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ESP Community in Transition: A Study of ICT Use in a Tertiary Context in Saudi Arabia

A thesis submitted in partial fulfilment of the
requirements for the award of the degree

DOCTOR OF EDUCATION

from

UNIVERSITY OF WOLLONGONG

by

Ibrahim Shaabi

B.A. (English Literature & Applied Linguistics), King Abdul-Aziz University, 1997
M.A. (TESOL), Ball State University, 2004

FACULTY OF EDUCATION

2010

THESIS CERTIFICATION

I, Ibrahim Shaabi, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Education in the Faculty of Education, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged below. The document has not been submitted for qualifications at any other academic institution.

Ibrahim Shaabi

25 June 2010

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LIST OF ABBREVIATIONS

A/V	Audio/Visual
ASM	Activity System Model
AT	Activity Theory
CALL	Computer Assisted Language Learning
CD-Rom	Compact Disk-Read-Only-Memory
CHAT	Cultural-Historical Activity Theory
CLT	Communicative Language Teaching
CMC	Computer Mediated Communication
CSCL	Computer Supported Collaborative Learning
DOS	Data Operating System
EFL	English as a Foreign Language
EGP	English for General Purposes
ELC	English Language Centre
E-mail	Electronic Mail
ESL	English as a Second Language
ESP	English for Specific Purposes
FL	Foreign Language
HCI	Human-Computer Interaction
ICT	Information and Communication Technology
iPod	Portable media player
IT	Information Technology
OCW	Online Cooperative Writing
OHP	Over Head Projector
SFL	Spanish as a Foreign Language
SLA	Second Language Acquisition
TELL	Technology Enhanced Language Learning
TESOL	Teaching English to Speakers of Other Languages
VLE	Virtual Learning Environment
WBI	Web-based Instruction
Web CT	Web Course Tools
WTO	World Trade Organization

ZPD Zone of Proximal Development

LIST OF WEBSITES

- <http://www.bbc.co.uk>
- <http://www.clarityenglish.com>
- <http://www.dyned.com>
- <http://images.google.com>
- <http://smarttech.com>
- <http://www.youtube.com>

ABSTRACT

This research study examines the success of an ESP course as it adopts technology. The context of this study is a public tertiary institution in Saudi Arabia. The focus of discussion in this study is the ICT attitudes and practices of six ESL teachers and an administrator, the changes ICT introduction brought in the ESP teaching and learning environment, and the elements that affect ICT integration in ESP.

Methodology needs of this research suggest the recruitment of case study approach. To serve the purpose of case study, two methods of data collection are used: semi-structured interview with the teachers and the administrator and observation of classroom and computer lab lessons.

Activity system analysis (Engestrom, 1987) composes the analytical framework for this study. Activity system interpretation of the identified themes delineates several systemic tensions within the culture of ICT use in ESP instruction.

Five elements are identified to be significant for the successful transition to ICT in ESP: adequate ICT tools, teachers' professional development, technical support, funding, and planning.

Particularly, the sociocultural factor is found to be of high importance for understanding ICT use in the addressed ESP context. Analysis of the participants' ESP activity systems reveals that ICT transition in the ESP context is hindered by inherited sociocultural obstacles. Oversimplification of the complexity ICT introduced to ESP and failure to understand the importance of community members' relationships impact the success of ICT-enhanced ESP lessons' delivery.

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1. INTRODUCTION

Overview

This research study investigates a tertiary environment in transition as it moves from using conventional teaching/learning tools to ICT (Information and Communication Technology). In this research, a particular environment - teaching English for Specific Purposes (ESP) in a Saudi public institution - is studied in order to: explore ICT perceptions and practices of six ESL (English as a Second Language) teachers and their administrator; examine the changes ICT brought to these teachers' teaching context; investigate the underlying factors affecting ICT use by these teachers; and determine what improvements to ICT practice could be made. The study utilises the case study approach (Creswell, 2003) and employs the Activity System Model (Engestrom, 1987) as its analytical framework.

The significance of this study lies in the fact that effective implementation and use of ICT in ESP instruction is a major challenge internationally. In the Saudi Arabian context, however, there is little evidence of any research being undertaken into this issue. Given that the research site promotes itself as a pioneer and leader in ICT use in language education in Saudi Arabia, the study will provide insights into the process that can be of benefit to others in similar situations.

1.1 Background to the Study

In the 2002 scholastic year, ICT was introduced in the ELC (English Language Centre), a language training unit within a public tertiary institution in Saudi Arabia. The introduction of ICT to English language programs within the ELC was initiated

by the Higher Administration of the institution and supervised by the Administrator of the ELC. Technical support was organised by teams from two departments within the institution: Information Technology (IT) and Audio/Visual (A/V).

One year after the introduction of ICT, it was clearly noticeable that the uptake of the innovation was inconsistent. Some teachers were not very interested in using the new technology. These teachers made occasional use of ICT in their classroom lessons and generally appeared hesitant to integrate ICT in their teaching. Another group of teachers completely avoided using ICT in their lessons. This group of teachers conducted textbook-based lessons in the computer labs instead of delivering computer-based lessons and providing their students opportunities to train on CALL (Computer Assisted Language Learning) programs. In the same context, it was observed that some students were not engaging with the new technology. In CALL lab sessions, students were often seen not practicing the designated activities for the lesson, preferring to chat to other students or play computer games.

These responses risked undermining the potential benefits of ICT in language learning and teaching and could adversely affect the delivery of quality ICT-enhanced ESP instruction, the very reason ICT was introduced to the study context in the first place.

1.2 The Need for the Research

The Saudi government has linked the country's economic success with a policy of greater educational opportunities for a higher percentage of the Saudi people. Saudi Arabia joined the World Trade Organisation (WTO) in 2005 (WTO Press Release, 2005) and as a result, the rate of business has grown rapidly between Saudi private and public sectors on the one hand, and overseas multinational corporations on the

other. The importance of English language in communication has increased in parallel to this business growth.

The existence of professional English language training programs that cater for the needs of Saudi youths is essential to the government's intention of making these young people work-ready. It is the language training programs provided by academic institutions in Saudi Arabia that have become responsible for establishing the various ESP courses that equip these students with their specific language and career needs. Incorporating modern educational technology into these specific language programs is essential for effective linguistic preparation for the future careers of the younger generation who will work in the modern technology environment.

Previous studies that discussed ICT integration in second language education in Saudi Arabia (Abalhassan, 2002; Al-Jamhoor, 2005; Al-Juhani, 1991; Almozaini, 1998; Alrumaih, 2004) have focused on English as a Foreign Language (EFL) or English as a Second Language (ESL) learning and teaching. To date, it has been difficult to find any research that has been done on technology use in ESP instruction in the Saudi context.

In pursuing the broad aims of this research, attention is focused on three main aspects of the ESP environment: investigating the teachers' and the administrator's ICT perceptions and practice; understanding how ICT has changed the context of and around ESP; and, lastly, identifying the elements that affect the success of ICT integration in ESP instruction. The research is also interested in describing how the use of ICT in ESP instruction in the particular study context could be enhanced.

1.3 ICT in Language Education in Saudi Arabia

A historical background of ICT use in Saudi educational context is presented to provide a better understanding of the wider picture. ICT was introduced to language education in Saudi schools from the early 1980s (Alrumaih, 2004). Examples of educational innovations used at that time were audio and video tape players, VCRs, TVs and overhead projectors. In addition, some colleges introduced language (audio) labs which were equipped with audio materials and headsets, used mainly to teach listening and speaking skills (Al-Juhani, 1991).

Later, CALL software programs were introduced to the Saudi educational technology market in the early 1990s by some companies working in the field (Al-Juhani, 1991). In Saudi Arabia, CALL was adopted first by some private educational institutions but only somewhat later by public institutions (Abalhassan, 2002). This late adoption, according to Abalhassan (2002), was a result of the extended evaluation process which public educational institutions in Saudi Arabia usually take before a policy decision is made.

The effectiveness of ICT in language education in Saudi Arabia has been investigated by some researchers who have found that for Saudi schools to keep up with global developments in the field of language education, it is essential that computer technology be integrated into the curriculum (Aljamhoo, 1999; Al-Juhani, 1991; Alluhaib, 1999). Some Saudi researchers in keeping with world trends of blending technology development and content learning have suggested the implementation of web-based instruction in language education programs at higher educational institutions (Al-Jamhoo, 2005; Al-Salem, 2005). For similar reasons, other Saudi

researchers have called for the adoption of online courses and distance learning technology (Al-Arfaj, 2001; Al-Ghonaim, 2005; Al Saif, 2005; Alshehri, 2005).

While a body of research has reported that some Saudi students and teachers generally bear positive attitudes toward ICT integration in language education (Al-Jamhoor, 2005; Al-Shammari, 2007), other studies have reported that some teachers have not coped well with the rapid advance of ICT (Abalhassan, 2002; Alrumaih, 2004; Almozaini, 1998).

1.4 Research Questions

The purpose of this study was to explore the perceptions and practices of six ESL teachers and their administrator during ICT implementation in a Saudi tertiary institution. The three research questions that governed the study in question were:

1. How is the introduction of ICT to ESP instruction perceived by the teachers and the administrator in this particular context and how do their perceptions affect their ICT use?
2. What changes does the introduction of ICT bring to ESP teaching in this particular context?
3. What are the factors that affect the success of ICT integration in ESP instruction in this particular context?

1.5 Approach and Methodology

To address the research questions, a qualitative case study was undertaken in the English language unit within a public tertiary institution in Saudi Arabia at the period of time seven years after new instructional technologies were introduced to the

institution. The methods of data collection included a combination of a series of semi-structured interviews and observations of the teachers' lessons, video recordings and field notes. Six ESL teachers and an administrator in the institution participated in the study.

The study utilised an Activity Theory approach and the Activity System Model (Engestrom, 1978) to capture the complex picture of the implementation of ICT into teaching ESP. This approach allowed analysing the use of ICT as part of a system of goal-oriented activities at both individual level of teacher's practice and at a broader level of the organization on the whole, including the multiple layers of its social and cultural contexts. The analysis of the contradictions within the ESP activity system allowed exploring the social structure of the community of ESP.

1.6 Discussion of the Study Major Terms

The aim of this section is to discuss the meaning of the basic concepts (terms) this study draws from. The general terms used to represent technology use in this study are: ICT, CALL and TELL. Although these terms are used interchangeably in language research (Abu Samak, 2006; Gillespie & Barr, 2002; Rende, 2004), they are not equivalent to each other and do not indicate the same notion. By clarifying the distinction between these terms, this section provides a definition for each of these three terms as they are used in this study. Additionally, a discussion of the meaning of 'ICT integration', as used in this study, is presented.

1.6.1 ESP (English for Specific Purposes)

ESP is a language teaching approach that is designed to meet the specific English needs of the learner in relation to the target context of use. It is designed to provide precise personal/professional language support for adult intermediate/advanced students. ESP is related to a specific discipline and is characterised by a different methodology from that of General English (Dudley-Evans and St John, 1998).

1.6.2 CALL (Computer Assisted Language Learning)

CALL is the most popular term that is used to indicate the overall application of technology in language teaching and learning (Abalhassan, 2002; Alrumaih, 2004, Braul, 2006). CALL was adopted in the TESOL (Teaching English to Speakers of Other Languages) conference in Canada in 1983 to refer to the applications of computers in ESL/EFL education (Chapelle, 2001). Levy (1997) defined CALL as “the search for and study of applications of the computer in language teaching and learning” (p.1). According to Levy (1997) CALL is multidisciplinary, drawing upon research in various fields including Second Language Acquisition (SLA), Sociology, Psychology, Cultural Studies, Applied Linguistics, and Computer Science.

Three phases of CALL were identified by Warschauer (1996): behaviouristic, communicative, and integrative. According to Warschauer (1996), each historic phase of CALL has different features; however, these phases overlap and are interwoven and interrelated. First, behaviouristic CALL (1970^s - 1980^s), was practiced on a mainframe computer and was informed by the grammar-translation and audio-lingual theories of language teaching and learning. Structuralist grammar was the language view that characterised behaviouristic CALL. The focus in behaviouristic CALL was

on drill and practice to achieve accuracy. Second, communicative CALL, (1980^s - 1990^s), was practiced on personal computers and was informed by the Communicative Language Teaching (CLT) theory of language teaching and learning. Cognitivism (a mentally constructed system) was the view of language that characterised communicative CALL. The focus in communicative CALL learning was on communicative exercises to achieve accuracy and fluency. The third phase of CALL suggested by Warschauer (1996) was integrative CALL, the 21st century CALL. CALL in this phase incorporated the Internet and multimedia software. At this stage, CALL is informed by the Content-Based theory of language teaching and learning. Socio-cognitive is the view of language characterising integrative CALL. The focus of integrative CALL is on authentic discourse to achieve accuracy and fluency.

Other researchers, like Bax (2003), argued that the third phase of CALL reported by Warschauer (1996) does not yet exist. Bax (2003) suggested three different phases of CALL. He called them restricted, open, and integrated CALL. According to Bax (2003) although ‘open’ CALL is currently used, educators should work to “attain a state of normalisation in which the technology is invisible and truly integrated” (p.13).

1.6.3 TELL (Technology Enhanced Language Learning)

In the 1990s, due to the growing possibilities offered by the internet and communication technologies in first/second language acquisition, CALL moved beyond the use of computer software programs to encompass the use of the internet and web-based tools. Consequently, the term TELL appeared (Dudeney & Hockly, 2007). This new use of technology has encouraged ESL/EFL teaching to expand its

interest in the multimedia approach. A number of researchers support this shift because it reflects the actual current use of digital technology. For instance, Rende (2004) suggests that the use of the acronym 'TELL' is more accurate since 'TELL' represents a broader concept of technology use. Levy (1997) highlights this change by saying that "the move from 'computer' to 'technology' shows a broadening out of the field and a feeling that a computer is just a part of the many technologies that are being used in language learning today" (p. 81).

Neither TELL nor CALL have a clear or specific theoretical background for language learning and teaching, rather they depend mainly on theories of language acquisition (Alrumaih, 2004). Egbert and Hanson-Smith (1999) stated that technology use in language learning is not based on a theory of its own but is based on language learning theories; so as technology develops, the theories of technology use in education do not. This is also supported by Miech and Mosteller (1997) who pointed out that "computers themselves do not possess theories of learning: computer programmers and educators, consciously or unconsciously bring those theories to the task" (p. 61).

It is necessary, therefore, when introducing the use of technology in FL teaching/learning to discuss language acquisition theories. Teachers who want to use CALL and TELL appropriately have to be aware of second language acquisition theories because both technology approaches are based on these theories. In this study, teaching approaches and pedagogies used by the teacher participants in their technology-based ESP lessons will be investigated (Chapter 5).

1.6.4 ICT (Information and Communication Technology)

ICT generally refers to technology as tools of modern invention and can be used in many different fields, whereas CALL and TELL refer to the applications of technology specifically in language education.

In this current study, the term ‘ICT’ is used to represent the use of computer-related technology included in each of CALL and TELL for language learning/teaching purposes. This involves the integration of CALL programs and the interactive whiteboard, in addition to the incorporation of the internet resources (websites and web tools), CD-Rom, and software applications (e.g. word processing and slide show) into language education. Therefore, non computer-related technologies such as audio and video players, TVs, and over head projectors (OHP) are not involved in the definition of ICT in the current study.

1.6.5 ICT Integration

In general, there is a widespread lack of a clear-cut definition for ICT integration (Condie, 2009). The term is commonly used over most fields including language education without defining its exact meaning as an approach, although sometimes it is defined in terms of its tools and/or purpose. One such definition of ICT integration in education is “using the computers and other technology to improve learning, productivity, and performance” (US Department of Education, 1996, par. 1, cited in Georgina & Olson, 2008, p.1).

A more effective definition needs to encompass the many purposes and huge array of applications now involved in technology use. This study recognises the complexity of ICT integration in education so that for a teacher to be able to integrate ICT

effectively, he/she has to have competence to “design, develop, control, use, and assess technological systems and processes” (Shackelford et al, 2004, p.7). It is this latter definition which this study leans on to provide a yardstick for the sense of the term “ICT integration” for the purposes of its research. While it is not the intention of the present study to describe “ICT integration” in any definitive way, it should be understood that the study is built on the assumption of the meaning of ICT integration in the comprehensive sense of Shackelford et al’s (2004) definition.

1.7 Organisation of the Study

The body of this study is divided into eight chapters. These chapters are organised as follows. Chapter 1 provides an outline of the study including the contextual background of the research. In this chapter, the major issue and need for this study is identified and the rationale for the research is framed. Next, a brief picture about the early importation of technology to language education in the Saudi context is introduced. This is followed by a presentation of the research questions. The chapter concludes with discussion of the major relevant terminology.

Chapter 2 includes a summary of selected literature on the main issues of the study. First, the role of ICT in each of general education, language education and ESP instruction is explained. Second, the importance of the transition to ICT-enhanced learning environment worldwide and the conditions for successful transition is briefly explained. Third, the factors that affect the success of ICT in education and in language education are clarified in detail. In this chapter, previous studies are summarised and assessed and relevant issues are highlighted.

Chapter 3 introduces the analytical framework the research is based on, presenting, in detail, the conceptual background of the Activity System Model and establishing the reasons it has been chosen to underpin the study.

Chapter 4 documents the research methodology used to conduct the study. This chapter starts with listing the research questions, followed by describing the research design, the research context, the research participants, data collection, and data analysis procedures. The chapter concludes with a discussion of the suitability of the research design to deal with the questions, and indicates steps taken to strengthen the trustworthiness of the methodology.

Chapters 5, 6, and 7 present and discuss the results of the analysis of the data in such a way as to systematically address the research questions of the study. Chapter 5 reports the findings drawn from participants' profiles and discusses the participants' ICT perceptions and ICT use in ESP. Chapter 6 continues the research results with the findings on the impact of ICT introduction and portrays the changes and tensions ICT has caused in the research environment. Finally, the elements of ICT success are described in the findings of Chapter 7 to reveal what improvements to ICT practice could be made.

Chapter 8 brings all the threads of the study together by providing an overview of the research findings, summarising the thesis findings, and highlighting the value of the sociocultural approach in the study. Chapter 8 discusses the research limitations and suggests some ideas for future research derived directly from the findings. A list of recommendations for teachers of ESP and administrators of language institutes is

provided. A closing statement summarizing the argument of the thesis completes this chapter.

At the end of the thesis there is an extensive reference list of the literature that served as primary sources of comparative research for this study: books, journal articles, conference papers, reports, and websites. Necessarily, also at the end of the thesis is a series of appendices including: the research approval letter issued by the Human Research Ethics Committee at the University of Wollongong, the invitation E-mail message for participants, the participants' consent form, the interview questions for each of the teachers and the administrator, and a sample of an individual case analysis for one of the study participants.

This dissertation has been made strictly according to the prescriptions found in the University of Wollongong High Degree Research (HDR) Handbook (2009). The referencing system in this study adopts the referencing system of the American Psychological Association (2001).

2. REVIEW OF RELATED LITERATURE

Overview

The purpose of this chapter is to review the literature related to the roles played by various factors relevant to the transition to ICT-enhanced language education. The identified literature covered in this chapter begins with the most general through to the most specific. The significance of ICT in education in general, in language education, and in ESP instruction respectively, is briefly presented. Next, an argument about the nature of the transition from a conventional to a technology-enhanced language education environment is established. This is followed by an in depth discussion of the factors that affect ICT integration in both education and language education.

The selection of the literature was shaped by the purpose of looking for key factors that underpinned effective language teaching. Consequently the literature review is not intended to provide a comprehensive overview of all areas of ICT but only those related to the most important parts of the research problem.

2.1 The Role of ICT in Education

ICT has the potential to enhance learning and teaching (Demiraslan & Kocak Usuel, 2008), and such a motivation is used by many educational institutions around the world to increase their development (Bransford et al, 2000). ICT is perceived to have some advantages in education including: assisting students' self-expression; facilitating learner-learner and learner-teacher communication; and encouraging self-directed learning (Bruce & Levin, 2001).

There are other advantages in adopting ICT in education, perceived by Hall (1998) as: learning variation, learning individualisation, immediate feedback, interactivity, management of teacher's time, and work saving. Reasons for teachers to utilise ICT in the classroom were described more broadly by Bransford et al (2000): bringing a real-world experience and learning tasks into the classroom; providing scaffolding to allow students to participate in cognitive activities; providing students with opportunities to receive individualised feedback; building communities of interaction that include students, parents, and teachers; and expanding opportunities for professional teacher development.

Six further reasons can be added for making use of ICT in teaching: responding to external requests (parents' pressure) for ICT inclusion and administrators' expectations of teachers' use; stimulating learners' motivation and interest; using the advantages of technology; relieving physical fatigue from teaching; simplifying the search for and preparation of the subject materials (Baek et al, 2008).

2.2 The Role of ICT in Language Education

The role of ICT in language education has been reported even more in the literature than general education (Almekhlafi, 2006; Becker et al., 1999; Bell, 2001; Evelyn & Oliver, 1987; Gips et al., 2004; Jiang and Ramsay, 2005; Murray, 2005; Warschauer, 1996). However, before looking at the role of ICT in language education, the complex nature of ICT's role needs to be identified. A seminal study by Taylor (1980) sets out understanding of the role of ICT in education. According to Taylor (1980) ICT can play three basic roles in education and language education: a tutor, a tool or a tutee. As a tutor, ICT is able to provide instruction, evaluate students' responses, and decide

the next stage to which a learner can proceed, such as the case of interactive multimedia software (CALL program). As a tool, ICT can be used to facilitate learning and understanding. For instance, in software applications such as Microsoft Word it can be used as a tool for text writing and for group editing; similarly, PowerPoint can be used as a tool for visual explanation and lesson enhancement; and Excel applications can be used as a tool for displaying examples and for problem solving. As a tutee, ICT is programmed by the user and is told what the user needs to know and how to function for that purpose (Taylor, 1980). This function assumes the user can control the software and is very applicable to design. The interest of this study involves the investigation of the use of ICT primarily as a tool, as informed by the theoretical framework of the study, Activity theory (Engestrom, 1987).

The use of ICT in language education including foreign language (FL) instruction, has developed from the earliest stages in audio tapes, word processing, and CD-ROM (Becker et al, 1999; Evelyn & Oliver, 1987) to internet browsing, online interaction with peers and people of similar interests using Computer Mediated Communication (CMC), and other forms of technology such as iPod and MP3 (Murray, 2005). The early use of ICT, according to Evelyn and Oliver (1987), was not seen as an essential part of the curriculum but rather was identified as supplementary, except in composition writing, where intensive integration of word processing software took place.

It is therefore not surprising that recent research reports that language education has a higher rate of ICT use in the classroom than other academic disciplines (Bell, 2001; Becker et al, 1999). Language teachers were also reported as the most frequent, on an annual basis, to have their students use the computer in class time (Becker et al,

1999). A survey, conducted on 4083 U.S. teachers to explore their use of ICT, indicated that teachers of subjects such as Science, and Math by comparison are less frequent users of computers than language teachers (Becker et al, 1999).

The explanation of this higher rate of use can be seen in the several advantages of ICT deployment in FL instruction. Among these is ICT's proven ability to improve the overall language skill of FL students. A study on United Arab Emirates' EFL classes reported that using CALL approach has a significant effect on students' progress (Almekhlafi, 2006). Moreover, two groups of elementary students were formed to examine the effect of CALL approach on students' overall performance: one group studied the curriculum using the textbook and the other group studied the same curriculum using CALL program (Almekhlafi, 2006). Almekhlafi (2006) found that users of CALL outperformed the non-user group. Almekhlafi's explanation of this finding was that students with higher computer skills were more motivated to learn language through technology. The implication of Almekhlafi's (2006) explanation could be seen as another advantage of ICT use.

Building a rapport between teachers and learners is another advantage of using ICT in FL instruction. An attempt to examine the effectiveness of CMC in facilitating communication between learners and their teachers was conducted by Jiang and Ramsay (2005). In a university course of Mandarin as a second language, Jiang and Ramsay (2005) recorded audio files including activities based on the weekly lesson topics, and posted them on the discussion board of the course website using Web CT. The two researchers instructed their students to listen to the content of the files by the end of each week, respond to the activity in each audio file, record their reflection and upload it to the discussion forum. Later, either of the two researchers listened to the

students' recordings and provided feedback to each student by E-mail. Students' recordings remained posted on the discussion forum until the end of the semester which allowed students to observe their own progress. The study found that ICT has the potential to enhance communication between learners and teachers and reduce learners' anxiety.

However, a number of disadvantages of ICT use in language education have also been identified. These include the relative high cost of ICT tools and a potential harm caused to the fairness of education especially when low budget schools and low-income students cannot afford ICT facilities (Gips et al., 2004). This notion applies to the whole spectrum of education not only language education (Gips et al., 2004). Another specific shortcoming of ICT in language education is its limited ability to address all language skills equally. CALL, although assisting in acquiring some language skills such as reading, and improving language areas such as vocabulary, falls short in listening and speaking skills (Warschauer, 1996). However, since Warschauer's (1996) research this limit has been continually improved by exploiting EFL online listening and speaking chat websites (Levy & Stockwell, 2006; Mustafa, 2001), showing that applications of ICT are still being discovered.

An additional downside of ICT in language education is its restricted capacity to handle unexpected situations such as lack of direct response to students' questions or lack of perception of the content of a written summary the way a human teacher does (Warschauer, 1996). This limitation of ICT is related to the computer's restricted artificial intelligence (Lai, 2006); especially that computers with human-like interaction ability do not yet exist (Blin, 1999). The implications of this confirm that the teacher's role cannot be replaced by technology. However, ICT is shown to be

particularly useful and valuable in language education despite its high cost, uneven distribution, and limitations.

2.3 The Role of ICT in ESP Instruction

ICT has the potential to enhance ESP teaching and learning. Researchers have reported that CALL programs offer ESP learners opportunities to practice specific academic/occupational language skills (Flowerdew, 1995; Mustafa, 2001; Shamsudin & Nesi, 2006). Other researchers have found CMC effective in encouraging oral discussion, improving writing skills, enhancing students' motivation, nurturing cooperative learning and facilitating cross-cultural awareness (Al-Jarf, 2004; Al-Salem, 2005).

Shamsudin and Nesi (2006) examined the effect of CALL in an ESP preparatory course for Computer Science major students at a technology university in Malaysia. The study found that using CALL in the ESP course motivated the students to: explore specialised websites; interact with people of the same field through synchronous/asynchronous communication; and encouraged students to practice conferencing, online discussion and blogging.

The role of ICT and CALL in ESP instruction was also highlighted by Flowerdew (1995) when he researched the effect of CALL programs in a job-seeking skills course for students at Hong Kong University of Science and Technology.

Flowerdew's (1995) study demonstrated a practical example of how CALL can be applied to the ESP context and investigated the role students and employers can play in the design of CALL software.

A third researcher, Chiu (2004), underlined the role of CALL in ESP instruction by examining the effect of online learning in an aviation training program for Chinese trainees. This study indicated the importance of the internet and web-based tools in delivering effective ESP instruction.

Mustafa (2001) emphasised the role of ICT in ESP teaching by testing the capacity of a multimedia CALL program to enhance pronunciation and oral communication skills of students enrolled in an ESP course at Jordan University of Science and Technology. Mustafa (2001) concluded that the effect of CALL programs in developing students' oral and pronunciation abilities is significant. Mustafa (2001) emphasised that CALL cannot only be used to teach some language skills, but in fact it can assist in teaching most language skills including oral interaction and pronunciation.

In summary, the discussion of the literature has established that the use of ICT, including CALL, is vital in ESP instruction (Chiu, 2004; Flowerdew, 1995; Mustafa, 2001; Shamsudin & Nesi, 2006). Although ICT/CALL approach was initially utilised as an experimental tool in the context of these four ESP studies, its positive impact on teaching and learning implied that it can be a fundamental tool for the success of ESP instruction. ICT has the potential to expand ESP training by enabling both the teachers and students to go beyond the limits of conventional learning materials to make contact with the world outside the classroom walls (Engeström, 1987). ICT offers ESP teachers and students two different opportunities by “linking the participants by network or system” and “by enable[ing] an activity to have an object that would otherwise have been impossible to grasp” (Kuutti, 1996, p. 35).

This current research underlined the significance of ICT and CALL for ESP which has been emphasised in the ESP research. In fact, when discussing the status of ICT in the context of this current study (section 5.3.1), it will be argued that success of ESP instruction can be determined by the participants' ICT perceptions whether ICT is a fundamental or supplementary (additional) tool.

2.4 Transition to ICT-enhanced Learning Environment

A great deal of educational research highlighted the fact that education is currently in a transition era (Barak, 2007; Shane & Wojnowski, 2005). Research emphasised that many educational institutions are in the process of moving from conventional teaching/learning approaches to the information age approaches including ICT (Shane & Wojnowski, 2005). Teachers and administrators are at the heart of this transition since they are directly responsible for implementing ICT in educational curricula. For many teachers and administrators transition to ICT-enhanced learning environment is not easy (Barak, 2007) and takes time (Shane & Wojnowski, 2005).

The research to date suggested that positive perceptions, proper synthesis and smooth incorporation in lessons; full access to resources (funds, time, and supporting personnel); and technical support all are essential conditions for successful technology transition in a range of educational settings (Barak, 2007; Hayes, 2007).

The following sections of this chapter focus on this key issue and examine the major factors that impact ICT use in education and language education. The importance of such an examination relies on the fact that ICT-based educational contexts share common features and they are therefore affected by similar factors. It is anticipated

that the factors that influence the integration of ICT in education are similar to those factors influencing ICT integration in language education including ESP.

2.5 Factors Affecting Successful ICT Integration in Education

Five factors are highlighted in the reviewed literature as substantial in affecting the success of ICT integration in general education. These factors are classified as institutional, personal, technological, pedagogical, and sociocultural. This classification has been adopted after Byungho (2003) and Al Saif (2005) in their examination of the elements that influence instructional technology integration in general tertiary education. Byungho (2003) grouped the factors that predict the level of ICT integration by university teaching staff at a US university into four categories: institutional support, technological, personal, and social (Byungho, 2003). Similarly, Al Saif (2005) sorted the factors that influence the success of Web-Based Instruction (WBI) in a Saudi university into five categories: institutional, technological, pedagogical, personal, and cultural.

The present study draws on Byungho's (2003) and Al Saif's (2005) categorisation in organising the literature about the factors: first into the factors affecting successful implementation of ICT in education generally, and later in language education specifically. The factors are recognised in the present study as: the institutional factor including elements the institution is required to provide for supporting the use of ICT. The second category, the personal factor, has to do with the individuals involved, their ICT attitudes and perceptions. Next, the technological factor is related to ICT characteristics, such as relative advantage, difficulty of use, and compatibility with the personal and professional goals of users. Fourth, the pedagogical factor is associated

with teachers' educational background and computer skills. Finally, the sociocultural factor describes individuals' interactions within ICT environment. This involves formal and informal norms and customs that regulate the relationships between the individuals involved in ICT integration.

These five factors are listed below (Table 2.1) according to their frequency of citation in the literature from most cited (institutional) to least cited (sociocultural). Table 2.1 develops these factors into their elements and organises the literature that is relevant to each element. The five categories and the related elements are adopted from the work of Byungho (2003) and Al Saif (2005) and are based in the investigated literature closely related to this study.

Table 2.1 Factors affecting successful ICT integration in education

Factor	Elements	Studies
Institutional	Training	Beggs, 2000; Gulbahar, 2007; Marrack, 2006; Mwaura, 2003; Pina, 2005; Strudler & Wetzel, 1999; Tondeur et al, 2008
	Funding	Beggs, 2000; Gulbahar, 2007; Hew & Brush, 2007; Parker, 1996; Pelgrum, 2001; Pina, 2005; Rogers, 1999; Strudler & Wetzel, 1999
	Technical support	Al Saif, 2005; Beggs, 2000; Parker, 1996; Pina, 2005; Tondeur et al, 2008; Rogers, 1999
	Time for materials development	Lim & Khine, 2006; Mwaura, 2003; Parker, 1996; Rogers, 1999
	Planning	Hew & Brush, 2007; Tondeur et al, 2008
	Evaluation	Gulbahar, 2007; Hew & Brush, 2007
	Incentives	Mwaura, 2003; Pina, 2005
Personal	Attitudes and perceptions	Al Saif, 2005; Hew & Brush, 2007; Inan, 2007; Li, 2007; Lim & Khine, 2006; Marrack, 2006; Paraskeva et al, 2008; Strudler & Wetzel, 1999

Factor	Elements	Studies
	Confidence and comfort in using ICT	Paraskeva et al, 2008; Groves & Zemel, 2000
	Certainty about the role of ICT	Parker, 1996
	Frequency of ICT use by teacher colleagues	Beggs, 2000
Technological	Relative advantage to the curriculum content	Beggs, 2000; Byungho, 2003; Mwaura, 2003
	Advantage over traditional methods	Beggs, 2000; Mwaura, 2003; Gulbahar, 2007
	Ease of use	Beggs, 2000; Mwaura, 2003
Pedagogical	Technological skills and experience in producing effective ICT activities	Gulbahar, 2007; Hew & Brush, 2007; Inan, 2007; Lim & Khine, 2006; Marrak, 2006; Parker, 1996; Strudler & Wetzel, 1999
	Understanding the role of ICT	Lim & Khine, 2006
Sociocultural	Collaboration between individuals and departments	Hew& Brush, 2007; Marrack, 2006; Lim & Khine, 2006; Rogers, 1999; Tondeur et al, 2008

One of the problems with imposed categorisation is the imprecise boundaries between categories. For instance, it is difficult sometimes to separate the personal factor from each of the pedagogical and the technological factors because they are in fact interrelated.

Building the five factors into a framework to compare the reviewed literature is the purpose of this literature review. The identification of the factors responsible for successful ICT integration in general education and in language education is believed by the researcher to be the pivotal point or key for effective transition to ICT in ESP.

2.5.1 The Institutional Factor

The fundamental role of educational institutions in establishing, implementing, developing and evaluating ICT has been underlined by many researchers (Byungho, 2003; Jacobson & Weller, 1988; Mehlinger & Powers, 2002; Moore et al, 1998; Rossberg & Bitter, 1988; Schrum, 1995). An overview of the literature reveals two groups of institutional elements can be made: the most frequently and the less frequently cited. Training, funding, and technical support are emphasised by the literature in that they are the most frequently cited as well as the most widely applicable to various educational settings and geographical locations.

In particular, initial and ongoing ICT training for teachers and students is strongly emphasised in the literature (Beggs, 2000; Gulbahar, 2007; Marrack, 2006; Mwaura, 2003; Pina, 2005; Strudler & Wetzel, 1999; Tondeur et al, 2008). Continuous ICT professional development for pre-service teachers is widely regarded a condition for successful ICT integration (Strudler & Wetzel, 1999).

ICT funding is reported as another substantial element in promoting ICT integration (Beggs, 2000; Gulbahar, 2007; Hew and Brush, 2007; Parker, 1996; Pelgrum, 2001; Pina, 2005; Rogers, 1999; Strudler & Wetzel, 1999). Sufficient funding helps to allocate effective ICT infrastructure (Beggs, 2000). In contrast, the literature pointed to insufficient funding as potentially leading to a shortage in basic ICT tools (Pelgrum, 2001) which eventually hampers effective ICT use.

Technical support is indisputably held to be crucial for the success of ICT integration (Al Saif, 2005; Beggs, 2000; Parker, 1996; Pina, 2005; Tondeur et al, 2008; Rogers,

1999). Conversely, insufficient technical support was documented as negatively affecting teachers' incorporation of ICT as in US elementary schools (Rogers, 1999).

Less cited institutional elements can be assumed to be less important in general education and include: time for material development, planning, evaluation, and incentives. Allocating an adequate amount of time for ICT materials' development is regarded as a quality determinant of lessons (Mwaura, 2003; Parker, 1996; Rogers, 1999). The institution's duty to provide sufficient time for teachers to prepare digital teaching materials is also found to influence the attitudes toward WBI implementation by American university teaching staff (Mwaura, 2003). Teachers' difficulty in completing ICT-based lessons is directly related to insufficient preparation time given to them to design how to incorporate ICT-based lesson materials (Lim & Khine, 2006).

The provision of an ICT general plan and integration guidelines by the institution was noted by fewer researchers (Tondeur et al, 2008). An effective ICT plan was described as one with a vision of integration that unites the views of administrative and teaching staff (Hew & Brush, 2007). Establishing a cohesive ICT procedure that sets comprehensible objectives and explicitly describes the means to achieve these objectives was seen as a way to encourage authentic ICT integration (Bryderup & Kowalski, 2002, cited in Tondeur et al, 2008).

Another less cited institutional element is continuous evaluation of ICT, regarded as a necessary administrative responsibility to facilitate ICT integration, and which Gulbahar (2007) claimed should involve evaluation of ICT tools, strategies, and outcomes.

An additional institutional element is incentives' provision for teachers which was considered an institutional responsibility for promoting ICT incorporation in university courses (Mwaura, 2003). Although teachers' incentives were recognised by Pina (2005) as important, he reported they are considered the least important by university officials.

While evaluating the literature categorised in this fashion according to important/well-cited and less important/less-cited institutional elements, it should be noted that the researcher is not endorsing this consensus of opinion. In fact, later discussion of the research results will contrast to the ranking of these factors. In the literature of effective ICT use this ranking is used in this study for the purpose of reviewing existing research and to establish a comparison for the study's findings.

Organizing the influencing elements according to their frequency in the literature of general education is only applied to the institutional factor because of the vastness of the literature relevant to it. However, it is not applied to the remaining factors.

2.5.2 The Personal Factor

The personal factor in general education involves four elements found to be substantial in the literature on ICT effectiveness. These elements are: users' ICT attitudes, users' ICT confidence and comfort, users' certainty about the benefit of using ICT, and the influence of teacher colleagues' use of ICT.

Users' attitudes, perceptions, motivation, and interest were found to be key by a significant number of studies (Al Saif, 2005; Hew & Brush, 2007; Inan, 2007; Li, 2007; Lim & Khine, 2006). Teachers' reluctance in using ICT was found to be an obstacle for ICT integration (Lim & Khine, 2006). Personal confidence and comfort

in using ICT was found to be important among Greek secondary school teachers (Paraskeva et al., 2008) and among American university faculty (Groves & Zemel, 2000). Certainty about the role of ICT in enhancing learning and teaching was identified by Parker (1996) as significant in affecting ICT integration in teachers' preparation courses at American colleges. ICT frequency of use by teacher colleagues was cited by Beggs (2000) as supportive although ranked in his study less important than other elements for effective ICT use in general education.

2.5.3 The Technological Factor

The role of the technological factor in ICT integration was identified as influential by many researchers. The technological factor involves a number of elements including: relative ICT advantage to the curriculum content, and compatibility of ICT with course goals (Beggs, 2000; Byungho, 2003; Mwaura, 2003); the general ICT advantage over traditional methods (Beggs, 2000; Gulbahar, 2007; Mwaura, 2003, Rogers, 1995); and the particular advantage of ICT ease of use to students and teachers (Beggs, 2000; Mwaura, 2003).

2.5.4 The Pedagogical Factor

Effective technology-based lessons are dependent on teachers' ICT skills and experience (Gulbahar, 2007; Hew & Brush, 2007; Marrak, 2006; Parker, 1996; Strudler and Wetzel, 1999). These skills include teachers' ability to find educational materials online, ability to keep pace with changes in instructional technologies, and keyboarding skills (Inan, 2007; Parker, 1996). Teachers' understanding of the potential role of ICT in the classroom was also found important to effectiveness since

misunderstanding the role of ICT by teachers is a constraint for ICT integration (Lim & Khine, 2006).

2.5.5 The Sociocultural Factor

The general relationships between interested parties (administrative staff, teachers, students, and IT technicians) and the level of cooperation in ICT use, particularly between teachers themselves, is a direct indicator of technology's success/failure because of its dependence on community communication for effective ICT use (Hew & Brush, 2007; Marrack, 2006; Rogers, 1999; Tondeur et al, 2008). Group discussion and peer-support were suggested by Parker (1996) as effective ways to encourage and structure teachers to share their ICT experiences. Teachers' not sharing their practice experiences was considered one reason for the failure of ICT integration (Lim & Khine, 2006).

In summary, the reviewed literature of education in general identified many elements as significant in determining the success of ICT use. Training, funding, and technical support are the most emphasised institutional elements in the reviewed literature.

Personal attitudes, technological applications, teachers' skills, and the organisation of communication are also often reported and counted fairly important in the literature of general education.

However, it should not be thought that successful ICT integration in education depends on a single factor or a few elements (Byungho, 2003). Factors are more complex than researchers often assume (Baek et al., 2008) which indicates that the co-relationship of these factors, as previously discussed, is under researched.

As the literature review moves from discussing the role of ICT education in general to discussing the role of ICT in language education in particular, the argument for a framework based on balanced holistic analysis of factors for successful ICT use will continue, and while claiming pre-eminence for the same five factors, these factors will be further refined by the literature review of language education.

2.6 Factors Affecting Successful ICT Integration in Language Education

To further focus the literature review on the research topic, the literature on language education is examined and classified into similar categories as those used in the discussion in the previous section about general education. Later in this study, when discussing the data and to identify the factors affecting ICT integration in ESP instruction, the same five categories will be implemented.

Examination of the factors influencing successful ICT integration in the literature of language education revealed that frequent emphasis is given to the same five factors that have been highlighted in the general education research: institutional, personal, technological, pedagogical, and sociocultural. However, particular elements associated with each factor and their emphasis differ (Table 2.2).

Table 2.2: Factors affecting successful ICT integration in language education

Factor	Elements	Studies
Institutional	Training	Albirini, 2006; Almozini, 1998; Brault, 2006; Chen, 2006; Gillespie & Barr, 2002; Jones, 2001; Kessler, 2007; Kim, 2003; Timucin, 2006; Zapata, 2002
	Planning	Alrumaih, 2004; Chen, 2006; Jones, 2001; Kim, 2003; Timucin, 2006; Zapata, 2002

Factor	Elements	Studies
	Funding	Abu Samak, 2006; Albirini, 2006; Al-Kahtani, 2001; Alrumaih, 2004; Braul, 2006; Gillespie & Barr, 2002
	Technical support	Abalhassan, 2002; Al-Kahtani, 2001; Alrumaih, 2004; Braul, 2006
	Facilitating the transfer of ICT experiences	Braul, 2006; Gillespie & Barr, 2002; Timucin, 2006
Personal	Attitudes and perceptions	Albirini, 2006; Al-Jamhoor, 2005; Braul, 2006; Chen, 2006; Lee, 2000; Rajabi, 2001
	Certainty about the role of ICT	Braul, 2006; Chen, 2006; Kim, 2003; Lam, 2000
	Language proficiency, age, gender,	Al Shammari, 2006; Ayres, 2002; Gillespie & Barr, 2002; Weishar, 1997
Technological	Relative advantage to the curriculum content	Abu Samak, 2006; Albirini, 2006; Almozaini, 1998; Chen, 2006; Gillespie & Barr, 2002; Lam, 2000
Pedagogical	Technological skills and experience in producing effective ICT activities	Abalhassan, 2002; Al-Kahtani, 2001; Almozaini, 1998; Alrumaih, 2004; Chen, 2006; Kim, 2003
Sociocultural	Collaboration between individuals and departments	Abalhassan, 2002; Braul, 2006; Hsu, 2006; Jones, 2001; Liu, 2006; Pugh, 1997

Comparing Table 2.1 (Factors affecting successful ICT integration in education) with Table 2.2 (Factors affecting successful ICT integration in language education), indicates that although the tables share similar elements, the literature of language education (Table 2.2) includes fewer elements than those of education (Table 2.1). In fact, Table 2.2 includes 11 influencing elements whereas Table 2.1 includes 17. The difference in the number of elements can be explained by the different content and method of language learning/teaching than to other school subjects. In addition, the order of importance of the elements in the two tables differs. For instance, funding

was found the second most important (most frequent) element for successful ICT integration in education, yet it appeared less important (less frequent) in language education. Additionally, the element of ICT planning was not very significant in the literature of general education while it was recognised as the second most significant element in language education.

