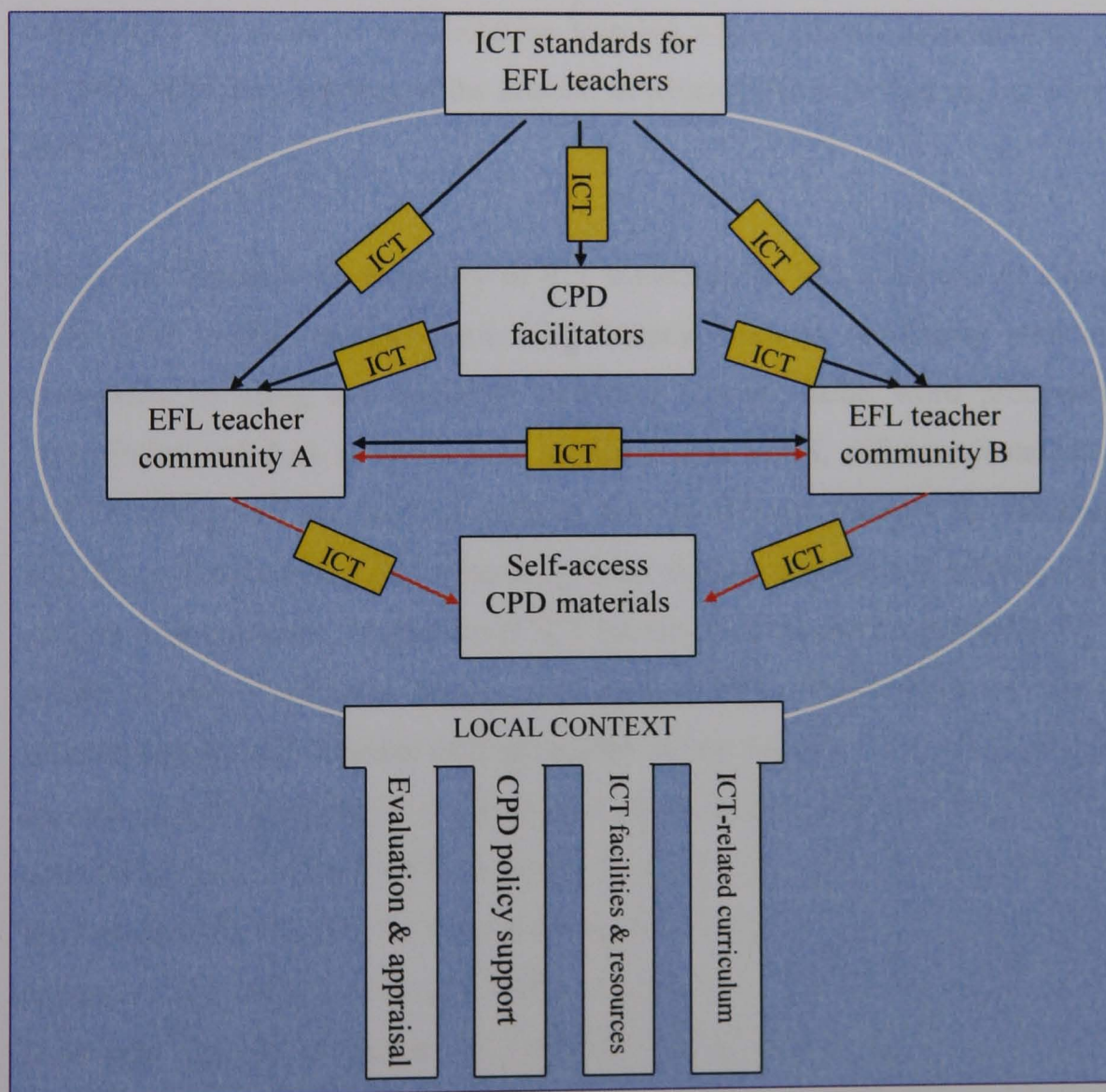


Figure 5.5 An ICT-based CPD model for EFL teachers

As discussed earlier in this chapter, ICT standards for EFL teachers in HEIs were not specified, which resulted in a mismatch between the CPD provided and what teachers needed. In addition, the findings showed that the communication among teachers and collaborative CPD was limited and e-communities for CPD and networking were non-existent. The study also indicated that the institutional context in which teachers received training and undertook self-directed CPD was critical. These unfavourable conditions affected teachers' motivation for professional development.

The model in Figure 5.5 combines both training guided by teacher educators and teachers' self-directed development with the full use of the versatility of ICT. It emphasises the value of collaborative learning within teacher communities. At the same time, key features of the context in which CPD is carried out have been fully considered.

The model assumes the existence of ICT standards for EFL teachers. At a basic level these would include: basic ICT literacy, such as familiarity with and confidence in using the Windows operating system, basic Word processing, PowerPoint and data software such as Excel and SPSS, software installation, and knowledge of the Internet such as how to use the Internet for resources searching, downloading and uploading files, communication via emails, video calls or web cameras. Higher-level ICT literacy (which can be applied in ELT) would comprise software design, professional PPT design, database set-up, website design, and creation of high quality online courses. Two types of CPD are envisaged: compulsory training (the black arrows) and self-directed CPD (the red arrows). In both CPD forms, ICT serves as a critical medium not only for formal CPD but also for e-networking and exchange within communities of practice. The effectiveness of CPD, however, as the model indicates, is dependent on the provision of favourable conditions, such as ICT-related curriculum, ICT facilities and resources, CPD policy support and continuous evaluation/appraisal of and feedback on the adequacy of this provision.

5.6 Conclusion

This chapter has made use of both quantitative data from the questionnaire survey and qualitative data from classroom observation, individual interviews and focus groups to find answers to the three research questions presented in Chapter 1.

The data suggests that the majority of teachers had initially held not only positive attitudes towards but great enthusiasm for ICT use in English teaching and the nation-wide College English reform, but their enthusiasm was waning in the light of inadequate support and training.

Although all the College English teachers and non-English majors of Years one and two had participated in the reform, only a small number of them had used System II – the only system which was used exactly according to the *Requirements*. This indicates that ICT-integrated ELT was limited in the University and traditional ELT still dominated. It also became evident that some teachers were unclear about the *Requirements*, which resulted in lack of consciousness about using ICT in English classes and was likely to cause misuse of ICT in language teaching.

The overall effect of adopting the software teaching systems was reported to be satisfactory in terms of students' listening and speaking competence as measured by CET 4 results. It was reported that the reform stimulated the improvement of ICT competence of both teachers and students. However, the reform challenged EFL teachers to adapt to the new software teaching systems, student-centred classroom teaching and how to guide students in their autonomous learning, which had caused them some anxiety. Moreover, the availability of ICT equipment and resources seemed to be insufficient to meet the needs.

With regard to ICT-related CPD policies and practices, there existed a gap between the current policies in the provision of CPD opportunities and teacher needs. The approach being taken to CPD has not met the needs of most teachers, partly because of their differentiated needs, partly because of the methods used.

The last part of this chapter has presented the implications of this study and made some recommendations for policy. The next chapter will discuss the contributions and limitations of this study and offer some recommendations for further research in this field.

Chapter Six

Conclusions

6.1 Introduction

The previous chapter set out detailed answers to the three research questions which were put forward at the very beginning of the thesis. This chapter begins by briefly summarising these findings and the nature of their contribution to the literature. Limitations of the research are then acknowledged and recommendations made for further research.

6.2 Research questions and main findings

The focus of this research was on EFL teachers' perceptions of CPD, particularly ICT-related CPD policies and practice in the context of the national College English reform in China. The key research questions for exploration presented in Chapter 1 were as follows:

1. What are EFL teachers' attitudes towards the adoption of ICT in language teaching (ICT pedagogy) and the wider context – College English teaching reform in China?

2. What is the profile of the implementation of College English reform at present in relation to the integration of ICT in English teaching?
3. What are EFL teachers' experiences of CPD? How has CPD met their needs in relation to the national reform and specifically ICT use?

The main findings were as follows.

Question 1

In terms of attitudes, the majority of EFL teachers in the selected institution had positive attitudes towards the national reform and showed their willingness to use ICT in language teaching. At the same time, teachers felt that ICT stimulated students' learning and its effects were felt to be positive. However, a number of significant barriers were reported, such as insufficient or inaccessible ICT facilities, limited ICT knowledge and skills, and difficulties in changing traditional pedagogy (see Q.2, below). Some teachers regarded the long-term benefits of ICT integration in English teaching and learning as uncertain.

Question 2

With regard to the implementation of the national reform in the University, some major findings emerged from the fieldwork.

- ICT resources in the University for English teaching and learning were insufficient to meet teachers' and students' needs for computers and access to the Internet and therefore the requirements of the reform. The four new technologically-enhanced material packages were not being thoroughly exploited and their full-scale use was limited. The main restriction on the wider use of these software systems was the serious shortage of ICT-equipped classrooms in the University. In addition, the emphasis on research in the University made it unlikely that there would

be further large-scale financial and human investment in the teaching reform, which reduced the enthusiasm of relevant management staff and EFL teachers for the continuous adoption of the reform.

- Another reason for limited use of ICT in ELT was teachers' lack of expertise and therefore confidence in using ICT pedagogy in language teaching. Although the reform had promoted the improvement of both teachers' and students' ICT literacy, there was a large gap between teachers' existing ICT literacy and the ICT knowledge and skills required to meet the diversified needs of ICT-integrated teaching.
- The reform had made it a necessity for EFL teachers to adjust their roles to meet the needs of computer- and Web-based language teaching and learning. Teachers were required to be teaching organisers, tutors, and teaching administrators in the new teaching model; however, most were not ready to abandon their traditional role as instructor. Moreover, since some students were not used to taking on responsibility for the autonomous learning required by the College English curriculum, teachers felt ill-equipped to guide students in their autonomous learning. In short, teachers felt unable to 'let go' (Voller, 1997) and students to take hold.
- Overall institutional support for the national reform was seen to be inadequate in terms of facilities investment, technical support and opportunities provided for teacher training and professional development (see Q.3, below).