In language education, the same five factors reported previously have been confirmed relevant by recent research in facilitating/preventing effective use of ICT in language education (Abalhassan, 2002; Albirini, 2006; Al-Jamhoor, 2005; Al-Kahtani, 2001; Alrumaih, 2004; Al Shammari, 2006; Ayres, 2002; Brault, 2006; Chen, 2006; Gillespie & Barr, 2002; Jones, 2001; Kessler, 2007; Kim, 2003; Lam, 2000; Lee, 2000; Rajabi, 2001; Timucin, 2006; Weishar, 1997). These factors and the related elements are listed in order according to the frequency of their appearance in the literature starting with the most frequently cited down to the least.

2.6.1 The Institutional Factor

Similarly to general education, the major factor considered in ICT use in language education is the institutional factor. Broadly this implies that the role the institution plays largely determines the extent to which ICT integration can be successful (Pina, 2005). The important elements related to the institution's role have been clearly pointed out in the reviewed literature. These elements include the provision of training, planning, funding, technical support, and facilitating the transfer of experience among teachers.

Above all, teachers' training was the most frequent institutional element underlined in the literature of language education (Almozaini, 1998; Brault, 2006; Gillespie & Barr,

2002; Jones, 2001; Kessler, 2007; Kim, 2003; Timucin, 2006; Zapata, 2002). Notably, this was also consistent with the findings of the literature about ICT in general education (Beggs, 2000; Gulbahar, 2007; Mwaura, 2003; Pina, 2005; Strudler & Wetzel, 1999; Tondeur et al, 2008). The research recognised ICT training as a parameter that differentiates skilful and poor-performance teachers (Zapata, 2002). EFL teachers at college level in Taiwan identified ICT teacher training as the most important institutional element directly determining the success of internet use (Chen, 2006).

ICT planning was the second most important institutional element for successful ICT integration in language education (Chen, 2006; Alrumaih, 2004; Jones, 2001; Kim, 2003; Timucin, 2006; Zapata, 2002). The possession of a comprehensive ICT plan and clear ICT objective becomes more important in language education than general education. Surprisingly, ICT planning was not considered very significant in the reviewed literature about ICT integration in education and was only cited by a few studies (Hew & Brush, 2007; Tondeur et al, 2008).

In language education, lack of ICT planning was regarded one of a number of elements adversely affecting ICT integration (Zapata (2002). According to Chen (2006), administrators and policy makers bear a crucial responsibility of establishing an ICT plan that sets priorities and predicts the needs of learners and teachers.

Involving the teachers in ICT planning is emphasised more in the literature of language education than it is in general education (Kim, 2003; Zapata, 2002). Jones (2001) believed that ICT integration in language education cannot be regarded merely a technological process; rather teachers' involvement and commitment is crucial to successful ICT integration. Similarly, Timucin (2006) showed by research evidence

that even when the importance of an ICT plan is recognised, teachers' participation throughout all implementation stages is determinative for success.

The findings of Timucin (2006) were drawn on his examination of the institution's role in the success of CALL integration into a university EFL preparatory course in Turkey. Timucin (2006) found some faults in CALL planning by the university administration; first, the university administration did not pay enough attention to teachers' and students' perspectives so teachers and students did not feel their roles in CALL incorporation were important. Second, the university administration was not explicit with EFL teachers about its objectives in adopting CALL from the beginning which caused some confusion for the teachers. Third, the teachers reported the university administration did not provide them with efficient training in CALL.

After ICT training and planning, the provision of sufficient funding was the third most frequent institutional element cited in the literature (Abu Samak, 2006; Albirini, 2006; Al-Kahtani, 2001; Alrumaih, 2004; Braul, 2006; Gillespie & Barr, 2002). ICT funding was a little less cited in the literature of language education than in general education (Beggs, 2000; Gulbahar, 2007; Hew & Brush, 2007; Parker, 1996; Pelgrum, 2001; Pina, 2005; Rogers, 1999; Strudler & Wetzel, 1999).

Technical support was the fourth institutional element viewed as critical in ICT integration in language education (Abalhassan, 2002; Al-Kahtani, 2001 Alrumaih, 2004; Braul, 2006). Technical support occupied a very similar status in the literature about ICT integration in education (Beggs, 2000; Parker, 1996; Pina, 2005; Tondeur et al, 2008; Rogers, 1999).

The types of ICT tools used in language education usually involve computer networks and telecommunication systems. These types of technology are not usually run directly by the teachers themselves and therefore technical support is crucial in dealing with the technical problems that can reduce learning effectiveness (Braul, 2006).

Overlooking the provision of sufficient technical support to ICT facilities brought CALL practice to a halt in many cases in the Saudi Arabian EFL context (Abalhassan, 2002; Al-Kahtani, 2001). Al-Kahtani (2001) examined the methods 13 teaching staff use in ICT-based lessons at four public universities in Saudi Arabia. Out of the 13 participant teaching staff, only one acknowledged effective technical support was provided. In most situations, these teacher participants had to tackle computer breakdowns themselves. Al-Kahtani (2001) recommended that administrators should assign a sufficient number of ICT technicians in EFL departments to provide the required technical support.

Facilitating the transfer of ICT experience among the teachers is the fifth institutional element identified in the literature (Braul, 2006; Timucin, 2006; Gillespie & Barr, 2002). Braul (2006) explored 19 Canadian teachers' perceptions about using CALL in a university ESL program and found lack of a sense of community and team approach adversely affecting the use of CALL in ESL lessons. Consequently, Braul (2006) suggested that teachers design a virtual forum where they could meet online to ask questions, receive answers, discuss technical issues, share CALL lessons, and learn from each other's experiences. This virtual forum could ensure additional ICT use and practice by the teachers, leading to greater facility with ICT, which in turn leads to the conditions in which greater integration is possible.

Prior to Braul (2006), Gillespie and Barr (2002) also emphasised the community approach for best practice and highlighted the critical role ICT experienced teachers could play in motivating their less experienced peers to achieve better techniques in technology integration procedures. Significant to the issue of skills' transference, Gillespie and Barr (2002) also argued that support from experienced teachers can increase their colleagues' interest in ICT and motivate reluctant and uncertain teacher users to search for better technology use.

2.6.2 The Personal Factor

Another category of factors that affect the success of ICT integration in language education is personal traits of ICT users (students and teachers). The personal traits reported by the literature as important in determining the success of ICT integration in language education are: users' attitudes and perceptions (Albirini, 2006; Al-Jamhoor, 2005; Braul, 2006; Chen, 2006; Lee, 2000; Rajabi, 2001); users' certainty about the role of ICT (Braul, 2006; Chen, 2006; Kim, 2003; Lam, 2000); and users' language proficiency, age, and gender (Al Shammari, 2006; Ayres, 2002; Gillespie & Barr, 2002; Weishar, 1997).

Teachers' attitudes were acknowledged in the research as one of the chief elements in deciding the success of ICT integration in language education (Braul, 2006; Chen, 2006; Lee, 2000; Rajabi, 2001). Attitude was emphasised by Albirini (2006) in his investigation of the attitudes of Syrian high school EFL teachers toward ICT and the variables that determine these teachers' use of ICT. Diffusion of Innovation theory (Rogers, 1995) was utilised by Albirini (2006) to examine the stages teacher participants followed in their ICT integration. According to this theory, users, as a

rule, proceed through five progressively ordered stages before they fully integrate ICT tools into their teaching: Knowledge, Persuasion, Decision, Implementation, and Confirmation (Rogers, 1995). Albirini's (2006) study reported positive ICT attitudes by most teacher participants. Such attitudes helped the teacher participants to move from the "Knowledge" (of ICT itself) to the "Decision" (to adopt ICT) stage (Rogers, 1995, p. 384). As the analysis of the survey revealed a positive ICT attitude among the teacher participants, Albirini (2006) predicted that these teachers would effectively use ICT in their classes "Implementation and Confirmation". The findings of Albirini's (2006) questionnaire survey suggested that Syrian teachers' attitudes were affected by three variables: ICT characteristics, cultural perceptions, and use of ICT advantages in the EFL class.

Correspondingly, students' attitudes toward ICT also affect their decision for using it in their language learning. Al-Jamhoo (2005) described the beliefs and perspectives of Arab EFL students toward Online Cooperative Writing (OCW) as generally positive, yet some students conveyed negative attitudes. According to Al-Jamhoo (2005) students who communicated negative attitudes toward OCW were affected by a number of factors including: "communication gaps; unsuccessful negotiation with native speaking discussion partners; cultural sensitivity; personal agendas, conflicts; and misinterpretation of the text" (p. 504). Consequently, students who bore negative attitudes toward technology gradually decided to discontinue their use of OCW (Al-Jamhoo, 2005).

Users' certainty about the role of ICT is another related personal trait that has impact on ICT integration (Braul, 2006; Kim, 2003). Lam (2000) pointed out that what is mistakenly thought to be teachers' resistance to using ICT is, in fact, teachers'

uncertainty about the usefulness of ICT in teaching. Lam (2000) argued that the issue in deciding the use of technology by teachers is not their like or dislike of ICT but the perceived actual benefit teachers can draw from ICT. Similarly, Chen (2006) associated teachers' uncertainty in using internet in their language teaching with a number of reasons including: ineffectiveness of ICT resources, and online potential complications such as slow internet connection.

Kim (2003) echoed that teachers' doubts about the effectiveness of ICT in teaching inhibit its use. Kim (2003) investigated the perceptions and practice of three ESL teachers in their ICT-based teaching in an American college-level classroom.

Interviews with the teachers and observations of their teaching practice revealed that ICT did not meet the teachers' expectations and did not provide the students with the intended benefit. This situation resulted, according to Kim (2003), in the teacher participants having a "doubtful", "cautious", and "critical" attitude toward ICT (p. 163).

The users' profile of language proficiency, age, and gender is another element that is claimed to be determinative in the success of ICT integration in language education (Al Shammari, 2006; Ayres, 2002; Gillespie & Barr, 2002; Weishar, 1997).

It has been found that advanced language learners perform better in an ICT-based learning environment than beginner learners (Weishar, 1997). Weishar (1997) investigated the effectiveness of incorporating CALL programs into an ESL training course designed for Vietnamese migrants to the US. The findings of Weishar's (1997) study strongly suggested that young Vietnamese ESL learners showed more interest in CALL and were more motivated to use it than older, low English proficiency learners.

Other research claimed a gender differentiation, that female language students perceive CALL more positively than male students do (Al Shammari, 2006). Al Shammari (2006) emphasised that students' gender relation to the perceived usefulness of ICT as significant. In his study, that aimed to investigate Saudi EFL students' attitudes toward CALL approach, Al Shammari (2006) concluded that although Saudi EFL students, in general, have a positive attitude toward CALL, Saudi female students had a more constructive perception toward CALL than male students.

In contrast to the findings of Weishar (1997) and Al Shammari (2006), Ayres (2002), found that students' language proficiency, age, and gender do not relate to the perceived usefulness of ICT. Ayres (2002) examined EFL students' perceptions about the role of CALL in a New Zealand school. Although the student participants came from different nationalities, age groups, genders, and had different levels of computer skills and language proficiency, the analysis did not find significant differences in the way these students perceived the usefulness of CALL in second language learning.

The teacher's age and gender were also found to be insignificant in other studies in deciding teachers' attitudes towards the use of ICT in their teaching. Abu Samak (2006) found that age and gender have no noticeable effect on Jordanian EFL teachers' attitudes toward the use of ICT. She concluded that rather the main factors associated with EFL teachers' attitudes toward ICT in Jordan are: technology attributes, teachers' cultural perceptions, technology competence, and access to technology.

2.6.3 The Technological Factor

The ICT tools' features and characteristics is the third factor in the analysis of successful integration in language education. The literature reports some qualities of the ICT itself that determine the degree to which ICT integration into language education can be successful.

Relevance to students' needs and to the course goals is one of the most important features of ICT tools (Abu Samak, 2006; Albirini, 2006; Almozaini, 1998; Chen, 2006). The decision to use ICT for many teachers is based mainly on their perceptions about the relative advantage of using the technology in their language lessons (Lam, 2000).

Similar findings to Lam (2000) were reported by the research of Gillespie and Barr (2002) already mentioned in this review. Gillespie and Barr examined the factors that influence students, teachers and administrators' choice of ICT in Canadian and British universities and concluded that ICT practicality or what they called "pragmatism" (p. 130), and potential advantage of ICT over traditional teaching methods, were the two most important issues that determine the selection of ICT in language education.

2.6.4 The Pedagogical Factor

The fourth category of the factors that affect the success of ICT integration in language education is users' technological skills and experience (Abalhassan, 2002; Al-Kahtani, 2001; Almozaini, 1998; Alrumaih, 2004; Chen, 2006; Kim, 2003). Zapata (2002) investigated five teaching assistants' strategies in integrating ICT in their Spanish as a Foreign Language (SFL) course and found that users' ability to integrate ICT successfully depends on effective teaching pedagogies.

Another researcher, Abalhassan (2002), indicated that teachers' positive attitude toward ICT is not very helpful if it is not accompanied by effective technology integration skills. Abalhassan (2002) examined the practice of eight high school teachers in ICT-based EFL instruction in Saudi Arabia, and found that although those eight teachers had positive perceptions about the role of ICT, their integration practice fell short and apparently reflected on their overall professional performance.

2.6.5 The Sociocultural Factor

Successful ICT integration in language education was reported to be closely related to the nature of the wider teaching environment - the sociocultural environment (Hsu, 2006; Hall, 1998; Jones, 2001; Pugh, 1997). The wider environment within which ICT is used was claimed, dramatically, by Abalhassan (2002) to be more important for ICT success than the technology itself. Brul (2006) claimed, more moderately than Abalhassan (2002), that focusing on the technological side of ICT tools only, is a false assumption that administrators and teachers usually make when evaluating the effectiveness of ICT integration. Brul (2006) emphasised that it is false to look at the technological focus of ICT only since it overlooks the importance of the sociocultural context.

The research indicated that successful ICT integration in language education is dependent on the relations between individuals involved in ICT integration. Formal and informal interactions between students, teachers, IT technicians and administrators are highlighted in the literature as influential (Hsu, 2006). Other researchers (Liu, 2006) went even further by arguing that absence of effective

collaboration between the individuals involved in ICT integration hinders the whole process of ICT use.

The literature establishes that the provision of ICT is just the beginning of the integration process. For effective ICT utilisation to take place, administrators have also to consider the degree of cooperation and coordination present between the parties involved (Jones, 2001). This implies enhancing language education through ICT means more than simply putting learners in front of ready-made technological tools. There are complex matters to organise beyond the technological tools, to the extent that the social rules will also determine ICT use (Abalhassan, 2002; Pugh, 1997).

The previous five factors and their related elements are used later to inform the discussion of the findings of this research (Chapters 5, 6, and 7). The fact that these five factors are drawn from language education makes them applicable to the specific context of ESP since ESP is a learning/teaching approach within the broader bounds of language education (Dudley-Evans & St. John, 1998).

2.7 Conclusion of the Findings of the Literature Review

In this chapter, an overview of the role of ICT in the general sphere of education was presented and the various reasons why teachers may or may not integrate ICT in their teaching were discussed. From this review it was found that the central role of ICT in education is its ability to enhance teaching and learning and to relate students' technological experiences to learning.

Also in this chapter, the role ICT plays in language education was examined in detail. The advantages and disadvantages of ICT in language education were discussed and

from the literature review it was perceived the advantages outweighed the disadvantages. The examination of the role of ICT in ESP instruction specifically, showed some potential benefits of ICT for ESP students. These benefits include: enhancing the use of web-based tools to improve oral, written, and discussion skills; facilitating cross-cultural understanding; and providing students with specific professional communication skills. The review also showed ICT use in ESP has not been thoroughly investigated neither has ICT use in ESP in the Saudi context been researched at all.

As well it was found that the reviewed literature underlined the important conditions for successful transition from conventional to technology-supported learning in a variety of educational contexts (Barak, 2007; Hayes, 2007; Shane & Wojnowski, 2005). The reviewed literature proposed general conditions essential for ICT transition including users' optimistic perceptions, appropriate integration strategies, funding, time, and technical support (Barak, 2007; Hayes, 2007; Shane & Wojnowski, 2005).

In summary, the literature related to the factors influencing the success of ICT integration in education and in language education was reviewed and classified into five main categories: institutional, personal, technological, pedagogical, and sociocultural after Al Saif (2005) and Byungho (2003). This organisation was meant to give a framework to compare and contrast to the results of the present study. It was found that the reviewed literature emphasised the various elements influencing ICT use differently in education to language education. Whereas funding was highly emphasised in education, it was not emphasised in language education research. On

the other hand, planning was greatly emphasised by the literature of language education but not by that of education.

The framework of these five factors will be tested against the findings of the present study and reported in Chapters 5 and 6 to identify the potential factors affecting successful integration of ICT in ESP instruction (Chapter 7). Therefore, this identification of the factors is seen as the critical point for ICT integration in the present study context.

The significance of this chapter was the categorisation of the literature to build a framework of comparisons of the reviewed literature that could be used on the findings of the present research. The conclusion of the argument of the literature review will be used later when seeking identification of key factors in effective ESP transition to ICT.

Overall, the reviewed literature, although valuing the role of the sociocultural factor in ICT integration, has focused generally on the institutional, technological, pedagogical, and personal factors. On the basis of this, apart from a couple of examples (Abalhassan, 2002; Pugh, 1997), it can be argued that insufficient emphasis has been given to the sociocultural factor affecting successful ICT integration in language education.

Vygotsky (1978), among others, would not have agreed with undervaluing of the sociocultural values because he viewed learning as a social enterprise. In light of Vygotsky's (1978) view, the researcher identifies ICT use in ESP as a social activity that needs to be examined through a sociocultural lens. To help investigate the sociocultural factor in the context of this study, an analytical framework, developed

from Vygotsky's theory, is proposed in the next chapter. This framework involves a socially-oriented theory "Activity System Model" (Engeström, 1987) that is purposed to have the capacity to assist in describing the dynamic sociocultural aspects related to this particular context of ICT incorporation into ESP.

It would be useful here to introduce the concept of 'Community of Practice' (Wenger, 1999) as a social approach that is related to Vygotsky's social theory and Engeström's Activity System Model. The community of practice approach is described by Wenger (1999) as having the potential to explain explicit and implicit social phenomena such as ICT implementation:

It includes what is said and what is left unsaid; what is represented and what is assumed. It includes the language, tools, documents, images, symbols, well-defined roles, specified criteria, codified procedures, regulations, and contracts that various practices make explicit for a variety of purposes. But it also includes all the implicit relations, tacit conventions, subtle cues, untold rules of thumb, recognizable intuitions, specific perceptions, well-tuned sensitivities, embodied understandings, underlying assumptions, and shared world views. Most of these may never be articulated, yet they are unmistakable signs of membership in communities of practice and are crucial to the success of their enterprises". (Wenger, 1999, p. 47).

The role of team approach is emphasised by Wenger (1999) because the complexities that individuals usually meet in their ICT integration practice cannot be resolved if each one of those individuals works separately from the members of the community, but rather they should work with a community scheme. Therefore, the importance of community of practice as essential to ICT integration into ESP instruction will be emphasised in the results chapter.

3. ANALYTICAL FRAMEWORK

Overview

In keeping with the finding from the literature that insufficient emphasis has been given to the sociocultural factor affecting successful integration of ICT in language education, it seemed expedient to go into an analytical framework with a dynamic sociocultural perspective; i.e. the Activity System Model (Engeström, 1987).

To explain the Activity System Model, this chapter provides an overview of the historical development of Activity Theory from which the Activity System Model draws its principles. The various elements of the Activity System Model are introduced and defined for an understanding of the strategic concept of ‘contradictions’. A brief outline of literature on the Activity System Model is presented to display a range of specific uses of the model. The applications of the Activity System Model in the literature aim to demonstrate how this analytical tool could be applied to the current study.

3.1 Activity System Model in Technology Integration

The role of the Activity System Model (ASM) in examining the sociocultural aspects of technology use is well documented (Issroff & Scanlon, 2002; Kaptelinin & Nardi, 2006; Levy & Stockwell, 2006; Lim & Hang, 2003; Verenikina, 2001; Zapata, 2002). ASM assists researchers to see technology as a tool that mediates teaching and learning. It is rooted in the social and cultural contexts of the classroom environment and reflects the relationships of the people involved in the activity. Importantly, ASM enables researchers to consider technology as a component within an objective-

oriented system. So the component of technology is conceived in the ASM as a tool that is used at both an individual level of a teacher's practice, and at a broader level of the (educational) institution (Murphy & Rodriguez-Manzanares, 2008).

It is highly significant for the purposes of this study that whether looked at as a theoretical framework or a tool of analysis (Murphy & Rodriguez-Manzanares, 2008), ASM has shifted the attention of the present research about instructional technology from the tools themselves (technology) to the use of tools (Murphy & Rodriguez-Manzanares, 2008) and from technology as the centre of interest to "understanding technology as part of the larger scope of human activities" (Kaptelinin & Nardi, 2006, p.5).

ASM has been proved as an effective framework for "the analysis and transformation of practices" (Martin & Peim, 2009, p. 131) and for examining the dynamics of technological change (Demiraslan & Kocak Usluel, 2008). It also provides tools that help researchers to understand the combination of technology and teachers' use, reasoning for teachers' choice of technology, and how teachers amalgamate technology with their teaching objectives (Lloyd & Cronin, 2002; Romeo & Walker, 2002). Besides, ASM assists researchers to identify the source of gaps (needs) and tensions in educational and professional settings (Malopinsky, 2008; Roth, 2007; Yamagata-Lynch & Haudenschild, 2006).

ASM (Engeström, 1987) as an analytical tool has achieved a high status and is credited with making a number of advantages to research: the ability to assist researchers in investigating the use of the computer by individuals through a social lens (Kuutti, 1996); clarifying the nature of transformations in work/educational

environments (Blin & Munro, 2008); and analysing conflicts in work/educational environments (Russell, 2002; Yamagata-Lynch & Haudenschild, 2005). Recent research (Demiraslan & Kocak Usluel, 2008; Karasavvidis, 2009) reports an additional advantage of providing a conceptual framework for understanding the diversity in both teachers' and students' approach to ICT.

The use of ICT in educational settings is a social practice and therefore can be investigated in a similar way to the way the previously mentioned transformation and conflict research have been done (Romeo & Walker, 2002). Therefore, it is logical to count activity system analysis as an effective approach in examining the elements related to the sociocultural environment of this Saudi ICT ESP context.

In regard to ICT itself, ASM can be supportive in investigating the particular sociocultural factors that are generally reported to relate to achieving positive results in ICT use (Liu, 2006; Warriner, 2005; Webb, 2007; and Zapata, 2002). Although there are signs of activity system analysis becoming more well-known and widespread in the literature of language education, it has not however been intensively used in the ESP area of language teaching research.

ASM was found an appropriate approach for the current study because it highlighted the individuals, units, materials, rules, and duties related with technology integration in the context of this research. In fact, ASM helped the researcher to go beyond the classroom context to seek to explore the influence of unseen individuals/units directly involved with ICT integration in the research context including the administration and IT technical support.

3.2 Development of the Activity System Model

ASM is a theoretical/analytical model based on Activity Theory. Activity Theory (AT) has been developed out of a particular theoretical frame which seeks to explain education/learning in a psychological and cultural sense. The development of AT, through the work of both Vygotsky in the beginning of the twentieth century and later Leont'ev (1978), is introduced to highlight the depth of the concepts which constitute ASM.

AT, also known as Cultural-Historical Activity Theory (CHAT), is a result of uniting Vygotsky's and Leont'ev's theoretical frameworks (Karasavvidis, 2009). This theory is defined by Kaptelinin and Nardi (2006) as "an approach in psychology and other social sciences that aims to understand individual human beings, as well as the social entities they compose, in their natural everyday life circumstances, through an analysis of the genesis, structure, and processes of their activities" (p. 31). Engeström (1987) further developed AT as it is known today.

3.2.1 Vygotsky's Sociocultural Theory

Vygotsky's theory relates to an ensemble of broader ideas of the sociocultural model of human cognition and behaviour (Warriner, 2005). There are three major facets of Vygotsky's idea of social and mental development, which he called the sociocultural theory: the developmental analysis of mental processes; the social origin of human mental processes; and the role of the sign system in the development of human higher mental functions (Johnson, 2004).

Vygotsky's sociocultural perspective (Vygotsky, 1978) establishes that human consciousness is primarily social and not mental (Nardi, 1998) and that an

individual's psychological development is a result of social interactions (Lighthown & Spada, 2006). Vygotsky joined the individual and social levels of cognition with a notion of the "Zone of Proximal Development" (ZPD), (Vygotsky, 1978, p.84). ZPD refers to the support given to less advanced learners by more advanced individuals or tools so that cognitive and psychological development can take place (Johnson, 2004). The wide implications of Vygotsky's theory are that learning is more effective with the help of cultural interaction and mediating artefacts that exist within the social culture (Cole, 1996). Vygotsky (1978) precisely identified the mediating artefacts as the tools that could help the child attain the ZPD necessary for development. He also believed that by using tools, human beings interact with their social environment and affect it, while at the same time, being affected by it. Tools for Vygotsky (1978, 1986) could be material (e.g. book, toy, a musical instrument) as well as psychological/cultural (e.g. language, art, music) (Zapata, 2002). The relationship between the mediating artefacts, people (Subject), and their goals (Object) is illustrated diagrammatically by Figure 3.1.

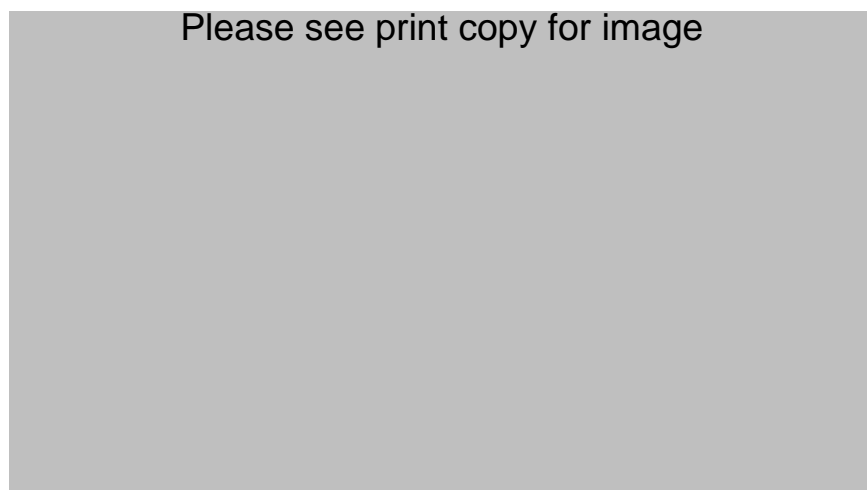


Figure 3.1: Vygotsky's representation of Subject-Tool-Object relationship (Vygotsky, 1978, p. 40)

The basic Vygotskian triangle represents the learning process as “a complex mediated act” (Vygotsky, 1978, p. 40) and explains how the mediating artefacts can affect the way individuals understand their social environment and the means through which they interact with the world.

Vygotsky’s sociocultural theory was originally researched in the field of psychology, therefore research in education and Human-Computer Interaction (HCI) has borrowed his ideas (Hardman, 2005).

3.2.2 Leont’ev’s Activity Theory

Leont’ev (1974) developed the ideas of Vygotsky’s theory and established a whole school of psychology known as ‘Activity Theory’ (Johnson, 2004). Leont’ev (1974) defined ‘activity’ as individual or cooperative actions motivated by a need (cultural or biological). He described activity as three-level model: Motive, Action, and Operation. ‘Motive’ is seen by Leont’ev as the intention the individual or group has when carrying out the action (Leont’ev, 2005). ‘Action’ is defined as a series of operations, and an ‘Operation’ is defined as the execution of an action (Kuutti, 1996). The Action should be performed using a specific Operation or under specific conditions (Johnson, 2004). For activity to occur, Leont’ev maintained, both Action and Motive occur simultaneously; therefore he importantly highlighted that when the Motive is lost, the whole activity becomes meaningless (Leont’ev, 2005). The application of this lost motive and consequent negation of activity to the study context will be discussed later in the ASM analysis.

3.2.3 Engeström Activity System Model

Engeström (1987) developed the ideas of Leont'ev's work (1974) into a model called Activity System Model. Engeström (1987) extended the basic mediational triangle of Vygotsky (1978) by including new components in the activity system: rules, community, and division of labour (Figure 3.2).

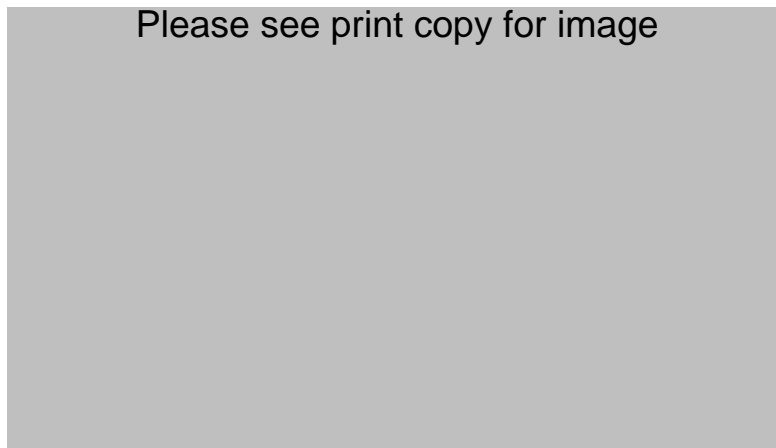


Figure 3.2: Activity System Model (adapted from Engeström, 1987)

The components of ASM (Subject, Object, Outcome, Tools, Community, Division of labour, and Rules) are described by Engeström (1987) as constantly developing and subject to change. The components of ASM are explained individually according to their definitions and functions in (Table 3.1).

Table 3.1: Definitions and functions of the activity system model components

Component	Definition and Function
Subject	The entity/group that is being focused on as the centre of the action in an activity.
Object	The goal of activity. The behaviour of the Subject is directed toward the Object which is the Subject's motive for participating in an activity. The Object is transformed into outcome with the help of the Tools (Engestrom, 1993).
Outcome	The consequence that the Subject(s) faces because of their actions, driven by the Object. The Outcome can encourage or hinder the Subjects' participation in future activities.
Tools	Socially-shared cognitive or material resources that the Subject uses to achieve the Object. The Tools mediates the relationship between the Subject and the Object.
Community	Individuals and subgroups with similar interests or expertise. The Community members share the same general Object as the Subject. The degree of involvement of the Community members varies from little or no interaction to a highly interactive environment (Kuutti & Arvonen, 1992).
Division of labour	Description of the division of activities in the Community. This involves the distribution of duties between Community members and distribution of authority.
Rules	"Explicit and implicit regulations, norms and conventions that constrain actions and interactions within the activity system and control the subject's participation while engaging in an activity" (Engeström, 1993, p. 67). The Rules mediates the relationship between the Subject(s) and each of the Community and the Object and can be predetermined or created with a shared meaning between the Subject(s) and the Community during interaction (Kuutti & Arvonen, 1992).

ASM suggests the possibility of analysing a multitude of relations within the triangle of activity. However, the critical undertaking of researchers is to seize the complete systemic activity and not only separate segments of it (Centre for Activity Theory and Developmental Work Research, 2003-2004). Therefore ASM as a framework of analysis also empowers the researcher to be able to track broad factors within the system.

In fact, ASM whose genesis was in psychology has pedagogical implications in the field of instructional technology where there is a culture immersed in technology tools (Engeström, 1987). Engeström (1987, 1993, 1999) asserted that ICT as mediating Tools allows the participants to control and achieve the Object of the activity. The unique features of description in the ASM nominate it as a useful analytical framework in the field of HCI and educational research (Kaptelinin, 1996; Kuutti, 1996; Lantolf & Thorne, 2006; Nardi, 1998; Russell, 2002). In the ASM, ICT can be looked at as a cultural tool, and researchers can use ASM to ask significant questions about how the tools can affect the users (Engeström, 1987) which has deep and important implications for the planning and practice of ICT. In summary, ASM has the potential to “understand [the] process of transformation within a system such as a classroom/university laboratory as well as illustrating how different systems interact with, and transform each other over time” (Hardman, 2005, p. 380). This statement encapsulates the choice of ASM as the framework of analysis of the research data.

3.3 Principles of Activity System Model

To best explain the nature of ASM, it is necessary to outline how the main principles of ASM have been applied and defined by researchers over time (Cole, 1996; Engeström, 1987, 1993, 1999; Kaptelinin, 1996; Kuutti, 1996; Nardi, 1996; Russell, 2002). Activity system model is defined by Engeström (1987) as a: tool-mediated, goal-driven, pre-determined, participant-motivated, and historically developing system. These adjectives describe the functions of ASM and thus show how it is a multi-purpose model that can be used and developed in many ways.

As has already been said, one of the principles of ASM that can show the underlying structure of a research site is that human activities are collective by nature so what seems an individual, separate activity is, in fact, in ASM language, mediated by other socially-historically embedded tools (Cole & Engeström, 1993). This communal nature of human activity is shown in the ASM to represent joint attempts by participants toward the Object. For example, therefore, social interaction between the community members is necessary for the activity system to achieve its Object (Engeström, 1987).

An additional principle of ASM is that the development of each component brings change in the other components. Participants bring their varied ideas, concepts, understandings, and agendas to the activity system (Engeström, 2001). Participants' input results in a variety of perspectives becoming embedded in the context of the activity system. Change can appear in one of three levels: chronological change, personal development, or daily changes (Russell, 2002). Examining these three levels of change in an ICT-integrated activity system enables researchers to see the historical development and the change's effect on the current situation.

A further valuable principle of ASM is that it represents the activity environment as a living entity (Vygotsky, 1978) therefore in continuous change (Engeström, 1993). This change is explained in the system as a result of tensions or contradictions between the elements of the activity system or between activity systems (Engeström, 1993).

An extended principle of ASM is the concept that individuals are sensible to and conscious of what activity they are involved in, yet they could be participating in activities that extend beyond their own boundaries or contradict what they usually do.

As a result, individuals are put in a position where the tools (or other elements of the system) could hinder their intended activity (Engeström, 1987).

Another facilitating principle of ASM is the notion that the simple cause and effect process is not accepted as a sufficient explanation of human activities (Hardman, 2005). Instead, ASM recognises deeper and wider sources of the environment which are analysed into categories as historical, social, and cultural tools (Cole, 1996; Quek, 2002).

3.4 Contradictions within the Activity System

Contradictions within an activity system can have two different types of sources: from within and from without (Engeström, 1987). An activity system does not subsist by itself but is connected to a network of other activity systems (Centre for Activity Theory and Developmental Work Research, 2003-2004). An activity system might receive from other activity systems its Tools and Rules and it might produce outcomes to some other activity systems (Centre for Activity Theory and Developmental Work Research, 2003-2004). Thus, contradictions can occur because of interaction in the network of activity systems just as they could occur within the components of the same activity system.

Through the Activity System Model (ASM) analysis researchers can interpret the research environment by identifying internal contradictions that occur between the elements and consequently create anxiety (Engeström, 1987). Importantly, identification of any contradiction (tension, disturbance, interference, imbalance) allows the participants to improve the conditions of the activity (Yamagat & Haudenschild, 2006).

Activity system is dynamic and often experiences continuous constructions and reconstructions between its components (Russell, 2002). For instance, Rules are not always kept or observed by the Subject; and there can also be ongoing negotiation and reformulation of Rules by the Subject. In addition, Subject and Community can continuously reconstruct Rules or develop new Rules in order to meet the Object of the activity system. Also, Subject and Community can continuously filter and restructure the Division of labor. ASM allows organisation and description of these complex relationships in the system.

There are four levels of contradictions within activity system: primary, secondary, tertiary, and quaternary (Engeström, 1987). The primary level appears within each component of the activity system. The secondary level exists between two components of the activity system. The tertiary level emerges when a different object is introduced to the activity by the Subject or some members of the Community (Centre for Activity Theory and Development Research, 2003-2004). The quaternary level of contradiction appears between the central activity system and external neighbouring activity systems.

Historical development of work environments causes individual and social conflict in the activity system (Engeström, 1999; Kuutti, 1996). Such contradictions in the activity system are important because they are a source of change and development (Engeström, 2000). However, contradictions do not always cause positive change (Murphy & Rodriguez-Manzanares, 2008) since positive change in the activity system depends on the way these contradictions are addressed and resolved (Nelson, 2002).

Therefore, resolving tensions in the activity system is fundamental to facilitating the achievement of the Object (Engeström, 1993; Kuutti, 1996). The ASM demonstrates in its conception that resolving the tension cannot happen at the individual level but only at the social level since “contradictions are in social/material relations among groups of people and the tools they use” (Wardle, 2004, p. 4). Observing internal disturbances (Engeström, 2000), and locating the way they affect and are affected by other activities are significant tasks for researchers conducting qualitative data analyses (Engeström, 1993). Fortunately it is then by this means, environments such as the language learning site of the current study can benefit from activity system analysis to successfully implement ICT in ESP teaching and learning.

3.5 Research in ICT Use Employing Activity System Model

The literature about AT use in educational technology has recently indicated extensive adoption of ASM by many studies. These studies have used ASM as an analytical framework to investigate the use of instructional technology. ASM is considered by these studies to offer a tool for comprehensive analysis and to reveal insights into instructional technology use.

Lloyd and Cronin (2002) used ASM to examine the efficiency of synchronous communication in connecting boarding students and their families. The study was conducted in indigenous secondary schools in Northern Australia. The researchers collected data through observations and interviews to investigate the impact of technology on teachers’ and students’ practices. Lloyd and Cronin (2002) analysed the data according to the interactions that occur in the activity system, for instance, interactions within Subject-Object-Community and interactions within Object-

Division of labour-Community. Activity system analysis demonstrated how the introduction of technology succeeded in connecting the students with their remote, illiterate families and how it dramatically boosted the learning environment, transforming “the learning environment from low-tech to high-tech” (Lloyd and Cronin, 2002, p.23).

Another study using ASM to explore the implications of ICT implementation in a primary school curriculum has been reported by Romeo and Walker (2002). The school principal, two teachers, and the IT coordinator in a public school in Victoria, Australia, participated in Romeo and Walker’s (2002) study. ASM was used to organise and systematise the commonalities and differences in the findings. Romeo and Walker (2002) applied ASM (Engeström, 1987) innovatively by drawing a descriptive activity system for each of their study participants. ASM analysis of the participants’ activity system allowed Romeo and Walker (2002) to conclude that there was no common object for ICT implementation and there was no communication and ownership of involvement in the researched community.

Activity system analysis was also adopted by Issroff and Scanlon (2002) to examine the experience of two ICT-rich higher education institutions. Their study involved students and teachers in two distinct settings: the first included a postgraduate science course in the UK and the second setting involved an undergraduate history course in the US. A variety of data collection methods was used including interview, observation, questionnaire, and material assessment. Using ASM helped the researchers to examine the implementation of ICT in both settings. The researchers acknowledged that activity system analysis helped them to comprehend the changes, obstacles, and adjustments that occurred for students and teaching staff before and

after the introduction of ICT in the training courses. An important finding by Issroff and Scanlon (2002) is that ASM was found to be effective in understanding “problematic features of the learning and teaching settings” (p. 83).

An extensive use of ASM was reported in an investigation of the sociocultural and pedagogical impact of ICT integration on Singaporean schools (Lim & Hang, 2003). Using activity system as an analytical tool allowed Lim and Hang (2003) to observe the practice of and the interactions between the components of the activity system within each of the classrooms, the schools, and across schools. The analysis exposed a number of internal as well as external contradictions that affected the collective task of achieving the Object. The internal contradictions were related to the change in the teachers and students’ roles after ICT had been integrated in the school curriculum. The external contradictions found by Lim and Hang (2003) were related to differences in the Object of both teachers and the school administration, in the ICT integration activity system. That is, while the teachers’ Object was to engage their students in “higher order thinking” (Lim and Hang, 2003, p. 61), the school administration’s Object was to improve students’ results in the national examinations. Lim and Hang (2003) stated that ASM’s power to account for the contextual factors is far beyond the capacity of other theories.

ASM framework was further used to examine the social environment of school-university partnership in the US (Yamagata-Lynch & Haudenschild, 2006). Semi-structured interviews with teachers and administrators were used to identify the contradictions about the professional development program that was conducted by the university to develop teachers’ skills. Activity system analysis found that teachers’ goals and views about the professional development program contrasted with their

school administrator and the university procedures. In addition, ASM helped to identify the results of the conflict including teachers' mistrust and doubts toward the effectiveness of the program.

The effectiveness of activity system analytical framework in investigating the reality of ICT integration in educational contexts was further asserted by Zapata (2002) who examined ICT integration into a college level Spanish as a second language course in the US. The study recruited five teaching assistants as case studies and collected the data through semi-structured interviews. Zapata (2002) used ASM as a lens to observe the teaching assistants' development and to examine their ICT teaching experiences before, during, and after the teaching course. Activity system analysis helped Zapata (2002) to categorise the use of ICT by the four teaching assistants as shallow. The analysis defined only one teaching assistant as an effective ICT user.

ASM was effectively used by Blin and Munro (2008) to investigate the implementation of a Virtual Learning Environment (VLE) at an Irish university.

Activity system analysis assisted the researchers in identifying the factors that hindered an effective uptake of the VLE by the university community. The minimal effects of VLE on teaching and learning, revealed in the study, were attributed to limited use of the VLE which only complemented or replicated already existing practices, and to contradictions within the activity system of staff professional development.

Demiraslan and Kocak Usluel (2008) employed activity system analysis to study the technological, social, and educational aspects of the incorporation of ICT in two Turkish elementary schools. The study reported several elements as significant for ICT use in the study context: access to technology, the institution culture, the

changing role of teachers and students because of ICT use, the role of ICT coordinator, and cooperation among the teachers themselves.

A recent study by Karasavvidis (2009) utilised activity system analysis to research teachers' perspectives on the barriers to ICT use in an elementary Greek context. Karasavvidis' (2009) main purpose was to investigate the conditions under which Computer Supported Collaborative Learning (CSCL) could be integrated into those teachers' practice. Activity system analysis reported time and curriculum constraints as the two most important barriers in the CSCL activity system.

The studies above share a common feature which is the employment of ASM as an analytical tool to explore and understand the social, cultural, and historical changes brought about by the introduction of ICT to educational/work environments. These studies confirm the validity of ASM as a valuable analytical framework in explaining sociocultural tensions in ICT-based educational contexts. By following the examples of these studies in their adoption of ASM, this research explores the role the sociocultural factor plays in successful use of ICT in ESP. The exploration of the role of the sociocultural factor is based on understanding the changes caused by the introduction of ICT in the ESP teaching/learning environment and the resulting tensions.

3.6 Summary

This chapter demonstrated the significance of ASM as an analytical framework to comprehensively analyse the complex range of social, cultural and historical aspects which can affect a successful introduction of ICT in ESP teaching in this study. The diagram of the ASM triangle was presented as allowing to capture the dynamics of the

ICT implementation process and the balance/imbalance of the elements' and their relationships in the participants' ESP activity systems. The historical background of ASM was traced to show the meaning of the elements of the framework.

The principles of ASM, which further justify its employment in this study, include the collective nature of the learning/teaching environment, the close interrelationship of the elements, and the complexity and fluid nature of the activity environment.