Question 3

In terms of ICT-related CPD policies and practices, there was a significant gap between teachers' needs and the provision available to them. Although CPD opportunities were available at national level, provincial level, institutional level and departmental level, these were still limited. CPD policies were not as

supportive as expected. Moreover, the quality of the perceived ICT-related training programmes was reported to be unsatisfactory. Training focused on ICT skills rather than ICT pedagogy and different levels of knowledge and competence were not considered in the design of the programmes. All these were regarded as constraints on teachers' personal and professional development and on the realisation of the objectives of the national reform.

6.3 Contributions of the research

The first contribution of the study is in the light it sheds on EFL teacher development in Chinese higher education. The study started in 2006 when the national College English reform had finished its research, pilot-study and experimental period. A literature search of articles published since 2000 in the major academic journals on EFL teaching and learning in China found only a small number of papers on EFL professional development (Gao & Li, 2007). Most of these have focused on theories or practice from other countries (e.g. Chen, 2005; Liu, 2005; Zhou, 2005; Xia, 2006; Wang, 2007); few have studied practical issues in China (e.g. Jin et al., 2005; Zheng, 2006; Feng & Zheng, 2006). As discussed in Chapters 2 and 3, although a few research have studies had investigated EFL teachers' development in China, they have tended to emphasise the importance of developing teachers' research ability, or enhancing their subject knowledge (e.g. Zhou, 2002; Liu & Dai, 2003; Gu, 2007). Research on EFL teacher CPD in Chinese HEIs within a reform in which the integration of ICT was highlighted has been extremely limited even though teachers are critical to the success of a reform (Fullan, 2001). This study is the first to look in depth at EFL teachers' professional development needs in the context of the ICT-based national College English reform; it therefore supplements the limited literature on ICT-related CPD for language teachers.

Another contribution of this study is its research design, which took care to involve representatives of the different layers within the reform, namely,

management staff, IT coordinators, technical assistants, teachers and students, and thus provided a wide perspective on the same phenomenon. The research method of classroom observation enabled me to see how EFL teachers integrated ICT in English teaching in natural and real settings and how students were involved in ICT-integrated language learning, and thereby enabled me to check the findings from other research instruments. The use of video recording in a rather resistant Chinese context which is deeply influenced by Confucianism proved to be a powerful tool to record real and rich data in this study. It also added a dimension to classroom observation and made possible an evidence-based record of the extent to which and the ways in which teachers are implementing ICT-based teaching. It will undoubtedly encourage more Chinese researchers to consider the use of video recorders in their own research. Since the data from classroom observation were collected via the researcher's eyes and the data from individual interviews and focus groups were via the researcher's ears, the combination of these two methods helped offset the disadvantages that certain methods have when used in isolation (Tashakkori & Teddlie, 2003) and achieved triangulation (discussed in Chapter Four). Although this is not the first time that EFL teachers' professional development has been studied in the context of a large-scale reform involving ICT (e.g. Zhang, 2007), it is the only study in the Chinese context which has combined both quantitative and qualitative research strategies to explore the implementation of the reform and ICT-related CPD policies and practices in depth and obtain data from such a wide range of those directly involved.

The third contribution made by this study is a desirable ICT-based CPD model (see Figure 5.5) discussed in Chapter 5. Different from those CPD models discussed in Chapter 2 (e.g. the experiential model, the reflective learning model and the collaborative learning model), this model is innovative in that it highlights the importance of combining both compulsory training and self-directed professional development by exploiting the versatility of ICT within communities of practice or e-networking and represents a contribution to knowledge within the area of ICT-based CPD. It offers a framework to EFL teachers on the one hand for their self-directed CPD in ICT-integrated language

teaching, and on the other to teacher trainers or CPD programme developers in designing specific CPD modules to meet teachers' diversified needs.

Fourthly, the study offers insights for other countries who are trying to carry out similar reforms (on a relatively large scale). As discussed in the earlier section (6.2), the findings are consistent with the literature in this research. Since teachers' positive attitudes toward an innovation are important but not enough, appropriate communication channels (Rogers, 1995), overall support including the provision of sufficient facilities and resources (Mumtaz, 2000; Warschauer, 2002; O'Mahony, 2003; UNESCO, 2003; O'Connor & Gatton, 2004), technical support (Williams et al., 2000; Zhang & Yang, 2002; Zhao, 2007), ongoing and systematic CPD policies (Karavas-Doukas, 1998), identification and analysis of teachers' needs (Wlodkowski, 1985, cited in Zhou, 2004; Charalambous & Karagiorgi, 2002; Gu, 2004) are essential to the smooth implementation of a reform. My study revealed that in a particular context (such as large-scale reforms requiring the involvement of new technology), on-going financial and human investment is a vital factor for continued adoption of a reform and influences the rate of adoption. It is suggested that before a reform is put into practice, reform planners need to anticipate issues such as these and consider countermeasures to deal with the problems that may occur.

Lastly, a revised implementation model of innovation (see Figure 5.4) suggested in 5.5.4 revealed that the reform itself is dynamic; the input from lower levels (teachers) can also lead to policy modification at higher levels (institutions and reform planners). The model therefore provides a framework which can help policy-makers better understand the process of the reform, get timely feedback from teachers and local universities and adjust the policy if necessary; so the reform can go smoother in the following stages.

6.4 Limitations of the research

Any academic study has its limitations, no matter how carefully it has been designed (Strauss & Corbin, 1998). Although this study used both quantitative and qualitative strategies to explore answers to the three research questions, it still has limitations, some of which can be addressed in further research.

Limitation in research scale

In an ideal world, it would have been desirable to look at a number of institutions to try to chart the commonalities and variation in the implementation of such a large-scale reform. Initially, I had planned to choose three universities at different levels in different parts of Hunan Province as multi-case studies, but due to limited time and tight budget this proved to be impossible. I had to focus on one institution (see Chapter 4). It should be remembered, therefore, that this study aimed not to generalise findings but to obtain a deeper understanding of the kind of ICT implementation in ELT which the national reform asked for and of the CPD policies and practices experienced by EFL teachers in a particular university. However, I have tried to describe the context in great detail and feel that I have presented a representative picture of that institution so that the reader can make a judgement as to what can be transferred to their own contexts for their research purposes.

Limitation in research samples

One limitation related to the sample of participants chosen for this study is the teacher sample. At the time of the fieldwork, there were two teaching groups teaching College English courses in the University on two different campuses (South Campus and North Campus). Most College English teachers from the North campus were teachers from a former financial college in this province,

which was a separate university before its merger with the case university in 2000 (see 4.3). For historical reasons, these teachers held relatively passive attitudes towards research and were unwilling to be interviewed and observed in their classrooms. Consequently, the teacher sample was a little imbalanced for only a few were from the North Campus. However, the researcher succeeded in recruiting some of this group to participate in the teacher focus group. This helped to serve as compensatory data.

Another limitation came from the management sample: the Director of CED. I had planned to interview the director who had been in that position for more than 20 years. He was regarded as an ideal interviewee for he knew very well the history of the Department, the policy and practice change in ELT and CPD in the past years and the national reform. During my fieldwork period, although I had asked him for an interview many times and he did not refuse me, at the last minute he refused, explaining that he was to resign his position as director. He might have been unwilling to provide his real thoughts or would not want the data analysis to be seen by others even with the promise of confidentiality. Luckily, he recommended a new director to me who had been teaching College English for more than 10 years. However, due to his lack of knowledge of the Department, the interview with the new director of CED did not produce as rich data as had been expected.

As part of the research design, I did not arrange an interview with the Head of School of Foreign Languages since my focus was on College English teachers and College English reform and I had confidence in getting enough data by interviewing the director of CED. In retrospect, I should have conducted this interview because the data emerging from this study showed that the School served as a critical link between the University and CED. The School also played an important role in CPD policies for its staff: its research-oriented evaluation system and support for CED were vital in influencing EFL teachers' attitudes toward the reform.

Limitation in research instruments

The main limitation as far as the research instruments are concerned lies in the questionnaire survey method. As discussed in 4.4.1, the questionnaire consisted of three sections, in which 'Personal Information' was the first part (see Appendix 5). In the survey, teachers were asked to write down their names and contact details and a covering letter in Chinese explained that the purpose of asking for this information was to contact them regarding later classroom observation, interview and focus group. Although it was repeatedly emphasised that their personal identity would remain confidential and they would not be identified by others, and all the data would be stored in a safe and secure location, it seems that a few respondents were still worried about the exposure of their information to others. It can partly explain why the percentages of respondents who chose 'Neutral' to respond to some questions were quite high (20%-30%) in the data analysis (see Chapter 5). The rather high 'Neutral' responses consequently affected the reliability of the data. In addition, most of the questions in the questionnaire were closed questions. In general, closed questions are quick to complete and straightforward to code but there is a risk that the categories might not be exhaustive (Cohen et al., 2000; Bryman, 2004). Although a category of 'Other' was added to the list, I noticed that some respondents just ticked without specifying or simply left the question unanswered, which I had to treat as missing data. The limitation also came from the questionnaire administration process, which may well have affected the quality of responses in the questionnaire. Most teacher respondents completed the questionnaires before or during a staff meeting and this meant that some of the questionnaires were finished in a hurry. Although the few questionnaires that were found to be incomplete were completed later, others may well have been completed without due consideration.

There were also limitations in the interview method. Although I formulated the topics carefully in individual interviews and carried out a pilot study (see 4.5.3), I later realised that I had failed to ask certain key questions. For instance, only a few questions designed relates to collaborative CPD and networking among

teachers, which subsequently turned out to be important in relation to the design of CPD modules. In one interview with management staff, I felt that I did not have total control over the process because of my inexperience as an interviewer.