In the ASM model, the relationship between achieving the Object and resolving the tension is shown. This relationship can be analysed to the benefit of the participants as it could reveal insights into an improved technology integration process.

Several empirical studies have been summarised to illustrate how ASM was applied to educational environments for their improvement. The results can therefore help in both understanding the problem and achieving more effective ICT learning outcomes.

A synthesis of research in the current literature indicates the factors of significance in ICT success as well as barriers to ICT integration in the teaching environment (Blin & Munro, 2008; Demiraslan & Kocak Usluel, 2008; Issroff and Scanlon, 2002; Lim & Hang, 2003; Lloyd and Cronin, 2002; Karasavvidis, 2009; Romeo & Walker, 2002; Yamagata-Lynch & Haudenschild, 2006; Zapata, 2002). The literature shows these factors cannot usually be revealed through simple evaluation or direct observation without considering the embedded and inherited sociocultural circumstances. The detailed procedure and current application of the whole analytical framework will be explained in detail in the Methodology Chapter.

4. RESEARCH METHODOLOGY

Overview

The purpose of this study was to explore ICT perceptions and practices of six ESL teachers and their administrator in a Saudi tertiary institution seven years after ICT had been introduced and implemented. Specifically, the study aimed to examine the changes ICT brought to these teachers' teaching context; investigate the underlying factors affecting ICT use by these teachers; and determine what improvements to ICT practice could be made. This chapter discusses the research design, research context, research participants, data collection methods, data analysis procedures and the measures taken to ensure the validity of the research to satisfy this purpose.

In the beginning of the chapter, research questions, inquiry approach and an outline of the research design are introduced. Subsequently, the research context: the institution, the ELC centre, the ESP program and the ICT structure, is described. Then, a detailed account of the research participants, including the process of their recruitment to participate in the research, is provided. This is followed by a description of data collection instruments used in the research. Lastly, data analysis procedure involving the steps of analysis, data coding, and data presentation's frameworks (single-case and cross-case) are described. The chapter concludes with a description of the processes followed to obtain as much validity as possible.

4.1 Research Questions

Three research questions govern the study of this particular Saudi tertiary context:

1. How is the introduction of ICT to ESP instruction perceived by the teachers and the administrator in this particular context and how do their perceptions affect their ICT use?
2. What changes does the introduction of ICT bring to ESP teaching in this particular context?
3. What are the factors that affect the success of ICT integration in ESP instruction in this particular context?

The research questions of this research were intentionally broad. This breadth resulted in data that encompassed a large amount of intensive detail of the ESP environment in the study. Narrower research questions would not have been sufficiently comprehensive to capture the complexity of the changes ICT introduction brought to the research context. Rather, narrower research questions would have, by their nature, eliminated some of the scope of change.

4.2 Research Design

Research can use contrasting views on which to base its thematic interpretation (Aronson, 1994). There are a number of ways for researchers to perceive reality in social-cultural studies. In one kind of ontological view, reality is “socially constructed” and multiple interpretations can be recognised (Mertens, 2005, p. 14). Consistent with this paradigm is an epistemological view that knowledge is socio-culturally situated and is influenced by social, cultural, political, and historical factors (Mertens, 2005). As this study is influenced by the constructivist philosophical assumption that “reality is not absolute, but is defined through community consensus” (Mertens, 2005, p. 231), qualitative approach is chosen in this study.

4.2.1 Qualitative Approach

Qualitative inquiry is based upon the naturalistic paradigm, and follows an interpretive/constructivist model, which assumes specific beliefs about the nature of reality and knowledge. Qualitative approach seeks knowledge and understanding through a design that promotes emergent questions and issues. Qualitative research has its origin in descriptive analysis and involves inductive process, reasoning from the specific situation to a general conclusion (Wiersma & Jurs, 2005).

The descriptive feature of qualitative methods of data collection provides researchers with in-depth understanding of the phenomenon in question (Gay, 1996; Marshal & Rossman, 1995; Patton, 1990; Yin, 2003). For instance, using qualitative methods of data collection in investigating ICT implementation in educational contexts (Alrumaih, 2004; Byungho, 2003; Kim, 2003) allowed researchers to elicit detailed information from the participants and to examine the teaching/learning environment in detail.

4.2.2 Case Study

This research undertakes case study approach (Creswell, 2003; Stake, 1995). Case study research is a detailed investigation of a specific person, place, or thing at a particular institution (Kervin et al, 2006), which offers an opportunity to research one aspect of a situation in depth (Merriam, 1998). Case study approach is chosen for the methodology of this research for two reasons: first, it introduces the means of answering the ‘how’ and ‘why’ questions about a set of events in the natural setting of the study context (Yin, 1994 in Merriam, 1998). Second, case study is able to explore

“contemporary events, [especially] when the relevant behaviour cannot be manipulated” (Yin, 1994 in Merriam, 1998, p. 8).

The strength of case study methodology is in its ability to report on real life events, providing a holistic and life-like perspective to the research (Merriam, 1998), thus suggesting itself as the most appropriate methodology to provide in-depth analysis for the context of this research.

Case study methodology, however, has identified potential weaknesses. First, case study has innate subjectivity on account of the researcher’s personal involvement in collecting and interpreting the data (Tellis, 1997). Second, case study derives from the narrow scope of selected data which limits the ability to generalise the results (Yin, 2003). Third, data collection in case study could be costly due to the nature of the process especially if the researcher has to spend time and effort to collect descriptive data (Tellis, 1997). Fourth, case study’s ethical considerations may involve the potential abuse of power by the researcher over the research participants (Yin, 2003).

However, to reduce the effect of case study’s potential weaknesses on the validity of this research, the researcher endeavours to explain the steps taken to deal with case study’s limitations to acquire trustworthiness for this research (section 4.7). For instance, member check and peer researcher independent advice were used to deal with subjectivity. Also, to deal with particularity, the research data was compared with findings in the literature. Finally, to deal with abuse of power, volunteering, the right of volunteers to withdraw, and member checking of preliminary interpretation were conducted.

4.3 Research Context

The importance of the section about the research context comes from the fact that the participants' ICT perceptions and practice, the main source of data and the core of analysis in this research, cannot be thoroughly understood unless intensive description of the study context is presented. The presentation of the study context involves first a description of the institution's mission and structure. Next, a description is provided for the ELC, the unit within the designated institution and the place where ESP instruction, the research focus, is conducted. Also, the reasons for choosing the ELC as the research site are explained. Next, the ESP course, and the language subjects taught within the ESP course and their distribution in the weekly timetable are detailed.

Later, a brief description of the ELC prior to the introduction of ICT is presented so the reader would understand the ESP environment prior and post ICT and realise the amount of change that ICT brought to ESP instruction.

Afterwards, a contextual description of post-ICT structure within which the participants perform is presented. This presentation involves classrooms, CALL labs, and related technology-assistance departments. Contextual description of ICT structure also includes ICT instructional resources accessible by both teachers and students: New Dynamic English (DynEd), Tense Buster, and SMART Board Interactive Whiteboard.

4.3.1 The Institution

The institution in which the ELC operates is a governmental organisation that provides training, research, and consultations in administrative, legal, and business

fields for both public and private sectors. This institution is supervised by the civil service as it implements the national administrative and labour policies. The Higher Administration structure of this institution is formed by the Board of Directors, the General Director of the institution, the Deputy for Training and the Deputy for Research. This Higher Administration group constructs and executes the institutional policies and plans. Every department of the institution is related to the Higher Administration and is responsible for putting its policies and plans into effect.

The training courses this institution provides are of two types: first, on-the-job short training courses (3-10) days, which provide a certificate of attendance and aim at equipping trainees (mainly public service employees) with various managerial, technical, and technological skills. The second type is long courses (1-2) years which qualify high school/university graduates for a diploma in the major of their study and aims to produce a skilful work force for the job market. Long courses usually require students to enrol in a one-year ESP preparation course as a prerequisite for starting their career majors. This English language training is conducted in the ELC.

4.3.2 English Language Centre (ELC)

The ELC is a department within the institution devoted to providing the students with the required English language skills for their career majors. The ELC was chosen as the site of this study for four reasons. First, it plays a role in providing a wide sector of governmental employees as well as high school/university graduates with English language training needs. Second, it is one of the few English language schools in Saudi Arabia that provides intensive ESP training. Third, the ELC is one of the first English language schools in Saudi Arabia that adopted ICT in its training courses. The

fourth reason for choosing the ELC as a location of this study is that the researcher has been working in it as an ESL teacher and therefore had easy access to its premises.

4.3.3 English for Specific Purposes (ESP) Course

The English language program itself runs for one academic year through four consecutive levels (beginner, elementary, intermediate, and advanced); each level is taught for one quarter (term). The English language program consists of two subjects: English for General Purposes (EGP), which runs for the two first terms, and English for Specific Purposes (ESP), which runs for the last two terms. The EGP course therefore covers the two first levels (beginner and elementary) and aims to provide students with foundational English skills. The ESP course runs for the two final levels (intermediate and advanced) and aims to prepare students to study their career majors: Executive Secretary, Sales, Commercial Accounting, Banking Operations, Information Studies, Hospital Administration, and Computer Programming.

The language skills (areas) taught in the ESP course are: Reading, Writing, Speaking, Listening, and Grammar. Each of these five skills (areas) is assessed with a (100) mark scale distributed as: two quizzes each of 10 marks (20 marks); a midterm exam (20 marks); a final exam (40 marks); participation (10 marks); and completed homework (10 marks).

The total number of classes for the ESP subject is 24 periods per week: 18 classroom tutorials and 6 CALL lab periods. The distribution of language skills in the weekly timetable is: four classes each for Grammar, Reading, Writing, and Speaking, and two for Listening. Each language skill is supported by CALL lab practice: two CALL

classes for Grammar, and one class for Reading, Writing, Speaking, and Listening.

The distribution of classroom practice and CALL lab practice in the ESP weekly timetable is illustrated in Table 4.1.

Table 4.1: Distribution of classroom and CALL lab practice in the ESP weekly timetable

Skill	Classroom meetings	CALL lab practice	Meetings per week
Grammar	4	2	6
Reading	4	1	5
Writing	4	1	5
Speaking	4	1	5
Listening	2	1	3
Total number of periods:	18	6	24

ESP students can be either secondary school graduates or government employees.

ESP Classes are usually average in size (25-30) students. However, students' drop can reduce the number in each class to 20 students (Participant Interviews).

4.3.4 Pre-ICT Structure in the ELC

Using technology in the ELC was exclusive to over head projectors (OHP), tape players, video players and TV sets in the classroom and listening/speaking materials

in the audio lab. Teacher participants said they did not have much difficulty in using the pre-ICT technology available in the classroom since it has been there for many years and that they are accustomed to using it (Teacher Interviews). Similarly, in audio labs teacher participants stated that they did not have difficulties in operating the control station and that their students were mostly familiar with all the functions of the audio station including the headset and the control buttons because most of the students have already dealt with similar audio equipment at home (Teacher Interviews).

This simplicity of the pre-ICT tools, however, did not prevent teachers to assist one another in integrating the available technology in their ESP teaching. Teachers used to cooperate in making audio recordings (monologue and dialogue) based on textbook activities and exchange these recordings with other colleagues (Teacher Interviews). Also, teachers used to exchange transparent slides to display in the classroom using the OHP (Teacher Interviews). Although the maintenance of the pre-ICT technologies was provided by the Audio/Visual (A/V) department, teachers used to help each other in the operation and maintenance of technology (Teacher Interviews). Cooperation among teachers can also be seen in non-technological issues such as the preparation and sharing of lesson plans, handouts and tests.

4.3.5 Post-ICT Structure in the ELC

Providing a contextual description of the ICT structure in the research site is necessary for better understanding of the environment in which ESP is taught. This description covers both ICT facilities and ICT educational resources. 'ICT facilities' refers to the locations in which ICT is available in addition to ICT-assistance

departments. 'ICT educational resources' represents the hardware/software accessible by both teachers and students in classrooms and CALL labs.

4.3.5.1 ICT Facilities

ICT facilities can be found in various venues within the research site, such as the ELC administrator's office, ELC secretary's office, teachers' offices, and in the printing office, but they are mainly found in classrooms and CALL labs. The ELC Administrator's, as well as the Secretary's, office is equipped with computer, internet access, printer, and a fax machine to help accomplish administrative duties. Teachers' offices are equipped with personal computers, and internet access. Teachers' computers are all connected to two shared printers; each printer is located in one of the two teachers' lounges.

In their offices and as part of their job, teachers use the computer for administrative purposes including entering students' attendance and grades; sending and receiving E-mails through the institution's intranet to and from: other teachers, the ELC Administrator, program coordinator, and test coordinator.

In addition to the administrative use of technology, teachers use the computer in their offices to perform teaching tasks such as: typing quizzes and tests; finding supplementary teaching materials; and browsing the internet looking for teaching materials.

Technology facilities are also found in the printing office which is equipped with modern laser black/white and colour printers and photocopiers for printing teaching handouts, quizzes, and examinations. The printing office is supervised by a technician

who receives printing orders from teachers to make copies of tests, quizzes, and supporting teaching materials.

ICT resources accessible inside both classrooms and CALL labs are used largely for delivering digital teaching materials. Technology in both the classroom and the CALL lab is maintained through technology-assistance centres.

4.3.5.1.1 Classrooms

There are 24 classrooms in the ELC. All classrooms are centrally air-conditioned and equipped with a teacher computer, data projector, pull-down projector screen, white board, and built-in speakers. The classroom computer is connected to the institution's server onto which digital copies of the textbooks are loaded. The institution's server contains shared folders of teaching materials: tests, quizzes, lesson plans, and PowerPoint presentations. These teaching materials are prepared and loaded by the teachers themselves. Within the server there is also a big digital video library holding dozens of educational films. These films can be instantly viewed in the classroom using the computer and the data projector.

For the teachers to access all these digital materials provided on the server, they only need user name and password. Internet access is provided in the classroom through the teacher's computer. Various software applications, including Microsoft: Word, PowerPoint, Excel, and Access are available on all classroom computers.

4.3.5.1.2 CALL Labs

Located in a separate, nearby building within the institution, 12 Computer Assisted Language Learning (CALL) laboratories are allocated for students' practice. Similar

to the classroom, each of these CALL labs is centrally air-conditioned and equipped with a teacher computer, data projector, pull-down projector screen, white board, printer, and built-in speakers. Each CALL lab is equipped with 24 networked computers for students' practice. Internet facility is accessed through the teachers' computer only. Two CALL software programs in addition to an interactive whiteboard are installed in the CALL labs. CALL lab practice is available only at the scheduled practice time. Any informal drop-in by students is not allowed.

4.3.5.1.3 Technology-Assistance Departments

The institution of which the ELC is part has two technology-assistance departments; both provide services to maintain ICT resources inside the classrooms and the CALL labs. The first department is the A/V Centre, which has a team of electricians whose job is to install and maintain technology hardware including computer stations and data projectors. This centre also supervises and maintains the video library and produces case study films. The second department is the Information Technology (IT) Centre which is responsible for maintaining ICT. IT technicians' tasks include technology troubleshooting, software installation, software updating, and maintenance of the institution's server. Teachers can contact both the A/V and the IT Centres for technical support by either filling out an online maintenance request on the institution's intranet or using the hotline phones installed in both classrooms and labs.

4.3.5.2 ICT Instructional Resources

There are two types of instructional resources accessible in the ESP course: printed and digital. The printed resources include textbooks and in-house prepared handouts. The printed resources cover all the course subjects (listening, speaking, writing,

reading, and grammar). The focus of ESP in the printed materials is on two language skills: reading and writing. Specialised ESP textbooks are used to deliver vocabulary and structure of ESP reading and writing. For Business reading, *Business Concepts for English Practice* by CENGAGE Learning is used. For Hospital Administration, *The Language of Medicine in English* by Regents Publishing Company is used. For Business writing, *Business Correspondence* by Addison-Wesley is used. In addition to these textbooks, in-house prepared materials are also used in all language classes in the ESP course.

The digital resources include two CALL multimedia software programs: *New Dynamic English* by Dynamic Education International and *Tense Buster* by Clarity Language Consultants, in addition to *SMART Board Interactive Whiteboard* by SMART Technologies. The use of these digital resources will be explained during the discussion of the teacher participants' ESP lessons in Chapter 5 (section 5.4). More detailed information regarding the multimedia CALL programs and the interactive whiteboard is provided in Appendix (A).

4.4 Participants

Obtaining the approval from the Human Research Ethics Committee at the University of Wollongong was the first step before making contact to recruit the participants (Appendix B). The Ethics application addressed several issues. First, participants were to be selected from among those who volunteered to participate, no one was pressured to participate. Second, participants' names and identities were to be kept confidential and pseudonyms used for each participant in the data analysis. Third, it was to be explicitly explained to the participants that none of what they said would adversely

affect them in any way. Fourth, specific consent was to be sought from all the participants before any audio/video recordings took place. Fifth, it was to be explained to the participants that they had the right to withdraw at any time during the study without any consequences. Sixth, regulations about conducting research in the institution where the ELC operated had to be followed.

4.4.1 Participants' Recruitment

To start data collection the researcher had to contact the institution, the site of the study, to secure access to its premises. Despite the fact that the researcher was part of the teaching staff in the ELC, permission had to be obtained before commencing data collection. A request letter was sent to the department in charge of research within the institution to seek permission to conduct data collection in the ELC on the designated date. The researcher's request to start data collection was approved promptly. Next, the researcher contacted the ELC secretarial office to obtain the teaching staff directory. The directory included 35 ESL teachers' names, E-mails, and the courses they were teaching in the session when data was being collected. An E-mail message was sent to all the 35 teachers on the list, the population of the study, to invite them to participate in the study (Appendix C).

Initially, eight participants volunteered to participate in the research. Later, in the second week of data collection, one teacher decided to withdraw due to his high teaching load reducing the number of participants to seven (six teachers and the ELC administrator). Individual personal meetings with the volunteers informed each of them about the aim of the research and the procedure of data collection. At the meeting, each of the participants was given a copy of the consent form (Appendix D)

explaining the study objective, the participant's role, and benefits as well as participant's rights. Signature on the consent forms were obtained from the participants before data collection started.

4.4.2 Participants' Data

Participants' demographic information (Table 4.2) shows that their ages, qualifications, positions, and years of teaching experience in the ELC vary. Accordingly, these participants were expected to have different perceptions toward ICT use in ESP instruction and also were expected to have various ways of using ICT in their lessons which would provide the research with rich data.

Table 4.2: Participants' information

Participant (pseudonym)	Position	Qualification	Age	Teaching experience in the ELC (Years)
Administrator	ELC supervisor	PhD in Language Education	40-50	19
Kareem	ESL teacher and CALL coordinator	BA in TESOL	40-50	9
John	ESL teacher	MA in TESOL	40-50	2
Ali	ESL teacher	MA in TESOL	40-50	9
Hani	ESL teacher	MA in TESOL	30-40	8
Peter	ESL teacher	MA in TESOL	30 -40	7
Omar	ESL teacher	MA in TESOL	30-40	8

The sample size of this case study represents variety, but is not necessarily qualitatively representative of the whole population. According to Stake (1994) the sample size of case study research is decided by: the ease of access to the site of the study and to the participants; the hospitality and willingness to participate by people of authority as well as the participants' themselves; and time constraints.

These particular participants were initially approached for this research because the researcher had convenient access to them (Braul, 2006) and because the study conclusions and recommendations are aimed to lead to improvements in ICT use in the ESP course at the ELC. The reality that some of the teacher participants had already met the researcher because he worked at the ELC in the past is expected to have a positive effect on the teachers' motivation to participate in the research and on the quality and richness of the collected data. For example, although teacher participants were extremely busy and had only few minutes out of class time (each of the teacher participants had a load of six classes per day), they showed cooperation and agreed to be interviewed frequently throughout the data collection period and agreed to their classes being observed. In many cases, teacher participants were interviewed in their lunch break or out of their working hours.

Another advantage of prior relationship between the researcher and the research participants is that these participants were likely to be more sincere and more open in answering the questions because the researcher comes from within the ELC, which makes him aware of background details that are not usually known by someone from the outside.

4.5 Data Collection

Data collection was conducted in the ELC for one term (eight weeks). It started on the 26th of March and finished on the 22nd of May 2008. The research participants were the main source of data. Two methods were used to collect the data: interview and observation (field notes and videotaping).

Collecting data took place during the third teaching term (quarter) of the 2008 scholastic year. The first week of the term was used by the researcher for: recruiting participants; scheduling interviews and observations according to the participants' timetables. The first week was also used by the researcher to write field notes based on the researcher's inspection of ICT infrastructure in the ELC, and to negotiate obtaining a copy of the institution's ICT policy, if available. Week 2 through to week 7 were used to conduct interviews (pre-observation) and to attend teaching sessions for observation. Week 8 was used to conduct a second series of interviews (post-observation).

4.5.1 Interview

'Interview' is defined by Brown (2001) as a "procedure used for gathering oral data in particular categories" (p. 5). Patton (1990) believes that the main purpose of the interview is to find out about what participants feel, believe, and think. An advantage of interview is its immediacy and direct interaction with interviewees (Rose, 1991). This benefit according to Rose (1991), permits the researcher to obtain clarification and deeper explication of issues raised. However, one of interview method's weaknesses is its subjectivity and potential for bias (Von Manen, 1990). In this

research, two types of interviews were used for data collection: pre-observation and post-observation.

4.5.1.1 Pre-observation Interviews

A series of semi-structured, pre-observation interviews were conducted first to identify the participants' ICT attitudes and their ICT past and present experiences. Two sets of questions were used in the pre-observation interviews: questions for interviewing the teachers (Appendix E) and questions for interviewing the ELC administrator (Appendix F). The interview questions were informed by the literature review and the analytical framework in order to capture the individual, social, cultural and historical contexts of the use of ICT.

The teachers' questions were grouped into four categories: teachers' personal and educational background; ICT resources and context; teachers' perceptions and self-reported behaviours in a technology-based environment; and rules and conditions informing ICT use. A number of these questions were open-ended to elicit further data. An example of an open-ended question is a question that inquires about the level of cooperation between the teachers in ICT implementation. As some teacher participants reported insufficient cooperation between teachers, the researcher had to follow this open-ended question with improvised further questions to obtain more explanation. Teachers' explanations about the reasons for insufficient ICT cooperation had to be contrasted with each other in the analysis stage.

Interview questions for the ELC administrator were grouped into two categories: the administrator's personal and educational background and the administrator's role in the introduction of ICT in the ELC. The focus of the administrator's interview was on:

the history and development of ICT since it was introduced in the research context; the institutional support offered to ICT integration in ESP instruction; and the perceived obstacles to ICT integration in ESP instruction. Other technical issues were also discussed in the interview with the Administrator including: the facilities required to establish state-of-the-art ICT; students' access to internet policy; technical and training support for teachers and students; and factors limiting the expanded use of ICT approach in ESP instruction. Although the number of the questions in the Administrator's interview was far less than the teachers', the researcher had to cover them in four different sessions due to the Administrator's teaching and heavy administrative commitments.

English language was used in all the interviews since all the participants were either native or accomplished speakers of English. All the teachers were interviewed individually in their offices. Interviewees have more confidence to talk and are more communicative in answering the questions they are asked when they are within their own territories and not out of them (Berg, 2001). However, teachers' busy schedules resulted in interviewing each one of them more than once (three to six times) to cover the entire interview questions. In total 31 interview sessions with teacher participants were conducted for this research. Each interview session with every participant was carried out for approximately half an hour. All interviews with teachers and the Administrator were digitally recorded using a Sony MP3 device.

4.5.1.2 Post-observation Interviews

Another series of interviews took place after the observations where it was intended to discuss the content of the video recordings of the observed classrooms/CALL labs.

Questions used during the post-observation interviews were drawn from material that arose from the researcher's initial viewing of the video recordings.

The process of the post observation interview began with the researcher viewing the video recordings, and writing down some brief notes related to: the role of ICT in the classroom, and inquiries about teachers' methods of integrating ICT in their lessons. The researcher then reviewed excerpts of the video recordings with the teachers to elicit clarification from the teachers on some of their teaching activities and the objectives they had in mind during the classroom/CALL lab teaching sessions. Post-interviews were used to obtain information about some issues that were found by the researcher to be significant and to need further explanation.

4.5.2 Observation

'Observation' is defined by Erlandson, et al. (1993) as "the systematic description of events, behaviours, and artefacts in the social setting chosen for the study" (p.94).

Research observation is sharper than the usual "less interested gaze of ordinary observation" (Kellehear, 1993, p. 125). The remarks the researcher wrote down while observing the teacher participants' ICT practice allowed him to see points related to ICT use that he himself could not see before when he was teaching in the same context.

As this study is built on gathering data personally and in a particular context, observation constitutes a foundation of this research (Yin, 2003). According to Bogdan and Biklen (1998), the focus in observational case studies is on a particular institution or some aspect of the institution, which can be determined or narrowed by the researcher as a boundary of the study. The particular context focus is emphasised

in this study as it aims to investigate and examine the embedded social, cultural, and institutional settings of ESP instruction in the research context.

An advantage of observation is that it allows previously unnoticed or ignored aspects to be clearly seen (Kellehear, 1993). However, a weakness of observation is researcher's bias that could result from influences of previous experience, researcher's fatigue, boredom or undisciplined attention (Denzin & Lincoln, 2000).

The observations used in this study were of a non-participant observation. While in participant observation, researchers engage in the activities they set out to observe, non-participant observers stand remote from the group activities they are investigating (Kellehear, 1993). Non-participant observations were conducted in designated classrooms and CALL labs as scheduled in agreement with teacher participants.

At the beginning of the first observation with each new class, the researcher was introduced to the students by the class teacher and was allowed two to three minutes with the students to give a brief orientation about the research he was conducting. The researcher adopted the position of simple observer (Kellehear, 1993) and wrote notes and remarks silently during the teaching sessions. However, the researcher was not a mere observer but rather was focused on collecting specific data related to the research questions and was informed by his previous teaching experiences.

Each teacher was observed six times; three times in the classroom and three times in the CALL lab. Written consent from the students in each observed class was obtained prior to video recording. The students of each class signed their consent for the researcher on the class roster provided by the class teacher at the beginning of the lesson. All the observed sessions were video recorded except the first session with

each group which was used by the researcher to gain students' confidence and to write observation notes. With the second observation, the researcher started to use the video camera to record the class activities. A digital JVC hard-disk video camera was positioned on a tripod in the back corner of the teaching venue to avoid detracting from the lesson. The focus was on the teacher's practice rather than the students' performance. As the current study's interest is the teachers' and the administrator's ICT perceptions and practice, the students' ICT practice and perceptions were not investigated.

The researcher during the observation had a physical limitation in observing all the simultaneous activities and writing important notes related to all of these activities, however, the video recording complemented the researcher's observations. Later, when viewing the video recordings of the teaching sessions the researcher was able to compensate for this limitation. Also, the researcher was able to combine his in-class observational notes with his post-observation interviews in a way that facilitated deeper understanding of ICT use. For instance, teachers' practice in the lab session and its relationship to classroom activities was discussed with the teachers in the post-observation interviews to clarify teachers' objectives.

Although the Administrator himself is a teaching staff member, his classes were not observed since his inclusion in the data collection was intended for the purpose of providing the background about ICT policy, planning, and implementation rather than his practice.

Another form of observation in this present study and a source of data is field notes. 'Field notes' is defined by Marie (1997) as "running descriptions of settings, people, activities, and sounds" (p. 53). Field notes are preferably written down as soon as they

are observed to avoid missing or forgetting points (Abalhassan, 2002; Marie, 1997).

The field notes in this research include written remarks about ICT infrastructure inside the ELC. The researcher took the opportunity, during the first week of the research period and before interviews and classroom observation started, to gather information of the ELC to examine the available ICT facilities. Also, during that initial period, the researcher paid regular visits to the classrooms and CALL labs, outside teaching time, to make notes about ICT facilities and resources used by both teachers and students. The data provided by the field notes has informed the description of the ICT structure introduced earlier in this chapter (section 4.3).

A summary of the methods used to collect the data is introduced in Table 4.3. This includes the required data and the matching data gathering techniques for addressing each of the research questions.

Table 4.3: Data required, data gathering techniques, and corresponding research questions

Data required	Data gathering techniques	Corresponding research questions
<ul style="list-style-type: none"> - Participants' ICT background, perceptions, philosophy and use - Teaching procedures and classroom activities 	<ul style="list-style-type: none"> - Administrator's interview - Teachers' interviews - Field notes 	<p>Question I</p> <p>How is the introduction of ICT to ESP instruction perceived by the teachers and the administrator in this particular context and how do their perceptions affect their ICT use?</p>
<ul style="list-style-type: none"> - Teaching procedures and classroom activities - Impact of ICT on existing culture. - ELC Activity systems before and after ICT - Pre and post-ICT ELC hierarchy - The social network of the persons involved in ICT integration in the ELC - Evidence of conflict between individuals and between groups and individuals - Explicit/implicit sociocultural rules 	<ul style="list-style-type: none"> - Administrator's interview - Teachers' interviews - Video recordings - Field notes 	<p>Question II</p> <p>What changes does the introduction of ICT bring to ESP teaching in this particular context?</p>
<ul style="list-style-type: none"> - Facilitators/obstacles affecting ICT integration in ESP instruction - Elements influencing the success of ICT - Official/underlying sociocultural and institutional rules - The operational processes involved at both the ELC program and the institutional levels - Evidence of conflict across rules - Participants' thoughts for the improvement of ICT use in ESP instruction 	<ul style="list-style-type: none"> - Administrator's interview - Teachers' interviews - Video recordings - Field notes 	<p>Question III</p> <p>What are the factors that affect the success of ICT integration in ESP instruction in this particular context?</p>

4.6 Data Analysis

Once the researcher finished interviewing the participants and observing the use of ICT in ESP lessons, the necessary organising of the data was undertaken. Audio and video recordings were organised in digital folders according to the interview order of participants and then saved on the researcher's computer as well as on an external driver. At the end of the period of data collection and on returning of the researcher, the external driver was placed for safe keeping in a locked filing cabinet in the researcher's office at the University of Wollongong. The sole purpose of recording the data is to ensure the validity and accuracy of the observed information. The original data therefore had to be secured to guarantee the integrity of the research.

4.6.1 Analysis Procedure

The body of data included the transcripts of the interviews video recording notes and observation field notes. These three sets of data were separately analysed after the researcher returned to the University of Wollongong after his overseas data collection trip. The initial purpose of the analysis was to organise the data and to identify the main themes and sub-themes.

The interviews were the first source of data to be analysed. There was a substantial amount of interview audio recordings which were transcribed and typed using a word processing program. Due to the extent of interview transcription, it was three months before the process was complete; however through the task, the researcher became more familiar with the data content (Braun & Clark, 2006). Preliminary notes were written in a separate Word document as the transcription processed. These notes were read later for deeper understanding of the interview data.

The transcripts were organised into files under each interviewee's pseudonym and saved in the researcher's computer for easy retrieval. Each of the transcripts was read carefully and repeatedly in search of tentative themes. Eventually, the tentative themes were carefully categorised parallel to the research questions to focus the data in line with the aims of the research. At the same time, thematic analyses under the tentative themes began to control and concentrate the data. This early categorising technique helped to reduce the data and quickly identify significant points that the interviewees wanted to emphasise.

One of the refining techniques in the process of interview analysis was contrasting two teacher participants (John and Kareem). These two teachers' diverse perceptions toward ICT use in the ESP instruction encouraged the researcher to nominate them for comparison. Throughout the comparison, similarities and differences between these two teacher participants were sharpened so that common themes could be clearly identified. However, themes identification was not exclusive to these two particular interviews; the other five interviews were later contrasted to each other and additional themes were identified.

Video recording notes for the observed ESP ICT-supported lessons were the second source of data to be analysed. Video recordings were viewed frequently (first by the researcher alone) looking for correlation with the identified interview themes and for possible new themes. At the time when the video recordings were later viewed for each of the participants individually, reflective notes were made and later typed in a comment sheet. These are referred to as 'video recoding notes'.

Video recording notes were classified into two types: descriptive notes written during recording; and analytical notes written during the video review process (Anton, 1996). Importantly for the success of the methodology, the themes of the interviews had to be recognised first because the video recording notes were all organised according to the same themes of the interview. The themes drawn from the video recordings data were also aligned with the research questions.

Video recording data offered descriptive notes on the observed teaching session and was later contrasted with the interview data. The data of these descriptive notes were categorised in the following themes: proportion of lesson dedicated to ICT, type of ICT resources used in the ESP lesson, techniques used in the ICT-based activities, levels of ICT applications in ESP lessons, ESP lesson pedagogy (teacher-centred vs. student-centred), degree of students' engagement in ICT-based ESP lesson, quality of the function of ICT facilities, and language skill used as the focus of the lesson.

Observation field notes were the third source of data to be analysed. Field notes were used to describe ICT structure and to provide information about ICT facilities and resources. The data of these field notes were classified into several themes: ICT features (types and quantity), ICT organisation, and ICT condition. All the themes found in the field notes data were compared and contrasted to the major themes found in the analysis of the interviews and video recording notes.

After initially identifying the themes in the data, it was possible to begin a methodical process of coding the data for higher organisation of the material. To do this, portions of data were selected and by using word processing features these portions of data were colour-coded into four groups: interviewee's background, perception, and

philosophy (yellow); ICT pedagogy in ESP (orange); perceived ICT integration's barriers (red); and interviewee's suggestions to remove these barriers (underlined red). After colour-coding the data into groups, it was also necessary to undertake a second type of coding process by selecting data containing key words within the groupings looking for sub-themes.

The final step in the formation of themes was themes revision, naming, and refining. This process involved examining themes' comprehensiveness in covering all the coded data and labelling them appropriately. Refining themes involved two functions: excluding some themes that data do not support and deconstructing major themes into more descriptive sub-themes. Comments were typed in the Word document margin and saved.

4.6.2 Data Analysis Framework

Two frameworks were used to analyse the data: first, thematic approach (Aronson, 1994; Attride-Stirling, 2001) and at a different level, the Activity System Model (Engeström, 1987). These analytical approaches were used in two steps. Thematic analysis was used in the first step to highlight the participants' profiles, ICT attitudes, and technology use. The findings from thematic analysis were then processed, in the second step, through the framework of the Activity System Model to demonstrate the various tensions in the participants' ESP activity system and to identify key elements affecting the success of ICT in ESP in the study context.

The use of thematic analysis in data analysis from an early stage was a necessary step to identify the major themes in the data. This can be understood as most analysis is

thematic in nature (Braun & Clarke, 2006) particularly across qualitative research (Holloway & Todres, 2003, in Braun & Clarke, 2006).

Thematic analysis fundamentally assisted the researcher in identifying the elements that affect the success of ICT integration in ESP instruction in this study context. The simple identification of elements was not enough. The need to identify the relationship between these elements in a systematic way was necessary for deeper understanding of the role of the sociocultural factor in facilitating or hindering ICT integration. Therefore, data at a dynamic level of analysis was necessary to make more sense of the material.

The Activity System Model was used to examine the relationship between the components of the participants' ESP activity system and to distinguish existing tensions. The activity system of the study participants, depicted from the Administrator's interview perspective, is graphically represented in Figure 4.1.

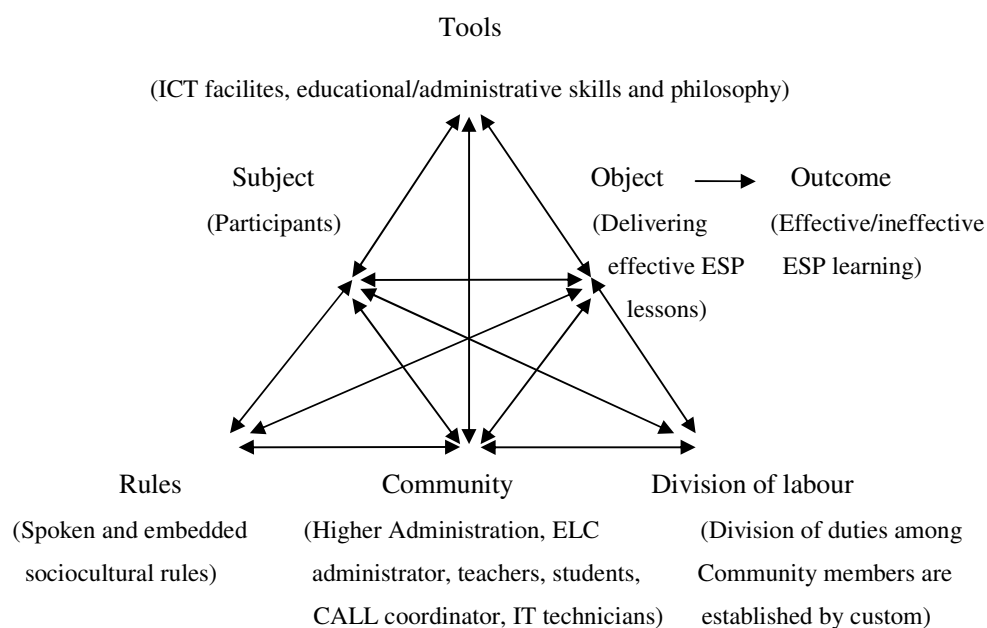



Figure 4.1: The participants' ESP activity system

The Activity System Model was also utilised as a symbol to represent individual activity systems of the seven participants. A triangle model was drawn for each participant to represent: the participant's goal for integrating ICT (Object); ICT means used in ESP teaching (Tools); the staff members involved in ICT integration (Community); the parameters that govern the participant's use of ICT (Rules); and the responsibilities the community agreed to perform (Division of labour).

Varied types of shapes were used to illustrate tensions (contradictions) in the participants' activity system: shadowed box  was used to highlight a component showing a primary tension (Figure 7.3); broken-line arrow -----▶ between two components was used to show a secondary tension (Figure 7.5), and lightning-shape, broken arrow ◀---⚡---▶ between two different activity systems to demonstrate the quaternary tension (Figure 7.9). Finally, an activity triangle model representing an overview of the tensions in the participants' ESP ICT-based practice was drawn (Figure 7.8).

4.6.3 Single-case and Cross-case Analysis

Seven cases (six teachers and the administrator) are established from the existing data. Because the research participants share the same work conditions and are exposed to similar circumstances, individual exposure of participants' cases would be repetitive. Thus, all seven cases are amalgamated into one case to portray a general outline of ICT use in the context of the study.

Cross-case approach assists in generalising “a particular set of results to some broader theory” (Yin, 2003, p. 44). The fact that data was gathered from different participants

working in the same surrounding makes cross-case a suitable approach in this research design because it helps the researcher to avoid repetition (Firestone, 1993; Miles & Huberman, 1994).

The results of the analysis are organised and discussed in three separate chapters (5, 6, and 7). Each chapter contains an answer to one of the research questions. Chapter 5 (Participants' Cases) introduces the findings related to the participants' profiles and ICT attitudes. Chapter 6 (Impact of ICT Use) presents the effect of ICT on the study environment hierarchically, functionally, pedagogically, and socioculturally. Chapter 7 (Elements of ICT ESP Success) draws on the findings of Chapters 5 and 6. It also proposes the elements found directly involved in influencing successful ICT integration in ESP in the study context.

4.7 Trustworthiness

The researcher's personal assumptions and values have to be monitored and minimised to strengthen the research and to gain reliability (Mertens, 2005). This research followed several techniques to fulfil the criteria for trustworthiness. These techniques were: persistent engagement, triangulation, member checks, debriefing and thick description.

The researcher followed the technique of persistent engagement by spending sufficient time in the field. In addition to his previous experience as a permanent ESL teacher in the research site for a number of years, the researcher was a full time data collector during the data-gathering period. Over the eight weeks of the research, the researcher was either conducting an interview in a participant's office, or taking notes during a classroom/CALL lab observation. During gaps between interviews and

observations, the researcher was busy in his office downloading the audio and the video files to his computer, listening to and watching these recordings to capture important points, and typing notes and comments in a separate sheet for later discussion. The researcher, through a direct and constant contact with the participants, established a supportive relationship with them. This was reflected in the participants' enthusiasm to participate and in their openness when discussing their views about ICT integration. The intensive time the researcher spent in the field provided him with many opportunities to carefully observe and make field notes during his research inquiry.

Triangulation (Guba & Lincoln, 1989) was employed by the researcher in analysing the data to increase understanding of any pattern of difference that occurred across the sources of data. The researcher triangulated in two ways: triangulation of sources and triangulation of methods. Triangulation of sources in this research took place when data from different participants were compared and crosschecked. Triangulation of methods was accomplished by contrasting the three sources of data: interviews, video recordings, and field notes. The researcher frequently contrasted the data gathered through field notes and interviews to the respective video recordings. Both types of triangulation enabled the researcher to test the reliability of the collected data.

Member checks and debriefing, together, constitute a third technique implemented by researchers in analysing the data to increase the trustworthiness of the research. The researcher contacted the participants for member checks before collecting the data and discussed with them the research problem, data collection methods and interview questions. Later, the researcher sent the interview transcripts and early interpretation to the participants for further comments and suggestions about the identified patterns

(Aronson, 1994). In addition, the researcher invited a peer research professional to cross check. This peer, who was not directly involved in the research yet familiar with qualitative research methods, commented on the data collection and analysis procedures, and offered some suggestions. Moreover, the researcher has had frequent supervision meetings with his supervisors to discuss all data analysis-related issues and received valuable feedback in those meetings.

In addition, to reduce the researcher's bias while observing ICT use in ESP lessons, the video recordings were examined by both the researcher and the concerned teachers during the post-observation interviews to reach a unified understanding of the activities and the teachers' objectives and to make up for any unnoticed or misunderstood activities during the observation time.

The fourth technique is thick description which was applied by the researcher to enhance a thorough understanding of the study context. The researcher in this study provides a detailed account of the setting of the research including the institution where the ELC operates; the ELC (the site of the study); the ESP course; and the ICT facilities used in both the classroom and the CALL lab. In addition, the social context of ICT use is extensively presented and explained including: the relations among the teachers themselves; and the relations between the teachers and the ELC administrator; and the teachers and the IT technicians. A comprehensive description is provided of each of the participants, their educational and technological background, their philosophical basis of using ICT in their teaching, their actual use of ICT in the classroom in addition to their perceptions towards the process of ICT integration. Various direct quotations were frequently used to clarify and/or emphasise the voice of the participants.

4.8 Summary

This chapter, providing details of the methodology of the study, has discussed research questions, research design, research context, research participants, data collection, data analysis, and research trustworthiness.

Data analysis took a thematic approach to the material collected through interviews. Data scripts were organised into individual digital folders. The scripts were then colour-coded into three general categories of the persistent themes that were used to interpret the findings and relate them to the three research questions. Thematic analysis of data was aligned with activity system analysis through which the systemic tensions that occurred within the ESP activity system were highlighted.

A number of measures were taken to confirm the data collection and analysis' reliability including using cross-case analysis, and establishing strong relations with the participants by spending sufficient time discussing ICT integration issues with them or observing their use of ICT in classrooms and CALL labs. In addition to these measures, the researcher used other techniques such as providing a detailed account of the setting; cross examining the data sources and the data methods to confirm their accuracy and relevance; and finally, contacting the participants and experienced practitioners to confirm the accuracy of understanding the data and the adequacy of the steps of analysis.

5. PARTICIPANTS' ICT PERCEPTIONS AND USE

Overview

This chapter is the first of three chapters presenting the results of data analysis consistently with the procedure outlined in the Methodology chapter. The findings of the interviews, video recording notes, and field observation notes are reported and discussed following analysis drawing on both thematic and ASM analysis.

The aim of this chapter is to get as clear a picture as possible of the participants' background and ICT perceptions and use. The participants' collective profile is the base to understand the trends that are found in ICT perceptions and pedagogy. It also helps to understand the tensions that emerge in the Community and Object of the participants' ESP activity system. The participants' ICT perceptions and pedagogy are important because they constitute a foundation for the findings of the research as they are directly related to the general topic of the study: successful ICT integration in ESP instruction.

In relation to the five factors previously identified as determinant for successful ICT integration in education and language education, the role of the personal, the technological, and the pedagogical factors in ICT integration in ESP is examined in this chapter. The personal factor is examined through the discussion of the participants' educational and computer background in addition to their ICT perceptions. The pedagogical and technological factors' role in ICT is explored through describing the teacher participants' use of ICT in their ESP teaching.

The main source of data for this chapter is the interviews of seven participants: six ESL teachers and the ELC administrator. This data has been synthesised because it became apparent at an early stage of data analysis that the patterns of recurrence were clear and would therefore be repetitious.

5.1 Research Question I

This chapter responds to the first research question:

How is the introduction of ICT to ESP instruction perceived by the teachers and the administrator in this particular context and how do their perceptions affect their ICT use?

In order to present the findings for this research question, it is essential that all seven participants be introduced. As has been previously mentioned, the data of the seven cases is very extensive so it became necessary to incorporate them into one large case. Also, as has been mentioned, cross-case analysis informs the findings about the participants' profiles, attitudes, and ESP lesson practice.

To introduce the participants, a descriptive profile is made for each one of them by analysing his educational and computer background. A second analysis of participants' profiles is conducted to shape a concept of the participants' ICT perceptions. These perceptions represent many aspects of the participants: their assumptions about ICT; their assessment of the importance of ICT in ESP instruction; their understanding of ICT advantages and disadvantages; and their definition of 'effectiveness in ICT use'.

Alongside the ICT perceptions, participants' ICT practice in ESP lessons is described in detail. This description involves teachers' teaching procedures in their ICT-based ESP lessons. Comparatively, the description highlights variation among teachers in aspects of their ICT use including: teachers' ICT pedagogy, ICT strategies, and frequency of using ICT.

5.2 Profiles

Data from the comments of the participants could not be fully analysed without the benefit of their personal background information. This background gives clearer perspective and definition to the whole picture of their ICT use. The background includes educational history, computer experience, professional training, and career positions.

The formation process of the participants' profiles is completed in two stages. In stage one, seven individual profiles are generated from interview and observation data. In stage two, a collective profile is designed by combining the seven individual profiles into a single comprehensive profile.

5.2.1 Individual Profiles

Participants' individual profiles involve the participants' educational and computer background and philosophy in using ICT in the ESP context. Individual participants' data is briefly outlined throughout the presentation of the collective (generalised) profile. A brief background profile of each of the participants is included in Table 5.1, while each of the participants' ICT identities and perceptions are summarised in Table 5.2. Later these two tables are combined with the participants' ICT use in Table 5.3.

After the background and ICT profiles are compiled, further interpretation of the profile of each participant is made through individual activity system models (Figures 5.1 to 5.7). Each triangular figure portrays the activity system for every participant and exhibits the participants' definitions for the various components in their own activity systems. The analysis procedures implemented in every individual profile are demonstrated through the profile posted as a sample in the appendices (Appendix G).

5.2.2 Collective Profile

The participants are diverse not only in their personalities, but also in their teaching experience (various types of EFL/ESL jobs and job duration); language (native Arabic and English); and nationality (Jordan, Saudi Arabia, and the US). Awareness of this diversity reflects a truer picture of the ICT use in lessons because it gives the texture of the participants' resources. Therefore, the collective profile of the participants, presented through a cross-case analysis, necessarily includes the participants' similarities and differences.

An example of participants' similarities and differences is: although all the teachers have a Masters level of foreign language training (except Kareem), their teaching experience years are widely different. Thus, there is a strong contrast between the 'new' teachers (Hani, Omar, and Peter) who have recently trained versus the other teaching participants (Ali, John, and Kareem) who not only have a long teaching experience but also in other countries. John is most notable among those with broad teaching experience, having taught in developed and developing countries before teaching in Saudi (John Interview 1). This data about teaching experience gives greater depth to the comments from experienced teacher participants in comparison to

those who lack experience and are therefore narrower in their perspective of ICT integration in ESP. The data is complex. Furthermore, within the experienced group, Ali and Kareem have wider experience in the ELC than John, having worked there for a longer time.

Also, the Administrator shows similarities and differences in that he has a further degree and managerial level experience besides matching the same kind of broad teaching experience as John, Ali and Kareem. Not only that, but he has worked up the ranks within the ELC itself from an ESL teaching position. This has given him a good grounding in knowing the organisation and helps him to manage the many staff for whom he is responsible which includes 35 teachers in addition to other support staff (Field Notes 1). A myriad of responsibilities are demanded of him as he oversees the teaching and learning processes: personal recruitment interviews, communicating suggestions to higher authorities on behalf of teachers, monitoring teacher attendance, and providing: memos, updates, discipline and dispute arbitration, as well as general policy (Administrator Interview 2). A brief background profile, provided in Table 5.1, of the similarities and differences the study participants have, begins to show the collective profile emerging.

Table 5.1: Brief background profile of the study participants

Participant (pseudonym)	Position	Qualification	Teaching experience in the ELC (Years)	Native Language	ICT uptake for own use	Exposure to ICT training
Administrator	ELC supervisor	PhD in Language Education	19	Arabic	Early user	Broad
Kareem	ESL teacher and CALL coordinator	BA in TESOL	9	Arabic	Late user	Broad
John	ESL teacher	MA in TESOL	2	English	Late user	Medium
Ali	ESL teacher	MA in TESOL	9	Arabic	Late user	Narrow
Hani	ESL teacher	MA in TESOL	8	Arabic	Early user	Medium
Peter	ESL teacher	MA in TESOL	7	English	Early user	Medium
Omar	ESL teacher	MA in TESOL	8	Arabic	Early user	Medium

A second significant point in the participant background is the variation in participants' computer experience. Hani, Omar and Peter, the new and recently trained teachers, are 'early users', that is, they used the computer from an early age both at home and at school. The Administrator, though being an early user, contradicts the main pattern however being an experienced teacher. Thus, he belongs to this group as an 'early user' but has much more teaching experience than they have, an interesting contrast and comparison to maintain when analysing his comments.

Although the ‘early users’ adopt the computer at an early age, it was only at college level that these participants began using the computer as a learning tool. It was in their postgraduate studies that they used the computer in more integrated ways. For instance, as part of his internship, Hani taught an ESL course to migrant students at a community college (Hani Interview 3). He used CMC to have these students converse through text chatting with each other and with other students who were mainly native speakers of English. As part of a Masters’ term project, Omar designed an ESL website dedicated to teaching vocabulary (Omar Interview 2). Similarly, Peter used ESL websites extensively in his postgraduate practicum (Peter Interview 2).

The other teacher participants (Kareem, John, and Ali) on the other hand, who are the experienced teachers, were ‘late users’. They came into contact with the computer in the context of their adult work situations when looking for, or preparing, teaching materials. For instance, John has used opportunities to participate in developing his computing skills significantly on several occasions during his teaching career (John Interview 1).

Interestingly however, these ‘late users’ are all keen users of the computer to learn foreign languages. They have therefore embraced the technology for their own personal sake, not just for their classroom teaching, a point to keep in mind as their perceptions of ICT technology in ESP lessons are examined. Another interesting and outstanding finding in the analysis of the participants’ profiles is that although Kareem is a ‘late user’ he has chosen to embrace extensive training on computer applications and internet, for teaching purposes. In turn, this has led to his appointment as CALL coordinator.

The profile of the Administrator, from whom ICT direction in ESP initiates, provides an important finding. The ELC Administrator, an 'early user', has not only taken as many computer training opportunities as the 'late users', but because of his promotions the Administrator has also been required to learn new applications. Again he provides both a comparison and a contrast to his 'early' and 'late' computer peers. Most of all, the Administrator personally and professionally (because of his early entry, vast training, influence, and personal interest in computers) holds the 'master key' to understanding many aspects about ICT use in the ELC courses including the source of ICT implementation in ESP.

As an 'early user' the Administrator not only used the computer as entertainment but was interested in the development of computer software and hardware from the time of the early computer operating systems, such as Disk Operating System (DOS). He has maintained his interest through to the latest version of Windows. In fact, it was the Administrator's interest in the development of computers, especially as it applies to the field of language learning and teaching that motivated him to propose the introduction of ICT to the English language program at the ELC at a time when it was innovative.

Moreover, the Administrator's role did not end with introducing ICT in the ELC; he has made further efforts to upgrade ICT by suggesting new technologies, such as the interactive whiteboard (*SMART Board*). This datum importantly presents a significant finding and establishes the implementation of ICT in ESP lessons as being introduced from top down. It also demonstrates that integration has primarily been driven from the top down, though the Administrator is supported by the enthusiasm of certain members of the staff in his vision of technology use.

5.2.3 Summary and Discussion of Participants' Profiles

Analysis of the data shows the following: new teachers and experienced teachers; late users and early users of computer; and highly trained users and less trained users. This finding of individual profiles is further developed and then diagrammatically illustrated in Figures 5.1 to 5.7. In summary, the findings indicate that the participants differ in the amount of exposure to ICT training and the personal use of ICT.

It is of great significance, for their future importance, to notice two specific details in the presentation of the findings in chapters 6 and 7. The first is that the introduction of ICT has been from top down. This implies a certain pressure which, as will be seen through the activity system analysis in chapters 6 and 7, has an effect on the use of ICT. The second is the influence of potential bias in two participants with administrative positions (Administrator and CALL Coordinator) because there could be a conflict of interest regarding any criticism of their own area of responsibility, especially if criticism was interpreted as a weakness in their leadership.

Before looking at the pressure within the ICT environment (chapters 6 and 7), the study will look more closely at the participants' ICT perceptions.

5.3 Perceptions

All participants have a generally positive perception toward the introduction and use of ICT in ESP. This group of participants, by showing enthusiasm to voluntarily participate in the research, could be slightly more motivated about teaching ESP with ICT than the group at ELC as a whole. Their perceptions about ICT vary only partly related to their personal, educational and computer experiences. Underlying their

varied experiences are assumptions which can be noticed in their views towards ICT. It will be shown that participants' personal, educational, and computer experiences build perceptions that cover: the degree of importance of ICT in ESP instruction; ICT advantages/disadvantages, and ICT effectiveness.

Participant's ICT perceptions together with the initial findings of their ICT use are eventually summarised and presented separately through ASM triangular diagram (Figures 5.1 to 5.7) after Romeo and Walker (2002) previously introduced in Chapter 3 (section 3.5). This gives an even clearer picture of participants' perception and ICT use in the current research context.

5.3.1 The Importance of ICT in ESP Instruction

The importance of ICT in ESP instruction is a large issue in the discussion of this research. Although all the participants emphasised the importance of ICT in their ESP lessons, most of these participants were 'held back' from systematic integration of ICT by their view of ICT as 'another tool' or a creative alternative in ESP. Figures 5.1 through 5.7 illustrate individual ESP activity systems for the seven participants.

The data represented through each individual activity system is a summary of participants' perceptions about the components of their ESP activity systems (Tools, Object, Rules, Community, and Division of labour). Every participant's activity system is characteristically labelled according to the participant's description of his own use of ICT in his ESP teaching.

As has been mentioned, the Administrator is a strategic person in the context of the research of ICT in ESP; however he is the source of conceiving ICT as a

supplementary tool in ESP. Although the Administrator advocated the implementation of ICT in the ELC from an early stage and is expected to impose a high degree of ICT integration in the ESP curriculum, his ideas about ICT in ESP do not fulfil his initial proposal of the institution keeping pace with modern language learning techniques:

We cannot have ICT as the core of the course unless the course itself is about ICT which is not the reality here in our ESP course (Administrator Interview 2).

The Administrator's activity system (Figure 5.1) reflects his view that the core component of the ESP curriculum is the syllabus's printed materials: the textbooks and handouts.

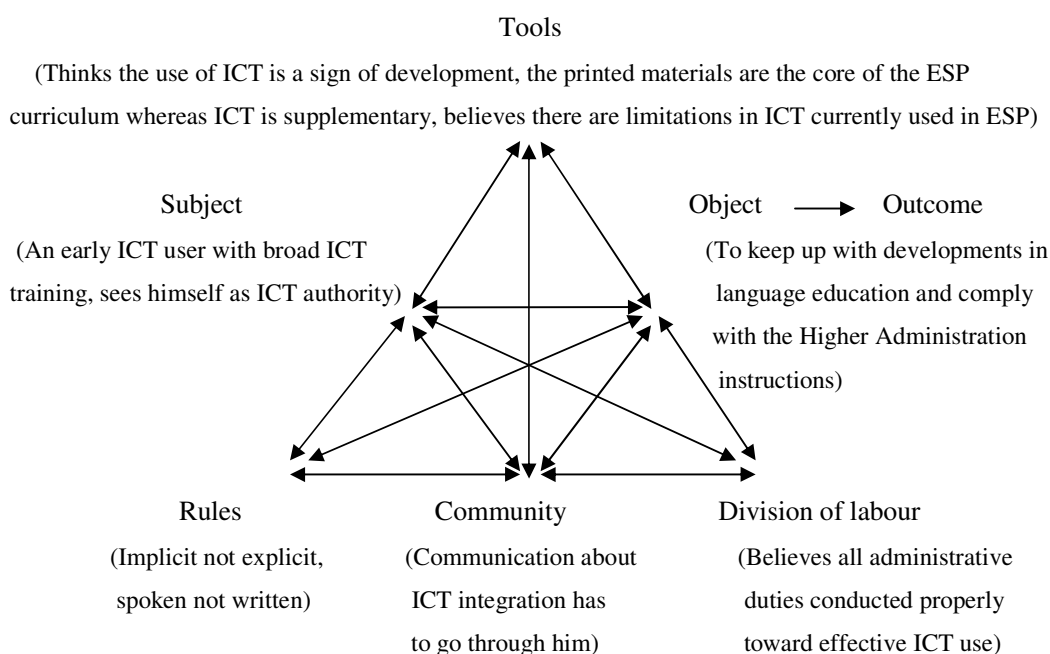


Figure 5.1: The Administrator (ICT authority)

Although the Administrator agreed there were limitations in the hardware and software used in the ESP course, he stated that all administrative and technical support duties for ICT were conducted properly (Administrator Interview 1). Seeing himself as the authority responsible for ICT, the Administrator believed that communication about ICT integration has to go through him. When asked about the institution's technology policy that could be referred to in analysing ICT implementation in ESP, the Administrator said that such policy does not exist (Administrator Interview 4). This implies that the Rules that govern the various aspects in the participants' ESP activity system are implicit and agreed upon by custom.

The Administrator's perception of ICT being 'extra' to the ESP course is adopted by the majority of teacher participants including Omar, Hani, John, and Peter. Omar's activity system (Figure 5.2) shows that he shares the Administrator's perspective of ICT as "additional":

What I could provide the students with using the computer technology is additional. I am required basically to follow the textbook since I work for an institute and I don't have the freedom to use my own materials (Omar Interview 1).

Even though Omar has many options for using ICT, the data indicates that Omar as a teacher makes the minimum use of ICT in ESP (Omar Classroom Observation 1).

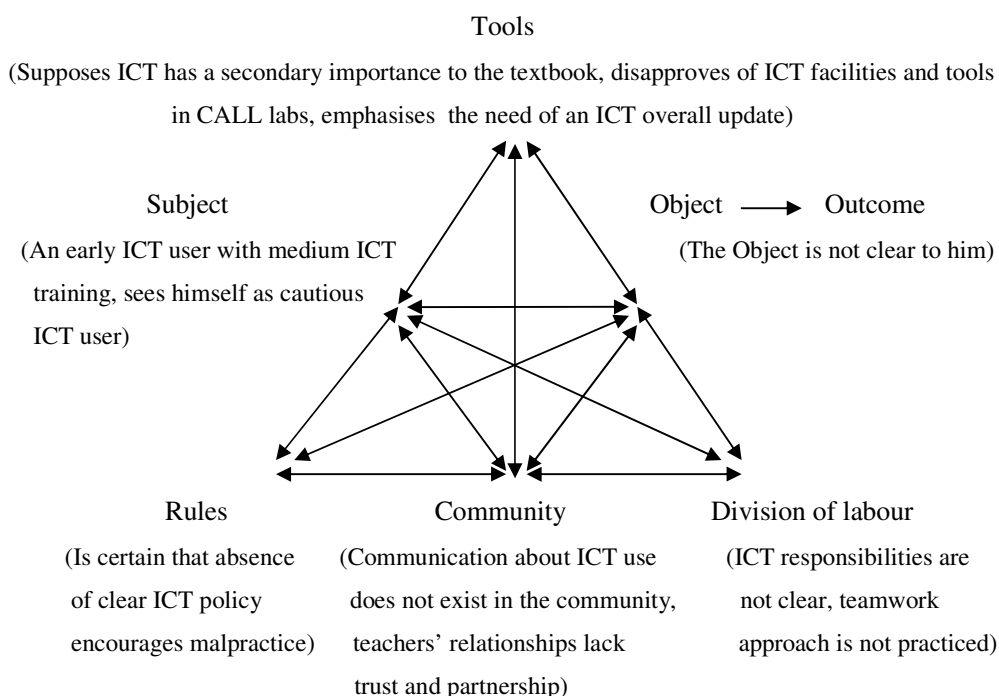


Figure 5.2: Omar (ICT cautious user)

Omar believed that the absence of technology policy in the ELC is a source of poor implementation of ICT (Omar Interview 1). As a result, the Object of ICT implementation in ESP is not known or clear for Omar (Omar Interview 1). Omar stated lack of cooperation between teachers in regard to ICT use is noticeable due to absence of team work approach and unorganised efforts (Omar Interview 1).

Analysis of Hani's activity system (Figure 5.3) shows that he also generally considers technology as auxiliary in ESP.

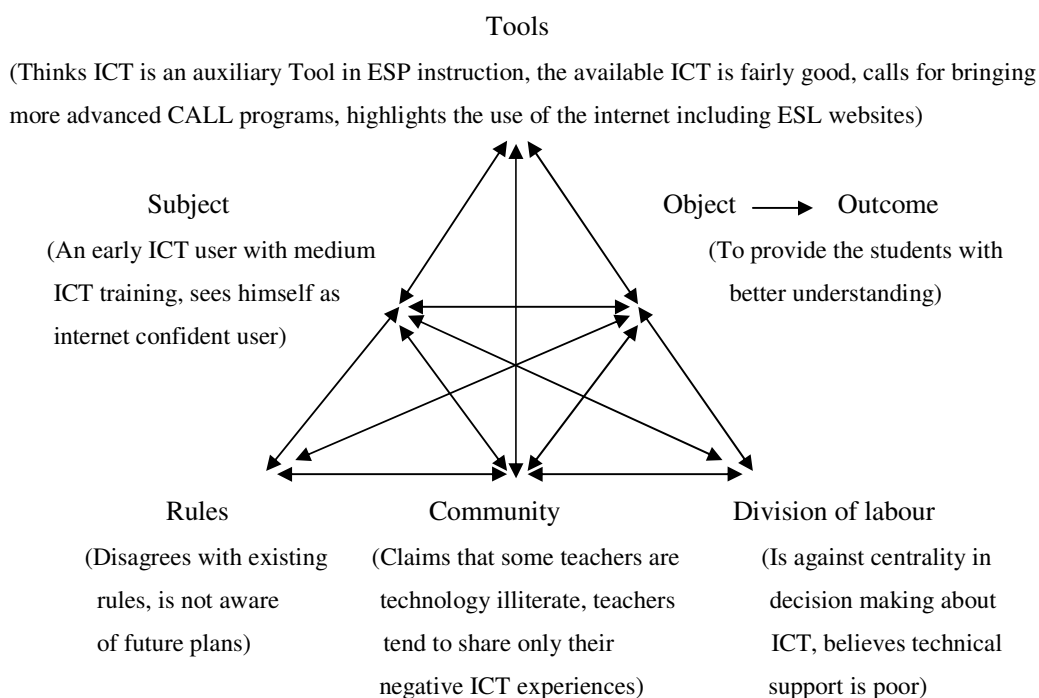


Figure 5.3: Hani (ICT focused user)

Hani's personal Object of using ICT in his ESP lessons is to provide the students with better understanding (Hani Interview 1). Unlike Omar, Hani thought that the available ICT tools are good though more advanced CALL programs are needed to be purchased by the ELC administration (Hani Interview 1). However, Hani believed that the existing rules that regulate the purchase of new ICT tools are not flexible (Hani Interview 1). When asked about the ELC future ICT plans, Hani said that he was unaware of any future plans (Hani Interview 1). Similar to Omar, Hani stated that teachers do not cooperate to integrate ICT in their ESP lessons and when they do they only share their failing ICT experiences (Hani Interview 2). Hani also claimed that ICT technical support is insufficient (Hani Interview 1).

A fourth participant, John, despite his understanding of the transformation ICT can potentially bring to ESP environment, has a view about the status of ICT in the ESP course (Figure 5.4) that is no different from that of the former three participants. John's view clearly stated that ICT is a teaching supporting tool not an end in itself (John Interview 1).

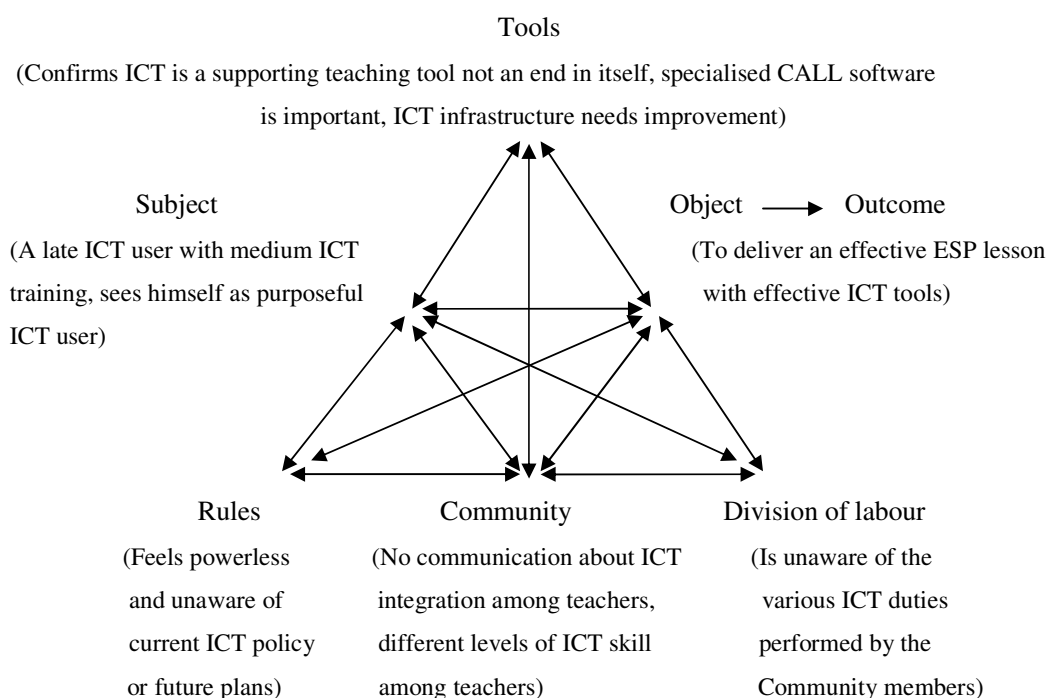


Figure 5.4: John (ICT purposeful user)

John's personal Object of ICT use in his ESP lessons is to deliver an effective ESP lesson (John Interview 1). John, like Hani, felt powerless and unaware of current ICT policy or ICT future plans (John Interview 1). Similar to Omar and Hani, John pointed out that communication among teachers regarding ICT is absent and differences between teachers in their technology competence is obvious across the ELC (John

Interview 1). John was unaware of the Division of labour performed by the Community members in regard to ICT integration and thinks that the Community members work separately (John Interview2).

The fifth Participant, Peter, explained that his main purpose of using ICT is to prevent dullness and to save efforts in teaching. Peter emphasised that with his teaching load of six classes per day and the students all having five lessons each day, the computer reduces the physical burden on him and it ameliorates student's boredom as well. Peter's activity system (Figure 5.5) illustrates his pragmatic personal objective in using ICT for teaching ESP.

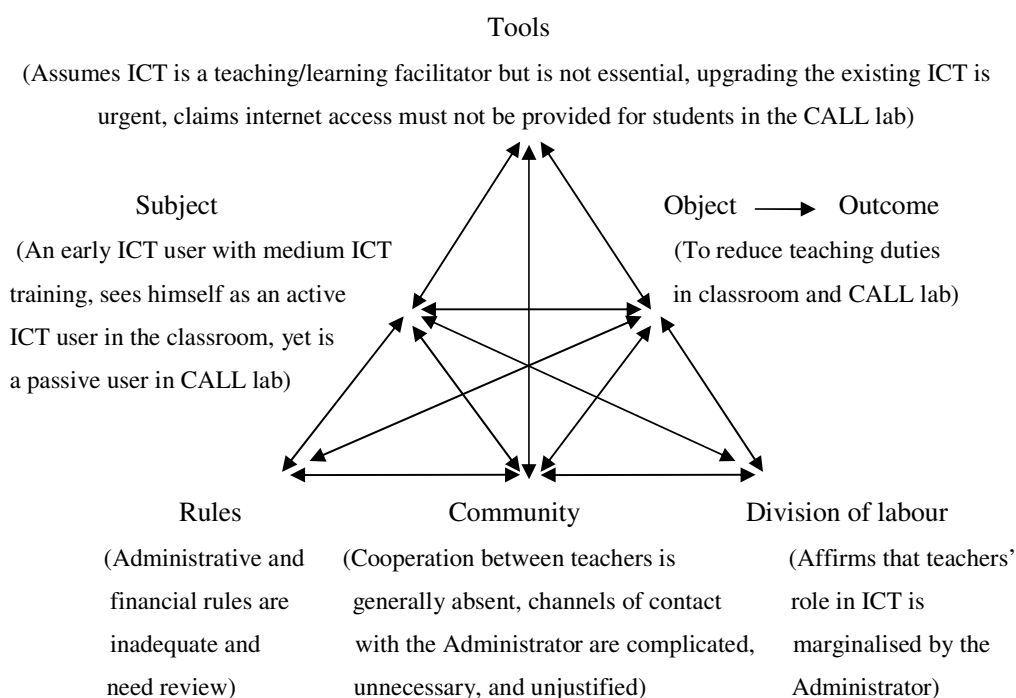


Figure 5.5: Peter (ICT pragmatic user)

Peter is no different from the four previous participants in that he thinks ICT is a facilitator Tool but not essential in ESP (Peter Interview1). Peter, similar to Omar, Hani, and John, strongly called for updating the current ICT Tools because they are either outdated or not useful for ESP (Peter Interview1). Also, Peter found the existing administrative and financial Rules are inadequate because they are neither written nor explained (Peter Interview 3). Peter stressed that collaboration between the teachers in regard to ICT integration is missing (Peter Interview 2). Finally, Peter thought the Administrator has a big responsibility to organise teachers' efforts and establish regular meetings for ICT discussion (Peter Interview 4).

In contrast to the Administrator, Omar, Hani, John and Peter, a minority of teacher participants believe ICT is a core component of the ESP course. The Administrator's claim which states that "all teachers view computer technology in ESP instruction as an aid" (Administrator Interview 3) is not consistent with the data because some teacher participants (Kareem and Ali) do not consider ICT as just another tool. In fact, the activity system of Kareem (Figure 5.6) shows that he is at the extreme end of the scale of use. Kareem claimed centrality for ICT and believed that ICT is not optional but a basic practice especially that ICT helps teachers to "cope up with the latest developments", "makes their job easier", and "improves our way of teaching and performance" (Kareem Interview 2).

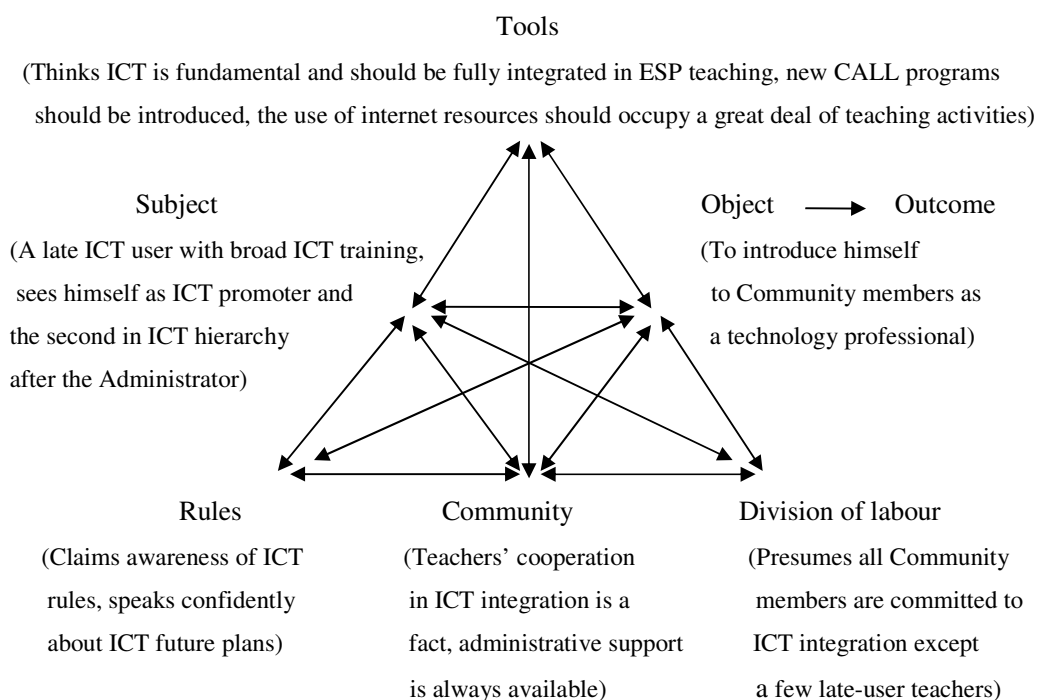


Figure 5.6: Kareem (CALL coordinator and ICT promoter)

Kareem's personal object of using ICT in his ESP teaching is to introduce himself as a technology professional (Kareem Interview 1). Because Kareem is the CALL coordinator he claimed awareness of ICT rules and ICT future plan (Kareem Interview 1). Unlike, the other participants, Omar, Hani, John, and Peter, Kareem believed that teachers' cooperation in ICT integration is an existing practice and that administrative support is always available (Kareem Interview 2 & 3). Moreover, unlike Omar, Hani, John, and Peter, Kareem presumed that all Community members are committed to their ICT duties according to the agreed Division of labour except some computer late-user teachers who show reluctance (Kareem Interview 3).

Ali's activity system (Figure 5.7) shows that Ali's perspective toward ICT matches Kareem's in that ICT is seen as central to ESP teaching and cannot be considered a supporting tool in classroom practice.

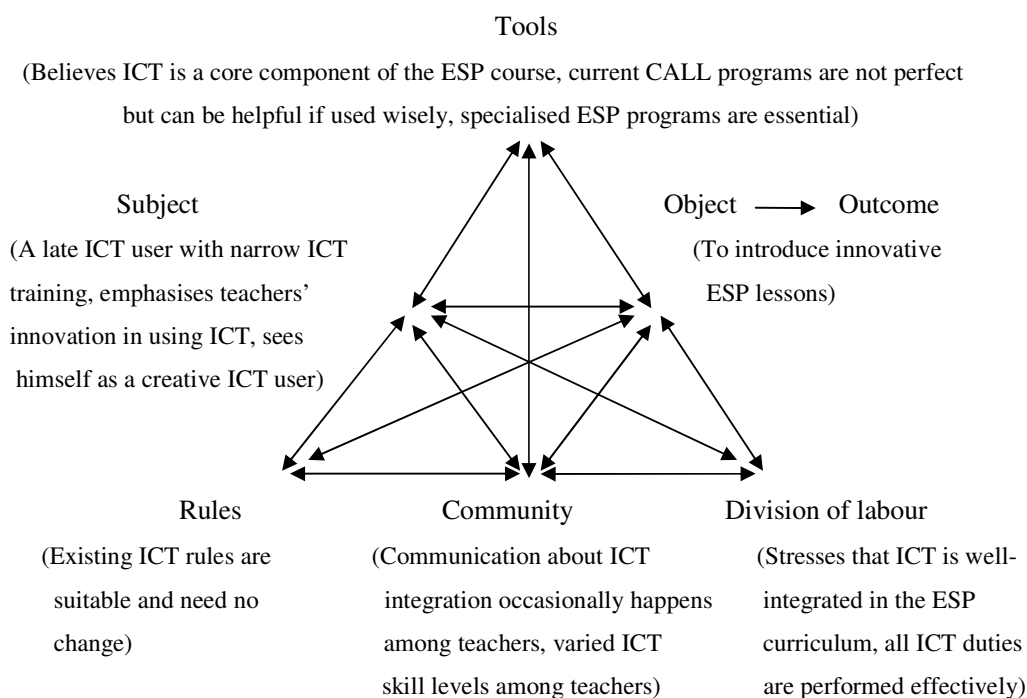


Figure 5.7: Ali (ICT creative, optimistic user)

Ali's personal Object of using ICT in his ESP lessons is to introduce innovative ESP lessons to his students (Ali Interview 1). Ali believed that the current CALL programs are not perfect but can be helpful if used wisely by the teachers and that the introduction of specialised CALL programs for ESP lessons is essential (Ali Interview 2). Ali agreed with Kareem that ICT Rules are straightforward and need no change, yet disagreed with Kareem that communication about ICT occurs regularly between teachers (Ali Interview 3). Ali, similarly to Hani and John, supposed that teachers are varied in their abilities to integrate ICT in ESP because of their different technological

perceptions and competence (Ali Interview 3). Finally, Ali considered that ICT is well-integrated in ESP curriculum and all divisions of labour are performed effectively (Ali Interview 5).

Using ASM in analysis at the teacher community perspective, a higher level of findings is revealed in the tensions that occur as a result of the participants' opposing views. The first example of this level of findings can be clearly seen in the minority's (Kareem's and Ali's) recognition of ICT as fundamental in ESP teaching in contrast to most of the other participants. This tension (contradiction, interference, conflict, or disturbance) in the participants' ICT perceptions shown in their individual ESP activity systems represents conflicting views about the status of ICT in ESP. The tension resulting from the participants' diverse perceptions about ICT in ESP instruction is a major finding of the research of the current study. Identifying this tension is crucial for its influence on ICT use in ESP lessons explained in the next section (5.4).

In addition to their diverse views over the status of ICT in ESP instruction, the participants are hindered from complete and effective ICT use by an additional reason: their personal objective of implementing ICT. According to the data, there is a general goal (Object), maintained by most participants, for ICT use, i.e. delivering effective ICT-supported ESP lessons (Participants' Interviews). However, based on data drawn from the activity systems of some of the participants, it is found that some participants do not recognise a specific goal of their activity (Omar, for instance). Other teacher participants have personal goals that contradict the activity general goal. For instance, Peter's goal, as shown in his activity system (Figures 5.5), is focused on pragmatic needs rather than pedagogical needs. Kareem's personal goal of using ICT,

as summarised in his activity system (Figures 5.6), is to promote himself as technology-confident. Kareem directly reports that he uses ICT to be seen as professional and describes ICT as a yardstick:

Nowadays it's a kind of a competition between teachers who use technology and teachers who don't use technology. So I need to be updated all the time, I need to improve my skills all the time and I need to use new technologies all the time (Kareem Interview 1).

In summary, limits among teachers of their views about ICT status and variation in their personal objective of ICT use cause a general limitation in their ICT applications and result in two discrete sources of tension (Figure 5.8). The first source of tension is in the Community because of their disagreement about the status of ICT and the Object of their ICT-enhanced ESP activity systems. The second source of tension results from the first tension: disagreement about ICT status and the Object of use cause a Community-Object tension which affected the Outcome, resulting in ineffective ESP learning.

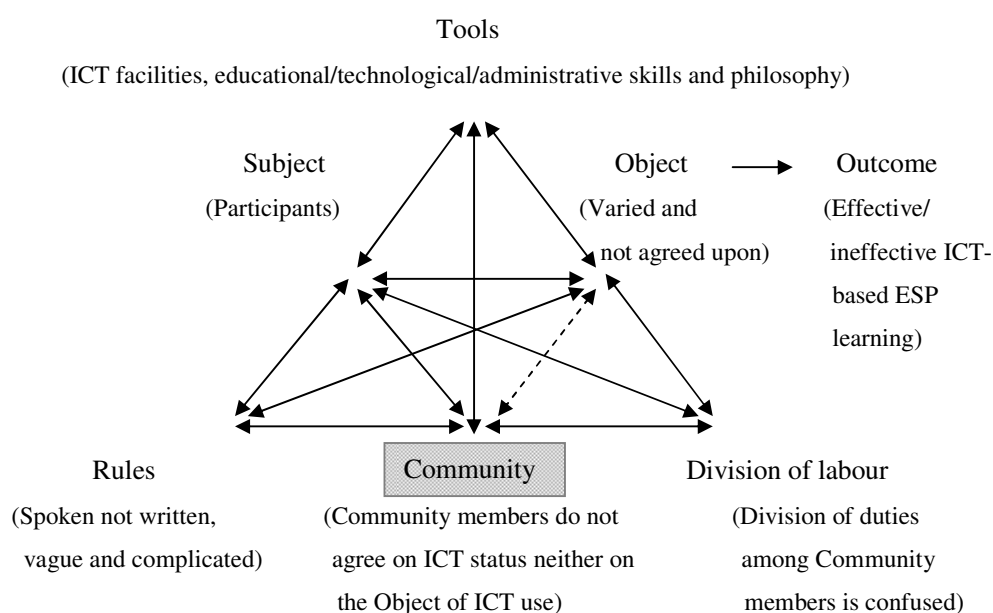


Figure 5.8: Tension within Community and between Community and Object in the participants' ESP activity system

The importance of ICT in ESP is 'held back', creating a gap in effective classroom practice. This gap is mainly caused by the decision of the Administrator to make ICT 'a supplementary tool' in the ESP curriculum. The Administrator perceived ICT as inadequate, by itself, to deliver the specialist nature of the ESP curriculum (Administrator Interview 1). This gap leaves ICT use somewhat undefined and is found to be a source of confusion for the teacher participants in their ESP teaching.

The participant's ICT perceptions are demonstrated through the seven individual activity systems (Figures 5.1 to 5.7). Later, a collective ESP activity system showing the participants' ESP activity system before and after ICT introduction will be introduced in Chapter 6 (Figures 6.3 & 6.4).

5.3.2 ICT Advantages and Disadvantages

In the interview data, the participants list some advantages as well as disadvantages for ICT use in ESP. The flexibility that ICT provides for students to learn what they need, at the pace they prefer is a major advantage according to Peter:

What the teacher can brag all day to the students about, students can learn themselves by working on special CALL programs. These programs can teach the students a lot and also provide them with the opportunity to practise on exercises at their own convenience. We all know that teachers don't have enough time to watch over all the students while they are practising or doing the exercises (Peter Interview 1).

ICT flexibility, Peter believed, is an outstanding advantage for teachers as well. The use of word processor to write and to display the lesson ideas on the whiteboard is a plain example:

I used to write on the board in the past and students had trouble reading my handwriting. So, they always used to ask for clarification like ‘what is that letter’, ‘spell that to us’, ‘we can’t read that’. So, by being able to use the word processor, everything is clear. So, that would save a lot of troubles (Peter Interview 3).

Hani, agreeing with Peter, emphasised that ICT improves the pace of learning and teaching in the classroom especially that ICT keeps the “level of enthusiasm and energy going up breaking the mundane routine” (Hani Interview 1).

Students’ motivation, Kareem thought, is the most significant feature of ICT. Kareem commented that Saudi students’ reserved nature has given ICT a specific advantage: “Students in Saudi Arabia tend to be shy, sometimes they know the answer of the question, but they don’t want to participate” (Kareem Interview 1). Kareem believed that using ICT “breaks the ice” and encourages the students to try (Kareem Interview 1).

Kareem recognises that in his ICT-based ESP lessons, students engage actively because they have more opportunities for interaction with each other and with the lesson material than in a non-ICT lesson context. Interaction, to Kareem, is what language learning is about (Kareem Interview 1). The engagement factor, brought by technology, was observed in Kareem’s teaching (Kareem Classroom Observation 1). Kareem encouraged his students to use the technology in the classroom and CALL lab to practice on CALL programs and to deliver their presentations. Kareem believed that through ICT students receive and produce information more effectively:

Students must always interact and communicate and use the language they learn through communication which is the main purpose of language (Kareem Interview 1).

Ali agreed with Kareem that ICT is a learning motivator. To enhance his students' speaking ability, Ali had the students use ICT to present before the classroom. Ali said this use of ICT not only improves the students' presentations, but also provided the teachers with a better way for evaluating students' oral performance (Ali Interview 1). Ali stated that with ICT, students no longer read their presentations from their handouts but deliver them spontaneously and more communicatively (Ali Interview 1).

John thought that the visualisation ICT brings on screen is the most obvious advantage for teaching:

I think that language is in great part visual and tactile and so since technological environment allows the teacher to use a more tactile environment, then I guess, it is probably a little better (John Interview 2).

John indicated that the importance of ICT lies in its creativity in providing a virtual and visual reality for the physical world when incorporated into language teaching:

I think computer technology allows the teacher to have a much more realistic visualisation of the physical world; language relates to the physical world (John Interview 2).

In the same way, Ali appreciated the visualisation advantage the vocabulary websites and online dictionaries provide the teachers with, especially in helping the teachers to relate words with images:

Prior to introducing the technology I used to introduce new vocabulary in my ESP lesson and some students did not understand them. Now, I go online, type the word and get the meaning and the image. A student asked me the other day about the meaning of a 'stethoscope'. I tried to explain it verbally to him but he could not figure it out. I did not need to draw a stethoscope and I did not need to waste two or three minutes trying to explain its meaning to the student. With technology the image explains itself (Ali Interview 1).

Hani referred to ICT's ability to engage all students simultaneously, making them feel they all have the teacher's personal attention at once (Hani Interview 1). Hani described ICT as a user friendly approach, especially that ICT facilitates students' learning in a "nonthreatening environment and without fear of being judged or made fun of by their classmates" (Hani Interview 1).

Timesaving, Ali felt, was the most apparent advantage of ICT over conventional teaching tools: saving the time teachers usually spend writing on the board or making photocopies of handouts. Ali detailed materials preparation time before the technology:

I had to prepare many transparencies to explain a lot of ideas and vocabulary. This took a lot of time at home and at the office and even in the Audio/Visual Department. I had to send my notes to the A/V Department ahead of time to make them into transparencies (Ali Interview 1).

Time saving and teacher's effort saving was also emphasised by Peter:

Earlier when I wanted to write definitions for some new words for Business major students, I used to use the marker to write these definitions on the board. This used to take time and used to make me exhausted at the end. Now with a computer and a projector in the classroom, I can type the definitions in my office or at home and bring them with me to classroom and display them and show them to the

students. This would save time and would give the students the ability to copy or even take copies of the new definitions instead of writing them down (Peter Interview 3).

Furthermore, Ali described an additional advantage of ICT related to both timesaving and flexibility, ICT enables teachers to retrieve digital teaching materials and display them:

ICT helps me to access materials that I had prepared earlier. For instance, in Business Reading I introduce word formation, such as suffixes and prefixes and words roots. If I have to introduce it again in Hospital Administration Reading, I would go to my Business Reading file and retrieve this part and show it to the students. So that is very handy because I can retrieve information from wherever I want (Ali Interview 1).