Based on the limitations discussed above and gaps identified within the literature, further research opportunities can be found in many dimensions such as the development of ICT-related CPD models for EFL teachers, ICT-related CPD policies, the relationship between personal and professional CPD, continuing pre-service, in-service, and post-service training and development. The next section will discuss these.

6.5 Recommendations for further research

Firstly, this study only covered one university. Although the findings might be suggestive of the situation in similar contexts, considering the enormous regional differences in terms of economic development, school culture and educational development in this country it would have been impossible to show a full picture of the national reform and ICT-related CPD policies and practices in this area and in all HEIs in China. Thus, further studies can cover more colleges and universities in different areas at different levels so that a fuller picture of the national reform and the context of EFL teacher CPD can be seen.

Secondly, the four-category model of ICT-related CPD for language teachers (see Figure 2.15 & Figure 5.1) distinguished between two broad roles of ICT in CPD: learning how to use ICT and learning via ICT (as content and media). The model can cover both formal training and informal self-directed development (at individual level or based on communities of practice). Teacher educators can adopt it as guidance for the design of ICT-related CPD training programmes. Future research can be done to validate programmes designed along these lines through more empirical studies of College English teachers and teachers of ESP and EAP.

Thirdly, although the questionnaire survey included questions on teachers' personal and professional CPD and the data that emerged from the questionnaire and interviews both revealed something of teachers' experience in personal and professional CPD, how to combine these two kinds of development to achieve efficient CPD was not considered. Subsequent work might focus on this aspect.

Fourthly, the study only explored EFL teacher's continuing development in the context of ICT use in Chinese higher education; there should be further study on designing an on-going and systematic CPD programme, which covers pre-service, in-service, and post-service training and development, to establish a joint-up PD system which could benefit teachers at different stages and in relation to other aspects of professional practice.

Lastly, the teachers in this study put forward their strong desire for other diversified CPD in addition to that for ICT (see 5.4.3.3). Subsequent work focusing on EFL teachers' overall development needs is desirable to meet the demand for highly-qualified language teachers in HEIs in fast developing countries like China.

6.6 Conclusion

This chapter has reiterated the research questions and key findings of the study. The contributions and limitations of the present study and further research opportunities have also been discussed.

This study explored the implementation of a national reform, College English reform, whose objectives were to improve the learning of English through the use of ICT. The findings suggest that lack of investment impeded the implementation of the reform and limited the rate of further adoption. The College English reform adopted what Rogers (1995) refers to as a classical centralised diffusion system in that its diffusion was top-down with overall

control of decisions by national government administrators. These top-down educational reforms still remain dominant in education systems everywhere. In this kind of diffusion system, educational planners' insufficient consideration of existing contextual realities (e.g. lack of sufficient investment in financial and human terms) in specific colleges and universities will result in a low rate of adoption, even discontinuance of the reform. Therefore, as shown in the implementation model (see Figure 5.4), with the deeper reforms undertaken in Chinese HEIs or those in other countries, reform planners need to take seriously existing contextual realities and see how teachers can be helped to experience the change process positively (both in macro and micro contexts of change) (Malderez & Wedell, 2007).

To sum up, teachers can make comprehensive reform possible but appropriate facilities and resources are essential, relevant professional development is key and overall, on-going support is vital.

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APPENDIX 1

Three Levels of Requirements for Undergraduate College English Teaching

Basic requirements

Listening: students should be able to follow classroom instructions, everyday conversations, and lectures on general topics conducted in English. They should be able to understand English radio and TV programmes spoken at a speed of about 130 to 150 words per minute (wpm), grasping the main ideas and key points. They are expected to be able to employ basic listening strategies to facilitate comprehension.

Speaking: students should be able to communicate in English in the course of learning, to conduct discussions on a given theme, and to talk about everyday topics in English. They should be able to give, after some preparation, short talks on familiar topics with clear articulation and basically correct pronunciation and intonation. They are expected to be able to use basic conversational strategies in dialogue.

Reading: students should generally be able to read English texts on general topics at a speed of 70 wpm. With longer yet less difficult texts, the reading speed should be 100 wpm. Students should be able to do skimming and scanning. With the help of dictionaries, they should be able to read textbooks in their areas of specialty, and newspaper and magazine articles on familiar topics, grasping the main ideas and understanding major facts and relevant details. They should be able to understand texts of practical styles commonly used in work and daily life. They are expected to be able to employ effective reading strategies while reading.

Writing: students should be able to complete writing tasks for general purposes, e.g., describing personal experiences, impressions, feelings, or some events, and to undertake practical writing. They should be able to write within 30 minutes a short composition of no less than 120 words on a general topic, or an outline. The composition should be basically complete in content, clear in main idea,

appropriate in diction and coherent in discourse. Students are expected to be able to have a command of basic writing strategies.

Translation: with the help of dictionaries, students should be able to translate essays on familiar topics from English into Chinese and vice versa. The speed of translation from English into Chinese should be about 300 English words per hour whereas the speed of translation from Chinese into English should be around 250 Chinese characters per hour. The translation should be basically accurate, free from serious mistakes in comprehension or expression.

Recommended vocabulary: students should acquire a total of 4,795 words and 700 phrases (including those that are covered in high school English courses). among which 2,000 are active words. Students should not only be able to comprehend the active words but be proficient in using them when expressing themselves in speaking or writing.

Intermediate requirements

Listening: students should generally be able to follow talks and lectures in English, to understand English radio and TV programmes on familiar topics at a speed of around 150 to 180 wpm, grasping the main ideas and key points and relevant details. They should be able to understand, by and large, courses in their areas of specialty taught in English.

Speaking: students should be able to hold conversations in fairly fluent English. They should, by and large, be able to express their personal opinions, feelings and views, to state facts and reasons, and to describe events with clear articulation and basically correct pronunciation and intonation.

Reading: students should generally be able to read essays on general topics in popular newspapers and magazines published in English-speaking countries at a speed of 70 to 90 wpm. With longer texts for fast reading, the reading speed should be 120 wpm. Students should be able to skim or scan reading materials. When reading summary literature in their areas of specialty, student should be able to get a correct understanding of the main ideas, major facts and relevant details.

Writing: students should be able to express, by and large, personal views on general topics, compose English abstracts for theses in their own specialization, and write short English papers on topics in their field. They should be able to describe charts and graphs, and to complete within 30 minutes a short composition of no less than 160 words. The composition should be complete in content, clear in idea, well-organized in presentation and coherent in discourse.

Translation: with the help of dictionaries, students should be able to translate on a selective basis English literature in their field, and to translate texts on familiar published topics in popular newspapers and magazines in English-speaking countries. The speed of translation from English into Chinese should be about 350 English words per hour, whereas the speed of translation from Chinese into English should be around 300 Chinese characters per hour. The translation should read smoothly, convey the original meaning and be, in the main, free from mistakes in understanding or expression. Students are expected to be able to use appropriate translation techniques.

Recommended vocabulary: students should acquire a total of 6,395 words and 1,200 phrases (including those that are covered in high school English courses and the Basic Requirements), among which 2,200 are active words (including the active words that have been covered in the Basic Requirements).

Advanced Requirements

Listening: students should, by and large, be able to understand radio and TV programmes produced in English-speaking countries and grasp the gist and key points. They should be able to follow talks by people from English-speaking countries given at normal speed, and to understand courses in their areas of specialty and lectures in English.

Speaking: students should be able to conduct dialogues or discussions with a certain degree of fluency and accuracy on general or specialized topics, and to make concise summaries of extended texts or speeches in fairly difficult language. They should be able to deliver papers at academic conferences and participate in discussions.

Reading: students should generally be able to read rather difficult texts, and understand their main ideas and details. They should be able to read English articles in newspapers and magazines published abroad, and to read English literature related to their areas of specialty without much difficulty.

Writing: students should be able to and write brief reports and papers in their areas of specialty, to express their opinions freely, and to write within 30 minutes expository or argumentative essays of no less than 200 words on a given topic. The text should be characterized by clear expression of ideas, rich content, neat structure, and good logic.

Translation: with the help of dictionaries, students should be able to translate into Chinese fairly difficult English texts in literature related to their areas of specialty and in newspapers and magazines published in English-speaking countries; they should also be able to translate Chinese introductory texts on the conditions of China or Chinese culture into English. The speed of translation from English into Chinese should be about 400 English words per hour whereas the speed of translation from Chinese into English should be around 350 Chinese characters per hour. The translation should convey the idea with accuracy and smoothness and be basically free from misinterpretation, omission and mistakes in expression.

Recommended vocabulary: students should acquire a total of 7,675 words and 1,870 phrases (including those that are covered in high school English courses, the Basic Requirements and Intermediate Requirements), among which 2,360 are active words (including the active words that have been covered in the Basic Requirements and Intermediate Requirements).

Source: MOE (2007). *College English Curriculum Requirements*. (official documents): 7-15.

APPENDIX 2

Information on the Case University

The institution selected for study is one of the key universities affiliated with the Ministry of Education (altogether there are 72 affiliated) in central south China. The University is now included in China's '211 Project' (in which the country's 100 key universities in the 21st century enjoy priority in obtaining national funds) and '985 Project' (which was proposed by the former president Jiang Zeming in May, 1998, with the aim to build a set of first-class universities to meet advanced standard and enjoy international prestige in the world for priority investment and construction. The total number was 38 when the research was conducted). From 1963, the University was affiliated with the Ministry of Mechanical Industry. In April 2000, in the readjustment of the management and structure of institutions of higher education of China, this university and another College of Finance and Economics merged to form a new university. In 2002, a Computer College was merged into the University. After the merger with the other two colleges in 2000 and 2002, the University had three separate campuses. At the time this research started, the University had 29 schools and departments and a graduate school and employed 4700 full-time staff; of these 1840 were teachers, of whom more than 950 were professors and associate professors. There were more than 30,000 full-time students, of which more than 6,000 were postgraduate students.