Reducing students' panic when encountering the big jump from general to specific terminology was considered by Ali another important advantage of using ICT in ESP:

We need ICT more often in teaching ESP because as a matter of fact for students ESP subjects are more difficult than the other skills. So, students need computer technology more in order to look up words' meanings and to simplify ideas and to clear points (Ali Interview 1).

Despite recognising all these advantages, there are some criticisms by the participants against ICT. Unexpected breakdowns of hardware and software were considered by Omar a major disadvantage of technology:

When the teacher is in the class and surprisingly finds the computer or the projector not working, he would certainly feel disappointed (Omar Interview 3).

Kareem concurred that when technology breaks down in the classroom, he loses confidence in presenting the lesson in a sufficiently dynamic and professional manner that is adapted to the 21st century students' needs:

I have a kind of confusion whenever the internet is down or the data projector does not work or when I have problems with my personal account in the server. I always feel that an important part of the teaching and learning processes is lost (Kareem Interview 1).

The high cost of establishing ICT facilities, updating them, and continually renewing CALL programs' licences was also pointed out by Kareem as an additional burden.

A further ICT disadvantage was stated by Hani: students with poor computer skills when they find themselves in an unfair situation in the computer lab compared to their computer-skilful classmates (Hani Interview 1). Older students, added Hani, are in a similarly unfair situation because of their reluctance toward the use of ICT in the classroom:

Old students seem to have an inherent inhibition from learning through technology. I have had students who literally have never touched a computer before (Hani Interview 1).

In conclusion, the participants' ICT perceptions are not random but rather are selective and evaluative. The participants showed confidence to denote points of strengths/weaknesses of ICT approach as they experience these points in their daily practice. The participants do not take ICT as is, but evaluate its qualities and usefulness to their teaching needs. ICT qualities are found important by Lam (2000) in shaping teachers' technology perceptions.

5.3.3 ICT Effectiveness

Defining ‘ICT effectiveness’ as understood by the teacher participants is important for the analysis to relate effectiveness to the use of ICT in ESP teaching in this context. The determinants of best practice will be further outlined in chapter 7 through the description of the elements influencing the success of ICT integration in ESP.

Almost all participants agreed that the method the teacher uses inside the classroom is what determines the effectiveness of ICT. This is a major point in the research.

Perhaps John’s words can most succinctly draw the definition of ‘effectiveness’:

It depends on how the teacher is using the technology. If it is just an extension of boring exercises, it is not really going to change the class understanding too much. If it allows the exercises to be interactive and allows them to make the class more exciting and more dynamic, then it can aid (John Interview 1).

John has touched on one of the important issues with the use of ICT. John believed that putting a great deal of emphasis on the technology inside the classroom would not be right because technology is not an end in itself but a tool (John Interview 1). For John, it is not whether ICT is good or bad but how it is used: “If the technology is just going to serve as a different type of textbook so what? What is the use of it?” (John Interview 1).

Similarly, Ali’s comment came from the same attitude. Ali thought the provision of advanced ICT alone is not a sign of success, especially if it is not accompanied by an effective integration plan. Teachers’ owning an ICT strategy in their classroom practice was highly emphasised by Ali as an indication of

effective ICT integration. Moreover, Ali maintained ICT appropriateness to students' digital and cultural local ambience is another indication of effective ICT use (Ali Interview 3).

Hani discussed ICT effectiveness at a detailed level when he affirmed that the effectiveness of integrating technology depends on several elements among which are the age of the learner. Older students, according to Hani, are usually introverted and favour the traditional methods of learning. Hani doubted forcing older students to use technology in learning would work:

I teach adult learners ranging from the age of 18 to 55 years. A lot of older students come to the ELC with apparent inhibition from learning the language through technology. So to have mature learners that have their fear of learning a second language and also add another fear of using this technology wouldn't be right. Sometimes I think I make the right choice by minimising using technology in that said class because I think it does more damage to the students than rather actually helping them with learning the language (Hani Interview 1).

In contrast, younger students, Hani claimed, show more interest in using ICT in their learning. Therefore, Hani thought, comprehensive ICT integration in a class of younger students would be less problematic:

“Most of them [younger students] don't have any fears of using technology because they are not dealing with it for the first time” (Hani Interview 1).

In conclusion, when defining the effectiveness of ICT in ESP lessons, many aspects are raised in discussion but the crucial ICT issue for this study is touched on by John who described it when he introduced the idea of technology having no magic in itself

but needing to be used appropriately for effective outcome. Ali supported this view, also mentioning suitability to effective cultural practice; while Hani agreed with this view of appropriateness and extended it by raising the age appropriate factor within the issue of effectiveness. Therefore, a finding of ICT perception is that the participants have a similar definition for ICT effectiveness.

5.3.4 Summary and Discussion of Participants' Perceptions

The findings of the research of this Saudi tertiary context show that participants' personal attitudes and perceptions are varied. These perceptions are formed into an individual ICT identity. An array of ICT identities ranging from 'ICT promoter' to 'ICT cautious user' is identified by the analysis of the participants' data (Table 5.2). It has been seen that participants' various personal, computer, and educational experiences greatly affect their perceptions about the importance of the role of ICT in ESP and about ICT advantages and disadvantages. Participants' personal attitudes and perceptions indicate that they use different advantages of ICT (flexibility, motivation, visualisation, engagement, timesaving, and panic reduction) and also weigh disadvantages of ICT variously (breakdowns, high cost, and difficulty to adopt by ICT illiterate and old students).

Table 5.2: Participants' ICT identities and perceptions

Participant (pseudonym)	ICT Identity	Perceived role of ICT in ESP	Perceived ICT advantages	Perceived ICT disadvantages
Administrator	ICT authority	Supplementary	-	-
Kareem	ICT promoter	Fundamental	Learning motivator	ICT high cost, unexpected

Participant (pseudonym)	ICT Identity	Perceived role of ICT in ESP	Perceived ICT advantages	Perceived ICT disadvantages
				breakdowns of ICT
John	ICT purposeful user	Supplementary	Visualisation	-
Ali	ICT creative and optimistic user	Fundamental	Time saving, flexibility, learning motivator, reducing students' panic	-
Hani	ICT focused user	Supplementary	Engagement, eliminating students' differences	High expectations from computer-inexperienced students
Peter	ICT pragmatic user	Supplementary	Visualisation, learning and teaching flexibility	-
Omar	ICT cautious user	Supplementary	-	Sudden failure of hardware and software

The importance of the participants' personal perceptions and philosophy in deciding the success of ICT integration into ESP instruction is established by the findings of this section of the participants' perceptions. This implies that the personal factor is significant in determining the success of technology and is in accord with the findings of the literature investigating teachers' ICT personal attitudes and perceptions (Albirini, 2006; Al-Jamhoor, 2005; Braul, 2006; Chen, 2006; Lee, 2000; Rajabi, 2001).

The participants, although agreeing that the method the teachers use inside the classroom largely determines the effectiveness of ICT, did not provide a specific definition of these methods. The definition of effective ICT use is a vast topic and needs further research beyond this study.

Participants' ICT perceptions provide an outline of a community in conflict.

According to the activity system, this would be expressed as tension. In this case, the tension exists within the Community and between the Community and the Object of the participants' ESP activity system (Figure 5.8). This conflict is demonstrated by the lack of two important foundations for ICT community structure: unified vision about ICT status and unified ICT objective. The underlying attitude of the Administrator toward ICT's status as a 'supplementary tool' undermines ICT potential, challenges complete ICT integration into ESP, and influences some of the ICT professional attitudes of the participants.

The introduction of ICT to the ESP curriculum brought a new diversity in the participants' teaching objectives. Each of the participants had his own personal goal. Disagreement among the teachers in defining the objective of ICT use has also been reported in the literature as an impediment for effective ICT integration (Romeo & Walker, 2002).

The observed variations of ICT perceptions have a great impact, enough to affect not only ICT status and objective, but the ESP ICT-supported lesson delivery itself, as will be shown in the next section about teaching procedures and classroom activities.

5.4 Teaching Procedures and Classroom Activities

The purpose of reporting the findings and developing the related discussion in this section is to highlight the impact of teacher participants' perceptions on the methods and techniques they apply in their ESP teaching.

The findings of data analysis include an intensive amount of evidence showing differences in the manner in which the ESP course is taught in the research context. Despite confusion about ICT status and conflict in their personal objects of using ICT, findings show a fairly positive impact from teaching ESP lessons with ICT. The evidence from the teacher participants themselves indicates a change in the quality of ESP lessons, in general and in specific ways, in response to the change of introducing ICT into classroom activities and ESP teaching.

To introduce and understand the participants' use of ICT in the classroom, it is necessary to appreciate that besides teaching other EGP courses, participants teach a variety of ESP courses for students majoring in Business, Sales, Banking and Management (Hospital Administration and Hotel Administration). Some participants keep changing every session the courses they teach. Others prefer to teach the same courses they taught before. At the time of data collection teachers were conducting the following ESP courses: Sales (Hani and John); Business (Kareem); Banking (Omar); and management (Ali and Peter).

The rich data extracted from interviews and classroom observation, show that ICT is rather used as a tool than as a tutor (Taylor, 1980). Teachers' ICT applications in ESP lessons mostly transform the computer and related technologies into digital

blackboard. ICT evaluative applications that can be used in ESP such as playing video clips for students to write a critique summary, engaging students in online writing forums for improving discussion skills, and encouraging students to have synchronous/asynchronous communication to improve their writing, listening, and speaking abilities were not represented in the data, which implies they are not being utilised by the institution being researched. This notion was indicated by John who stated that ICT is being used in the study site in a non-evaluative method that does not provide ICT with an additional credit over the textbook (John Interview 1). This gap is important in underlining finding of an incomplete implementation of ICT in the study site.

Furthermore, the data also show that the quantity and quality of ICT in ESP instruction are not steady. Variations in the amount and frequency of technology use are immediately noticeable across teachers' practice and in classes by the same teacher. This variation in ICT use can be explained in light of three aspects: ICT-based lesson pedagogy, the language skill being taught, and the frequency with which teachers choose to use ICT. These three aspects, as will be shown, are not operating separately but interweave in a complex manner.

5.4.1 ICT-based Lesson Pedagogy

The first and most noticeable aspect in teacher participants' ICT-supported teaching was the pedagogy adopted in their ESP lessons. Two main approaches were used by the teachers to deliver ESP lessons: teacher-centred and student-centred (Hu & Webb, 2009). Although teacher-centred approach was widely adopted by all teachers in their

classroom activities, variation in teachers' approaches was noticeable in CALL lab activities (student-centred and a combination of both approaches).

In the classroom, teacher-centred approach was unmistakably observed where teacher participants used the computer and digital projector to display the lesson activities and direct the lesson discussion (Teachers Classroom Observations).

In the CALL lab, most teacher participants (Kareem and John, Peter, Omar, and Hani) implemented student-centred approach but a combination of both approaches was also applied (Ali). A student-centred approach was strongly exemplified by Kareem in CALL lab. Kareem maximised the communicative side of ICT by allowing students to use the teacher's computer to orally deliver their presentations accompanied by their PowerPoint slideshows. During this time, student presenters used the internet to show illustrative images and to play audio/video files (Kareem CALL lab Observation 1). Kareem's lab observation also showed students conducting a general knowledge contest (with prizes) between two sides using the digital projector where students engaged intensely in revision motivated by competition (Kareem CALL lab Observation 2). ICT was the basis of the engaged atmosphere of these student-based lessons.

Student-centred was also implemented by John, yet John himself identified his teaching approach as technology-centred rather than student-centred:

I would say it's a technology-centred because when you put the technology at the forefront, the teacher automatically moves to the side, and the interaction is between the students and the technology (John Interview 2).

Similarly to Kareem and John, Peter implemented the student-centred approach in the CALL lab. However, Peter rarely interfered with students' own practice which is CALL program-based (Peter CALL Lab Observation 2) and acted passively in CALL lab:

I do nothing, honestly. All I do is I just ask the students to sit at the computers, log on to the program and start working, that's all (Peter Interview 1).

In contrast to the above examples (Kareem, John, and Peter) Ali employed a combination of both teaching approaches in his lab tutoring. Ali started the lesson by assigning a CALL listening activity. A few minutes later, Ali had the students do a group or pair-activity based on the CALL material that they have practiced (Ali CALL Lab Observation 1).

The innovativeness of Ali's lab pedagogy clearly appears in his smoothly integrating CALL lab practice with ongoing classroom lessons. Ali believed that by eliminating the routine drilling of CALL programs and extending classroom sessions with 'directed' CALL lab practice, students would have additional opportunities to understand the classroom lesson:

I always aim at making students' practice in the CALL lab focused and beneficial. I always specify a certain part of the software for students to listen to and to do an activity on it. I don't just give the students a chance to do whatever they want. CALL lab period is not for free practice. Students listen for a purpose (Ali Interview 1).

It was found from the observation that the ICT pedagogies implemented by the participants are sometimes engaging but sometimes are not. Observations also showed

that students show more interest in lessons delivered using student-centred approach or a combination of the two main approaches (Ali and Kareem) than lessons delivered using only teacher-centred approach. ICT lesson pedagogies implemented by Ali and Kareem evidenced an effective choice in ICT-enhanced lesson delivery.

Interestingly, although Ali has received a narrower ICT training than the other teacher participants (Table 5.1), his use of ICT resources in ESP lessons was more interactive (Ali classroom and CALL lab Observation). Students in Ali's ICT-enhanced classes showed more interest in the lesson than in other teacher participants' classes.

5.4.2 Language Skill

ICT can be used by teachers to support their teaching of a number of language skills. According to Dudley-Evans and St. John (1998) ESP instruction involves different language skills, such as grammar, vocabulary, discourse, writing, genre, reading, and speaking. However, the data indicates that prior to the adoption of ICT, ESP teaching in the research context was limited to vocabulary, reading and writing skills only (Kareem and Ali Interviews). This limitation in ESP teaching was directly caused by the limited scope of the printed materials used for ESP teaching in the context of the study (Kareem and Ali Interviews). Despite the general limitation, there was some evidence that with ICT-supported teaching, a greater variety of language skills/areas was taught: reading, writing, listening, speaking, grammar, note-taking, pronunciation, and vocabulary (Teachers Classroom Observation). In addition, some teacher participants showed creativity in employing a multiplicity of ICT resources to teach various language skills. This indicates that ICT has potential for the delivery of

many language skills/areas in ESP instruction, which confirms Mustafa's (2001) finding, discussed in the literature review in Chapter 2.

The methods followed by the teacher participants in delivering ICT-supported ESP lessons are diverse. For instance, in teaching reading, a variety of ICT resources were used by teacher participants: digital copy of textbooks, specialised websites, and CALL programs (Teachers Classroom observation). In a specific use of teaching reading for Hospital Administration, John made use of various CD-Rom programs (John Classroom Observation 1). This included a specialised software program that visually represented the physical body in a more dynamic way that allowed John to show human body parts separately using three dimensions feature, as opposed to the course book which, according to John, is "very dry", even in a slide presentation (John Interview 2). Kareem used passages available on ESL websites and projected them for his reading class through the digital projector, and then discussed the comprehension questions that follow (Kareem classroom Observation 1).

In teaching writing, with the flexibility ICT offers, some teachers (Kareem, Peter, and Ali) did not use the marker to write on the board; instead they used the word processor and the digital projector. Not only that, but they allowed their students to display their essays using the classroom computer on the whiteboard for group discussion (Teachers Classroom Observation). Ali, in a similar way, opened a Word file in the beginning of the writing lesson and wrote some examples then instantly displayed the examples for his students using the data projector (Ali Classroom Observation 2). Ali added that he always saves these Word files for later use (Ali Interview 2). The data, however, did not show any use of the internet by the teacher participants toward integrating the web-based materials in teaching ESP writing.

In teaching listening, Ali had the students listen to audio excerpts and write down the new or unclear words and expressions they encounter. Afterwards, these words/expressions were discussed in a group activity. In cases when there were some unclear words for some students, Ali used the internet to find synonyms and images for clarification. Similarly, Hani made use of audio websites that contain speeches by famous speakers:

I found out that Malcolm X was a very eloquent orator and very well-spoken. So, I share some of his online speeches with the students and have them listen to them and write down notes and discuss some of the aspects of what they heard (Hani Interview 1).

In teaching note-taking, Ali had the students listen to audio excerpts (accessed through ESL websites) and simultaneously take notes. In addition, Ali chose certain individuals to deliver a summary of the aural material before their classmates. Ali said that this encourages the students to articulate the words correctly when trying to communicate their ideas (Ali Interview 3).

In improving students' pronunciation, Hani used a feature available in *New Dynamic English* that helps to evaluate students' pronunciation:

We have this one exercise where a student basically reads a sentence or two and the software assesses how close their pronunciation is to a native speaker's (Hani Interview 1).

In teaching pronunciation, Kareem visited specialised websites that introduce accurate pronunciation for ESP terms (such as bbc.co.uk) (Kareem Classroom Observations 1). This enabled the students to gain authentic language experience in diverse ways.

In vocabulary, although taught across the skills, teacher participants used diverse ICT-supported ways in teaching vocabulary. Kareem consulted online dictionaries to introduce and to check the meanings of new words. He also utilised (images.google.com) to project images of new words and to relate these words with their figures (Kareem Classroom Observations 2).

With grammar, individual inventive uses of ICT were observed, for example John uses CALL programs that include grammar-based games, such as drag and drop, matching, and a concentration-type quiz (John Classroom Observation 2). Hani used the internet (blogs) to have his students see examples of how native speakers of English use grammar in their daily conversations (Hani Classroom Observation 1). Hani noted that such internet materials provide the students with rich examples of actual spoken English contrary to grammar textbooks which present written standard English (Hani Interview 1). However, Hani emphasised that he always uses blogs with discretion because some blogs contain inappropriate language that could cause grammatical confusion to the students:

In one grammar class I was browsing the internet looking for an interview to explain to the students the use of the past perfect and I came across this blog which contains interview with a well-known sports figure who answered one of the questions and said: “I had done this two years ago” and I thought: “you can’t use the past perfect and then specify the time”. So, I can’t teach proper English to non-native speaker learners by showing them an example of a native speaker making such a mistake because that will encourage them to make more mistakes (Hani Interview 3).

Observation showed that video websites were also incorporated by Hani (Hani Classroom Observation 3). He argued that he uses video clips to clarify grammatical

rules in real-life situations and that using the technology in this way is “fascinating” for students:

If I am explaining a grammar point that the students are finding difficult to understand, I sometimes access video websites such as ‘youtube.com’ and play a video where I have a real actual use of the language in that and have the students watch and listen to the language in action (Hani Interview 1).

All these examples point to the observed finding that the textbook (emphasised by the Administrator as the central component for ESP) narrowed the language skill use, however the use of ICT intensified the teaching of some language skills. There was even a multiplicity of ICT resources’ used within one language skill application. The quality of CD-Rom presentation, internet images, video/audio files, blogs, and games were all observed to be effective in engaging students’ participation and were commented on positively by teacher participants.

Interestingly, apart from the use of word processing in writing and group editing, which is a non web-based writing approach; writing is the only language skill that was not supported by web-based resources in teacher participants’ practice (Teachers classroom Observation). Although the web-based writing approach such as Online Cooperative Writing (OCW) is emphasised in the literature as an effective ICT-based writing learning tool (Al-Jamhoo, 2005), it was not acknowledged or used by the teacher participants. Absence of Web-based resources in delivering writing lessons is noticeable in the teacher participants’ data.

5.4.3 Frequency of ICT Use

Teacher participants varied in the frequency with which technology was used in their ESP lessons. Classroom observations showed that while some teachers incorporate ICT in all class activities from the very beginning of each lesson, other teachers often conduct the lessons with partial or no use of ICT (Teachers Classrooms Observations).

Classroom observations and interview showed constant use of ICT by Kareem, Ali, Peter, and Hani during the class time. Kareem emphasised this by saying:

Maybe the activities change from time to time, but concerning the use of technology in general; I use it all the time from the beginning until the end (Kareem Interview 1).

Equal to Kareem, Ali began his class, even before taking attendance, by starting the computer and the data projector, logging onto the institution's server, locating the textbook and the lesson of the day, and then engaging his students in the lesson activities. Ali said that he fully depends on ICT to conduct the various teaching activities throughout the class time and the only situation when ICT is not used is when the students are busy discussing or preparing answers for an activity:

When I want to introduce or explain anything in the ESP class, it must be through the computer. I use computer technology from the beginning to the end without interruptions. When I want to ask the students to do an exercise for five or seven minutes, this is the time when I don't use the computer because students are busy doing the exercise, but once we start discussing the exercise we go back to the computer (Ali Interview 1).

A less frequent user of ICT, John, used ICT occasionally (once every two classes) in his ESP lessons (John Interview 2). John argued that extensive ICT use is not always

a sign of effective integration. John believed that even if the lesson content is displayed through technology, it could be, in fact, ineffective use of ICT. John highlighted this kind of use and said it does not give ICT much advantage over the course textbook (John Interview 1).

At the extreme end of the teacher participants in relation to their frequency of ICT use was Omar. Observation of Omar's classes reveals that he rarely utilised ICT in his ESP teaching. In the interview, Omar listed recurrent hardware malfunction, scarcity of appropriate materials online, and insufficient class time as the reasons for the limited use of ICT (Omar Interview 1). Omar's main focus is on the textbook: he sees ICT as only a supportive means: "I prefer to start with the textbook because ICT is like an extra material" (Omar Interview 1). Omar's attitude is quite clear: he does not see ICT as a major conduit of learning. It is not going to bear the weight of the lesson, it is a support: when the class time does not allow for technology use, Omar does not 'take the risk' of spending too much time with computerised materials to the neglect of the core lesson (Omar Interview 1).

5.4.4 Summary and Discussion of Teaching Procedures and Classroom Activities

The observation of teachers' ICT-based ESP lessons identified improved teaching methods followed in the classroom and CALL lab. However, the findings indicated that ICT was not systematically embraced neither were ICT classroom applications were evaluative but simply a duplication of the textbook materials. Teacher participants used the computer mainly as a tool (word processing) but not as a tutor (writing evaluation). More importantly, the philosophy of ICT being a supplementary

teaching tool influenced most teacher participants and determined their classroom practice.

Findings of ICT use in the ESP course indicated that participants' use of ICT is widely diverse in: the choice of ICT pedagogy; language skill focus of the ESP lessons; and the frequency of ICT use. For the purpose of comparison between participants and to give a sense of the whole group, participants' ICT use data profiles data (Table 5.1) in addition to participants' ICT identities and perceptions' data (Table 5.2), previously presented, are consolidated in Table 5.3.

Table 5.3: A consolidation of participants' profiles, ICT identities, and ICT use

Participant (pseudonym)	Position	Age	Qualification	Teaching experience in the ELC (Years)	Native Language	ICT uptake for own use	Exposure to ICT training	ICT Identity	Perceived role of ICT in ESP	Perceived ICT advantages	Perceived ICT disadvantages	ICT Pedagogy (Classroom)	ICT Pedagogy (CALL lab)	ICT resources used	Frequency of ICT use
Administrator	ELC supervisor	40-50	PhD in Language Education	19	Arabic	Early user	Broad	ICT authority	Supplementary	-	-	N/A	N/A	N/A	N/A
Kareem	ESL teacher and CALL coordinator	40-50	BA in TESOL	9	Arabic	Late user	Broad	ICT promoter	Fundamental	Learning motivator	High cost, unexpected breakdowns	Teacher-centred	Student-centred	Websites, CALL programs	Frequent
John	ESL teacher	40-50	MA in TESOL	2	English	Late user	Medium	ICT purposeful user	Supplementary	Visualisation	-	Teacher-centred	Student-centred	CD-Rom	Non-frequent
Ali	ESL teacher	40-50	MA in TESOL	9	Arabic	Late user	Narrow	ICT creative and optimistic user	Fundamental	Time saving, flexibility, learning motivator, reducing students' panic	-	Teacher-centred	Combination of the two approaches	Websites, CALL programs, the institution intranet	Frequent
Hani	ESL teacher	30-40	MA in TESOL	8	Arabic	Early user	Medium	ICT focused user	Supplementary	Engagement, eliminating students' differences	High expectations from computer-inexperienced students	Teacher-centred	Student-centred	Websites,	Frequent
Peter	ESL teacher	30-40	MA in TESOL	7	English	Early user	Medium	ICT pragmatic user	Supplementary	Visualisation, learning and teaching flexibility	-	Teacher-centred	Student-centred	CALL programs, the institution intranet	Frequent
Omar	ESL teacher	30-40	MA in TESOL	8	Arabic	Early user	Medium	ICT cautious user	Supplementary	-	Sudden failure of hardware and software	Teacher-centred	Student-centred	-	No use

An important finding at this stage of the analysis is that teachers' ICT pedagogy cannot be seen entirely in terms of the teacher's personal choice but is a mixture of choice and other facets of the environment. A determining facet of ICT pedagogy in the study context is the effect of the teachers' established teaching practices. The traditional teacher-centred approach is deeply rooted in some teachers' practice and found to prevent complete integration of ICT (Hu & Webb, 2009).

Another facet of ICT pedagogy in the same context is ICT tools available in each of the classrooms and CALL labs. In the classroom, with only one computer operated and controlled by the teacher, there is a very high chance that the teachers will adopt the teacher-centred approach. In the CALL lab, on the other hand, with its 24 networked computers, a student-centred approach is usual: each student logs on to one of the computers and practises on the CALL programs available on the institution's server; and because the students become familiar with CALL programs over time, they seldom ask the teachers for help.

5.5 Addressing Research Question I

How is the introduction of ICT to ESP instruction perceived by the teachers and the administrator in this particular context and how do their perceptions affect their ICT use?

The first research question touches on the preliminary matters of the study of the ESP community transition. There are major and minor conclusions from the findings of this question. The conclusions highlighted in this first question are developed in the following two research questions.

The introduction of ICT to ESP instruction was received enthusiastically by almost all the study participants. However, they fundamentally disagree in defining the significance of ICT in the ESP curriculum. This is the first major conclusion and the study and is interpreted by the analysis as a major hindrance to effective ICT integration. The consequent lack of leadership about ICT and the differences in the participants' ICT perceptions created conflict in the use of ICT in the ESP context. This is clearly evident in the collective activity system (Figure 5.8). This conflict was not always eased or controlled because there was not any standardised expectation of ICT usage which in terms of the ASM meant no unified Object (Figure 5.8).

There is a difference between the participants about the importance of ICT in ESP. The administrator's position, by labelling ICT as having a supplementary status, is, somewhat, minimising ICT's role and influencing some teachers' views and consequently undermining the task of ICT integration. Presently, the Administrator is emphasising the centrality of the textbook for ESP instruction and encouraging the teachers to consider ICT as supportive. This means the teachers decide on an ad hoc basis whether ICT is appropriate for lesson materials or not.

The second major conclusion of the study is teachers' different personal objectives for ICT use. While some teachers' personal Objects for using ICT is to deliver an effective ESP lesson (Hani, John, and Ali), other teachers' Object is to: take a break from teaching (Peter); look computer savvy (Kareem); or have no Object (Omar). This reinforces the disagreement about the purpose of ICT in ESP teaching. The tension in the community because of the confusion of objective cannot be underestimated.

Conflicting views about the significance of ICT in ESP relates to three other (minor) implications which can be described. The fact that some participants emphasised the use of ICT while other participants gave it minor consideration resulted in inconsistency of teachers' use of ICT and their performance in the ESP lessons. Therefore the first minor implication of varied Object is irregularity in delivering ESP.

A minor implication appeared from the major conclusion of varied objectives: a breakdown of teamwork between teachers themselves in covering the mandate to provide ESP lessons to the same group of students.

The third major conclusion was related to the diverse effect of teachers' personal views of ICT significance in ESP on their teaching practice. The teachers who regarded ICT as significant implemented an innovative teaching strategy in the classroom and CALL lab, whereas other teachers did not use ICT much. CALL lab strategies implemented by the teacher participants generally depended either on the power of the software or the teachers' own initiative and sometimes on both. Only Ali, although the least exposed to ICT training, showed a strategy that compensated for some serious limitations of appropriateness in the design of the CALL software programs for ESP learning.

6. IMPACT OF INTRODUCING ICT

Overview

This chapter is the second of three presenting the results of data analysis. The purpose of the first result chapter (Chapter 5) was to assemble the findings of the participants' ICT perceptions and use whereas the aim of this chapter is to discuss the impact of the introduction of ICT on ESP instruction. This discussion depicts the perceptions and practices of the participants and is used to analyse the factors influencing the integration of ICT in ESP instruction. These factors are identified and explained in the next chapter (Chapter 7). The data from the participants' responses, video recordings, and field notes were used for the analysis.

To relate the discussion in this chapter to the general discussion of the literature review, the five factors previously identified there as determinant for successful ICT integration in education and language education are used. In particular the impact of the institutional and sociocultural factors in ICT integration in ESP through the discussion of the ELC hierarchy; the participants' ESP activity system; the relationships within the ESP community; and the effect of the internet on the existing cultural values is examined.

6.1 Research Question II

This chapter responds to the second research question:

What changes does the introduction of ICT bring to ESP teaching in this particular context?

The findings from the analysis of interviewees' responses show that the introduction of ICT made macro and micro changes in ESP instruction and in the surrounding environment. The macro changes involve the alterations in the hierarchy of the ELC, the site of the research. The micro changes include shifts in the function of the participants' ESP activity system and the relationships within the ESP community.

6.2 English Language Centre (ELC) Hierarchy

To understand the changes ICT brought to the ELC, an examination of the structure of the ELC administrative hierarchy before and after ICT was made. Interview data shows that after ICT was introduced the ELC Administrator continued his duties as a chairman of the ELC and as a teacher of EGP/ESP courses as well. The coordination of the IT Department - to keep computers and other hardware and software working - was added to the Administrator's already extensive duties (Administrator's Interview 1). This additional responsibility demanded the Administrator's continuous attention in keeping ICT facilities in working order and coordinating ICT matters throughout the ESP community which put great pressure on him (Administrator Interview 1).

The Administrator is accountable to the General Director of the institution through the General Director Deputy for Training from whom authorisation and instructions for all training affairs in the institution are received. The Administrator's duties include being fully in charge of overseeing the plan to implement ICT set by the Higher Administration of the institution (Administrator Interview 1). This includes oversight of the ESP course and its ICT implementation plan.

The introduction of ICT brought change in the ELC hierarchy of the technical workers. Before the introduction of ICT the Administrator was directly supported by electricians working in the A/V Centre (Figure 6.1).

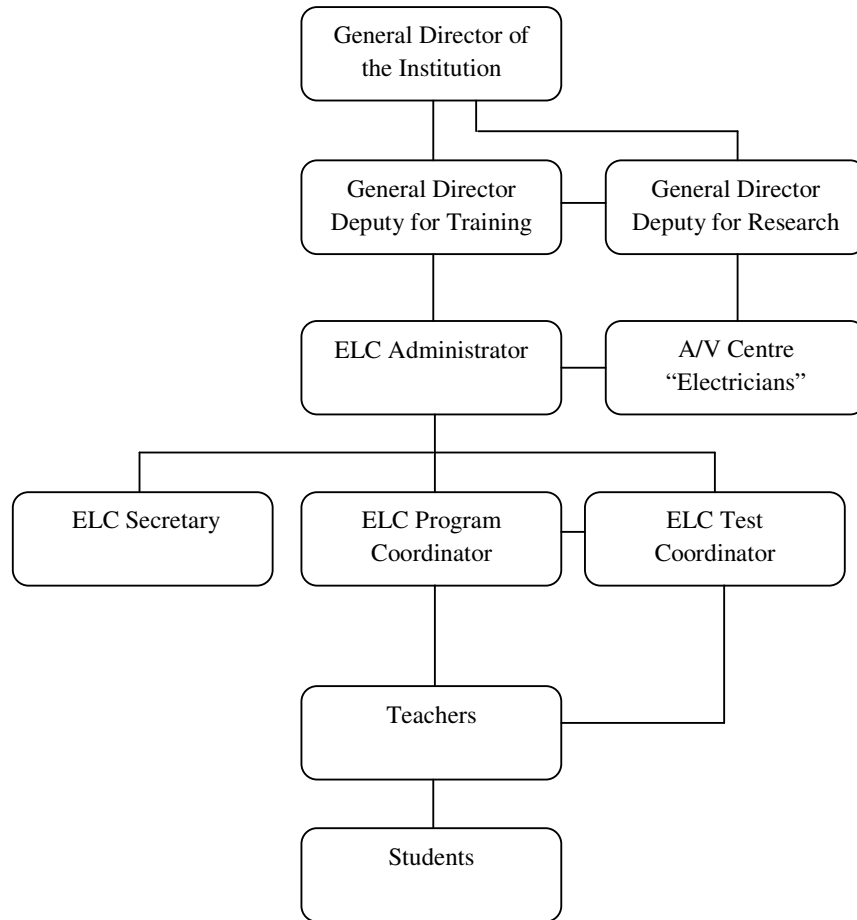


Figure 6.1: Pre-ICT ELC administrative hierarchy

ICT has made the technical maintenance job much more challenging than it used to be in the pre-ICT hierarchy. Technological support in the post-ICT hierarchy is crucial to the ESP course and is now provided by technicians of the IT department (Administrator Interview 4). Therefore, the IT Department has become highly significant to the ELC because of the enormous assistance it provides now in

installing and upgrading hardware/software, and in maintaining all the technology facilities in all the teaching venues. Post ICT brought a close link of IT technicians to the CALL labs and classrooms, and a sense of the teachers' dependence on their efficiency.

In the post-ICT ELC hierarchy (Figure 6.2), the Administrator is now assisted in his task by three staff: the ELC Program Coordinator, Test Coordinator, and CALL Coordinator.

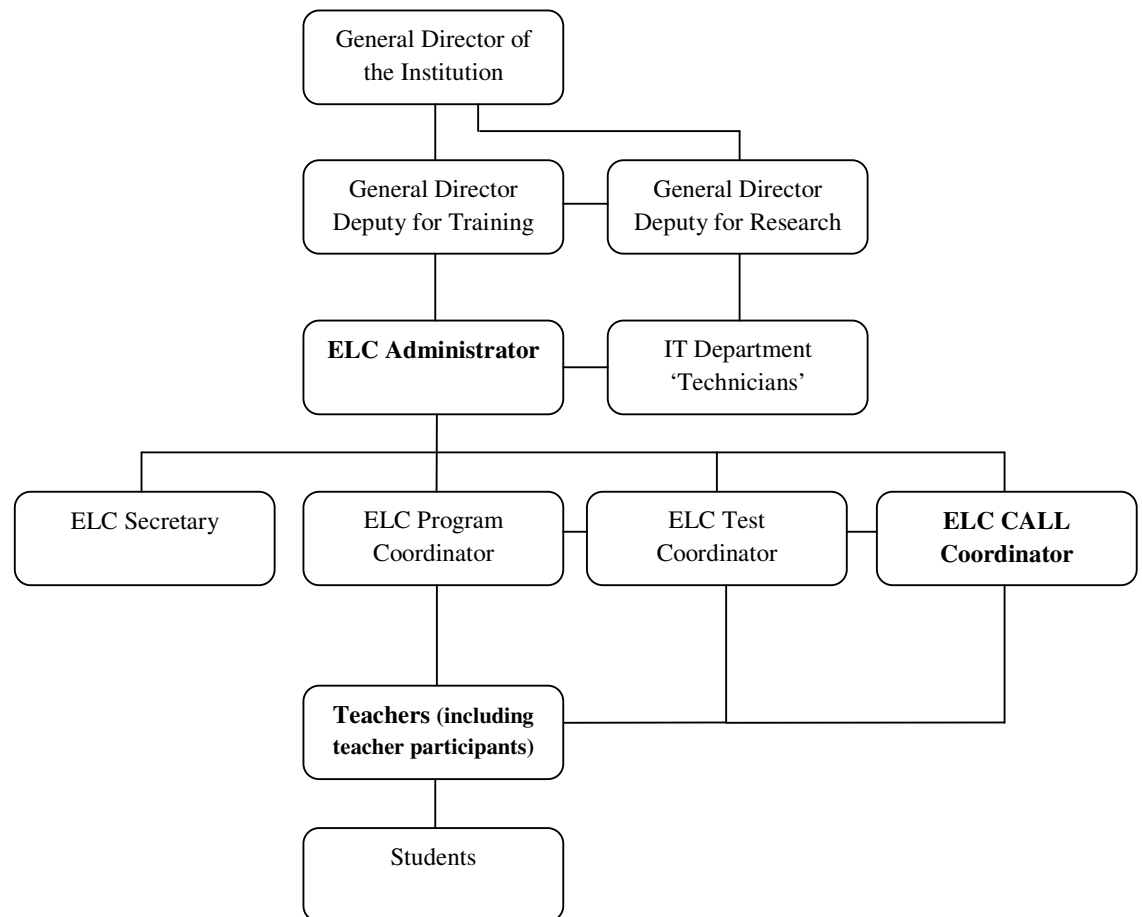


Figure 6.2: Post-ICT ELC administrative hierarchy (The participants in this study are shown in bold font)

The CALL Coordinator joined the ELC recently in post-ICT time. The addition of the CALL Coordinator position to the post-ICT hierarchy was significant as this position was especially created for ICT support in ESP teaching. The other two coordinators have been there from the pre-ICT ELC. All three coordinators are ESL teachers who besides teaching are coordinating various functions of the whole program.

For the purposes of drawing a complete picture of the ELC hierarchy, three ELC positions are briefly described: the Program Coordinator, Test Coordinator, and ELC Secretary. These three positions are not important in the ICT transition process, nor are they relevant to the analysis of the research about ICT. However introducing the function of their positions helps to understand the environment in which the study participants work.

The Program Coordinator impacts the teacher participants but only at a general administrative level. In his job of assisting the Administrator, the Program Coordinator's duties comprise: providing the ELC teachers with instructions, memos and updates delivered to him by the Administrator; organising teachers' subject preferences and teaching assignments before the beginning of every teaching quarter 'term'; organising substitutes for absent teachers; and providing teachers with teaching materials such as textbooks and handouts (Administrator Interview 2). It is noteworthy that the Program Coordinator also takes charge of the ELC administration when the Administrator is out of the office.

Likewise, the ELC Test Coordinator impacts the teachers at an administrative level. The Test Coordinator provides support in administering the midterm and final

examinations; a function that is largely unchanged in the post-ICT environment. The Test Coordinator's duties also involve: assigning teachers to write the exams; printing out all the exams and making them available for the teachers before the exam time; assigning exam rooms and teachers' invigilation tasks; keeping copies of the previous years' examinations so teachers can use them to prepare new versions of exams (Administrator Interview 2).

The ELC Secretary provides administrative assistance to the Administrator. His duties cover: arranging the Administrator's appointments; receiving phone calls and diverting them to the administrator's office; taking messages for the Administrator while he is out of his office; filing all records; and typing letters, minutes, and memos (Administrator Interview 2).

The new position of CALL Coordinator, which was strategically created to support the transition into ICT-enhanced ESP instruction, was significant for the findings of this study. The Administrator's technology vision was greatly facilitated by the CALL Coordinator who assisted with all ICT implementation inside the classroom and CALL lab. Beside keeping backup copies of all the digital teaching materials available on the institution's server, CALL coordinator (Kareem) explained that his responsibilities include orienting newly enrolled teachers to ICT facilities available in the classrooms and CALL labs and familiarising them with how to log on to the institution's server and how to access the digital teaching materials provided in the server (Kareem Interview 1). In addition to the help given to the teachers, Kareem stated that he is currently preparing a syllabus that links the software program directly to the textbooks (Kareem Interview 1). These jobs in providing and establishing ICT

resources were found to be essential to the smooth running of ICT-enhanced ESP teaching/learning.

The final two orders in the ELC hierarchy are teachers and students. It is from the teaching order that the samples of ESL teacher participants who teach ESP are taken. The data in this research relate to ESP and do not generalise to all ESL teachers as a group; as a group they are not part of this study, as mentioned earlier in the Methodology. ESL teachers are supervised by the Program Coordinator in their role of: teaching various EGP/ESP courses, running multiple quizzes and exams, and evaluating students' performance in the middle and at the end of the teaching term.

The students are not part of the findings of this study either, but are part of the context. Although not interviewed, they were indirectly observed and are, therefore, part of the data collected in that sense. They are also impacted by the findings because they are directly supervised by the interviewed participants.

6.3 Participants' ESP Activity System

The purpose of this section is to present a picture of the participants' ESP activity system before and after ICT has been introduced. The individual activity systems of the participants, explained in detail in Chapter 5 (section 5.3.1), are combined to structure pre and post-ICT ESP activity systems (Figures 6.3 & 6.4) and to show the differences between them.

For all the participants the introduction of ICT involved a number of changes in their activity: the use of new Tools in classroom teaching, adjustments in training needs, new regulations controlling ICT implementation, and different distribution of responsibilities and tasks (Participants' Interviews). The participants' post-ICT

activity system (Figure 6.4) represents how ICT caused changes in five components of the teachers' ESP activity system: Tools, Object, Community, Rules, and Division of labour.

In the participants' pre-ICT ESP activity system (Figures 6.3) the Subject (the participants themselves) used a variety of Tools including: the textbook, handouts, whiteboard, markers, OHP, tape player, video player; TV set; in addition to their instructive and administrative skills and philosophy (Participants' Interviews).

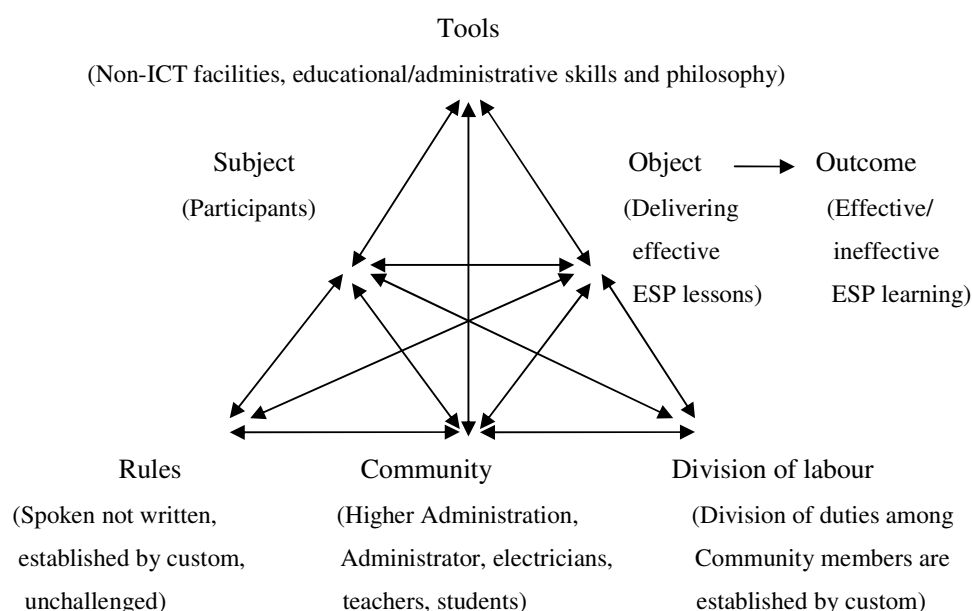


Figure 6.3: Participants' pre-ICT ESP activity system

In the participants' post-ICT ESP activity system (Figure 6.4) the Tools have changed. In addition to the textbooks, ICT (software, hardware, the internet, and texts in digital format), and the participants' computer skills and philosophy became additional Tools. This change in Tools is the first impact of ICT on the participants' ESP activity system.