At the time of this research was conducted, the School of Foreign Languages had a staff of 193; 168 were professional teachers (19 professors, 11.31%; 62 associate professors, 36.9%; 81 lecturers, 48.21%; 6 teaching assistants, 3.57%), among whom 89 were teaching College English in two big teacher groups (according to two grades: first year and second year students they were teaching) which were divided further into four sub-groups (according to the South campus and North campus they belonged to).

APPENDIX 3

The Use of Four Software Teaching Systems in the Case University in the Four Years 2004-2007

There were four software teaching systems used in the University.

- **System I.** *Experiencing College English Teaching System*, Higher Education Press;
- **System II.** *New Era Interactive English teaching system*, Tsinghua University Press;
- **System III.** *New Perspective College English Teaching System*, Foreign Language Teaching and Research Press;
- **System IV.** *New Concept College English Teaching System*, Shanghai Foreign Language Education Press.

The four systems had been examined and approved by English experts and high-level educationalists for use in the reform. Three of these computer-based and web-based English teaching systems have been experimentally adopted and used for all non-English major students since then – approximately 5,000 each year.

The software teaching systems were being deployed as shown in the following Table, among which **System IV.** '*New Concept College English Teaching System*' had not been adopted; instead, another set of textbooks and VCD '*College English (New Version)*', produced by the same press: Shanghai Foreign Language Education Press, were used.

Table 1 the Use of College English software teaching systems

Grade	Total No. of students /classes	System I	System II	System III	College English (New Version)
Year 2004	5190/173	22 classes	11 classes	32 classes	108 classes
Year 2005	5160/172	32 classes	13 classes	/	127 classes
Year 2006	5220/174	26 classes	10 classes	28 classes (other 110 only use its VLS textbook & VCD)	110 classes only use its Integrated textbook
Year 2007	5040/168	31 classes	9 classes	127 classes only use its VLS textbook & VCD	127 classes only use its Integrated textbook

* Normally there are about 30 students in each class.

Note 1: Before 2006, students in the University normally took two English courses: ‘Integrated Course or Intensive Reading’, two hours per week; and ‘Listening and Speaking’ course, two hours per week. From September 2006 on, ‘Listening and Speaking’ was reduced from two hours per week to one hour per week because the University started to adopt a flexible credits system, which listed 105 compulsory courses with corresponding credits for students. College English was one of them, but the original 16 credits of it were reduced to 12. Within this new credits system, students were freer to select other courses they liked except the compulsory ones.

Note 2: System II ‘*New Era Interactive English teaching system*’, produced by Tsinghua University Press, was the only system whose textbooks, VCDs, teaching software, learning and teaching platform, and management platform have been fully used in the University. Two courses were undertaken: ‘Reading, Writing and Translating’ (RWT, two hours per week in ICT-equipped classrooms, face-to-face), ‘Viewing, Listening and Speaking’ (VLS, two hours per week in language labs, face-to-face), together with two-hour autonomous learning in computer rooms, where each student had a PC connected to the teaching and management

platform. Altogether six hours were allocated and guaranteed for students under this teaching software system because it was the first software system to be selected for use in this university in its experimental stage. It was natural it had received enough policy-related support and financial support from the University and Tsinghua University Press as well. For instance, the University had invested RMB3, 000,000 *Yuan* (approximately 0.3 million Pounds) and built 7 modern-equipped computer rooms, with around 540 sets of PC for students; each PC was connected to the teaching, learning, and management platform. Teachers could guide students' learning and detect their learning process; IT coordinators could check the use of learning software via teaching and management platform; students were free to practice English reading and listening by themselves for at least two hours per week, for autonomous learning was regarded as a core of College English reform. The specific majors, grades and classes used this system were as follows,

Table 2 The use of System II: *New Era Interactive English teaching system*

Grades	Classes numbers	Majors
2004	11 classes	Chemistry and Chemical Engineering
2005	13 classes	Maths; Software
2006	10 classes	College of Material Science and Engineering
2007	9 classes	College of Material Science and Engineering

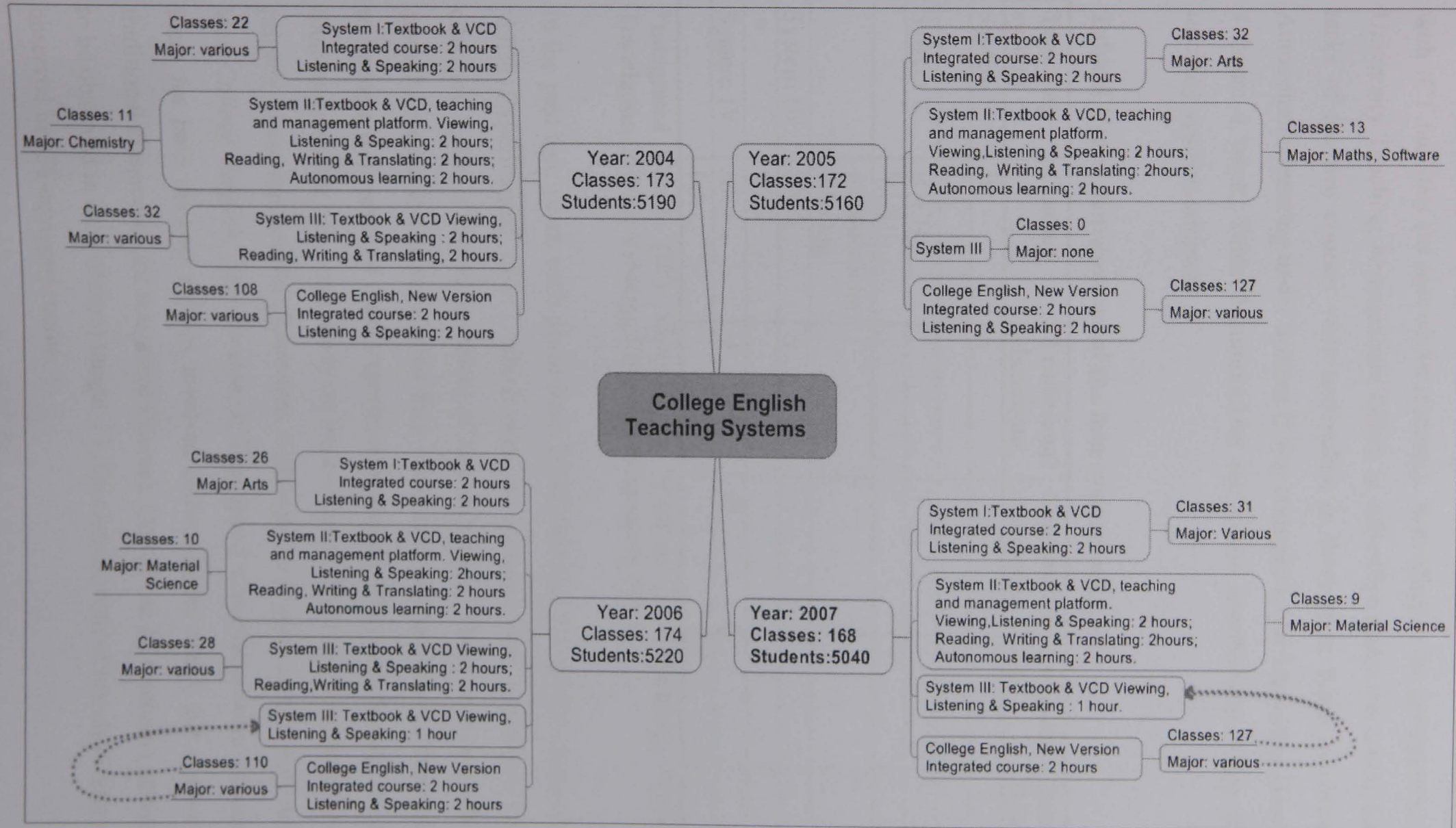
Note 3: System III 'New Perspective College English Teaching System', produced by Foreign Language and Research Press, its textbooks and VCDs of 'Reading, Writing and Translating' (RWT) course and 'Viewing, Listening and Speaking' (VLS) course were only used by two grades, Grade 04: 32 classes; Grade 06: 28 classes. From Grade 06 on, except for those classes who use System I, II, the left classes adopted VLS course under this system, one hour per week; while the textbooks and VCDS of their 'Integrated course' was College English, New Edition (Shanghai Foreign Language Education Press), two hours per week.

Note 4: 'College English, New Version', produced by Shanghai Foreign Language Education Press

The majority of students in all grades use the hardcopy textbooks and VCD of it, 'Integrated course', two hours per week; 'Listening and Speaking', two hours per week. Grade 2006 and 2007 used its integrated textbooks and VCD while used the textbooks of '*New Perspective College English Teaching System*' as its 'Viewing, Listening and Speaking' (VLS) course for 1 hour per week.

Note 5: In different grades, students of different majors from different schools were selected to use the same teaching system. It was the Academic Affairs Office who made the decision that students from which schools should be involved in this system. Sometimes they wanted to see if there was any correlation between students of different majors and the results of teaching the same system.

The specific use of these systems in the University in the past four years was shown in Figure 1. At that time, English teaching was composed of two courses: 'Reading, Writing & Translation' (or integrated course under teaching systems: College English, New Version and New Experience English) and 'Viewing, Listening & Speaking' (or Listening and Speaking). The teaching systems provide textbooks, tapes, VCDs and network for teaching and learning.