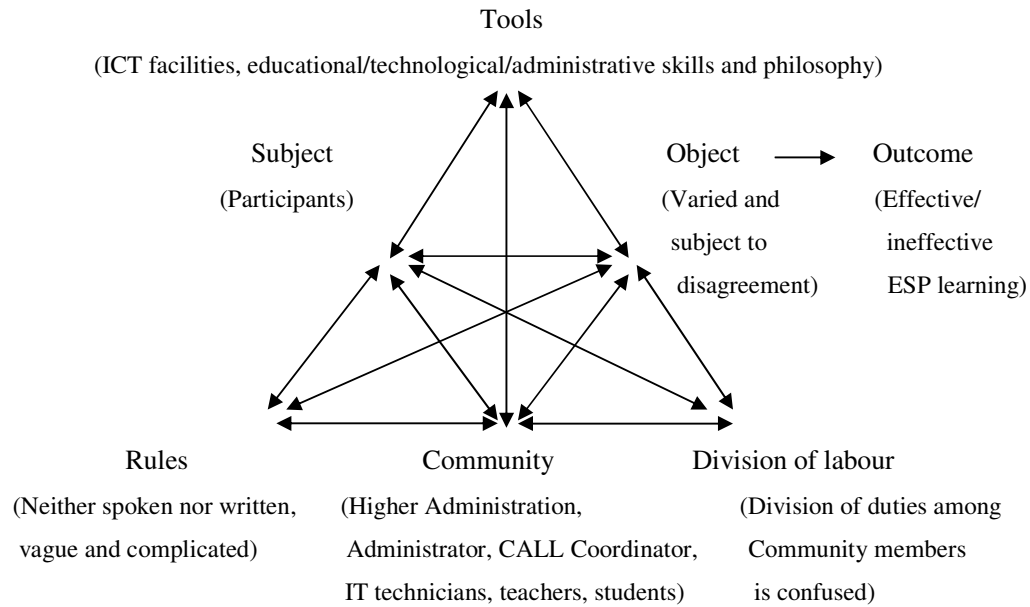


Figure 6.4: Participants' post-ICT ESP activity system

The second component of the participants' ESP activity system that is impacted by ICT is the Object; the purpose of using ICT in ESP instruction. The general Object of using technology in the pre-ICT activity system, as maintained by the Administrator, is to deliver effective ESP lessons (Administrator Interview 1). However, the analysis of the participants' activity systems in Chapter 5 (subsection 5.3.1) reveals that the Object of the pre-ICT ESP activity system is not maintained in the post-ICT activity system. The participants' Objects of implementing ICT in ESP, as demonstrated in Figures 5.1 to 5.7, are varied and subject to disagreement.

The third component that is impacted by ICT introduction is the Community of the participants' ESP activity system. This Community, in the pre-ICT activity system, included the Higher Administration, ELC administrator, teachers, students, and electricians. The change of Tools necessarily brought change in technical needs of the

Community: the electricians left and IT technicians replaced them (Participants' Interviews). The introduction of CALL Coordinator position also brought a change to the Community in the post-ICT ESP activity system.

The fourth component that has changed because of the introduction of ICT to the participants' ESP activity system was Rules. Rules, in the ASM are defined as "explicit and implicit norms, conventions, and social relations within a community" (Kuutti, 1996, p. 35). The Rules of the participants' pre-ICT activity system were not simple. They were, however, settled and well understood by all participants. The introduction of ICT brought change, and change which included additional complications (Participants' Interviews). The Rules of the post-ICT activity system involve change in the customary social norms. The innovative nature of ICT approach (Jones, 2001) with its new applications in ESP instruction brought instability for the established social relationships in the Community and teaching procedures about which Rules to adopt.

The introduction of ICT impacted the Rules of the participants' post-ICT ESP activity system in two ways: the Rules that mediate the relationship between the participants and their community members became vague and uncertain; and the Rules that regulate the use of Tools to achieve the Object of the ESP activity system were not understood by the Community members (Participants' Interviews).

Under this definition, in the post-ICT activity system there is the unvoiced sociocultural Rules that shape the daily social interaction among all individuals and units involved in ICT implementation. More detail of the role of the sociocultural

Rules in forming the relationships within the ESP activity system will be discussed afterward (section 6. 4).

The fifth and final change in the participants' ESP activity system is in regard to the duties performed by the Community, that is, Division of labour. Though generally the duties of some Community members are somewhat similar in pre and post-ICT activity systems, there are several adjustments that were made with ICT. The impact of ICT introduction on the responsibilities of the teachers, the Administrator, IT technicians, and the CALL coordinator was challenging to them all. This change in roles changed the way the whole task of ESP was shared, that is the division of duties.

The data demonstrated that teacher participants have various levels of ICT competency which made it more challenging to manage teaching tasks using ICT (Participants' Interviews). Teacher participants had to adopt the new technology and accommodate their lesson plans to it. In addition, the findings indicated that the Administrator's duties in the post-ICT were even much greater and more complicated due to the new technology responsibilities.

The data also show that a key alteration in the Division of labour was that of IT technicians and the CALL Coordinator. IT technicians' and the CALL Coordinator's responsibilities in the post-ICT activity system have already been detailed in the previous section of ELC Hierarchy (section 6.2).

6.4 Relationships within the ESP Community

Relationships of Community members have changed because of ICT introduction. Looking at the level of teachers' cooperation in the pre-ICT activity system (Figure 6.5), shows that cooperation among teachers was available in forms of: creating audio

recordings based on textbook activities and exchange these recordings with other colleagues; sharing OHP transparencies; and helping each other in operating and maintaining the available technology. Cooperation in non-ICT teaching matters was also available in form of discussing lesson plans and exchanging handouts and examinations (Teacher Interviews). In addition, because of the simplicity of pre-ICT tools, the existing communication Rules between the Community members were habitual, uncomplicated and undisturbed.

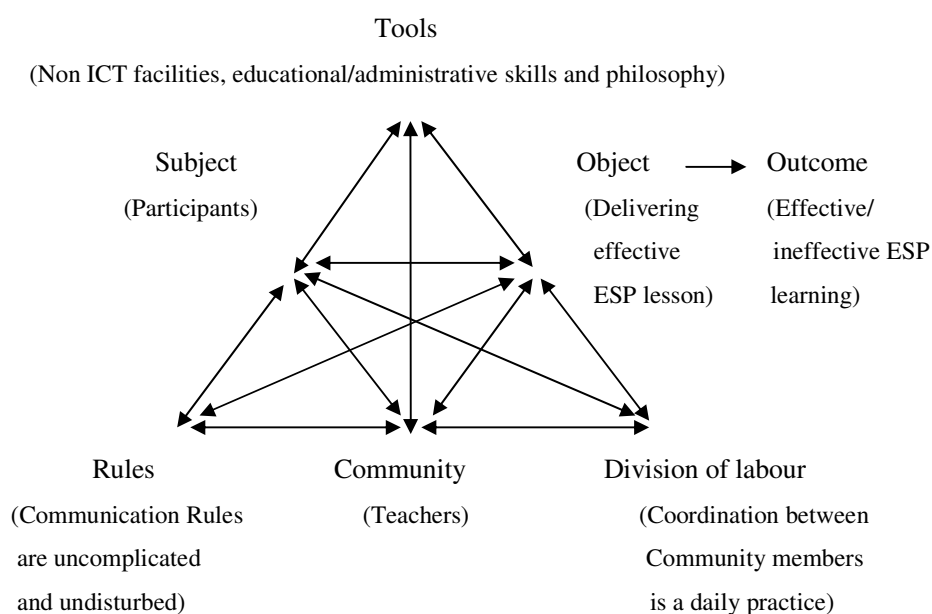


Figure 6.5: Social interaction in the participants' pre-ICT ESP activity system

Although the use of ICT in language education requires a greater level of coordination between teachers due to the innovative and technical side of ICT (Jones, 2001), analysis of the nature of social interaction in the participants' post-ICT activity system (Figure 6.6) shows hardly any contacts among teachers to discuss ICT integration in their ESP lessons. Lack of teachers' communication and cooperation in the post-ICT activity system indicates absence of written Rules regulating teachers'

communication. Ineffective communication Rules is a source of tension in the activity system and is demonstrated as a shadowed box in (Figure 6.6).

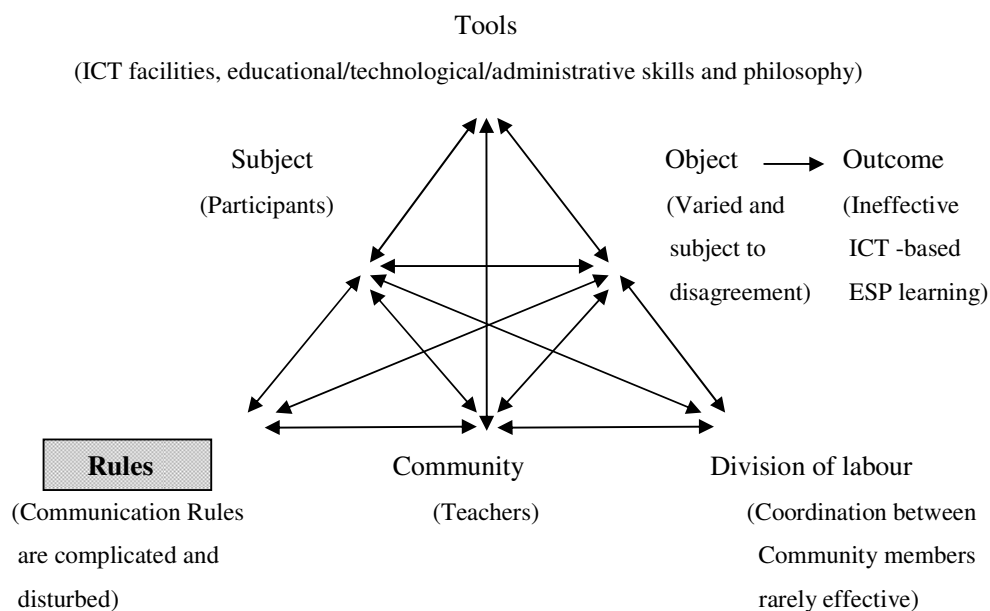


Figure 6.6: Social interaction in the participants' post-ICT ESP activity system (Rules tension)

Ways of interaction, communication and coordination within the context of post-ICT are reported by all teacher participants to be unsystematic (Teacher Interviews). Data revealed by the participants show that the communication about ICT is influenced by a number of determinants related to the unspoken social rules and teachers' personal perceptions about ICT ESP use.

The introduction of ICT brought tension to the ESP activity system which affected teachers' cooperation at both the group level and the individual level. Teacher participants felt more isolated in their community because of the new source of

teaching method and the intimidating number of ICT resources in the classroom and the CALL lab (Teacher Interviews).

At the group level, data show that there are only two occasions when ICT-related matters can be raised. The first occasion is through teachers' feedback received during administrator-teacher meetings. These meetings are infrequent and irregular. The second occasion is through students' feedback, conducted only at the end of every scholastic term before final examination. This feedback is related to lesson appraisal by students.

Absence of cooperation in the group level of the post-ICT activity system is associated with lack of formal rules specifying a mechanism of communication about ICT. The Administrator, however, claimed there is a mechanism through which teachers' requests are reported to him and then to the Higher Administration:

Teachers usually suggest an idea to CALL coordinator and he writes a memo and forwards it to me and then I forward it to the Higher Administration. If the Higher Administration thinks that this idea is really needed here and supports our training needs, the idea is approved (Administrator Interview 2).

To some teacher participants this method of communication is not workable. Peter wondered why there is not a direct channel of communication between teachers and the Administrator since communication via the CALL coordinator is not always helpful:

Teachers sometimes suggest things to the CALL coordinator, who on behalf of them take these suggestions to the administrator, who on behalf of all the teachers take the suggestions to the IT centre and see what they have to say about it. But what teachers actually need is a direct and obvious channel that we can use to fix or update any kind of programs or

to fix any kind of problem or even implement any suggestion that we come up with (Peter Interview 3).

At the individual level, cooperation is not based on clear and straightforward rules. Teachers rarely coordinate with each other or share their technology experiences (Teacher Interviews). In the few times teachers communicate with each other about ICT, their communication is reported to be not always fruitful: John reveals that when he is interested in knowing some ICT application, he E-mails all the teachers and he sometimes receives a reply but mostly does not, even from the coordinator himself (John Interview 3).

A thorough description of lack of communication among teachers is provided by Omar. Omar reported that teachers' cooperation is based more on personal relationships than work relationships:

There is a wide gap between teachers in this institution, if you know a teacher personally, then you could ask him about how he uses the technology in his class (Omar Interview 3).

He also claimed that some teachers feel embarrassed to ask for assistance in ICT integration:

What prevents some less experienced teachers from asking the more experienced ones about technology is that these less experienced teachers could be sensitive and don't want to look like they are technologically illiterate (Omar Interview 3).

Omar, on the other hand, said that technology-confident teachers feel uncomfortable when they receive questions about their technology use from other teachers:

Asking about technology is a sensitive issue for some teachers. Some teachers would consider such questions as interference in their business and not as an attempt to just exchange experiences (Omar Interview 2).

This experience of thwarted communication is not exclusive to Omar but is expressed by most of other participants who said there are no meetings between teachers (Teacher Interviews). The difference with Omar is that he is pragmatically open about his views, whereas other participants are not so liberal because of the sensitivity and possible effect their comments could have on their relationships with other individuals within the institution.

6.5 Internet and Web-Based Tools Applications

The findings show that the introduction of ICT in the ESP curriculum caused the participants to express concern about the possible effect of ICT (the internet, in particular) on the students' cultural values (Participant interviews). Previously, in the pre-ICT activity system, choosing suitable teaching resources was not difficult since textbooks, handouts, and audio/video cassettes were selected by the ELC Administrator and approved by the Higher Administration (Administrator Interview 4).

Appropriateness of some websites is a major concern recognised by the Administrator:

Technology has a good side and a bad side and it depends on the user. The concerns that we have for using the internet in our ESP instruction necessitates that we make sure that whatever the students do, doesn't violate our cultural and religious and community values in general in this part of the world (Administrator Interview 3).

The Administrator draws attention to the websites that contain unsuitable materials and emphasises some potential negative effects these materials might have on young students:

There are a lot of concerns when we talk about an open source like the internet. Of course the internet here [Saudi Arabia] is censored because, as you know, there are many websites that are not appropriate which have been blocked by the government (Administrator Interview 3).

Similar concerns are echoed by Kareem who thinks that these concerns warrant a sufficient reason for not providing students with internet access in the computer lab (Kareem Interview 2).

Participants' approach toward the internet as a learning resource indicates a tension in their ESP teaching activity system. This secondary tension is between the Administrator/teachers (Community) and the use of the internet and web-based materials by students (Tools) and is shown as a broken line (Figure 6.7).

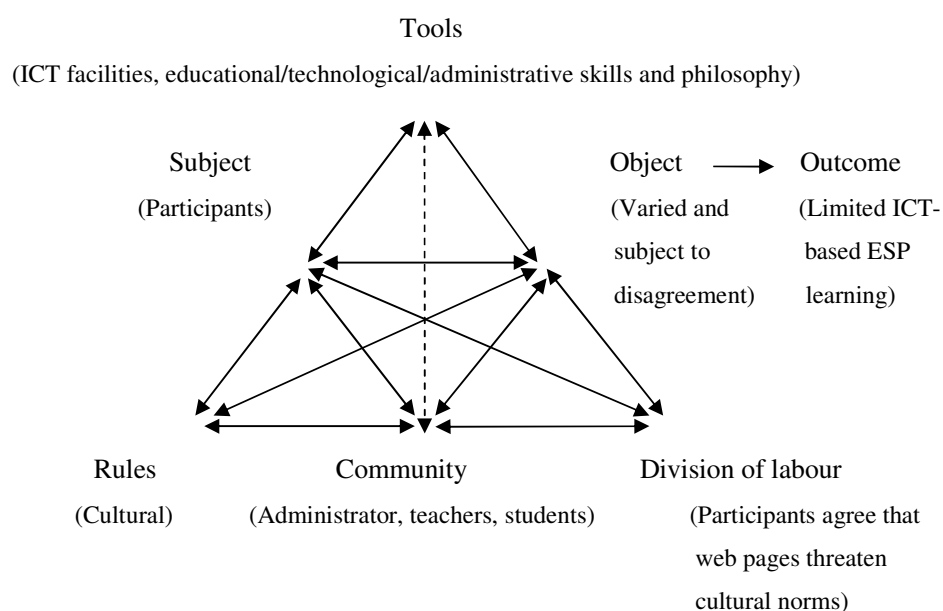


Figure 6.7: Community-Tools tension in the participants' ESP activity system

The tension between Community and Tools caused by the Community's concerns about the internet use by the students inhibited potential benefit of web-based activities and affected the Object of the participants' ESP activity system resulting in limited ICT-based ESP learning.

Participants' concern about the effect of the internet on the students' cultural values has an effect on their decision whether to incorporate web-based tools into the ESP curriculum. Participants, although acknowledging the importance of CMC in enhancing students' ESP learning, do not think that students are ready to use web-based tools.

The failure to acknowledge the specific potential of web-based tools in ESP instruction in addition to lack of internet access in the CALL lab (for students), are the two major reasons for most teacher participants' lack of interest in web-based tools applications for ESP teaching (Teacher Interviews).

An exception to the participants' perceptions toward web-based tools is Hani who had used his institution's E-mail as a means of asynchronous communication to correspond with his students:

Because of my extremely busy schedule here at my work place, I really have very little time to meet with students before or after classes. So, I provide them with my E-mail and they can correspond with me. They can send their feedback, their suggestions, anything they would like to share with me, websites that they come by, and so on (Hani Interview 1).

However, Hani mentioned that this means of communication with the students was not very successful because after a short time from the beginning of the semester

students did not continue E-mailing him and preferred oral communication in the classroom. This discouraged Hani to keep using the email as a means of communication with his students (Hani Interview 1).

The findings indicate that the absence of internet access in CALL lab was caused by four main reasons: students' abuse of ICT, limited capacity of the institution's server, concerns about misallocation of CALL programs practice, and demands on teachers to supervise internet use by their students.

Students' internet access has significant implications for the issue of incorporating web-based tools. Data interestingly revealed that internet access was available for all students when the CALL lab was first integrated into the curriculum. However, teacher participants noticed the students got distracted by the internet by checking their E-mails and visiting news, sports, and games websites (Teacher Interviews)

With more cases of students' internet misuse and with more computer technical problems in CALL labs, some teachers proposed the disconnection of the internet from students' computers to the Administrator who in turn took this proposal to the IT department. The IT department immediately disconnected the internet from CALL labs; notably it reduced their work and the load on the internet server (Ali Interview 5).

Teacher participants reported that students' misuse may be unintentional due to computer illiteracy, but sometimes is intentional. In spite of the verbal instructions and orientation about CALL lab use they received at the time of enrolment, some students abused ICT facilities by cutting the mouse and headphone wires and deleting software (Kareem Interview 3). Hani's commented on the impact of students' abuse:

Sometimes students mess around and turn off the data projector thinking that the teacher can't reach the on/off green button. Some students are so technically savvy that they actually are able to run their own commands, gain more privileges than other students, delete certain software or do things which are amazing in a sense but not in a positive sense because it creates problems for the teacher or for the next student who is using the same computer (Hani Interview 2).

Hani gave an extreme example of a particular student who tampered with the institution's server and brought practice in CALL labs to a stop a while ago:

I remember one time one student somehow managed to hack into the network and actually started to send obscene messages to all the other computers but we were able to locate him later. This student's behaviour was pointless; I mean you would rather have someone with that knowledge, with that skill to really invest it in something useful (Hani Interview 2).

Hani said that although this kind of behaviour is not common, it is likely among adolescent learners because they are "familiar with forms of abuse of technology" (Hani Interview 2). He indicated however, that he believes proper supervision can reduce the chance of students' tampering with the software and he signified a potential feature in the main CALL software, *New Dynamic English*, in which the teacher can monitor the students while they practice on their computers by accessing the students' screens to see exactly what they are doing without the students being aware. Unfortunately, Hani added, this feature does not work due to lack of renewal of software licence (Hani Interview 2). He declared that students' tampering with the software is a main reason for keeping CALL labs locked outside training sessions time which, physically, stopped motivated students from doing extra practice in their free time (Hani Interview 2).

The second reason for the absence of internet access in the CALL lab is the limited capacity of the institution's server. The Administrator relates the limited capacity of the institution's server as a reason for slow internet connection especially that the server of this institution is connected through another government organisation. Internet connection gets even slower and consequently frustrating for all users when so many students log on at the same time occupying a huge chunk of the bandwidth (Administrator Interview 2).

Distraction of students' practice on CALL programs is the third concern associated with the internet access in the CALL lab. A number of participants think the provision of internet access to students will change the lab practice routine in a way that distracts CALL programs' practice and brings systematic CALL practice to an end. The Administrator mentioned that the internet with its huge number of websites would divert students' attention and could waste their time and the teacher's time:

If we allow our students to communicate through audio/video chatting either on the internet or on our intranet, we need to make sure that they are really using this in a fruitful way not chatting about topics not related to study. So they need to be monitored and there have to be arrangements as to how to monitor students' behaviour while using this technology (Administrator Interview 3).

Peter joined the Administrator by emphasising that internet access distracts students from using CALL programs, the main resource of practice in the computer lab:

I think the internet distracts students. The students can always use the internet; they can go home and use the internet, they can go to the library and there are many computers there where they can use the internet, but in the lab, it is a learning session, students have to focus on what they are doing (Peter Interview 3).

Peter further explained that teachers are accustomed to first introducing the lesson in the classroom and then relating the lesson to the CALL programs' contents and by having the students do some practice on their computers. Internet access, as specified by Peter, makes students busy with the websites so they would abandon the use of CALL programs especially if the CALL programs in use are not sufficiently relevant or challenging. Peter's point is the time factor, the limit of time available for CALL learning, and that is an important reason to curtail internet availability.

The fourth and final cause of absence of the internet access in the CALL lab is the extra physical labour required to monitor students' internet use during the training session. Omar explained that the provision of internet access in the students' computers requires teachers to relentlessly observe every single monitor to make sure students are abiding by the practice rules. He said this means that teachers have to walk around between computer rows all the time, which are tight and therefore it is difficult to control internet use (Omar Interview 4).

6.6 Discussion of the Impact of ICT Introduction

The analysis of the study context shows that the introduction of ICT to the ESP course brought complex changes. These changes affected the whole organization at various levels: the ELC hierarchy, the participants' ESP activity system, teachers' relationships, and the use of the internet and web-based tools applications.

The first aspect of change involves the ELC hierarchy. Responsibility for ICT made the Administrator's job more challenging and intensive maintenance of CALL labs and classroom technology required the creation of ICT technicians' job. The CALL

Coordinator position was created to support ICT use but it prevented direct access by teachers to the Administrator. These were all structural changes in the ESP system.

The second aspect of change is in the social shifts as seen through the lens of activity system (Cole, 1996; Engeström, 1987; Quek, 2002). Changes in the participants' activity systems appeared in Tools where ICT brought a break down in the team-work approach in the Community, also in confusion about responsibility in the Division of labour component.

The third aspect of change is in the Community practice. The findings identified the breakdown of the former daily practice of communication, coordination, and sharing of lesson materials. Post-ICT social interaction indicates that interdisciplinary collaboration among teachers is missing. Teachers' cooperation is crucial for proper technology use in language education (Braul, 2006; Gillespie & Barr, 2002; Jones, 2001; Timucin, 2006), however the findings showed an insignificant amount of cooperation between teachers in the research context. For instance, less-confident teachers are inhibited from making contact with more-confident teachers about ICT, for fear of losing face, whereas more confident teachers are reported to feel defensive of their practice.

The fourth and final aspect of change identified by the findings is the participants' concerns about students using the internet and web-based tools. The participants believe that unsupervised use of the internet threatens students' cultural standards. Therefore, students did not have access to the internet in the CALL lab because the participants perceive the material content is not always appropriate. These concerns limit the use of ICT resources (particularly the applications of web-based tools and

CMC, although CMC approach is not always web-based) and therefore, it becomes difficult for ICT to be fully integrated in this ESP context.

Although web-based tools (chatting, blogging, E-mailing, and audio/video conferencing) are reported in the literature as having learning potentials in ESP instruction (Chiu, 2004; Flowerdew, 1995; Hayes, 2007; Mustafa, 2001; Shamsudin & Nesi, 2006), they are not emphasised by the participants. In contrast to contemporary global trends of language teaching, of which all participants are generally aware, most participants did not acknowledge the importance of web-based tools neither do they show interest in adopting CMC applications.

The fact that internet facility is not provided for students in the computer lab means the potential of web-based support for ESP is no longer at the forefront of the teacher participants' attention. Data show that teacher participants draw on web-based resources mainly for their own teaching in the classroom situation where the teachers choose the lesson's focus and relevance.

Therefore, the question remains whether or not ICT can be fully utilised for the purposes of effective and successful teaching/learning in ESP despite the existing barriers. Chapter 7 addresses this inquiry by listing several elements perceived to be substantial for the success of ICT integration in this particular context.

6.7 Addressing Research Question II

What changes does the introduction of ICT bring to ESP teaching in this particular context?

To address the concerns of the second research question, the findings will be recapped. The introduction of ICT to ESP instruction in this particular context brought two changes: organisational and social. These two major changes were a direct result of the shift in Tools, from less to more advanced, which impacted all aspects of the participants' ESP activity system.

The organisational change involved first the establishment of new technology-related positions. The two positions of CALL Coordinator and IT maintenance technicians were established to provide support for ICT integration. An organisational change appeared in the increased importance of ICT technicians for their role in providing efficient and continuous maintenance for ICT.

The second major type of change was the social change in the participants' ESP activity system. The introduction of ICT brought challenges to the old form of relationships and behaviour in the Community. The level of interaction, collaboration, and communication in the participants' ESP activity system shifted with the introduction of ICT.

More specifically, the social change can be seen in the level of cooperation between the teacher participants. Communication and coordination in relation to lesson materials was common in the pre-ICT period, but after the introduction of ICT, this level of coordination has decreased. Communication across teachers was hindered, as has been discussed above, because some teachers felt embarrassed to ask for help whereas other teachers felt sensitive that their practice was being questioned or interfered with by inquiries. This resulted in absence of coordination between teachers about ICT-enhanced lesson delivery and lack of cooperation in material sharing and

support for inexperienced teachers. These conditions disturbed the established teaching pattern and brought pressure to ICT-supported procedures.

Another social change appeared: teachers do not have direct access to the Administrator for suggestions for improving ICT implementation because all communication is conducted through the CALL Coordinator. The teachers were aware of the need for support and training because of the innovative and technical requirements of teaching procedures with ICT, but felt isolated in their community.

An additional social change brought by the introduction of ICT is participants' cultural concerns about the students' use of the internet resources. This concern raised the issues of the students being subject to unsuitable materials and being distracted from their studies. Consequently, internet access was withdrawn from CALL labs and was not available for the students at the time of data collection.

7. ELEMENTS OF ESP ICT SUCCESS

Overview

This is the last of the three result chapters. The first (Chapter 5) discussed the results of research of the participants' ICT perceptions and use. The second (Chapter 6) discussed the results of the impact of ICT on the participants' ESP activity system.

The purpose of this chapter is to identify and describe several elements found to be essential for the success of ICT integration in the current ESP course. These elements are derived from the data emerging from the participants' interviews, the classroom/CALL lab video recordings, and the notes from field observations within the research site. The results in this chapter are simultaneously compared to the literature of instructional technology implementation to see if there is a common trend with the study context.

7.1 Research Question III

This chapter responds to the third research question:

What are the factors that affect the success of ICT integration in ESP instruction in this particular context?

Five elements are perceived to be essential for successful ICT integration in ESP instruction in the research context. These elements are listed respectively according to both the importance the participants gave them and the number of participants who made the comment. They are: adequacy of ICT tools, teacher professional development, reliable technical support, sufficient funding, and thorough planning.

The first element of success (adequacy of ICT tools) is related to the technological factor, whereas the other four elements are associated with the institutional factor.

This finding is in alignment with Al Saif (2005) and Byungho (2003) in their examination of the variables that influence instructional technology integration in tertiary education. While Al Saif (2005) and Byungho (2003) concluded that there are five major factors affecting the success of ICT in education, this study found only two types of factors are substantial for ESP instruction: institutional and technological.

Each of the five key elements found from the research site data (adequacy of ICT tools, teacher professional development, reliable technical support, sufficient funding, and thorough planning) is discussed in detail to give a picture of how their absence or misapplication can affect the success of ICT use in ESP. The findings in the present study are discussed in relation to similar studies in the research literature in order to identify what might be specific to this study and what might be the broader experience.

7.2 Adequacy of ICT Tools

The strongest voice of the participants is given to comments about the adequacy of ICT tools including the relevance of these Tools to the ESP curriculum. Participants' feedback about ICT Tools is consistently strong but complex because it involves various technologies: hardware (computers and related devices), software (operating, anti-virus, and CALL programs), interactive whiteboard, and the CALL labs. The Tools, highlighted in the activity system as they mediate the Subject(s) attempt to achieve the Object of the activity, were repeatedly reported by the participants as inefficient and as not efficiently serving the full purpose for which they were first

introduced, that is, to support effective ESP lessons (Administrator Interview 3).

Since the finding of ICT Tools is so broad, it is divided into four parts. These four parts are: hardware, software, interactive whiteboard, and CALL labs.

7.2.1 Hardware

The first finding relates to hardware. It is unanimously claimed by the respondents that the computer hardware in classrooms and CALL labs are outdated. The Administrator stated that the computers are slow and either need to be replaced with new ones or have more RAM (Administrator Interview 3). Field notes showed that some headsets were broken and some monitors did not work (Field Notes 3). The researcher himself tested the lab hardware and found the CALL programs were unloaded in some computers and were slow to respond in others (Field Notes 4). Besides, repeated breakdown of hardware, such as monitors, mice and headsets were often noticed (CALL lab Observation).

7.2.2 Software

Findings about the adequacy of ICT Tools also encompass also the software. Limitations in software (operating, anti-virus, and CALL programs) have been emphasised by the participants. Operating software has not been updated since it was first installed. The Administrator, himself, wondered when the IT department would update the software:

We are still using an old operating system which is Windows 2000. Our institution hasn't even adopted Windows XP although now Windows Vista has gone out and it's in the market so I don't know: are we going to jump to Windows Vista without using Windows XP or are we going to change to Windows XP? (Administrator Interview 3).

Software is also limited in the view of the participants because anti-virus programs were outdated and did not work properly:

We've got a network wide problem that we were hit with last year and it is still continuing. There are some nasty viruses that we cannot seem to get rid of, that has to do of course with the software but has also affected the hardware. Some computers are behaving in a strange way (Administrator Interview 3).

CALL interactive software including *New Dynamic English*, and *Tense Buster* are not well-designed for ESP purposes, according to all participants (Participant Interviews).

Both *New Dynamic English* and *Tense Buster* are limited in content and licence (Administrator Interview 3). The content of the two CALL programs installed in CALL labs is not appropriate to the needs of the ESP course (Participant Interviews).

New Dynamic English focuses on general listening and reading skills and *Tense Buster* focuses on general grammar. The Administrator confirmed this:

Unfortunately both software programs are general English. Some topics might have ESP materials but it is not intended to be that way (Administrator Interview 2).

The Administrator related students' boredom inside the CALL lab as a response to the content of the main CALL program: *New Dynamic English*:

This program is only eight sections and students usually finish each section in about two weeks. So, in sixteen weeks by the end of the first two teaching levels [elementary and beginner] students would have covered the whole program. Because we have four teaching levels [elementary, beginner, intermediate, and advanced] here in the English course students who practice on this program too fast find themselves repeating the same content or doing nothing in the CALL labs, especially

in the last two levels, the intermediate and the advanced levels (Administrator Interview 2).

Irrelevance of CALL programs to ESP was continuously emphasised by all teachers including Ali:

These two multimedia software programs are more related to English as a Second/Foreign Language than English for Specific Purposes. There are parts that could fit ESP topics, but in general they are not designed for ESP, they are designed for TEFL/TESL, the general English program (Ali Interview 2).

Peter thought the existing CALL programs are more appropriate for learners of English as a foreign language but not for English for a specific purpose (Peter Interview 1). Peter confirmed that the content of these CALL programs is similar to standardised-test preparation books such as TOEFL (Test of English as a Foreign Language) (Peter Interview 1). Omar agreed with Peter and believed that the present CALL programs do not assist teachers in teaching ESP topics neither do they challenge the students or stimulate their interests, especially the advanced ones. Omar stated that lab practice is not beneficial since students only practice on these programs mostly because they are told to practise by teachers (Omar Interview 5).

Hani reported that the two CALL programs, *New Dynamic English* and *Tense Buster*, could be satisfactory only for students in their first two levels of the English language course, i.e. preparatory and elementary; but he did not think they meet the needs of students in the last two levels of the course, i.e. intermediate and advanced, especially given that at these two final levels students would have developed to the stage of studying ESP materials:

I can't say that New Dynamic English is helpful for sure because we have a multitude of different ESPs here, some students study English to become hospital administrators, so that's a very limited professional thing, others to work in business, so it's really difficult to gauge whether New Dynamic English actually caters to all kinds of students (Hani Interview 2).

Some interactive features of *New Dynamic English* do not function because the rights to use the program have not been renewed. Hani confirmed that students cannot use all features of *New Dynamic English* because these features are non-functioning:

I can't really feel grateful for the people who installed New Dynamic English because it was purchased seven years ago and since then the licence has not been renewed and the software still hasn't been updated. I don't think there is a use for software that is not updated on a regular basis (Hani Interview 2).

The implications of teachers' comments about CALL programs' limitations point strongly and directly to another part of the Community involved in CALL, the students themselves. Though they were not part of the research of this study, their boredom and frustration due to CALL programs' inadequacy (CALL lab Observation) in turn compounds the pressure on the teachers and causes more tension in the CALL lab context and the Community at large.

7.2.3 Interactive Whiteboard

The third type of ICT Tools reported to have limitation is the interactive whiteboard. Participants have varied views about the interactive whiteboard (*SMART Board*). Some participants described it as an effective tool that poses much potential for ESP instruction (Hani and Kareem Interviews). Others described it as having limitations (Administrator Interview 3). In fact, a number of participants questioned the need for

the interactive whiteboard technology at all in classrooms but especially in the CALL lab (Omar and Peter Interviews). Peter, for instance, questioned the need for interactive whiteboards in the classrooms and claimed that the computer and the digital projector could perform the same functions as the interactive whiteboard in a more effective way:

Using the computers and the word processor is efficient while interactive whiteboard is very slow and time consuming (Peter Interview 3).

The ELC Administrator confirmed teachers' remarks about the effectiveness of the interactive whiteboard:

Some teachers said that Smart Board doesn't add anything to the technology that we already have in the classrooms. They thought just using the computer with the data projector is enough technology for them. They didn't think that Smart Board was of any more value to have this new technology (Administrator Interview 3).

Also, the Administrator endorsed teacher participants' claims about the slowness of the interactive whiteboard:

Teachers said that when they write something on Smart Board using the electronic pen, it takes a long time before it appears on the board and that is frustrating to them. I investigated this difficulty and I asked a technician about those difficulties, and he told me that they had to do with the slow connection between the computer and Smart Board (Administrator Interview 3).

Surprisingly, despite awareness of the shortcomings of the interactive whiteboard, the Administrator continued to support its installation in all learning venues:

We have made an arrangement with the Training Technology Centre [A/V department] to install Smart Board in our conference room and in all the

classrooms and CALL labs (Administrator Interview 3).

7.2.4 CALL Labs

The last type of ICT Tools reported to be inadequate are CALL labs. CALL labs themselves were described by the participants as having quite a few problems. These problems are related to the number of computers, lack of free practice hours, and the configuration of computers.

Lack of sufficient computers (Field Notes 1) was viewed by Hani as an obstacle for effective CALL training:

I must say that CALL labs do not accommodate for the number of students especially since we have sometimes 30 students while each CALL lab accommodates a maximum of 24 computers (Hani Interview 2).

John affirmed this problem persists in almost every CALL lab session: “What can we do? Because we have 30 students and we have 24 computers, so which six students shouldn’t get the computers?” (John Interview 2). To deal with the problem of not having enough computers in CALL labs, Peter said that he would usually tell the extra number of students to move to a nearby free lab, but if there is none, he would ask each one of them to share a computer with a classmate (Peter Interview 2). This first procedure does not seem practical to Peter however because, as he mentioned, this requires him to leave the lab training session while the practice is going on to supervise in the other lab at least twice during the practice time to check on the students and to provide them with instructions and assistance. However, Ali responded to this problem by saying:

“If there are 27 or 30 students in each group, they do not all attend, there are often absentees, so there are usually free computers for the extra students” (Ali Interview 2).

Consequently in the interview, Ali was asked about the situation when all 30 students happen to attend the lab session at the same time. He replied by saying that he would tell every two students to work together on one computer or he would try to find accessible computers in a nearby CALL lab and send some students there (Ali Interview 2).

Unavailability of the CALL lab for students’ practice is another shortcoming of CALL labs. Teacher participants reported that six of the twelve CALL labs originally established for English language instruction are now used by students of other majors. The overwhelming demand made by other departments within the institution to use these CALL labs is a direct cause for such a development (Hani and Peter Interviews). This reallocation affected the possibility of finding a vacant lab for ESP CALL practice: “Sometimes we cannot provide instruction in CALL lab because they are unavailable” (Hani Interview 2).

CALL labs’ shortage also affected students’ ability to do free practice because labs are occupied most of the time (Hani Interview 2). Ali confirmed that the use of CALL labs for free practice is limited because they are always occupied with training sessions. The only time allowed for additional practice is the 10 minute break between training sessions (Field Notes 3).

Moreover, teachers’ inability to access CALL programs from their own offices is an extra limitation of the CALL facilities, stated by teacher participants (Teacher Interviews). Ali explained that this is due to software copyrights which do not allow

CALL programs to be installed except in the CALL labs. The consideration of the busy schedule the CALL labs have, being occupied most of the time with CALL sessions, means that teachers do not have any chance to view the programs and prepare CALL lessons in advance. As a result, Ali said teachers always go to the CALL lab session less than totally prepared. Ali thought that this reduces the potential of CALL programs to be used effectively especially in the case of new teachers who need to orient themselves with the CALL program before teaching (Ali Interview 5).

The organisation of computer sets inside CALL labs is an additional limitation of CALL labs according to some teacher participants. Field notes show that computers are configured in different ways: straight rows in some labs and in other labs are set in horse-shoe rows (Field Notes 1). Both configurations do not provide the teacher with enough space to move easily between rows to offer assistance to the students because the distance between computer rows is too narrow. CALL lab observation shows some students taking advantage of the congestion and lack of teacher's access to play 'Solitaire', a computer card game. Hani said teachers could still monitor their students' practice through special software installed in the teacher's station in the CALL lab, yet this software no longer works because the software licence has not been renewed (Hani Interview 4).

In summary, ICT Tools inadequacy caused significant complications for teachers in their teaching. The fact that ICT Tools in their current state do not support the presumed goal of the activity system indicates two sources of tensions. The first is in the Tools component itself for inadequacy to fulfil the ESP learning needs. The second tension results from the first: inadequacy of the Tools causes a tension that flows in the participants ESP activity system between Tools and Object. This tension

(Figure 7.1) lies in the Tools itself (shown by a shadowed box) and affects the Object of the participants' ESP activity system (shown by a broken-line arrow) resulting in ineffective ESP learning.

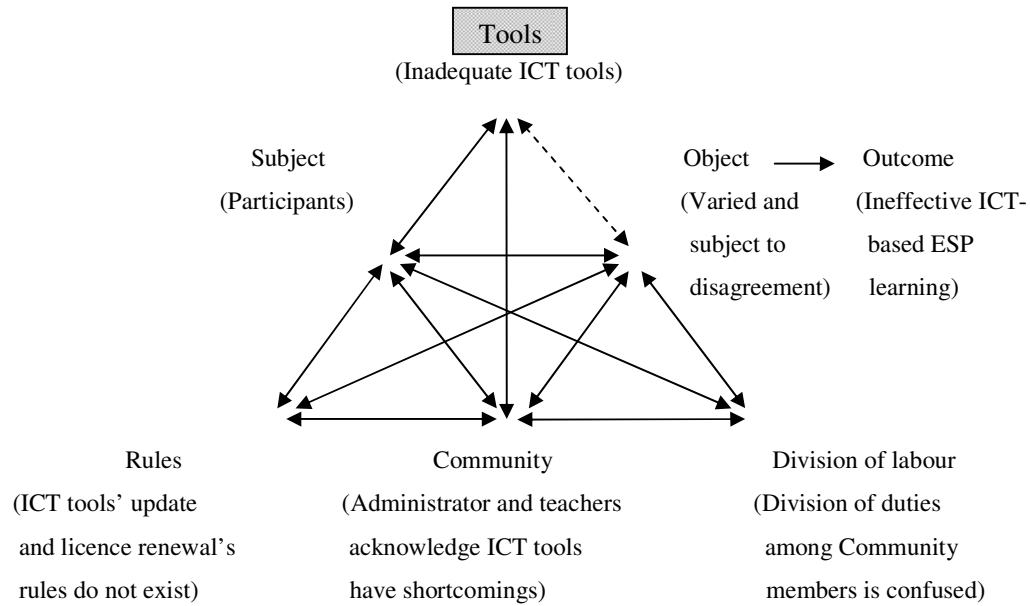


Figure 7.1: Tensions within Tools and between Tools and Object in the participants' ESP activity system

However, there is no agreement about what exactly should be done to improve ICT conditions. Some teachers (Peter, Kareem, and Ali) suggest an update for all ICT facilities:

We need more technology, more software programs, we need cooperation, we need workshops, we need orientations, and we need to be updated about the technology that is available now in the market. All these should be taken into consideration by the Administrator (Peter Interview 3).

Interview data indicate uncertainty among participants about the distribution of responsibilities and the division of tasks in the ELC, especially in regard to improving the current situation of ICT facilities. Participants have different opinions in regard to determining responsible individuals/units for improving the technology. The Administrator claimed that the IT department is responsible for updating hardware and operating software in CALL labs. Some teachers (Omar, Peter, and Hani) held the ELC Administrator himself responsible for improving the situation of ICT in the CALL lab. They thought the Administrator could do much more to modernise and improve the standard of ICT, in CALL labs in particular, through his direct contact with the Higher Administration and the IT department. A second group of teacher participants (John and Kareem), although agreeing that the ELC Administrator is partially responsible for removing the hurdles that affect ICT integration, thought that developing the performance of ICT in ESP instruction is mainly the responsibility of the Higher Administration of the institution. A third group (Ali) represented the view that teachers should not hold anyone responsible for improving the current situation of ICT, but that the teachers themselves take the initiative to amend the situation and act appropriately.

Other teacher participants expressed the view that their role in improving the current status of ICT is regrettably limited since they report their voices are not heard by the Administrator:

I don't think that teachers had a say in whether ICT was going to be implemented or not. The administrator conducted a 'discussion' and then CALL labs were set up and that was it. I must say that we didn't have any hand in having this technology implemented (Hani Interview 1).

7.3 Professional Development

The second finding of elements of success in ICT integration relates to professional development. The frequency of participants' comments about professional development comes second after their comments about the adequacy of ICT Tools. This reflects participants' awareness of their professional needs for further training in ICT use. ICT training, as specified by all teacher participants, is presently superficial and focuses on the operational features of ICT but not on classroom teaching applications (Teacher Interviews). Both Kareem and Omar said that teachers' training needs have not been addressed by the ELC administration (Kareem and Omar Interviews). John claimed that he was not offered any training in how to integrate ICT since he joined the ELC. The only professional development he received was an orientation session he attended when he was first enrolled (John Interview 1). When Peter was asked about the ICT training he received his tone was clear, he said:

I don't think there was any kind of training. There was what is called 'orientation' for new teachers who come to this institute to work here. It is conducted for one hour. They take new teachers on a one-hour tour in the computer labs and show them how to use the computers and how to enter students' names into the system so students can log on to the program, that's it! (Peter Interview 1).