In the University, three kinds of classrooms were used for English instruction. 1) traditional classrooms without any ICT facilities (sizes of these rooms varied from 30- to 90-seats); 2) multimedia classrooms with 60-120 seats; 3) language labs with ICT facilities (to seat 60-80 students). According to the arrangement of the University Teaching Arrangement Office (a sub-office under the AAO), teaching tasks of the two courses were undertaken in these three types of classrooms. Autonomous learning under System II was arranged in the Interactive Base for 2-4 hours a week. Table 3 summarizes the venue distributions of the English teaching systems adopted.

Table 3 Venue distributions of the four systems adopted

Teaching system	Courses	Traditional classroom	Multimedia classroom	Language lab	Interactive Base
System I	IC	√			
	LS			√	
System II	RWT		√		
	VLS			√	
	Autonomous learning				√
System III	RWT	√			
	VLS			√	
System IV	IC	√	√*		
	LS			√	

*Integrated Course (IC); Listening & Speaking (LS); Reading, Writing & Translation (RWT); Viewing, Listening & Speaking (VLS)

In the past four years, each grade from 2004-2007 had 2-4 special classes named 'LiDa Experimental class', which was to commemorate a famous Chinese educator: LiDa, a former President of this university. Those freshmen who had passed a special test arranged after their one-month military training were eligible to become a member of these experimental classes. They had priority to choose their majors after two years' study on basic courses. Their teachers, therefore, had priority to use multimedia classrooms. Although the English system they adopted was *College English, New Version*, ICT-equipped classrooms were allocated to them for both the two courses involved (other classes under this system used traditional classrooms for Integrated Course). One of the 12 teachers (who agreed to be observed in their classes) taught 3 LiDa classes, both of her class hours were observed in ICT-equipped rooms.

APPENDIX 4

Teacher Selected for Classroom Observation

Teachers	Gender	Age	Academic title	Years of teaching	Software systems used*
T1	F	30-39 yrs	Lecturer	3-5 yrs	System II
T2	F	40-49 yrs	Associate professor	Over 20 yrs	System I & III
T3	F	26-29 yrs	Teaching assistant	1-2 yrs	System III & IV
T4	F	26-29 yrs	lecturer	3-5 yrs	System I & III
T5	F	30-39 yrs	Associate professor	11-15 yrs	System III & IV
T6	M	Over 50 yrs	Associate professor	Over 20 yrs	System III & IV
T7	F	Over 50 yrs	Professor	Over 20 yrs	System I & III
T8	F	30-39 yrs	Lecturer	11-15 yrs	System III & IV
T9	F	40-49 yrs	Lecturer	Over 20 yrs	System II
T10	F	30-39 yrs	Lecturer	6-10 yrs	System III & IV
T11	M	30-39 yrs	Lecturer	11-15 yrs	System III & IV
T12	F	30-39 yrs	Lecturer	3-5 yrs	System II

***Four software teaching systems:**

System I: *Experiencing College English Teaching System*, Higher Education Press

System II: *New Era Interactive English teaching system*, Tsinghua University Press

System III: *New Perspective College English Teaching System*, Foreign Language Teaching and Research Press

System IV: *New Concept College English Teaching System*, Shanghai Foreign Language Education Press

APPENDIX 5

Survey of English Teachers' ICT Use and Their Attitudes towards ICT in Chinese HE Institutions

CONFIDENTIAL

Part I Personal Information

1.1 Name: _____ 1.2 Name of the institution: _____

1.3 Gender: Male Female 1.4 Age: 20-25 26-29 30-39 40-49 over50

1.5 Contact telephone or mobile: _____ 1.6 E-mail address: _____

1.7 Please indicate your academic title.

Teaching assistant Lecturer Associate professor Professor

1.8 Years of teaching experience: 1-2 3-5 6-10 11-15 16-20 over20

1.9 Do you have a computer in your home? Yes No

1.10 Do you have a computer in your office? Yes No

1.11 Do you use ICT in your teaching? Yes No

1.12 Including the current year, how many years have you been using computers in general?

1-2 3-5 6-10 11-15 over15

1.13 Have you used the following reform systems? If 'Yes', please indicate which.

a. Experiencing College English

b. New Era Interactive English

c. New Perspective College English

d. New Concept College English

If you have used other software systems, please name and describe briefly.

1.14 Have you taken an ICT competency certificate test? Yes No

1.15 If Yes, what certificate do you have at present? What ICT uses were covered in the test (e.g. basic Windows operation, word processing, etc.)?

Part II. ICT use by English teachers

2.1 Please select the following ICT applications or hardware available to you at your work.

- | | | | |
|---|--------------------------|---------------------|--------------------------|
| a. word processing | <input type="checkbox"/> | g. E-mail | <input type="checkbox"/> |
| b. database | <input type="checkbox"/> | h. video conference | <input type="checkbox"/> |
| c. art/graphics software | <input type="checkbox"/> | i. digital camera | <input type="checkbox"/> |
| d. presentation software | <input type="checkbox"/> | j. fax | <input type="checkbox"/> |
| e. spreadsheets (Excel, etc.) | <input type="checkbox"/> | k. scanner | <input type="checkbox"/> |
| f. Internet | <input type="checkbox"/> | l. printer | <input type="checkbox"/> |
| m. real time communication system (MSN, QQ, SKYPE, etc) | | | <input type="checkbox"/> |

n. Other (please specify): _____

2.2 What do you use ICT for in your work context? Please select from the following those you frequently use (you can select more than 1 choice).

- a. File management
- b. Communicate with students via e-mail
- c. Publish my teaching materials
- d. Publish students' work on the Internet
- e. Search for and download resources for teaching
- f. Online discussion with colleagues about teaching
- g. Face to face instruction with some ICT use
- h. Online instructions to remote students
- i. Other (please specify): _____

2.3 Please select the 3 biggest barriers to the use of ICT in your teaching.

- a. Not available at all
- b. inaccessible when needed
- c. extra workload involved
- d. lack of preparation time
- e. lack of skills
- f. lack of appropriate software
- g. cost of using
- h. lack of technical support

2.4 Do you often use ICT resources for your own professional development? Yes No

If Yes, where?

- Office Home Computer room esp. for teachers
Public computer rooms for both teachers and students
Other (please specify): _____

2.5 How often have you had the chance to attend training courses focusing on ICT knowledge and/or skills or ICT in education?

- More than twice Twice Only once Never

2.6 Considering the content of the courses you have taken or plan to take, which were/are most useful (MU), and which were/are least useful (LU)? You can select more than 1 choice.

- | | MU | LU |
|---|--------------------------|--------------------------|
| a. Basic ICT skills (Windows, word processing, etc.) | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Advanced ICT skills (database, graphics, etc.) | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Managing ICT in the classroom | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Information on how ICT contributes to students' learning | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Developing ICT policy | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Using ICT for professional development | <input type="checkbox"/> | <input type="checkbox"/> |
| g. Other (please specify): _____ | | |

2.7 Have you ever tried to teach yourself any ICT skills? Yes No

If Yes, which? If No, Please indicate the reason, and go to 2.9.

2.8 Please select from the following the 3 biggest benefits of your formal or self-taught development in ICT.

- a. it enhanced my ICT skills
- b. it enhanced my knowledge of how to use ICT in my teaching
- c. it changed my attitude towards ICT use in teaching
- d. it allowed me to have useful discussions with other professionals
- e. it helped me to understand the role of ICT in teaching and learning
- f. it helped me to change my classroom practice
- g. Other (please specify): _____

2.9 Please indicate any (other) source of support you have received for using ICT.

- Other member of staff IT coordinator Students Professional journals
 Other (please specify): _____

Part III Attitudes towards ICT use in English teaching

3.1 Please indicate the extent to which you agree or disagree with the following statements about attitudes toward innovation by putting a tick (✓) in the most appropriate box.

(SA=strongly agree; A=agree; N=neutral; D=disagree; SD=strongly disagree)

General attitudes towards innovation:	SA	A	N	D	SD
3.1a- I enjoy trying out new ideas					
3.1b- I seek out new ways to do things					
3.1c- I am usually one of the first to accept something new					
3.1d- I am suspicious of new inventions and new ways of thinking					
3.1e- I feel the traditional way of life and doing things is the best					
3.1f- I find it difficult and troublesome to use new innovations					

3.2 Please indicate the extent to which you agree or disagree with the following statements about using one of the national teaching reform systems by putting a tick (✓) in the most appropriate box. If you haven't used one of these systems, go to 3.3.

(SA=strongly agree; A=agree; N=neutral; D=disagree; SD=strongly disagree)

Views about your participation in the national teaching reform systems:	SA	A	N	D	SD
3.2a- It is a significant episode in my professional development					
3.2b- It is a fruitful experience					
3.2c- It has improved learning among the students involved					
3.2d- I feels nervous in class teaching with ICT					
3.2e- It has added a great deal to my workload					
3.2f- It has involved too much of my time and energy					
3.2g- It has encouraged more interaction with colleagues					
3.2h- It has changed the way I teach					

3.3 Please indicate the extent to which you agree or disagree with the following statements about using ICT in education by putting a tick (✓) in the most appropriate box. (SA=strongly agree; A=agree; N=neutral; D=disagree; SD=strongly disagree)

Your attitudes towards effects of, and use of, ICT in education:	SA	A	N	D	SD
3.3a- Young people are growing up in a world where ICT is pervasive and my university is no exception					
3.3b- The National Curriculum says I have to use computers					
3.3c- My university lays great emphasis on the use of ICT					
3.3d- My colleagues' use of ICT pushed my own use					
3.3e- My students enjoy teaching and learning with ICT					
3.3f- ICT holds exciting possibilities for enhancing teaching					
3.3g- Using ICT is part of how I see myself as a professional teacher					

3.4 In general, how important has ICT been for your teaching in each of the last three academic years? (Scale: 1 - Did not use ICT; 2 - Minor importance; 3 - Moderately important; 4 - Very important)

This Year: (2006-2007) _____ Last Year: (2005-2006) _____ Year (2004-2005) _____

3.5 Compared to three years ago, are you using ICT more frequently or less frequently in the following ways? (LF= less frequently now; SS= stayed the same; MF= more frequently)

	LF	SS	MF
3.5a- Using ICT for class preparation (e.g. handouts, overheads)			
3.5b- Getting students to use ICT during lessons			
3.5c- Getting students to use ICT in their study outside of classrooms			
3.5d- Keeping marks and assessment data			

3.6 Please tick (✓) the best description of your ICT use in teaching.

3.6a- I was using ICT for teaching before most teachers in my college knew what it was.	
3.6b- I was one of the first teachers in my college to use ICT for teaching.	
3.6c- I was not one of the first teachers in my college to begin using ICT for teaching, but used it ahead of most of my colleagues.	
3.6d- I used ICT for teaching later than most of my colleagues.	
3.6e- I was among the last teachers who used ICT for teaching.	
3.6f- I have not used ICT for teaching.	