Teacher participants also revealed their discomfort about the quality of training they received on the interactive whiteboard, the most recent technology introduced in the ELC. Omar succinctly described the interactive whiteboard training session as "short, promotional, general, theoretical and insufficient" (Omar Interview 2). When Hani was asked about the training he received on the interactive whiteboard, he said:

Hardly anything, unfortunately, the Smart Board was installed while I was away working on my graduate study. When I rejoined the ELC I taught for six months and nobody even offered to provide me or the newly arrived teachers with any orientation. Luckily I had used the Smart Board before and I was aware of it but I kept thinking of other teachers who didn't know how to use it (Hani Interview 2).

Insufficient ICT training opportunities was also emphasised by Ali: “There is no specific training program. Every teacher experiences this through actual teaching” (Ali Interview 2). Ali relied more on his own previous computer experience: “I did not take any training course. I just learned this by myself” (Ali Interview 2).

Most teacher participants (Omar, John, Hani, and Peter) held the Administrator responsible for not providing the necessary training opportunities that teachers need. This indicates tension within the Community of the ESP activity system. This primary tension (Figure 7.2) emerges between teachers and the Administrator as teachers reported their training needs are not fulfilled as a result of the negligence of another Community member (the Administrator).

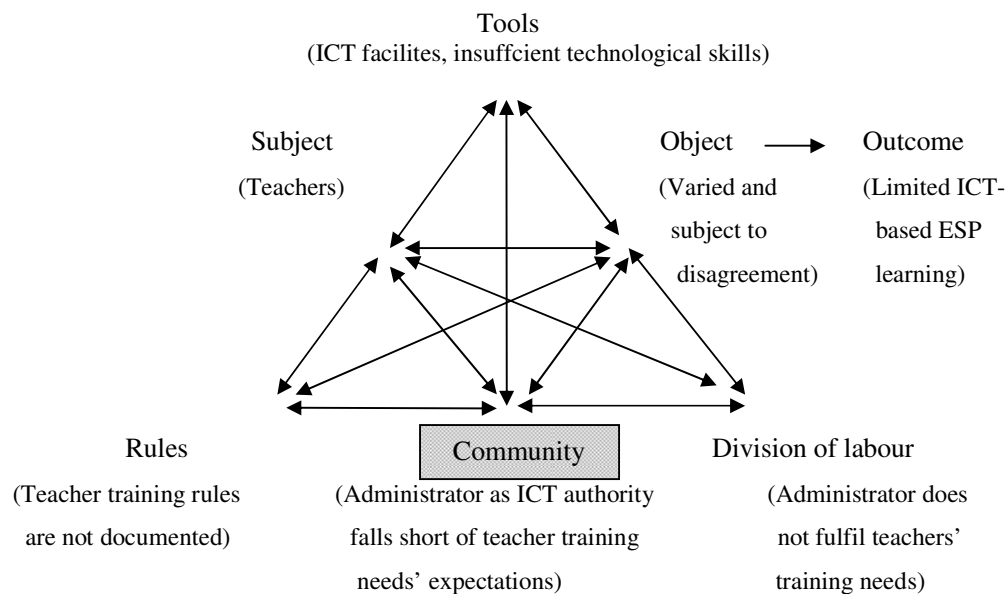


Figure 7.2: Community tension in the participants' ESP activity system (1)

The tension caused by lack of sufficient professional development for teachers affected the Object of the participants' activity system and resulted in limited ICT-based ESP learning.

7.4 Technical Support

The third element of success for ICT integration in this particular context is technical support. Maintenance support for technology is limited in both CALL labs and classrooms. Frequent failure of computers in CALL labs was often reported: "In an average CALL lab, we usually have four to five non-functioning computers, but sometimes it is even worse" (Hani Interview 2). Permanent malfunctions of ICT caused CALL lab sessions to be at a critical operational level in many cases:

"Sometimes up to half the computers do not work properly; the mouses are broken and the monitor's picture is jumping" (Omar Interview 2).

Teachers' remarks about technical malfunction are of two types: those related to the IT department and those related to teachers' lack of maintenance skills. The first type is related to teachers' remarks about the quality of IT support provided by the IT department. Hani criticised the IT technicians' promptness in dealing with technical problems in the CALL lab:

Sometimes I run into some technological problems which I cannot solve and then I would have to call a technician and sometimes that takes longer than what I actually want it for (Hani Interview 1).

The second type of teachers' remarks about technical malfunction is associated with teachers themselves lacking the technical skills necessary to deal with the technical troubles in a practical approach. Ali reported that, in practical terms, having the same technical problems often made him familiar with fixing some of the minor technical problems. Yet, he says he can do nothing when he has major troubles especially those related to software design or hardware damage (Ali Interview 5). Therefore, Ali concluded that at least teachers should acquire some troubleshooting skills.

With the absence of an ICT maintenance policy to follow in the ELC, insufficient IT support had a direct, negative effect on lesson procedure and caused tension within the Community members, i.e. teachers on the one hand and IT technicians on the other, figuratively illustrated in Figure 7.3.

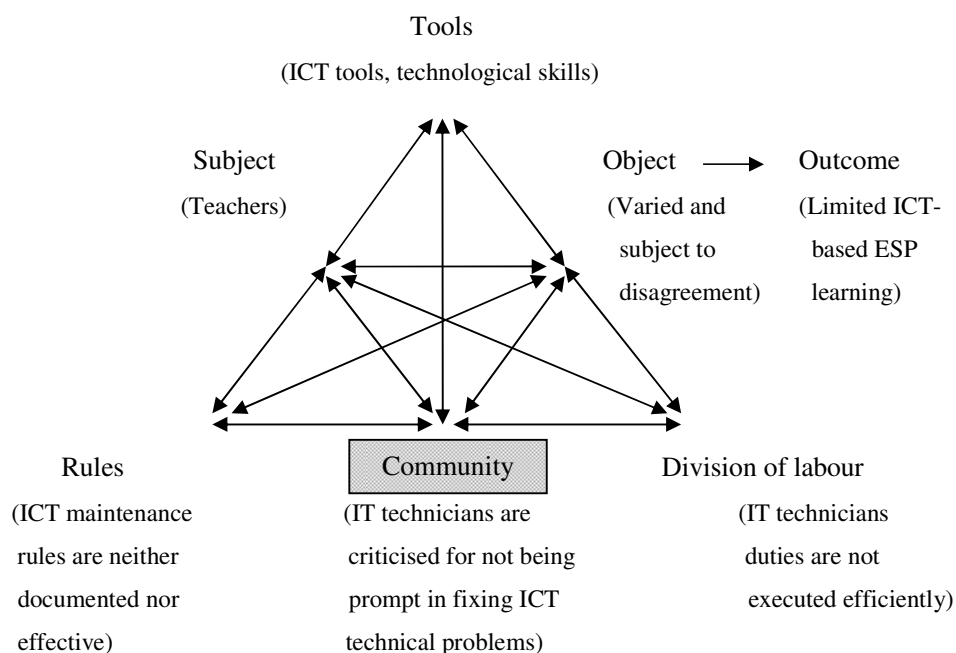


Figure 7.3: Community tension in the participants' ESP activity system (2)

The tension within the Community (teachers vs. ICT technicians), as a result of insufficient technical support, significantly affected the Object of the participants' ESP activity system and resulted in limited ICT-based ESP learning.

In addition to IT technicians' responsibility to provide sufficient technical support, the Administrator's responsibility was highlighted by some of the teachers who think the Administrator himself should constantly check up on the condition of the ICT facilities by paying regular physical visits to live teaching sessions in the classrooms and CALL labs. According to Ali, this would give the Administrator an awareness of the lack of maintenance of existing ICT tools (Ali Interview 3).

In the literature, the task of supervising ICT tools is one of the major responsibilities of the CALL coordinator (Lim & Khine, 2006). However, in the context of this study, Kareem, the CALL coordinator, with a heavy teaching load (30 classes a week), does not have the time to routinely check the technology facilities in both classrooms and CALL labs; nor is he given any authority to provide better resources.

7.5 Funding

The fourth element of success in ICT integration in the study context is funding. Participants have contrasting views about how effectively ICT is being funded. The Administrator emphasised that ICT is sufficiently funded and interpreted what he regards as 'successful' implementation of ICT in the ELC courses in terms of adequate financial support:

There is sufficient financial support for technology, not only in the English language program; it's actually at the level of the entire institution (Administrator Interview 3).

In contrast, most teacher participants thought that ICT funding is insufficient. They claimed that broken ICT tools in CALL labs in addition to computers and software shortages all prove that the amount of money that has been spent on ICT development was insufficient. Poor conditions of ICT facilities, confirmed by field notes (Field Notes 2), was claimed by Peter as an indication of lack of financial support in the ELC:

Technology needs updating all the time and that is something that we lack. You can buy computers and you can set up computer labs, but if you don't keep updating the computer labs, if you don't update the programs you have, and if you don't spend enough money for that purpose, that wouldn't be beneficial (Peter Interview 3).

The finding shows that the ELC is not financially independent and purchasing the technology is not processed directly through the ELC. Instead, ICT purchase requests have to be evaluated, processed, and managed from outside the ELC (Peter Interview 2). The current ICT purchase procedure is reported by some teachers as a main reason for the slow process of any technology update (Teacher Interviews). The fact that ICT funding rules are neither documented nor efficient indicates ineffectiveness in the Rules themselves (primary tension) and extends to negatively affect the Object of the participants' ESP activity system (secondary tension) as presented in (Figure 7.4).

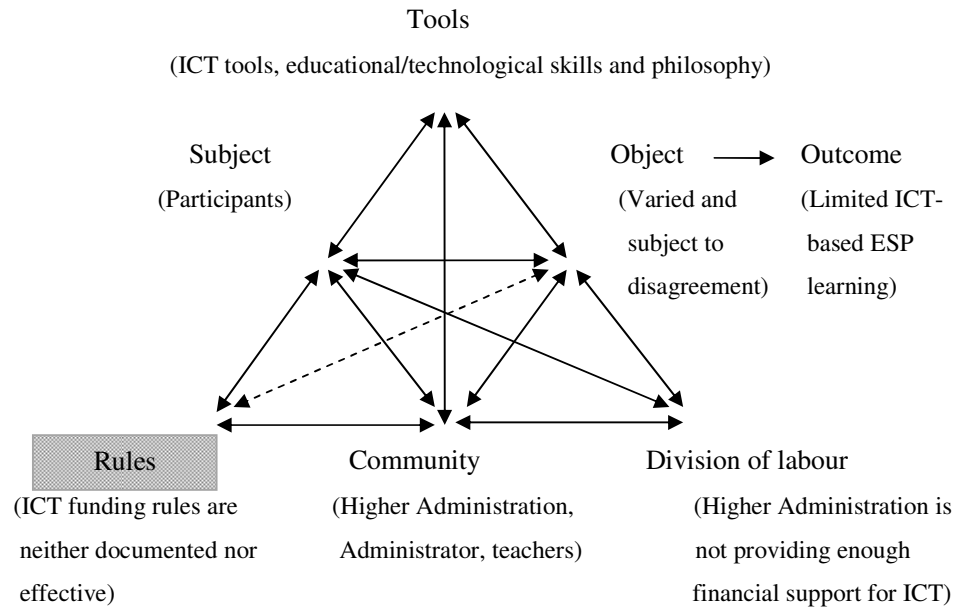


Figure 7.4: Tensions within Rules and between funding Rules and the Object in the participants' ESP activity system

Even the ELC Administrator himself is not expected to request ICT funding from the Higher Administration of the institution (Teacher Interviews). Omar identified the implicit attitude of the Higher Administration by saying that expenses have to stay within a limited budget even if shortage of funds affects ICT's capacity to support ESP learning (Omar Interview 4). This attitude of the Higher Administration is, indeed, a discouragement for the teachers who wish to improve ICT facilities in the research site.

7.6 Planning

The fifth element of success for ICT integration in the study context is planning. Absence of effective planning from an early stage and absence of written ICT guidelines was reported in the data (Participants Interviews). The Administrator

reported an absence of an ICT general plan and counted it a major limitation in technology adoption (Administrator Interview 3). Some teacher participants consider the nonexistence of such a plan to be a gap in ICT implementation (Teacher Interviews). Other teachers used the absence of ICT guidelines to explain their uncertainty about the extent to which they should use ICT in their teaching (Teacher Interviews). The lack of an ICT plan is manifested in teachers' uncertainty about the role of ICT in the ESP. This lack, demonstrated by the ASM, shows that the planning Rules currently implemented in the ELC are ineffective on their own and is found to be negatively affecting the Object of the participants' ESP activity system (Figure 7.5).

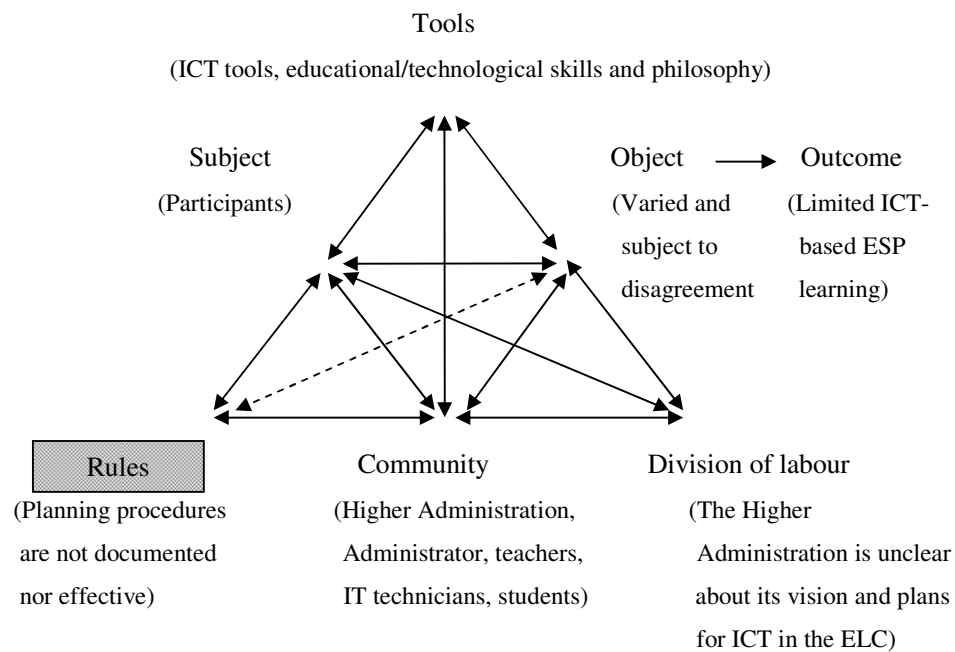


Figure 7.5: Tensions within Rules and between planning Rules and the Object in the participants' ESP activity system

As has been said, confusion about the level of ICT incorporation into ESP is a consequence of the lack of a technology policy. The data reports teachers' anxiety about vagueness in the institution's ICT vision. The institution's motive for establishing ICT facilities is unclear for most teacher participants (Teacher Interviews). Omar revealed that he was unaware of the real reason for which ICT was initially introduced in the ELC (Omar Interview 3). John doubted it was for a sincere teaching motive, but for "show" (John Interview 2). Peter concurred ICT in the study site was "to make an impression" (Peter Interview 3).

In contrast to them, the Administrator and two of the teachers (Hani and Ali) believed that the institution's introduction of ICT is for the provision of better learning opportunities for the students. The Administrator stated, as has been said, that ICT establishment in the ELC is a response to the advancement of instructional technology in language learning and teaching world wide. Therefore, Hani and Ali agreed with the Administrator's explanation for the role of ICT in the ELC curriculum. These two teachers also highlighted the role of the ELC as a department within a non-profit governmental institution which is simply not motivated to speed up the implementation of ICT to gain a reputation for business purposes as much as other profit-driven, private educational institutions are.

In addition to the vagueness of planning specifically relating to the role of ICT in the ESP course, the data shows a lack of vision about four other essential aspects of planning for technology integration: ICT needs assessment; periodical ICT evaluation; students' ICT performance assessment; and coordination about ICT integration between teachers.

First, needs assessment, although highlighted by participants as a cornerstone in ICT implementation, it has been overlooked from an early stage (John Interview 1). The Administrator confirmed that needs analysis is an essential part of any general plan for ICT integration, yet he reported that such a procedure had not been implemented in the ELC:

A successful design of a program starts with the needs assessment and I think we should have taken that into consideration (Administrator Interview 3).

Further in regard to ICT planning, periodic and systematic appraisal of ICT facilities is the second aspect highlighted by teacher participants as necessary for effective ICT planning. The observation findings show an absence of, or only superficial ICT periodic evaluation. Moreover, several teachers explicitly confirmed the absence of periodic evaluation for ICT. Peter mentioned that only an insignificant evaluation is made through the students' appraisal of courses at the end of every semester:

At the end of every session, students are supposed to fill out this kind of application about the evaluation of teachers and classroom. I think there is a part of it about technology in the classroom, whether the teacher uses the technology appropriately in the classroom or not (Peter Interview 2).

In fact, this part of the evaluation form, which Peter referred to, includes a single question about the teachers' use of technology. Kareem emphasised the need for periodical ICT evaluation in classrooms and labs but explained that teaching responsibilities distracted him from doing it: "In fact we are very busy in teaching that we don't assess the technology we have periodically" (Kareem Interview 3). In contrast, Ali emphasised the importance of routine ICT evaluation by relating evaluation to a good quality operation of ICT facilities (Ali Interview 2).

The third planning aspect is lack of a method to assess students' performance in the CALL lab. Some teachers expressed their discomfort with the absence of an appraisal system for students' performance in CALL lab: "So far we don't have any kind of assessment or evaluation that could motivate students to use the CALL lab more effectively" (Kareem Interview 2). Absence of such an appraisal system causes some students not to take CALL lab practice seriously since CALL lab performance does not affect their overall grade.

The fourth and final aspect resulting from absence of an ICT plan is related to communication about ICT integration. Clear and regular communication Rules for teachers involved in ICT use are reported as missing in daily/weekly practice. Experienced teachers are not passing on their knowledge while less experienced teachers lack mentoring in their attempt to integrate ICT. Moreover, the implication of not having a weekly meeting means a lack of unity in curriculum coverage and activity materials used for students. This lack of communication between teachers from the beginning of ICT implementation represents a deeper sociocultural issue in the context of the study.

7.7 Summary and Discussion of the Elements of ICT Success

In this study context, five elements were perceived by the participants as significant in determining the success of ICT integration in ESP instruction. These five elements of success are aligned and grouped under technological and institutional factors of ICT success. Adequacy of ICT tools is aligned with the technological factor; and teachers' professional development, technical support, funding, and planning are aligned with the institutional factor.

In support of the participants' comments in this research, these two factors are well reported in the literature as variously significant to ICT success in language education (Gillespie & Barr, 2002; Jones, 2001; Kessler, 2007; Kim, 2003; Lam, 2000; Timucin, 2006).

The first of the five elements is the inadequacy of the current ICT resources. The resources in the research site do not adequately support teachers in their classroom teaching nor do they fully serve the objective of the ESP course. Teacher participants expressed strong doubts about the suitability of the current CALL programs, *New Dynamic English* in particular, for addressing students' needs in the ESP course. Additionally, a number of remarks were made by teacher participants about the size and organisation of CALL labs. Similarly, the findings of previous studies confirm that the quality of ICT infrastructure is critical for the success of language training (Albirini, 2006; Almozaini, 1998; Chen, 2006; Gillespie & Barr, 2002; Lam, 2000).

The second element is professional development. In a foundational sense, poor ICT training for teachers caused a limited application of technology in the study context. Much of the existing training encompassed only details of functional use of the technology itself. Insufficient training, as revealed by interviews and observations, is a main reason for most teachers not to use ICT tools effectively. The case of the interactive whiteboard is a clear example where, although the teachers had a basic idea about it, they did not have training for lesson applications. The literature confirms the participants' claims that ICT training is essential and is directly related to teachers' success in integrating technology into language education (Almozaini, 1998; Brul, 2006; Chen, 2006; Gillespie & Barr, 2002; Jones, 2001; Kessler, 2007; Kim, 2003; Timucin, 2006).

The third element for ICT success is technical support. Consistent comments by teacher participants, supported by the researcher's field notes, illustrate that the situation of ICT facilities in the study context is critical. Although it occupies an important status in the literature of both general (Tondeur et al, 2008) and language education (Braul, 2006), technical support is overlooked in the ESP context of the current study. More specifically to this study, insufficient technical support for ICT facilities in ESL learning programs at Saudi tertiary institutions is reported by three researchers (Abalhassan, 2002; Al-Kahtani, 2001; Alrumaih, 2004) as a common practice. These researchers all suggest that Saudi educational institutions should give more consideration to ICT technical support to avoid interruption or cessation of ICT practice.

The fourth element that affects the success of ICT integration in ESP instruction in the study context is funding. Although the provision of a constant ICT subsidy has been highlighted by the literature as essential (Abu Samak, 2006; Albirini, 2006; Al-Kahtani, 2001; Alrumaih, 2004; Braul, 2006; Gillespie & Barr, 2002), the data indicate insufficient money has been spent on ICT upgrading in the research context.

The teachers, in their comments, often expressed their need for extra funding for ICT modernisation: purchasing more advanced hardware and more suitable CALL programs, and renewing software licences. The Administrator, although in charge of administering the various tasks of the ELC, does not himself make the financial choices to facilitate ICT improvements. The Administrator can only 'suggest' improvements for ICT use to the Higher Administration because it has the power over funding and policy. An example of the limited role the Administrator has is the implementation of the interactive whiteboard. Even though the Administrator revealed

from his and the teachers' experiences that the interactive whiteboard was slow and ineffective, the Higher Administration decided to go ahead with its plan to install it in all the classrooms and the CALL labs. The comprehensive installation of the interactive whiteboard, with all its limitations, was not understood by the teacher participants, especially in light of the other critical ICT needs.

The fifth and last element responsible for the success of ICT integration in ESP is planning. Planning is defined here as a comprehensive procedure for putting ICT into practice, so it is related to the initial implementation of ICT as much as its present and future contexts. The literature about ICT planning promotes teachers' involvement in ICT planning for better ICT integration results (Chen, 2006; Kim, 2003; Zapata, 2002). In particular, Jones (2001) and Timucin (2006) reported that technology implementation in language courses is not totally a technological matter rather, teachers' involvement and commitment is key to ICT successful integration.

The findings revealed that teacher participants were not included in the planning process and this implied that they did not feel they were a valued part of the implementation. Absence of ICT planning in the research site can be evidenced in that needs analysis was never conducted; periodical ICT tools' evaluation was never realised nor was students' CALL performance assessment administered. Data from field observation notes and from changes in the ELC hierarchy (section 6.2) showed consistent emphasis on teachers' teaching role whereas little attention was given to teachers' role in ICT curriculum development in ESP.

The current data was described using ASM; particularly several tensions in the ESP activity system were highlighted. One tension (Figure 7.1) is within the Tools

component itself and is related to ICT structure as it has deficiencies in itself.

However, the tension in the ASM and the effect of Tools' insufficiency also extends to impact the Object of the ESP activity system causing further tension, Tools-Object tension.

Another tension in the ESP activity system occurs within the Community and appears on two occasions. The first occasion is a consequence of teachers blaming the Administrator for not fulfilling their ICT training needs (Figure 7.2). On the second occasion, the tension in the Community is demonstrated by the teacher participants' complaint that IT technicians do not provide effective technical support during CALL lab sessions (Figure 7.3).

An additional variety of tension exists in the Rules component as rules were found to be loose and vague. Moreover, vagueness in Rules affects the Object and causes two Rules-Object tensions in the ESP activity system. The first tension (Figure 7.4) is a result of ICT funding Rules being ineffective which hinders updating the existing technology and slowing down the purchase of more advanced technologies. The second Rules-Object tension (Figure 7.5) is a consequence of the absence of ICT planning rules stating the technology vision of the institution and clearly setting implementation procedure. Thus, absence of effective planning rules causes poor ICT implementation and negatively influences the ESP activity system and therefore teaching in the institution.

It is necessary to generalise the tensions identified by ASM analysis throughout the results chapters (Chapters 5, 6, and 7) because they represent the problems and so by generalising there will be a clear picture of what the community is experiencing.

Recognizing the problems through the tensions in the activity system is the beginning

of making improvement (Yamagat & Haudenschild, 2006). These tensions are either primary tensions, e.g. tensions in Community (Figure 5.8), Rules (Figure 6.6), and Tools (Figures 7. 1); or secondary tensions, e.g. Community-Object (Figure 5.8), Community-Tools (Figure 6.7), Tools-Object (Figure 7.1), and Rules-Object (Figures 7.4 & 7.5). An overview of all the tensions taking place in the participants' ICT-supported ESP activity system is illustrated in Figure 7.6.

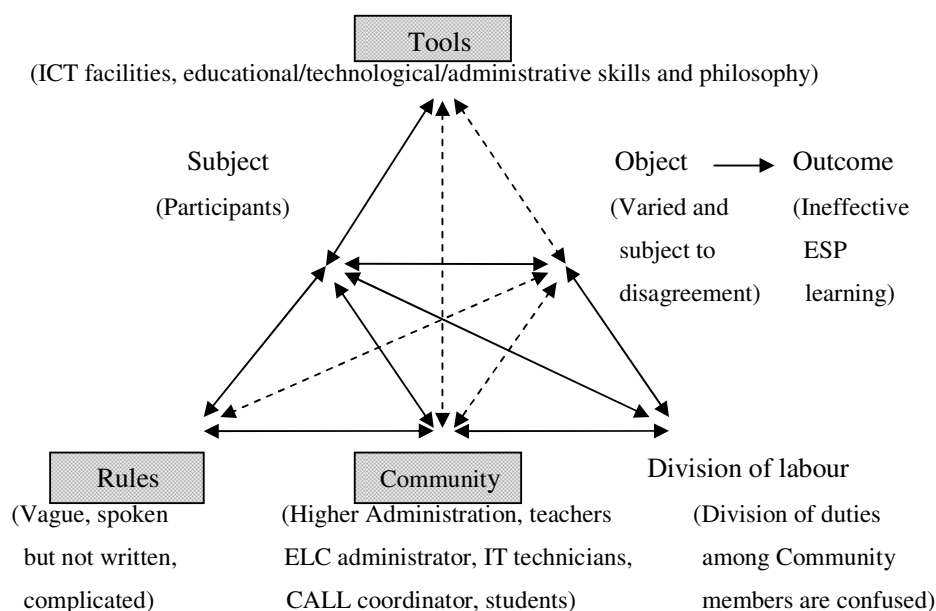


Figure 7.6: Overview of tensions in the participants' ICT-supported ESP activity system

In overviewing the tensions resulting from lack or misapplication of the five elements important for successful ICT integration in ESP (Figure 7.6), it was concluded that most tension is directed toward the Object of the participants' ESP activity system. It can be seen in Figure 7.6 that three of the four secondary tensions are directed toward the Object of the ESP activity system (Community-Object, Tools-Object, and Rules-Object). The significance of this amount of tension implies that the participants'

disagreement on a unified Object of the ICT-ESP activity system, reported in section (5.3.1) and illustrated in (Figure 5.8), compounded and yielded further disagreement on two components of the activity system: Rules and Tools. The first component (Rules) is found to suffer from absence of ICT general plan and lack of channels of communication within the Community. The second component (Tools) is found to experience insufficiency in quantity and quality and at other times incompatibility with the existing ESP curriculum.

Disagreement on the Object of the participants' ESP activity system indicates the Community's failure to consider the Object as a foundation of their ICT-ESP activity (Engeström, 1987) which is necessary to have a meaningful activity (Leont'ev, 2005). The implication of this disagreement is a further breakdown of the total ICT integration in the study context.

Moreover in the ASM, tension does not exist only within and between elements of the activity system but also between activity systems (Engeström, 1987). The existing tensions of the participants' ESP activity system indicate further tensions with three external relevant activity systems within the institution, causing a third type of tension, quaternary, in the ESP instruction environment. Although the study focuses on examining the impact of ICT within the participants' ESP activity system, the findings show that this impact also extends to a network of activity systems within the institution (Figure 7.7).

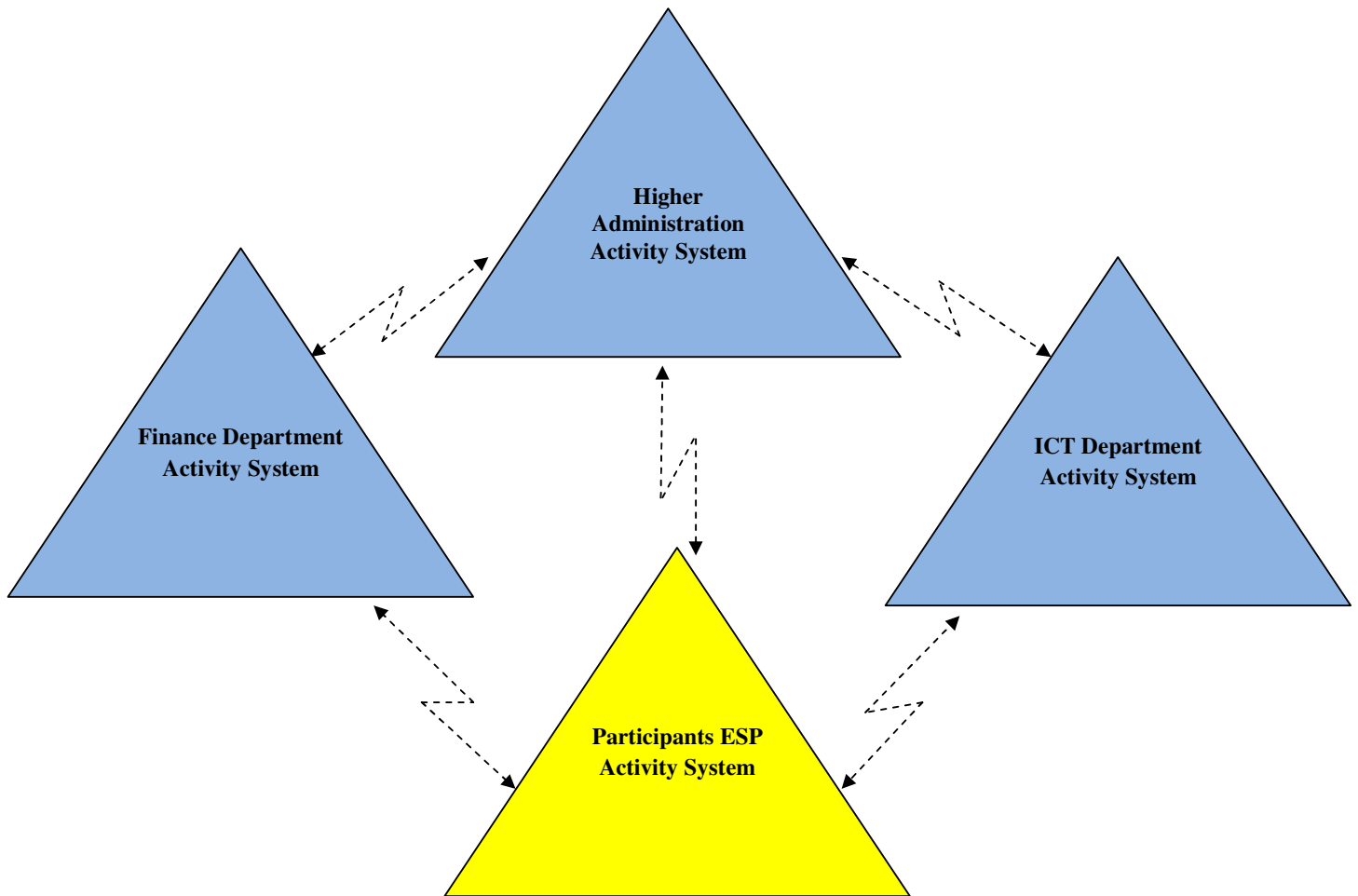


Figure 7.7: Tensions between the participants' ESP activity system and other relevant activity systems within the institution

These activity systems are: the Higher Administration, the Finance Department, and the IT Department. These tensions are demonstrated in: lack of ICT vision in the Higher Administration; insufficient funds and prolonged ICT purchase procedures by the Finance Department; and unsatisfactory levels of technical support by the IT Department.

In making his conclusions the researcher found that the data suggest that the five elements of ICT success are alone insufficient to explain ineffective ICT integration

in the study context. Although these five factors are shown to be necessary, they do not explain underlying matters that would describe why there has been a de-emphasis of: planning, funding, well-designed timing and coordination. This de-emphasis can only be aligned with and understood through the existing sociocultural values: centralised authority, precedence of personal relationships over rules, and dependence on informal verbal communication rather than written policy documents. This additional finding of the impact of the sociocultural factor is supported by the literature of ICT integration in language curriculum (Abalhassan, 2002; Braul, 2006; Hall, 1998; Hsu, 2006; Lim & Hang, 2003; Liu, 2006; Pugh, 1997). These sociocultural values in the study context are well-documented in the data and have been presented previously to support the discussion of the participants' ICT perceptions and use, impact of ICT use, and elements of ICT success.

7.8 Addressing Research Question III

What are the factors that affect the success of ICT integration in ESP instruction in this particular context?

Above all, the technological factor was reported by the data as essential for successful ICT integration in ESP in the addressed context. Most attention in the participants' responses was given to the technological factor (adequacy of tools) including hardware, operating and educational software, interactive whiteboard, and CALL lab. On the question of what should be done, however, there were differences of opinion between the participants. There was also a debate within the participants' answers on whose responsibility it was. Overwhelmingly, inadequacy of the selection of technology was found to be the major perceived hindrance to ESP teaching with ICT.

The institutional factor was also reported as essential for successful ICT integration. It includes four elements: professional development, technical support, funding, and planning. Particularly, teachers' professional development was emphasised as important for success. This was laid at the feet of the administrator as he was perceived to be personally responsible for fulfilling teacher training needs. This element is particularly related to the general tension in the Community. The expectation of resourcing professional instruction lies at the heart of teachers' mandate to provide good learning opportunities for their students. Often, there was anxiety and uncertainty among the teacher participants because of the limits of the technology provided and limits of teachers' abilities to adopt the technology.

The institutional next most important element after professional development was technical support. The data showed another failure of agreement, the adequacy and maintenance of Tools. The frustration of teacher participants with it implied a responsibility to fix it. Some teachers expressed a belief that the Administrator himself could fulfil that function but the data clearly showed the complexity was institutional and could only be resolved at that level.

The funding element showed many tensions between the Administrator's claim of having plenty of resources and success in technology implementation and the teacher participants' reports of their experience. The implication of this data is that establishing effective ICT structure is hardly achievable by the Administrator because he was not independent in funding resources.

Planning, though rated last by the participants, was found key by the researchers' study of the data to the limits in technology adoption. The ASM analysis showed the absence of a written policy aggravated the uncertainty of use of ICT in ESP and thus

without a focus the advancement of instructional technology in the study context was frustrated. The exclusion of the teacher participants in the role of planning and curriculum development was another aspect of the poor channels of communication within the organisation. It also meant the teacher participants felt they were not valued in the implementation process by the institution administration.

In addressing the two previous research questions (Research Questions I & II), it was found that there was disagreement about the significance of ICT in ESP. This finding is also confirmed in the data of Research Question III. In this research question the data showed a major failure of agreement about the importance of ICT in ESP was embedded in the planning for the implementation of ICT and affected ICT selection and use policy.

Although advancement of instructional technology worldwide was recognised by all the participants, there was a failure of agreement about the reason for the introduction of ICT in ESP in the study context. This meant uncertainty, limitation of technology adoption, and lack of continued support for further advancement of applications of technology.

From a general perspective, the findings in this chapter suggested that the five elements of successful ICT integration, although necessary, alone were insufficient to explain the slowness of the transition to effective ICT-based ESP instruction. This further general finding pointed to the underlying sociocultural values. The society in the current context valued centralised authority, spontaneous responses over formal and planned procedures, personal relationships over rules, and verbal over written communications. Simultaneously, the underlying sociocultural values did not emphasise the importance of planning/funding, well-designed coordination, or

appropriately timed stages, all of which have in fact been necessary for the objective to be realised.

8. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Overview

In this concluding chapter, a combined summary of the research purpose, methodology, and findings is provided. As well, a final concluding statement is made of the study findings. The value of the sociocultural approach in the study is reiterated. This value includes the facilitative role of the ASM in helping to identify the issues, in addition to the identified issues themselves. Also, the research limitations of this study are outlined and suggestions for future research are identified. Finally, practical recommendations for language institutions facing similar challenges resulting from the advance of technology and competition in global education markets are proposed. The recommendations are most applicable to ESP courses, teachers of ESP, and administrators of ESP courses since that is the basis of the study. As has been mentioned, ESP is generally thinly researched using the ASM; and ESP in the Saudi Arabian context is apparently without any preceding research. The chapter concludes with a closing statement where a summary of the argument of the thesis is stated.

8.1 Summary of Findings

The purpose of this research has been to explore the teachers' and the Administrator's ICT attitudes and practices, to examine the changes ICT brought to the study context; to investigate the underlying problems inhibiting effective ICT use in the study context; and to determine what improvements to ICT practice could be made.

Although this study draws on a specific case, the broader value of the work lies in the development of a rigorous methodology, a reliable theoretical approach, an visual analytical framework, and a set of categories that can measure ICT success and can be tested in other contexts.

For conducting the research effectively, it was decided that the best data approach was a narrow sample of participants using an in-depth comprehensive case study which provided a rich descriptive picture of the research context. The data were collected by taking written field notes through personal observation of the research site, interviewing the Administrator and teachers, and then videotaping some classroom/CALL lab lessons. The data was later analysed to build an argument that provides a picture of the change and tensions that the introduction of ICT to the study context brought. Further analysis explained the nature of these tensions in the implementation of ICT.

Two theoretical tools were used in the analysis of the data: thematic analysis and activity system analysis. After the participants' cases were thematically analysed, the Activity System Model (Engeström, 1987) was then used to identify the systemic tensions within the ESP environment and tensions in the relationships between the ESP environment and relevant activity systems

Through analysis, individual profiles highlighting participants' ICT background, perceptions, and use were developed. These individual profiles, when all combined, showed the impact of ICT on the ESP instruction and hence identified the nature of specific changes within the hierarchy, the ESP course environment, the teaching

procedures and classroom activities, the relationships in the community, and the internet and web-based tools' use.

The characteristic of wide variation across participants' ICT use made it necessary to look at the ESP context more broadly. Investigation of the participants' broader context revealed that there was a positive impact of technology on teaching procedures, but the level of use was inconsistent and the channels of coordination were absent. Furthermore, a confusion of responsibilities and a sense of isolation from participation in planning and development were noticed in this research environment. Absence of clear rules which define ICT use in relation to cultural suitability added to the general vagueness and tension about ICT.

The current state of ICT in the research context has been referred to, by most participants, as slow from an early stage of ICT implementation into the ESP curriculum. Even after seven years since the introduction of ICT in the ESP curriculum (2002-2008), participants believed ICT has been partially but not fully integrated. Most participants acknowledged ICT use in ESP has a long way to go before it can be described as effectively and completely integrated.

The nature of the changes ICT brought called for an examination of which elements determine the success of ICT use in delivering effective ESP lessons. A composite of elements for success was found essential for this goal of effective ESP lessons and it is recommended as a device that can be used to enhance ICT-ESP incorporation. The device is complex with overlapping categories but necessitates two types of factors: institutional and technological.

The device includes two things: teachers' positive ICT attitudes and effective use; and supportive circumstances being available. These supportive circumstances involve four elements in the institution: teacher professional development, reliable technical support, sufficient funding, and thorough planning. The supportive formula includes the technological element: adequacy of ICT tools.

This technological element was found to be especially significant to ESP instruction in the research site. Although the importance of the adequacy of ICT facilities has been generally emphasised in educational research (Albirini, 2006; Almozaini, 1998; Chen, 2006; Gillespie & Barr, 2002; Lam, 2000), the implications of ICT adequacy in planning and commitment of ESP instruction (including adequately financing the whole process) appears to have been seriously overlooked in this ESP context.

Aligned with the sociocultural findings of this study, it should not be surprising that there was no study of ESP in the Saudi Arabian context to support policymakers, administrators or teachers in the implementation of ICT. Lack of ICT planning, and the findings of previous research pointing to the lack of a link between research and practice in ICT ESP implementation in Saudi Arabia, means that implementing ICT in an ESP teaching environment in Saudi Arabia was not likely to be as successful as could be possible with the support of research data.

Through investigation of: the role played by the institution in supporting ICT in ESP; ICT tools in the research context; participants' ICT attitudes and pedagogies; the social network in the study context (the relationship of individuals and units involved in ICT integration), this study is aligned with Al Saif 's (2005) and Byungho's (2003) research. Their research has been previously acknowledged in detail in the Literature Review chapter.

While both Al Saif (2005) and Byungho (2003) included five factors as important in affecting the success of ICT in education (institutional, technological, pedagogical, personal, and sociocultural), this study found that in ESP instruction, especially in this particular context, pedagogical and personal factors, although needed, are less important than the other three factors: technological, institutional, and sociocultural.

This study emphasised the sociocultural factor because it was found not enough just to introduce hardware and software (for ICT implementation), but there has to be a communicating social framework to meet the community needs within the ESP activity system. Failure to understand the importance of social relationships in the successful delivery of effective ICT-enhanced ESP lessons implies that the ELC Administrator, supported by the Higher Administration of the institution, has, from the initial implementation stage, oversimplified the effect of an ICT introduction to the existing team approach of his teacher colleagues. The new underlying pressure to compete for technology status, embedded with the introduction of ICT, meant a resulting undefined community of practice.

The sociocultural factor in the present study context brings a dichotomy: whereas the global spirit of technology is innovation, adaption, and change, this particular ICT ESP educational context is centralised, fixed and not easily adaptable to new elements. Consequently, because of these sociocultural features, the employment of ICT in the current context of ESP inevitably could not result in full technology incorporation in instruction. Therefore, it is more accurate to report that ICT is being 'used' in this ESP course but not 'integrated'. Effective ICT integration requires a critical level of planning, commitment, and cultural adaptation.

8.2 The Value of the Sociocultural Approach in the Study

The social approach was found valuable for the discussion of data in this study. The role of the sociocultural approach, highlighted in this section, involves two main issues: the efficacy of the ASM as the analytical framework for the study and the sociocultural details identified by ASM analysis.

The sociocultural approach is seen as a helpful contribution to the discussion of ICT implementation. ASM enhanced the understanding of the social, cultural, and historical issues related to ICT introduction and use in the ESP course. The model enabled the tracking of the historical (pre and post ICT) and sociocultural (Rules, Community members, and Tools) changes that ICT introduction brought to the ESP activity system. Through ASM the tension within the research phenomenon can be analysed holistically, understood socially, and the remedy for this tension can be predicted.

Furthermore, ASM helped in capturing the social nature of teachers' practice and following changes that took place in the organisation's activity system. ASM helped in identifying the developmental stages of technology use and in understanding the process of activities' transformation. It made it possible to describe the contextual and organisational rules that drive the use of technology and to identify the members of the activity who, along with the Subject, play major roles within the organisation's activity system. Finally, it illustrated how any change in the Tools or the Object of the activity system can bring change to all levels of the system.

ASM triangle was utilised and developed throughout the current study. First, it figuratively represented the participants' ESP activity system. Next, it drew an

individual activity system for each of the participants showing their ICT ESP attitudes and perceptions. After that, it depicted the pre and post ICT ESP activity systems for comparison. Finally and ultimately it described the primary and secondary systemic tensions that occur regularly within the participants' ICT ESP activity system and between the ICT ESP activity system and other related activity systems.

Activity system analysis was necessarily preceded by a rich description of the environment through thematic analysis. Thematic analysis was therefore complementary to the activity system analysis. Thus, activity system analysis in this study, although essential to understanding the dynamic forces of the ESP activity system, is interconnected with thematic analysis for the power to describe the conflict of effort and objective in detail.

The second issue that demonstrates the value of the sociocultural approach in the discussion of data in this study is the details that were identified by ASM analysis. These details indicated that the transition of the ESP course toward an ICT-enhanced environment has not been smooth in this research context. Despite the passage of seven years since the introduction of ICT to the ESP curriculum, the study identified fundamental problems regarding integration of technology.

Sociocultural issues emerged within the themes of institutional and technological findings as evidence of changes brought by the introduction of ICT to ESP instruction. These data found that technological and institutional factors did not wholly explain the problems of ICT being incompletely and ineffectively integrated in the ESP curriculum.

The central finding from the data is that ICT introduction brought more than technology change to the ESP environment. The purpose of the discussion was to explore the nature of this change, particularly to understand the obstacles to the transformation of the ESP community by ICT. The resulting data were used to identify factors that affect the success of ICT in ESP instruction in this tertiary Saudi context. From the conclusions of the study of ESP ICT introduction, there were four broad issues that appeared in the context.

The first issue was the unintended complexity the changes to ICT brought. The existing culture assumed that a central authority could impose technology from top down by making facilities available to users who would simply adopt them. The belief in the simplicity of the process is evidenced in that no written policy was made to outline the purposes or procedures, only verbal instruction was given. The concept of technology was one of supportive or additional material. It was seen that the outcome was a variety of attitudes by participants to ICT in ESP lessons. This indicated the fundamental fact that there was no efficient driving force to standardise ICT practice and that the needs of ICT introduction were not understood.

The second issue from the data was the oversimplification of the process of ICT implementation by the administration. ICT has been introduced not only from the top down but without systematic planning or collaborative consultation. The ESP activity system demonstrated many occurrences of tension within and between its components. The Administrator, even though concerned that ICT implementation be firmly established as a fundamental hallmark of the ELC courses, has a different attitude in the ESP context and does not consider ICT has a central place in ESP lessons. Therefore, he sees ICT as a supplementary tool to the textbook and handouts.

He thus calls into debate the basic principle of whether fully integrated ICT is preferable; and decides against the choice of systematic ICT integration in ESP. The decision for ICT implementation has been made, but the degree of integration in ESP is limited. The result of this decision is that the use of ICT in ESP is not a straightforward process, but is in fact made individually and inconsistently. The oversimplification of ICT implementation is the consequence of the absence of system and coordination.

The third issue of the data is uncertainty. Research data revealed some teacher participants were unsure of the identity of the responsibilities for such matters as inadequate software, insufficient professional training, inefficient ICT maintenance procedure, and failure to renew the software licences. There was a debate about ICT responsibilities in regard to the provision of adequate facilities and maintenance. Individually, the teachers were uncertain about how much to incorporate ICT into their lessons and there were some teachers who were not technologically confident of the ICT-based lesson procedures. These matters created not only uncertainty but actual tensions in the activity system.

The fourth issue was confusion in the ESP activity system. The confusion about the Object of the activity system is the clearest example. Whereas the original Object of the ICT-supported ESP activity system was to deliver effective lessons (and hence to enhance students' command of ESP), some participants did not share this particular Object because there was not a stated Object that is acknowledged by the Higher Administration or the ELC administrator. Confusion, would logically, extend to students, especially when they compare different ICT use by their teachers.

To summarise the four issues raised in the research, it can be briefly reiterated that ICT implementation brought complexity to an environment that had previously seemed straightforward in resource sharing and unified in objective. The failure to perceive the complexity of the ‘new rules’ in which the procedures, facilities and objectives were unclear meant that the change was characterised by many individual and uncoordinated attitudes and uses of ICT. The ELC administrator, supported by the Higher Administration of the organization, oversimplified the complex implementation which brought an added burden to ICT-enhanced lesson delivery, confusion and uncertainty to the community and collapse of the coordination practice.

The culture of the institution is built on a central authority, demonstrated in the way in which policy decisions are made, such as the implementation of ICT without consultation and the choice of CALL software. Another example of the centralised-authority culture is the approach of having an administrator in charge rather than rules that can be referred to (lack of a written policy). Centralisation of authority also allowed the Administrator to have control of development and updating decisions with teachers having little influence or participation.

The incomplete integration of ICT is attested repeatedly: by the Administrator being the single point of reference in matters of ICT change and maintenance and there not being rules to refer to; by teachers not being provided with adequate ICT training; by not making suitable software and reliable hardware available for teachers and students; by there not being enough funding and planning; and there not being a resource and experience sharing system where teachers can manage their role and have support. The former list could only be positively encompassed by first engaging a fresh sociocultural mindset towards the implementation of ICT. As has been said,

the nature of technology is change and adaptation, not a set of new teaching resources to be added within the traditional methods. Smooth transition for the ESP course into a technologically-enhanced environment requires a degree of sociocultural change to be achieved first (Hu & Webb, 2009).

In conclusion, the ASM analysis highlights sound reasons why the employment of ICT in the addressed ESP course did not result in full technology incorporation. Therefore, it is more accurate to say that ICT is being 'used' to varying degrees in the ESP course rather than 'integrated'. Complete integration of ICT into ESP would require comprehensive planning, effective integration pedagogy, commitment to sufficient funding, access to effective ICT tools, and positive personal attitudes. Indeed, complete and effective ICT integration in ESP necessitates a social adjustment of the values of the institution, more consultation, and a greater degree of direction and communication to support the community. A smooth transition toward ICT-based ESP requires openness to learning new ways, a whole organisational approach.

The role of the sociocultural approach and the identified findings reported above can be related to the concept of 'Community of Practice' proposed by Wenger (1999). The notion of community of practice is seen by the researcher as a useful approach for further research into successful ICT implementation in ESP instruction in this study context. By enhancing the team spirit of the pertinent individuals, ICT implementation could be more effectively achieved. The concept of the community of practice reiterates the sociocultural approach and Activity theory view that ICT integration in ESP instruction is not simply a technological but a social task:

The concept of practice connects doing, but not just doing in and of itself. It is doing in a historical and social context that gives structure and meaning to what we do. In this sense, practice is always social practice (Wenger, 1999, p. 47).

To resolve the tensions between rules and practice, observed in this instance, it would be in the spirit of Wenger (1999) to recommend that the community of practice concept be implemented since it “provides resolutions to institutionally generated conflicts such as contradictions between measures [rules] and work [practice]” (Wenger, 1999, p. 46).

8.3 Study Limitations

The limitations of this study reside in three areas: scope, participants, and methodology. First, the scope of this study is limited to the context of a single tertiary institution in Saudi Arabia. Although ICT implementation research aims to recommend improvements across contexts, this study recognises the unique sociocultural aspects of the addressed context and therefore the limited generalisability of the findings of the study. This study was limited to a particular subject in a single language course at one tertiary public institution in Saudi Arabia. The research was conducted and evaluated in the hope that the results can be generalised for application in other Saudi tertiary institutions intending to make informed decisions for a smooth transition into effective, technology-enhanced education. However, it is acknowledged that the sociocultural values, characterising the delivery of ICT-enhanced lessons in this context, are not necessarily applicable to those of other geographical educational establishments. The range of standards in tertiary institutions varies in terms of structure, objectives, and priorities, thus not making it easy to generalise across the differences between institutions.

The second aspect of limitations, participants, has four details. One of these is related to the participants' field of speciality. This study investigates ICT use in ESP. Teacher participants are basically ESL teachers who also teach some ESP courses. The conclusion is exclusively related to ESL teachers teaching ESP and does not generalise to all the ESL teachers as a group because they are not part of this study.

Participants' limitation is also associated with gender. This study was conducted in a predominantly male context and included only male participants (single-gender education is the norm in Saudi Arabia). Therefore, the capacity to extend the recommendations of this study to a female or co-educational context is limited by some of the potential gender-related data differences between male students and teachers and other combinations of gender and role.

Another limitation appears in the participants' sensitivity in discussing the ICT situation especially when it touched issues of responsibility. This sensitivity affected the objectivity of the Administrator and CALL coordinator who both had wide responsibilities. Their administrative positions made it difficult for them to be unbiased and give negatively critical answers.

As for the teacher participants, their suspicion that some of their answers might harm their careers affected their freedom to comment and be independent of the institutional attitude. During the interviews, some of these teachers asked the researcher to stop the audio recording because they did not want their answers recorded to avoid their answers being misunderstood or affecting their job prospects.

The third area of limitation in this study is the methodology limitation. This type of limitation involves research design and population. This study is qualitative using

interview and observation methods of data collection. Quantitative methods could have been used in addition to these qualitative methods. For instance, a questionnaire survey could have been conducted in the beginning of data collection and before commencing interviews and observations, to collect participants' demographic data and to orient the participants to the topic of the research. The questionnaire survey could also be used to rank the factors that affect ICT integration and to establish a category hierarchy.

Methodology limitation also includes the decision of eliminating students and IT technicians from the population of the research. While the study has some interest in examining the perceptions and practices of ICT and CALL for the teachers and the Administrator, it excludes the students and IT technicians. No direct contact was made with any students or IT staff and no input was elicited from any of them although some data were identified about students and IT technicians through the participants' responses. By involving the students and IT technicians, the study could have had more insight on the sociocultural aspect of ESP instruction in this context. Thus, the study's suggestions are limited to ESP teaching and administrative practice rather than ESP learning or ICT technical support.

8.4 Suggestions for Future Research

The findings of this study clearly suggest the need for future research. Initially, the effect of sociocultural elements in technology integration into ESP instruction needs further clarification. This should investigate the effect of explicit/implicit Rules, Community members' relationships, and the effect of Tools' change on successful ICT integration in ESP, areas which are largely unexplored and would require

intensive research. Furthermore, the issue of incorporating the internet and web-based tools in ESP instruction needs in-depth examination. Also, an informed definition of ICT integration in ESP instruction requires further inquiry.

Moreover, future research needs to expand the scope of research to include a variety of Saudi tertiary institutions (institutes, colleges and universities). This expansion would provide a broader description of ICT experiences in ESP in Saudi higher education. With more educational institutions involved in the research, it is likely to result in a more authentic picture about ICT in the Saudi ESP context.

The involvement of other pertinent individuals - students and IT technicians - in investigating the success of ICT in ESP (in addition to teachers and administrators) is another important issue for future research. Additional feedback from students and IT technicians would provide a genuine and additional perspective to those of educationalists and bureaucrats.

Furthermore, using a mixed-methods approach instead of a single-method approach is a suggestion for future research. Using a mixed-methods approach would allow researchers to contrast the findings of both quantitative and qualitative data to maximise the benefit of the data.

8.5 Recommendations

Based on the findings of the study, a number of recommendations can be made. These recommendations address teachers and administrators working in ESP instruction and the wider ESL context.

It is recommended that teachers consider that understanding the role of ICT in ESP lessons is essential for delivering effective ICT-based lesson. Teachers should know ICT potential for ESP teaching and the benefits of integrating the internet and web-based tools in the ESP curriculum.

Experience sharing among teachers is a rich source of knowledge and development in educational institutions. ICT experiences should be exchanged among teachers. This exchange has to be comprehensive, that is both successful and unsuccessful experiences of teachers' use of technology should be exchanged. It is particularly the responsibility of experienced teachers to impart their knowledge to those new or inexperienced in the profession.

In addition, the study demonstrated that successful implementation of ICT in ESP teaching is closely related to the role of the administrator and other executive positions in the institution. Having a general technology policy which contains the organization's ICT vision and ICT integration general plan is an initial step in ICT implementation. To establish such technology policy, administrators of language organisations should conduct a thorough needs analysis to map out the exact technology needs for their language courses. Administrators could also make contact with local and overseas language teaching organisations to benefit from their experience. They also could seek consultations from national and international companies working in the field of instructional technologies.

The provision of adequate technology which is directly relevant to teachers' and students' ESP instructional needs is essential. This involves modern hardware and software, efficient internet connection, and specialized CALL programs that match the need of ESP learning. Administrators need to carefully and efficiently consider

budgeting for essential expenditure on hardware and software purchase and update consistently and not just initially.

Effective training for teachers is fundamental. Teachers' training should involve both training in performing the operating functions of technology tools, and training in ICT applications in ESP lessons. Training should also involve establishing better understanding of theory, research and practice. In addition, models of ICT integration could be presented for teachers to adopt. Showing teachers how to synthesize online materials and how to create new online learning materials is an important aspect of teachers' ICT training. Students' effective learning and assessment should also be part of ICT teacher training.

Group discussion where technology integration is negotiated is important. Therefore, administrators should organise seminars, workshops, and forums for teachers to exchange their concerns, views, and experiences related to ICT use. In addition to the teachers, there will be times when these meetings should involve the administrators themselves, student representatives, CALL coordinator, and IT technician representatives.

Defining and supporting the role of CALL coordinator in ICT supervision is necessary. Administrators have to provide CALL coordinators with support, authority, and time to execute their duties effectively. The role the CALL coordinator could play in supporting students and teachers in their tasks of ICT use is important and should be emphasised by administrators.

Sufficient technical support for classroom and lab technology is basic to effective instruction. IT departments and technicians are directly responsible for keeping

technology in order. Administrators should synchronise with IT departments to routinely check the technology and use a system in case of failure. This would include that administrators should organise for a sufficient number of IT technicians to be available for prompt assistance in case of classroom and lab malfunctions during lessons. Moreover, administrators should coordinate with the IT department to provide short maintenance training courses for teachers and students to learn how to deal with minor technology breakdowns.

Systematic evaluation of technology facilities needs to be conducted regularly. Establishing an assessment system for ICT use is necessary to enhance ESP ICT-supported training. The outcome of the evaluation procedure would help administrators to make decisions about technology maintenance, update, and the right-to-use licences' renewal. Cooperation between CALL coordinators, IT technicians, and teachers to develop an ICT assessment procedure would promote the effective use of ICT and help teachers and students achieve better outcomes.

Having clear and direct channels of communication between administrators and their teaching staff is essential. Administrators should organise and encourage teachers to openly discuss technology implementation issues and make their voice heard at appropriate and convenient times.

Staying up to date with new developments in the field of instructional technology is important for educationalists especially those in administrative positions. Therefore, administrators of ESP/ESL programs have to build partnerships with other educational institutions and frequently visit national and international instructional technologies' exhibitions to follow new training hardware and software to see what

could benefit their own language courses. This way administrators and teachers keep abreast of fast changes in instructional technologies.

8.6 Closing Statement

Beyond the potential benefits of this study to the wider research context and to the specific institution, this study has been a journey of exploration and learning for the researcher himself. I learned lessons quickly in this research context that would have taken me a long time to learn in the work environment. During the research I had a privilege of accessing teachers' offices and classrooms, something that would not have been possible for me normally when I was a teacher myself. Entering the field of ESP teaching as a researcher allowed me to record, discuss, and examine issues from an outside angle, a perspective that was not available to me before. The study has provided me with a theoretical framework to understand the issues with greater clarity and has broadened my familiarity with other research in the field. My journey as an ESP professional will now continue with much greater confidence and appreciation for the essential elements for effective integration of ICT when teaching ESP.

To reiterate my thesis argument: my target from reviewing general and language education literature was to distil the factors deemed important for ICT integration. I identified five factors: personal, institutional, pedagogical, technological and sociocultural.

When I examined these five factors in the ESP environment in a Saudi tertiary context, I found them all to be important for success, yet with different levels of importance. The teachers' ICT perceptions (personal factor), ICT classroom

applications (pedagogical factor), both have an obvious degree of importance on ICT integration but with a less degree of influence than the other three factors.

So when I examined the role of the institutional factor in the research context I found it more important because of the facilitating elements of funding, planning, training and technical support.

However, in the particular ESP context of the study, I found the technological factor had a higher level of importance as perceived by the participants. When I examined the participants' ICT use, I found that one technological element, specifically above all, provided a key within the factor and that was adequacy of ICT tools. Therefore I concluded that adequacy of tools was necessarily a great focus if ICT was to be successfully integrated in ESP.

Although I found that the two factors - technological and institutional - were integral to ESP, alone they did not fully describe this ESP study context. Consequently, I sought explanation from the social and cultural circumstances surrounding the context of ICT ESP integration. I concluded that only from the exploration of the participants' relationships in the ESP activity system was I able to understand the dichotomies and tensions involved in integrating ICT in ESP in this Saudi tertiary context.

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Appendix A

ICT Instructional Resources

1) New Dynamic English (DynEd)

New Dynamic English courseware is a multimedia software program directed to build effective communication skills for EFL/ESL learners (DynEd User's Guide, 2004).

New Dynamic English features a variety of general topics such as seasons, weather, and environment as well as people's lives and activities (DynEd User's Guide, 2004).

There are four levels in *New Dynamic English* and each level contains two modules.

Level 1 is designed for beginner learners, level 2 is for low intermediate level learners, level 3 is for intermediate level learners and level 4 is for upper-intermediate and advanced learners (DynEd User's Guide, 2004). The software program includes two types of tests; placement and mastery. Placement test is taken by the students at the beginning of the course to determine their level. Mastery tests focus on the language aspects being learned in the topics of the software. Mastery tests can be taken at the end of each section to monitor and evaluate students' progress in the study of this educational software (DynEd User's Guide, 2004). There are six mastery tests for each level of the program or 24 mastery tests for the four levels. The questions in the mastery tests focus on listening comprehension, vocabulary, grammar, sentence construction, and sentence ordering. Each mastery test ranges from about 8-13 minutes and consists of between 20 and 50 test items (DynEd User's Guide, 2004).

New Dynamic English highlights the importance of listening as a basic skill for learning a language and incorporates audio input in all its modules. Listening

comprehension exercises follow audio excerpts and video scenes to verify students' understanding. Speaking activities are also incorporated with the help of the 'Speech Recognition' feature (DynEd User's Guide, 2004). By utilising the 'Speech Recognition' feature, students can have their speech input heard and verified by the software and can play and replay their recordings. In addition to improve the communicative skills, the program provides grammar, dictation and vocabulary activities that follow each audio material. Examples of activities are: sentence formation, word/meaning match, scrambled word order exercises, filling in the blanks, circling the correct word, and sentence reordering in a paragraph. An answer key is also provided for the students to check their own answers.

New Dynamic English has several useful features for teachers and students. First, it enables the students and their teachers to track students' progress by keeping records of student activities. In the beginning of the course, the teacher (or the student himself) can create an individual record using the 'Student Record Keeping System' feature (DynEd User's Guide, 2004). This helps the students to track their own progress and to continue from the point they stopped at in the previous session. A second feature, 'Record Manager', enables the students to send their activity records to their teacher or save them in a file (DynEd User's Guide, 2004). 'Record Manager' also provides teachers access to students' computers as they practice and enables them to establish communication with their students orally through the headset or graphically by sending and receiving text messages.

2) Tense Buster

Tense Buster is a CALL program that addresses the grammatical needs of EFL/ ESL learners. The program includes five levels: elementary, lower intermediate, intermediate, upper intermediate and advanced (Clarity Language Consultants Ltd, 2008). The program covers 33 separate areas of English grammar such as: tenses, parts of speech, conditional sentences and reported speech. Language skills highlighted in the program include: Reading, Listening, Vocabulary, Pronunciation, and Study Skills. The program includes a comprehensive set of tests (a total of 1650 questions) that cover all grammar areas. Each grammar area is followed by an extensive 50 question test. In addition, teachers and/or students can create random tests which involve a variety of grammar areas at the same level.

Tense Buster has some features that can be used by teachers to enhance students' practice. For instance, through the 'Results Manager' feature, teachers can generate and print reports on students' practice on the program, their progress includes their score of each activity and the time spent on each of these activities. This same feature allows the teacher to obtain a record of the average score of each student compared with other students. Another feature of the program is 'Author Plus' which allows the teachers to add, delete, and reorder activities (Clarity Language Consultants Ltd, 2008).

3) SMART Board Interactive Whiteboard

SMART Board Interactive Whiteboard offers a powerful visual pedagogy especially suited to the younger generation's inclination for graphic images. It allows the teacher to prepare the lesson with clear sequential steps and teach in a dynamic visual way.

This method has the power to attract the students' attention throughout an extended period.

SMART Board is a touch-controlled screen that works as a computer monitor and a mouse at the same time. This ICT package is operated through three components: software, data projector, and the interactive whiteboard itself. The software is installed in a computer and represents all the digital materials being applied. The projector displays the computer desktop and applications which are carried out on the interactive whiteboard. These three components are connected to each other wirelessly or through serial cables or universal serial bus (USB). Writing on the interactive whiteboard can be done by a pen-tool (a choice of four coloured pens) or fingers. Controlling the applications on the *SMART Board* can be done by several methods: pointing; clicking and dragging, just the same way the mouse is used. The digital camera installed in the interactive whiteboard, with the help of the software installed in the computer, transmits the pens-tool and the finger contact on the screen to the computer as a mouse activity.

SMART Board has several advanced features that help teachers in their presentations. One feature is called "Annotation Saving" and allows teachers to save the notes they have written on the interactive whiteboard for future reference. Another feature "Notebook" works as an electronic notebook that could be used to edit and distribute the notes which have been written previously on the interactive whiteboard. A third feature, "SMART Recorder", enables teachers to video record everything they do on the interactive whiteboard using a digital camera and a microphone with the ability to play the video file later. Other features of *SMART Board* Interactive Whiteboard include: converting handwritten texts to typewritten texts and SMART keyboard that

allows teachers to type straight on the interactive whiteboard (SMART Technologies, 2005).

Appendix B

Approval Letter from the Human Research Ethics Committee at the University of Wollongong

University of Wollongong



CONFIRMATION OF APPROVAL

In reply please quote: HE08/031
Further Enquiries Phone: 4221 4457

9 April 2008

Mr I M Shaabi
40 Tasman Drive
Shell Cove
NSW 2529

Dear Mr Shaabi

Thank you for your correspondence of 9 April. I am pleased to advise that the conditions attached to the provisional approval of the Human Research Ethics application listed below have been met.

Ethics Number: HE08/031

Project Title: Factors affecting use and integration of instructional technology: A study of English for specific purposes instruction in a tertiary context in Saudi Arabia.

Name of Researchers: Mr Ibrahim Mohammed Shaabi, A/Professor Beverly Derewianka

Approval Date: 20 March 2008

Expiry Date: 19 March 2009

Please remember that the HREC has reviewed the research proposal for compliance with the *National Statement* and approval of this project is conditional upon your continuing compliance with this document. As evidence of continuing compliance, the Human Research Ethics Committee requires that researchers immediately report:

- proposed changes to the protocol including changes to investigators involved
- serious or unexpected adverse effects on participants
- unforeseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 6 weeks prior to the date your ethics approval expires, or can be downloaded from the web. The reports must be completed, signed by the appropriate Head of School, and returned to the Research Services Office prior to the expiry date.

Yours sincerely

PP A/Professor Garry Hoban
Chairperson
Human Research Ethics Committee

cc A/Professor B Derewianka, Faculty of Education

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Appendix C

Invitation E-mail Message for Participants

Dear English language instructor:

My name is Ibrahim M. Shaabi and I am pursuing my postgraduate study in TESOL at the University of Wollongong, Australia. I am sending you this letter to invite you to participate in the study I intend to conduct in the English Language Centre (ELC). My study investigates the factors that affect the use and integration of instructional technology (computer and computer-related technology) in English for Specific Purposes (ESP) instruction at the ELC.

The study will involve interviews as well as observations of teaching classes in the classroom and the computer lab. The interviews and the observations will be audio and video recorded and you will be requested to explain some of the videotaped observations of your classes.

Your participation is voluntary; there will be no penalties or loss of benefits involved should you choose not to participate in this study. Your identity will be anonymous and no correlation will be sought between the participants and the data provided. Your responses will not be available to your superiors. There is no compensation for participating in this study neither is there known benefits, but I hope you will gain more knowledge about the factors that affect the use and integration of computer technology in teaching English. The information obtained from the study will be included in the research results. The study results and findings will be available in the institution's library after the study is complete.

Thank you for your assistance.

Sincerely,
Ibrahim Shaabi
University of Wollongong – Faculty of Education
Wollongong NSW 2500 Australia
ibrahimalshabi@hotmail.com

Appendix D
Participation Consent Form

UNIVERSITY OF WOLLONGONG

TITLE OF PROJECT: Factors affecting use and integration of instructional technology: A study of English for Specific Purposes instruction in a tertiary context in Saudi Arabia

PERSON IN CHARGE: Ibrahim Mohammad Shaabi
40 Tasman Drive Shell Cove NSW 2529 Australia

I. Explanation of the study: The study in which you will be participating investigates the factors that affect the use and integration of computer technology in teaching English for Specific Purposes instruction. The study will attempt to determine whether your behaviour in classes in which technology is used is affected by these factors and if these factors play a major role in the success or failure of the use and integration of computer technology in these classes.

Your role in the study: If you agree to take part in this study, you will be asked to participate in seven interviews. The first interview will last for 50 minutes and will be audio-recorded. In this interview you will be asked about your experience in and your perceptions about instructional technology (computer, hardware, software, internet and web-based tools). Then your teaching classes inside the classroom and/or the computer lab where teaching involves the use of instructional technology will be observed and video recorded. This will happen once every week for six consecutive weeks. Each observation will be followed by a 10 minute-interview where you will be requested to provide some analysis of the videotaped observations of your teaching practice which had been recorded previously.

Benefits to you: This study has been conceived as an attempt to provide you with a better understanding of the factors that affect your teaching practices when using technology in your classes, and with the opportunity to reflect on the causes and effects of these factors.

II. Your rights as a research participant: the purpose of this study and your role will be explained. You may ask any questions about the research procedures, and these questions will be answered. Further questions should be directed to Ibrahim Shaabi (0432592919).

Your participation in this research is confidential. Only the researcher in charge will have access to your identity and to information that can be associated with your identity. In the event of publication of this research, no personally identifying information will be disclosed.

Your participation is voluntary. You are free to stop participating in the research at any time, or to decline to answer specific questions without penalty.

This study involves very minimal risk; that is, no risks to your physical or mental health beyond those encountered in the normal course of everyday life.

III. This section indicates that you are giving your informed consent to participate in this research.

PARTICIPANT: Read this section carefully. After you read it, if you are WILLING to participate in this study, sign your name and date below this section. If you are NOT WILLING to participate in this study do not sign your name.

I AGREE TO PARTICIPATE IN A SCIENTIFIC INVISTIGATION ON Factors affecting use and integration of instructional technology: A study of English for Specific Purposes instruction in a tertiary context in Saudi Arabia.

I UNDERSTAND THE INFORMATION GIVEN TO ME, AND I HAVE RECEIVED ANSWERS TO ANY QUESTIONS I MAY HAVE HAD ABOUT THE RESEARCH PROCEDURE. I UNDERSTAND AND AGREE TO THE CONDITIONS OF THIS STUDY AS DESCRIBED.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, I HAVE NO PHYSICAL OR MENTAL ILLNESS OR DIFFICULTIES THAT WOULD INCREASE THE RISK OF ME PARTICIPATING IN THIS STUDY.

I UNDERSTAND THAT I WILL RECEIVE NO COMPENSATION FOR PARTICIPATING IN THIS STUDY.

I UNDERSTAND THAT MY PARTICIPATION IN THIS STUDY IS VOLUNTARY, AND THAT I MAY WITHDRAW FROM THIS STUDY AT ANY TIME BY NOTIFYING THE PERSON IN CHARGE.

I UNDERSTAND I WILL RECEIVE A SIGNED COPY OF THIS CONSENT FORM.

I AM 18 YEARS OF AGE OR OLDER, AND A FULL TIME EMPLOYEE IN THE SITE OF THE STUDY.

Signature

Date

Appendix E

Interview Questions for Teachers

I. Personal and educational background

Questions in this section aim to collect background information about the participants including their education and computer experience.

1. Could you describe your academic training and field of study?
2. Could you describe your English for Specific Purposes (ESP) teaching experience?
3. When did you first use a computer? What was the context? Did you, growing up, have a computer at home?
4. What are the primary things that you do with the computer? What do you use the computer for on a daily basis?
5. Have you ever used the computer to learn a foreign language? If so, could you describe this experience?
6. Have you received any training in using computer technology for language teaching? If so, could you describe this experience?
7. Have you ever taken part in a technology-based language teaching project? What was your role in that project?

II. ICT resources and context

Questions in this group seek information about ICT infrastructure and environment. These questions are also directed to the obstacles that teachers encounter in the technology-based environment and how they deal with them.

8. Would you describe the ICT facilities inside the classroom and CALL lab?
9. To what extent do students have access to ICT inside the classroom?
10. Where do students interact more effectively with ICT, in the classroom or in the CALL lab? Why?
11. How many times a week do students have to visit the computer lab?
12. How often are CALL labs open for students' practice?

- 13.** How many computer sets are there in every CALL lab and do they match the number of students of each class?
- 14.** What do you usually do in the case when the students outnumber the computer sets available inside the CALL lab?
- 15.** How are computer stations organised inside CALL labs? Is their organisation convenient for the students and teachers as well?
- 16.** How complicated are ICT facilities available in the ESP program at this institution for both the students and teachers?
- 17.** Is there a centre for technical support in your institution? If so, what is its main job?
- 18.** How often do you experience technical troubles with ICT inside the classroom and the CALL lab?
- 19.** To what extent are you personally prepared to deal with technical troubles in the classroom/CALL lab?
- 20.** How do you usually react when a technical trouble takes place?
- 21.** In case of technical failure, what alternatives do you have?
- 22.** Is there sufficient technical support for ICT in the English language program?
How?
- 23.** What type of CALL software program is made available for students' practice in your institution?
- 24.** Do CALL software programs provide teachers with significantly effective solutions to all teaching difficulties that they may encounter? Could you give an example?
- 25.** In what kind of teaching activities do you think CALL software programs are more effective and helpful?
- 26.** In what kind of teaching activities do you think CALL software programs are less effective and helpful?
- 27.** Do ESP courses taught in this institution need to be supplemented or supported by CALL software programs?
- 28.** Are CALL software programs, available in your institution, appropriate for students' language abilities and interests?
- 29.** Do you think that CALL software programs you use in your technology-based instruction are related to the content of the ESP courses you teach?

30. Do CALL software programs used in the ESP courses help reduce the teachers' work load inside the classroom/CALL lab or increase it?
31. Do you think the existing CALL software programs are culturally appropriate for the students? How?
32. Do you think the existing CALL software programs are suitable and significant or do you prefer they are replaced? What would be the alternative?
33. What could be missing or lacking in the current CALL software programs used in your institution in order for them to be more effective?
34. What is the best approach, in your view, for academic institutions making a decision about adopting new ICT facilities?
35. What are the aspects you find most significant for the process of choosing the CALL software programs?
36. If you are consulted on choosing a CALL software program for your institution, what would you specifically recommend and why?
37. Do you believe that CALL software programs, available in the market, satisfy the needs of the ESP curriculum and support teachers? How?
38. Do you think the use of computer-mediated communication tools in ESP instruction promotes authentic ESP communication? How?
39. Do you have access to the CALL software programs used in the CALL lab from your own office?
40. Are ICT resources (hardware, software programs, and internet access) always available for teachers and students? How does this affect the use and integration of ICT?

III. Perception and behaviour in a technology-based environment

Questions in this section aim to elicit teacher participants' perceptions about ICT and its role in changing/developing their teaching methods and about teachers' perceptions of student learning with ICT.

41. How important do you think ICT is in language instruction generally?
42. Could you describe the ways in which you have used or are using ICT in your teaching?
43. What is your overall purpose of using ICT in your ESP teaching?

- 44.** How significant is ICT for your delivery of ESP instruction?
- 45.** How would you compare your performance in a technology-based classroom to your performance in a traditional classroom where technology is not used?
- 46.** How do you describe your teaching of ESP when using ICT? Is it student-centred, teacher-centred, or a mixture of both? How?
- 47.** Do you think using ICT makes you more encouraged, interested and involved in working with your students? How?
- 48.** Does the frequency of ICT use by other teachers affect your own decision to use ICT in your teaching?
- 49.** What is the average time you allocate to using ICT in your ESP lessons?
- 50.** At what point in the lesson do you use ICT? Do you use it in the beginning, at the end, between activities, or isolated from the class activities? Please provide your pedagogical view and the justification of your choice.
- 51.** How often do you use each of the following ICT resources and why: CALL software programs, the internet, E-mail, computer-mediated communication (blogging, audio and text chat, audio/video conferencing)?
- 52.** In which language skill(s) do you use ICT more often? Why?
- 53.** Would you describe how ICT has changed your teaching methods over time?
- 54.** What are the teaching problems that ICT has helped you to resolve? Give examples where ICT has significantly provided a better solution compared to traditional teaching aids?
- 55.** To what extent do you perceive the use of ICT improves the quality of student learning? In what specific ways?
- 56.** How does the role of your students change in a technology-based classroom?
- 57.** Do you think adopting ICT at your institution has brought any advantages to ESP instruction? If yes, please state these advantages.
- 58.** Do you consider ICT harmful in any way? To whom?
- 59.** Do you think you as a teacher should be very interested in ICT generally? Do you have any specific plans for using ICT in your future ESP instruction?
- 60.** Can ICT be utilised by the students without the presence of the teacher? How?
- 61.** Does ICT serve the interests of the teachers more than the interests of the students?

IV. Rules and conditions

The questions in this group intend to explore the social and cultural rules that influence the success of ICT use and integration in ESP training.

- 62.** Why do you think ICT is used in your institution? What is the main motive of your institution for adopting ICT in ESP training?
- 63.** Is there an overall plan for the integration of ICT into ESP training? How?
- 64.** Is there any kind of coordination among the personnel involved in integrating ICT into ESP training?
- 65.** Is there a routine evaluation and assessment of ICT integration into ESP training to ensure quality? How?
- 66.** Is there periodic assessment of students' and teachers' needs in relation to ICT resources and technical support? How?
- 67.** Is there sufficient financial support for the integration of ICT in ESP training at your institution? How?
- 68.** Did you request the ICT facilities you have now, or were they just there when you first came to your institution?
- 69.** Were you consulted when your institution decided to establish ICT?
- 70.** Have the teachers' perceptions about the use and integration of ICT into ESP training been considered in any way in the establishment of ICT or in its review? How?
- 71.** Do you think teachers should play a bigger role in integrating ICT than just using what is already there in the classroom?
- 72.** Does the administrator of the English Language Centre (ELC) require the teachers to use ICT in presenting their lessons?
- 73.** What has the ELC administrator provided ESP teachers with, in terms of training using ICT?
- 74.** Do teachers share their experiences in regard to ICT integration with each other? How?
- 75.** Does the use of ICT by students in their ESP training promote collaboration with each other or does it cause loss of interaction? How?
- 76.** Does the use of the Internet and the web-based tools (chatting, blogs, and E-mails) by the students in ESP training involve misuse by the students? How?

77. Is there any cultural concern about students using computer mediated communication tools such as E-mail, text chat or audio/video conferencing? If yes, what are they?
78. Does the use of ICT in ESP training involve additional work and time in preparing the teaching materials? How?
79. What could the ELC administrator do to enhance the use of ICT in ESP instruction? How?
80. Could incentives (skill bonus, extra professional training locally and internationally) promote the use of ICT by ESP teachers?
81. Can fear of technology (technophobia) on the part of some teachers affect their decision to use ICT in ESP instruction?
82. Can fear of being replaced by the computer affect some teachers' decision to use ICT in ESP training?
83. Do you believe your institution is convinced about and satisfied with its investment in ICT? Why?
84. How would you describe the technology-based ESP training in your institution, successful, unsuccessful, promising or unpromising? Why?
85. What is your institution lacking in order for its investment in ICT to become more significant and rewarding in effective ESP instruction?
86. If there is a weak point in ICT integration process in your institution, where could this weak point be located?

V. Closing questions

The questions in this group aim to investigate the information that was not covered by other interview questions. These questions also give participants the chance to share additional information.

87. What are the questions you expected me to ask you but I did not?
88. What are the questions you wondered why I did ask you?
89. Is there anything else you would like to tell me?

END OF QUESTIONS

Appendix F

Interview Questions for the Administrator

I. Personal and educational background

Questions of this group aim to collect background information about the program administrator in terms of education, Information and Communication Technology (ICT) and administrative experience.

1. Could you describe your academic training and field of study?
2. Could you describe your administrative experience?
3. When did you first use a computer? What was the context? Did you, growing up, have a computer at home?
4. What are the primary things that you do with the computer? What do you use the computer for on a daily basis?
5. Have you ever used the computer to learn a foreign language? If so, could you describe this experience?
6. Have you ever received any training in using computer technology in language teaching? If so, could you describe this experience?
7. Have you ever taken part in the establishment of a technology-based language training project? What was your role in that project?

8. Administrative role

Questions of this group aim to elicit information about the role of the ELC administrator in the ESP technology-assisted course and how the administrator's role could affect ICT integration into ESP training.

9. From an administrative point of view, what is the role of ICT in the English for Specific Purposes (ESP) instruction?
10. Do you consider ICT a supplementary or a foundational component of the ESP curriculum? Why?
11. Do you think the use of technology in ESP instruction involves additional work and time in preparing the teaching materials? How?

12. What are the stages that have been accomplished so far in establishing ICT in the ESP training program?
13. What kind of administrative support does the ELC administrator offer to help integrating ICT in ESP training?
14. Is there an overall plan for the integration of ICT into ESP training? How?
15. Is there a routine evaluation and assessment of ICT integration into the ESP training to ensure quality? How?
16. Is there periodic assessment of students' and teachers' needs in relation to ICT resources and technical support? How?
17. Have the teachers' perceptions about the use and integration of ICT into ESP training been considered in any way in the establishment of ICT or in its review? How?
18. What has the ELC administrator provided teachers with in terms of training in using ICT?
19. Does the ELC administrator organise group discussions for teachers to share their experiences in regard to ICT integration? How?
20. What could the program administration do to encourage the use of ICT in ESP instruction? How?
21. Could incentives (e.g. stipends, less teaching load, local and international training) promote the use of ICT by teachers?
22. Is there sufficient financial support for the integration of ICT in ESP training at your institution? How?
23. Is there sufficient technical support for ICT in the integration of ICT in ESP training at your institution? How?
24. Are ICT resources (hardware, CALL software programs, Internet access), currently available, sufficient for ESP training? How does this affect the use and integration of ICT?
25. Are CALL software programs used for ESP training compatible with the ESP curriculum? How?
26. Is there a need to purchase new CALL software programs for ESP training? Why?
27. Are there any cultural concerns for using the Internet and the Web-based tools (audio/video chatting, E-mail, internet) in ESP instruction? How?

28. Is there a future plan to utilise the internet in ESP training? Why?
29. Can fear of technology (technophobia) on the part of some teachers affect their decision to use ICT in ESP training?
30. Can fear of being replaced by the computer on the part of some teachers affect their decision to use ICT in ESP training?

END OF QUESTIONS

Appendix G

Kareem's Individual Profile

Case 2 (Kareem)

Introduction

In this case study, interview data with a different English instructor, “Kareem”, will be analysed under the same themes previously found in the coding stage of this same interview. This analysis will highlight the obstacles Kareem encounters when integrating computer technology into his lessons; consequently the factors that affect the success of computer technology are made explicit. Kareem's teaching experience and philosophy in using computer technology in the English for Specific Purposes (ESP) context, based on his answers during the interview and classroom observation, will influence the results of this analysis.

Kareem's educational background

Kareem is a native speaker of Arabic and has a college degree in English; in addition he has some training in English language teaching methods. Kareem has taught all ESL/EFL skills, (reading, writing, listening and speaking). He has also taught ESP courses in a number of countries, including Bahrain and Saudi Arabia. Kareem is in his mid-forties and has been a full-time teacher of English as a Second/Foreign Language at the English Language Centre (ELC) for nine years now. Currently, Kareem teaches various ESP courses including Reading for Business Administration. He has received intensive training in how to use the computer and the Internet for teaching purposes; and has been trained in technology troubleshooting inside the organization in the IT Department and outside in private training institutes. Kareem mentioned that his experience and skill enable him to consider the computer an effective learning/teaching instrument. As for using the computer technology in language self-learning, Kareem has used several Internet websites to learn French and Hebrew. Kareem has wide experience in technology use: he has participated in some technology-based language teaching projects; he has been a member of the team that prepared the proposal for the establishment of the Computer Assisted Language Learning (CALL) labs at the ELC; and he is also a member of the team that implements computer technology in ESP courses. For the past nine years, apart from his teaching, he has worked as the CALL coordinator and as a member of the ESP Curriculum Development Committee.

Kareem's use of computer technology in ESP teaching

Kareem mentioned in the interview that the computer for him is not only a teaching tool but a multi-purpose machine (Kareem Interview 1). For example, Kareem said that he uses the computer to organize his plans and agenda, to keep his diary, and to store his banks of teaching data. In addition to his laptop and six external storing drives, Kareem mentioned that he needs to use both his office computer and his home computer to have the capacity to store the complete outline of lesson plans, tests, quizzes, audio/video files and the scanned textbooks (Kareem Interview 1). Although all these files are accessible through the institution's server, Kareem said that it is one of his key responsibilities as a CALL coordinator to keep backup copies of all the digital teaching materials for all teachers (Kareem Interview 1).

Besides accessing digital teaching materials via the institution's server and using them as teaching resources, Kareem stated that he incorporates non web-based digital materials into his ESP lessons, such as the English learning software programs. The use of computer and digital projector is essential to Kareem's ESP classes on a constant basis: "Actually it [the use of technology] is an integrated process from the beginning until the end of the class, maybe the activities change from time to time, but concerning the use [of technology] in general, I use them all the time from the beginning until the end" (Kareem Interview 1).

Kareem also incorporates web-based teaching materials in ESP into his teaching. He revealed that during his ESP classes, using the teacher computer (the only computer in the classroom), he browses through specialized websites: to find answers to questions asked by students; to supply student practice online tests; to check the meanings of words using online dictionaries; to demonstrate to students how to pronounce new words; and to project images, especially when introducing new vocabulary: "I use the World Wide Web all the time. I always search for information and sometimes I check my own information, for example if we have a discussion or debate in class, the referee is always the web" (Kareem Interview 1).

Kareem noted that using the Internet in his classes is indispensable to the extent that he somehow loses self-confidence without it, "When the system [the Internet] is down, we face a lot of problems, we feel we have to go back thousands of years to the Stone Age if we have any problem with technology because we got accustomed to using it" (Kareem Interview 1). Kareem stressed that he incorporates the World Wide Web by matching appropriate websites with the various language skills. For example, in Listening classes, he visits customized listening websites devoted to learners of English as a Foreign/Second Language. As for Speaking, Kareem usually visits pronunciation websites which, as he claimed: "Provide excellent skills by native speakers on the net" (Kareem Interview 1). Concerning Reading classes, he uses reading passages on many websites and projects them to his students, using the digital projector, and then discusses the comprehension questions that follow. In Writing classes, Kareem has his students practice online: "for Writing for practicing, we practice online, I always show my students quizzes online, they take quizzes online" (Kareem Interview 1). As for Grammar, Kareem claimed that he has the

students take online quizzes: “for Grammar again we use it [the Internet] for tests, quizzes, supplementary materials, [and] additional exercises” (Kareem Interview 1).

Computer technology in Kareem’s classes is not only used by the teacher (Kareem), but also by the students. Observations to Kareem teaching sessions have showed that Kareem urges his students to use the computer, the Internet and the digital projector inside the classroom to “explain, demonstrate and make presentations” (Kareem Interview 1). In Kareem’s Oral classes, for example, the students present various topics using the computer and the digital projector. During their presentations the students use the Internet to show photos and to play audio/video files to explain their presentations (Kareem Field Notes 1). In some of Kareem’s