Thank you for your participation in this study!

APPENDIX 6

Survey of English Teachers' ICT Use and Their Attitudes towards ICT in Chinese HE Institutions (in Chinese)

中国高校英语教师对信息通信技术(ICT)的看法及使用状况调查

第一部分：个人信息

- 1.1 姓名: _____ 1.2 学校名称: _____
- 1.3 性别: 男 女
- 1.4 年龄: 20-25 26-29 30-39 40-49 50 以上
- 1.5 联系电话: _____ 1.6 电子邮箱: _____
- 1.7 职称: 助教 讲师 副教授 教授
- 1.8 从事教学工作年限 (年): 1-2 3-5 6-10 11-15 16-20
over20
- 1.9 请问您家里有电脑吗? 是 否
- 1.10 请问您办公室有电脑吗? 是 否
- 1.11 您在教学中使用 ICT 吗? 是 否
- 1.12 算上今年您使用电脑有多少年了?
1-2 3-5 6-10 11-15 over 15
- 1.13 您使用了以下大学英语教改课程体系吗? 如果是, 请划勾。
- a. Experiencing College English (体验英语, 高教社)
 - b. New Era Interactive English (新时代交互, 清华)
 - c. New Perspective College English (新视野, 外研社)
 - d. New Concept College English (新理念, 上外)
- 如果您还使用了其它网络课程, 请简单说明。
- _____
- _____

- 1.11. 您是否曾参加与ICT能力有关的证书考试? 是 否
- 1.12. 如有, 您目前有什么证书 (如: 计算机二级证书) 并请简要说明本证书的主要内容 (如: 文字处理, Windows操作等)。
- _____
- _____
- _____

第二部分：ICT 使用情况

2.1 请在您工作中可使用的ICT选项旁划勾。

- | | | | |
|-------------------------|--------------------------|-----------|--------------------------|
| a. 字处理 | <input type="checkbox"/> | g. 电子邮箱 | <input type="checkbox"/> |
| b. 数据库 | <input type="checkbox"/> | h. 可视会议系统 | <input type="checkbox"/> |
| c. 图形图画软件 | <input type="checkbox"/> | i. 数码相机 | <input type="checkbox"/> |
| d. 演示软件 | <input type="checkbox"/> | j. 传真 | <input type="checkbox"/> |
| e. 电子制表软件 (Excel, etc.) | <input type="checkbox"/> | k. 扫描仪 | <input type="checkbox"/> |

- f. 互联网 l. 打印设备
- m. 实时通讯系统 (MSN, QQ, SKYPE, etc)
- n. 其它ICT (请说明): _____

2.2 请选择以下您工作中常用的ICT功能 (可选择多项)。

- a. 文档管理
- b. 通过电子邮件与学生交流
- c. 在网上公布我的教学资料
- d. 在网上公布学生作业
- e. 搜索和下载教学用资源和信息
- f. 与同事在线讨论教学
- g. 使用ICT面授
- h. 远程在线授课
- i. 其它 (请说明): _____

2.3 请选择 3 个在教学中阻碍您使用 ICT 的因素。

- | | |
|-------------------------------------|-------------------------------------|
| a. 没有设备 <input type="checkbox"/> | e. 缺少相关技能 <input type="checkbox"/> |
| b. 需要时无法获取 <input type="checkbox"/> | f. 缺乏合适的软件 <input type="checkbox"/> |
| c. 工作量加大 <input type="checkbox"/> | g. 使用费用高 <input type="checkbox"/> |
| d. 缺少时间 <input type="checkbox"/> | h. 缺乏技术支持 <input type="checkbox"/> |

2.4 您使用ICT资源教学自身职业发展吗? 是 否 如果是, 您通常在哪里使用?

- 办公室 在家 教师专用计算机房 师生合用计算机房
- 其它 (请说明): _____

2.5 您获得过几次与 ICT 有关的知识技能或者将 ICT 应用于教育方面的培训机会?

- 超过两次 两次 一次 从来没有

2.6 就您所参加或准备参加的 ICT 培训课程而言, 哪些您认为非常有用(MU), 哪些作用最小(LU)? 请给合适的选项划勾 (可以多选)。

- | | MU | LU |
|----------------------------------|--------------------------|--------------------------|
| a. 基本ICT技能 (如Windows基本使用, 文字处理等) | <input type="checkbox"/> | <input type="checkbox"/> |
| b. 高级ICT技能 (如图形图画, 数据库, 制表等) | <input type="checkbox"/> | <input type="checkbox"/> |
| c. 课堂上使用ICT的方法和技巧 | <input type="checkbox"/> | <input type="checkbox"/> |
| d. ICT对学生学习过程的作用 | <input type="checkbox"/> | <input type="checkbox"/> |
| e. 有关ICT政策发展的信息 | <input type="checkbox"/> | <input type="checkbox"/> |
| f. 使用ICT进行职业发展 | <input type="checkbox"/> | <input type="checkbox"/> |
| g. 其他 (请说明): _____ | | |

2.7 您自学过有关 ICT 的知识和技能吗? 是 否

如果是, 有哪些? 如果否, 请说明原因, 并转到问题 2.9.

2.8 您在所参加的 ICT 正规培训或自学 ICT 技能过程中您认为最大的收获, 请选择 3 项。

- a. 提高了我的 ICT 技能
- b. 增长了如何将 ICT 更好应用于教学的知识
- c. 改变了我对 ICT 用于教学的态度
- d. 使我有机会和其他专业人士进行有益的探讨
- e. 使我更好地理解 ICT 在教与学中的作用
- f. 帮助我改变了课堂教学形式
- g. 其他 (请说明): _____

2.9 请选择您所得到的其他有关 ICT 的帮助 (可以多选):

- 其他教职员工 ICT 教辅人员 学生 专业杂志
 其他 (请说明): _____

第三部分: 对 ICT 在英语教学中使用的态度

3.1 请说明在多大程度上您同意以下有关改革的评价, 请在合适的选项下划勾。

对改革的态度	非常同意	同意	无所谓	不同意	非常不同意
3.1a- 我喜欢尝试新的想法					
3.1b- 我常采用新的方式处理事情					
3.1c- 我通常是最先接受新事物的人中的一个					
3.1d- 我对新发明、新想法持怀疑态度					
3.1e- 我觉得还是传统的生活、处事方式最好					
3.1f- 我认为改革很难而且很麻烦					

3.2 请说明在多大程度上您同意以下有关参加全国大学英语教学改革的想法, 请在合适的选项下划勾。如果您没参加, 请转到问题 3.3.

关于全国大学英语教学改革的想法	非常同意	同意	无所谓	不同意	非常不同意
3.2a- 参加教改对我的职业发展很有意义					
3.2b- 参加教改是一段很有收获的经历					
3.2c- 对参加教改的学生有很大的提高					
3.2d- 运用 ICT 进行教学使我在课堂上感到紧张					
3.2e- 教改很大程度上加重了我的工作负担					
3.2f- 教改占用了我很多时间和精力					
3.2g- 教改使我与同事的交流增多					
3.2h- 教改改变了我的教学方式					

3.3 多大程度上您同意以下有关 ICT 在教育中使用及效果的句子，请在合适选项下划勾。

ICT 在教育中的使用及效果	非常同意	同意	无所谓	不同意	非常不同意
3.3a- 年轻人成长于一个 ICT 普遍应用的年代，我的学校也不例外					
3.3b- 国家课程要求我在教学中使用 ICT					
3.3c- 我的学校很注重 ICT 的使用					
3.3d- 我的同事都在使用 ICT					
3.3e- 我的学生喜欢 ICT 辅助的教与学					
3.3f- ICT 的使用使教学效果得到显著提高					
3.3g- 专业教师需具备在教学中使用 ICT 的能力					

3.4 请说明过去 3 年里在您的教学中使用 ICT 重要性的看法，1 表示没有使用 ICT；2 表示不重要；3 表示一般重要；4 表示很重要)

2006-2007 _____ 2005-2006 _____ 2004-2005 _____

3.5 与 3 年前比较，请说明在以下情形中使用 ICT（此项中具体指计算机和网络）的情况，（LF 表示现在用得少些；SS= 与 3 年前差不多；MF= 较以前使用更频繁）

	LF	SS	MF
3.5a- 使用 ICT 进行备课 (如：准备学生用打印材料，幻灯胶片等)			
3.5b- 课堂上安排学生使用 ICT 进行学习			
3.5c- 安排学生在课堂外使用 ICT 进行学习			
3.5d- 运用 ICT 创建评分、统分系统管理学生成绩			

3.6 请选择以下有关您在教学中使用 ICT 最合适的评价并划勾（只选一个）。

3.6a- 在同事还不知道什么是 ICT 时我就开始在教学中使用 ICT 了。	
3.6b- 我是我们学院最先在教学中使用 ICT 的教师之一。	
3.6c- 我不是我们学院最先在教学中使用 ICT 的教师之一，但比大多数教师使用得早。	
3.6d- 我比大多数同事开始在教学中使用 ICT 都要晚。	
3.6e- 我是最后几个开始在教学中使用 ICT 的教师之一。	
3.6f- 我在教学中没有使用过 ICT。	

您愿意继续支持并参加本研究的其他工作吗？是 否

课堂观测（2 个课时）：愿意 不愿意

个人访谈（30—45 分钟左右）：愿意 不愿意

小组访谈（45 分钟左右）：愿意 不愿意

（参加后续研究的老师将获赠一份小礼品。）

感谢您对本研究的大力支持！

APPENDIX 7

Class Observation Summary Sheet

Teacher name:	Observer:	Date:
Students' level:	Students' major:	No. of students:
Course:	Textbook used:	Time period:
Software-teaching system used:		
Lesson theme:		
Type of ICT available in the classroom:		
Type of ICT used (including software details):		
Description or sketch of room layout:		

APPENDIX 8

A Sample Completed Class Observation Summary Sheet

Teacher name: Y. L.	Observer: HU	Date: 27/09/07 R405
Students' level: Grade 2	Students' major: Computer Science	No. of students: 61
Course: Listening & Speaking of System II	Textbook used: VLS textbook	Time period: 45m (8:55-9:40am)
Software-teaching system used: New Perspective College English Teaching System (Horizon)		
<p>Lesson theme:</p> <p>Unit 2 This is going to be a great Semester!</p> <p>Functions: Talking about various aspects of school life; Making and replying to suggestions; Using exaggerations.</p>		
<p>Type of ICT available in the classroom:</p> <p>For teachers: multi-media equipped teaching systems (PCs, overhead projector, loudspeaker (sound box), DVD ^{player} microphone & earphone, & slide projector)</p> <p>For students: PCs, earphones & microphones</p>		
<p>Type of ICT used (including software details):</p> <p>Teacher: PC, overhead ^{slide} projector, microphone, sound box, CDs of Viewing, Listening & Speaking.</p> <p>Students: PCs, earphones & microphones</p>		
<p>Description or sketch of room layout: (9 rows x 7)</p> <p>There're 72 seats for students. Each seat is equipped with a PC, a microphone with earphone. Each seat is separated by transparent screens from the other, with a number on it. An overhead projector is fixed on the ceiling. Two sound boxes are fixed on the front wall. In front of the room, there is a blackboard and a multimedia education educational platform, with a PC for ^{the} teachers, a DVD player, a slide projector (The teacher can choose any of these equipment for teaching if necessary)</p>		

There is an air conditioner at the corner of the room; 4 electric fans are fixed on the ceiling.

APPENDIX 9

Class Observation Commentary Sheet

Teacher name:		Observer:	Date:	
	Teacher	Students		
Time	Types of ICT	Purpose of ICT use	Types of ICT	Purpose of ICT use
01-05m				
06-10m				
11-15m				
16-20m				
21-25m				
26-30m				
31-35m				
36-40m				
41-45m				

APPENDIX 10

A Sample Completed Class Observation Commentary Sheet

Teacher name: Y.L.		Observer: HU	Date: 27/09/07 Room 405 ⁿ (a language lab)	
	Teacher		Students	
Time	Types of ICT	Purpose of ICT use	Types of ICT	Purpose of ICT use
01-05m	PC, ^{slide projector} microphone, CDs, microphone + earphone } audio	^{plan} (Broadcast) some dialogues and ask Ss to fill in the blanks	PCs, microphones + earphones	Listen to dialogues and fill in the blanks; then discuss answers with T.
06-10m	PC, CDs, M+E. }	Broadcast the dialogues for 2-3 times so that Ss could understand better.	"	Listen for 2-3 times, trying to get as many words as they can
11-15m	"	play a video (Unit 2 II Speaking outg Model 1)	"	Watch a video and fill in blanks.
16-20m	" video	explain new words & phrases, discuss the content of the video with Ss	model 1: You're just going to have to study hard.	Listen to T's explanation & discuss contents of the video
21-25m	"	Replay the video, explain new words and phrases while playing	"	watch the video again, listen to T's explanation of words one by one.
26-30m	"	play another video, show answers to Ss + Speaking out - Model 2	Model 2: which class do you prefer?	Watch another video, do the blank-filling; Speaking (*very limited)
31-35m	"	Replay Video 2 and discuss with Ss. + Dialogue speaking: Model 3	Model 3: Publish or Perish	Watch Video 2 again and ^{get} answers from T.
36-40m	"	Replay + explain	"	Watch again + discuss with T (*very limited)
41-45m	/	Speaking: ask Ss to practice these dialogues in pairs.	/	practice the dialogues in pairs.

Doubts: Students still passive learning in class?
limited interaction with peers and teachers?

APPENDIX 11

Semi-Structured Interview Questions: EFL teachers (supplementary prompts are included in brackets)

Protocol for interviews with EFL teachers

General questions

Could you say something about yourself and your teaching experience?

Key questions

Part A (ICT use)

1. Have you ever used any ICT resources in your teaching? If yes, what are they? If no, why not?
2. What difference has ICT made to your teaching? (How is your teaching without ICT different from that of your colleagues who do use ICT?)
3. Who or what influences your use of ICT in teaching?

(Who or what influences your teaching?)

4. Are there any problems related to the use of ICT? Or have you found any problems related to the use of ICT? Or are there any barriers to the use of ICT in your teaching?

(Do you think you are going to use any ICT in your teaching in the near future? Why or why not?)

5. Have you tried to solve these problems?
6. What do you think is the ideal form to apply ICT in your teaching?
7. How have you gained your knowledge of ICT competence and how do you maintain that competence? (What opportunities have you had to meet these needs – teachers' views of students' needs?)

Part B (CPD)

1. Have you received any support from your university to address your needs/interest in CPD related to the reform? What are they? (Special time allocation/ financial support/ reduced workload/ retained tenure/ others)

2. Have you taken part in any CPD programmes led by your university to respond to the current English reform to improve your ICT skills and ICT pedagogy? If yes, please describe. If no, why not? Given the chance, are you willing to participate? And where would you like the training to be held? (my college/ other college/online/professional training company/other)
3. How do you feel you need to develop professionally in order to be able to do what is now expected of you by this reform? (subject knowledge/ educational knowledge/ teaching ability/ managerial skills/ skills of working with others/ICT skills/ ICT pedagogy/others)
4. What types of CPD activities do you prefer in relation to ICT?

ICT workshops/seminars and conferences/self-taught learning packages
5. What CPD forms will help you implement ICT-enhanced teaching more efficiently and effectively?

APPENDIX 12

A Sample Transcribed Interview with Coding (an extract)

Date of interview: 27/09/2007

Interview conducted by: A (the researcher)

Interviewee: B (Teacher 4)

A: In the following interview, we will talk about ICT in teaching and education, and your own continuing professional development. First of all, could you say something about yourself and your teaching experience?

B: OK. Frankly speaking, you could call me a new teacher. I have been an English teacher for two years. And I think I like my teaching very much. ICT is very effective in my teaching. So I think it gains popularity among our students. The students like it very much because it could make our class very vivid.

} 1.3
+
2.4

A: So being a new teacher, you have adopted ICT in your English teaching for two years.

B: Yes, from the very beginning.

A: That means you have used ICT resources in your teaching. Could you describe what kind of ICT resources you have used?

B: During my preparation for the lesson, I used all kinds of resources online. Anything concerned with my teaching, I will download and have some copies. During my classes, for example, listening and speaking classes, I will use the multi-media, which is very wonderful and valuable for my teaching. Especially as a language teacher, I think our language is clearly explained by some pictures.

2.2

A: How comes?

B: Which will be very effective, I mean, I think my students could easily get some information by the pictures and some videos.

} 1.3
+
2.4

A: Do you mean the internet resources downloaded from the website, and for your PPT presentation?

B: Yes. And I have some classes in the (language) training centre. What's special in the training centre is that you have a very close contact with your students; otherwise you will be punished because they paid a lot of money. Therefore I always have communication with them on line. For example, MSN, QQ, and also frequent use of e-mail.

A: So you have any experiences in communicating with your students via, just as you mentioned, e-mail, MSN, QQ, etc. Have you ever tried to manage your students' exam scores with ICT?

B: That's my pity. Because of the limitations of my equipment, I can not do so. But that's my hope and wish. If I doing so, I think the connection between me and my students would become closer and closer.

2.2

A: OK. Have you noticed any difference between your teaching and those teaching without ICT? I mean, what difference does ICT make to your teaching?

B: At first, my actual teaching is concerned with listening and speaking classes. Make full use of the ICT. But how about the 'extensive reading' classes? The situation is totally different, as you say. We have no room, no chance to use the ICT:

A: Multi-media resources are not available?

B: It is not provided for us. Therefore we have to teach with the blackboard and chalks.

2.2

A: Traditional one?

B: Yes. But in my heart, I think the traditional method also have some other... en, I don't know whether it is bad or not, but that's my own feeling. When I teach in a traditional way, it means I could have a keen observation about my students, whether they are happy or in bad mood, they are active or not, they are passive or not. I will get it from their facial experience. That in ICT classes, for example, in the listening classes, I can't get their facial experience because my students displayed by some numbers on the screen.

1.1
+
2.4

A: Could you tell me who or what influenced your use of ICT in your teaching?

B: What's taken into consideration is equipment, whether the technology is advanced or not. For example, you know, I really hope one day I could use the semi-media and multi-media which will provide me some chance to go surfing online in the classes. 2.2

A: So does that mean the equipment itself influences your choice of adopting ICT? If the classroom is equipped with ICT facilities, you are willing to use ICT in teaching. Is there anybody who just forced you or pushed you to use ICT in your teaching? For instance, your boss, the dean of your school, or the head of your group. 2.5.1

B: Actually I like it out of my heart, which will work for future benefit in my own classes. Nobody forced me to do so. 1.3

A: what about the curriculum itself? Is it because of the national English teaching reform, new software courses are widely adopted in the classroom?

B: I think this also meets the demand of the current situation. I like it.

A: That means nobody or nothing could force you or push you to use ICT; you use it only because of your own interest. Have you ever met some problems in your ICT use?

B: At the beginning of my use, I always had some trouble in using it. I mean I'm not proficient in using this new equipment. And also I think there are not proper occasions for using. I heard that some of our teachers could not make full use of some functions of this equipment. I think our students need some training. 2.3

A: Do you mean, on the one hand, the lack of ICT proficiency or ICT skills caused problems in ICT use?

B: And caused some resources waste.

A: Is that because of your lack of ICT proficiency, ICT skills or techniques?

B: As well as lack of training. 3.2

A: And the students need training as well?

B: To some degree, they need to take notice of some principles. That is to say, they should have some awareness to protect our equipment. Otherwise, there will be some waste.

A: Do you think it is still necessary for English teachers to teach their students how to use some resources?

B: No, it is unnecessary. Because our students in modern times, they have to use computers very well. 1-3

A: You mentioned the lack of ICT techniques or skills just hindered your use. Are there any other barriers in your ICT use?

B: I think I have included all of my excuses in doing so.

A: Since you have met some problems in your ICT-integrated teaching, have you ever tried to solve some problems by yourself?

B: Sure. Once I meet the problems, as I told you at the beginning, that is to say, at the beginning time, I've met some troubles. After classes, I would check all the equipments and ask for help from the some employees to solve such kind of technical problems. And also I will ask my students to take care of these equipments. You know, I think the information online is also included within this system. Therefore I think I make full use of them. 2-5.2

A: At first, you tried to solve the problems by yourself. If you couldn't, you just turn to the IT technicians for help. I mean these problems, according to you, are most of the problems technical problems or ...?

B: Technical problems.

A: OK. Maybe they are problems that relevant offices should solve for teachers. So, in your eyes, what is the ideal form to apply ICT in your teaching?

B: Actually what I am not satisfied is that our equipment, our technology cannot meet our demand for searching information online. I mean, after classes, if I could check the exercises or assignments, homework online, it would be OK, it would be excellent. 2-2
+
2-5-1

A: Do you mean not only in class, but also after class, you wish you could make full use of ICT in your teaching?

APPENDIX 13

Semi-Structured Interview Questions: Management and Administrative Staff (supplementary prompts are included in brackets)

Protocol for interview with Personnel Department Chief

1. May I start by asking about the functions of your unit in this university?
2. Does this unit have a special budget to support teachers' CPD in relation to ICT?
3. Are there specific measures used by the university to identify teachers' needs for the use of ICT in their teaching?
4. What programmes are being offered by the university to assist teachers to integrate ICT into their teaching? Is there any individual support for them?
5. Are there any ICT-related certificates compulsory for teachers in the university? What kinds?
6. To what extent are teachers involved in shaping CPD policies for ICT use in teaching?

Protocol for interview with Dean of Academic Affairs Office

1. Could you tell me about the functions of your unit in the university? How has your unit supported the implementation of National College English Reform?
2. What kind of impact has the reform had on the university? (English teachers, and students)
3. Does the unit have a special budget for the reform? (equipment affordance/ technicians' extra subsidies/training budget for College English teachers, etc.)
4. What support have you supplied for the reform? (such as provision of hardware, web-based courses, multimedia classrooms, ICT training, and related fees for research, campus area network, extra rewards for college English teachers involved in the reform, etc.)
5. What problems and difficulties have you met in the implementation of the reform in relation to ICT use in English teaching? How have you tried to solve them?
6. Does there still exist any gap between the expectation and the actual implementation of the reform? How are you trying to fill in the gap?

Protocol for interview with College English Department Director

1. Please tell me the profile of your department, and the functions of it.
2. Could you describe the current situation as far as the national College English reform is concerned?
3. At the initial stage of the reform, what kind of worries did you have as a director? Did you have any doubts whether the reform could be implemented smoothly?

4. Were any problems anticipated in relation to the use of ICT?
5. How has the reform been implemented? More specifically the use of ICT?
6. How has this unit assisted English teachers to integrate ICT into their teaching and research?
7. What problems and difficulties have you actually met? How were these identified (e.g. teachers complaint or suggest)? How have these problems been tackled? Have they all been solved or are there still problems remaining? If so, how do you plan to tackle these?
8. Is the College English Department responsible for CPD for English teachers?
9. How do you identify their needs and support teachers' CPD, especially in relation to ICT use in teaching?
10. On the whole, what kind of impact has the reform had on the university. English teachers and students?

Protocol for interview with IT-coordinator and language lab technician

1. Could you say something about your work specifically?
2. In your work, have you noticed if English teachers have met any problems and difficulties in using ICT in their teaching? What were they?
3. How about students?
4. How did you help them?
5. Being an IT coordinator/technician, do you have any advice and suggestions for the integration of ICT in English teaching and learning?

APPENDIX 14

ICT Facilities and Resources Available in the University during the Research Period

According to the information supplied by the University Academic Affairs Office, ICT facilities and resources available for teaching at the time of fieldwork were as follows.

Table 1 A summary of ICT-equipped classrooms available for teaching in the University

	ICT- equipped classroom number	Seats available
Main teaching buildings	136	15,777
Interactive Teaching Base	7	528
Language labs	19	1144

There were altogether 136 multimedia classrooms, seating 15,777 students available in the main teaching buildings of the three campuses, which took half of the total number of seats (both in multimedia and non-multimedia classrooms) in the University. They could be used by all subsidiary schools and departments.

Multimedia classrooms in this university refer to the classrooms that were equipped with ICT equipment such as computers, projectors and electric screens. The rooms could be used to demonstrate teaching materials such as PowerPoint presentations, audio and video clips, and could get access to campus network if necessary. The size of these multimedia classrooms was much bigger than the normal ones. Even the smallest multimedia classroom could seat more than 50 students at the same time. Some classrooms were able to seat over 300 students.

Besides these multimedia classrooms, there was an Interactive Teaching Base comprising seven ICT-equipped classrooms. All 528 seats for students were fixed with PCs, microphones and earphones. This was built primarily for the experiment of national College English reform in 2004. The Department of Higher Education, Ministry of Education invested RMB120, 000 *yuan* (12,000 *pounds*) for the

textbooks and software. Since the only system adopted in its entirety was 'New Era Interactive English' produced by Tsinghua University Press, the Press provided a set of software and helped build the teaching and learning system; the rest of the investment on hardware came from the University. As the Dean of the Academic Affairs Office stated, the University altogether invested about RMB3,000,000 *yuan* (300,000 *pounds*) in this base.

The office in charge of the maintenance of ICT teaching facilities and related technical support was the Educational Technology Service Centre. The office is a subsidiary of the Academic Affairs Office. At the time of data collection, the centre had altogether 25 members whose duty was to guarantee the smooth operation of all the facilities equipped on all these campuses. Three members of staff were exclusively allocated to supply IT support for the Interactive Teaching Base.

ICT facilities were also offered by various schools and departments of the University. Some had their own labs and computer rooms to support the teaching and learning activities of both students and staff. These facilities were maintained by technicians employed by relevant schools. In the School of Foreign Languages, for example, there were two labs exclusively built for Business English courses. The College English Department managed 13 language labs out of the total 19 (1144 seats) and used 12 of them (788 seats) in the South Campus, which was operated by the Academic Affairs Office in the past; and another 6 (276 seats) in the North Campus for college English teaching, which was operated and maintained by the Data Management Center. In order to improve the efficient use of the language labs and avoid both institutional and departmental management at the same time, the University decided to assign the operation of the language labs to the College (School) of Foreign Languages. However, the University still supplied financial support for the upgrade of the equipment and further improvement. At the time of fieldwork, each lab was equipped with ICT facilities such as a teacher-controlled computer management system, projectors, screens, loudspeakers, which were suitable for ICT-integrated language teaching. Nine of them were equipped with a computer for each student. Three technical assistants from the School of Foreign Languages worked there full time.

APPENDIX 15

ICT-Integrated Teaching in the University

In 1997, the University, cooperating with China Telecom, established the first online university in China. In the following year, approved by the MOE, the University became one of the first four universities accredited to offer degree courses through distance (online) education in China. The University had developed an IP-based system combining both the Internet and Video conference system to deliver courses to distance education students. The teaching content could be either synchronously accepted by students or retrieved later by students at their convenience. Multimedia teaching classrooms were also established.

In the year 1999, the University began to expand enrolment, which caused great demand for teachers. EFL teachers were particularly in demand for they undertook the task of English teaching for all non-English major students in the University. To deal with the teacher shortage, some undergraduate courses on the campus such as College English, College Mathematics and College Physics began to integrate ICT into teaching using the intranet or campus network. Teachers were lecturing through a campus-based network system in one classroom to several hundred, even one thousand, students located in different classrooms in different teaching buildings, which was termed as the 'one to many model'. The practice at that time was viewed as a great innovative success as it realised the dream of 'teaching as many as possible at the same time'. In addition, it fully exploited the existing excellent teaching and teacher resources and saved resources to a large extent. Although this practice in the University was highly praised and regarded as a model for modern higher education and influenced the practices of other HEIs in China at that time, the teaching effects later proved not to be as satisfactory as expected. In 2002, the Multimedia Centre (later it was renamed by Educational Technology Service Centre) was set up, and the 'one to many model' was replaced by the 'one to one model', in which one teacher taught students face-to-face only in one multimedia classroom.

APPENDIX 16

A Photo of a Language Lab

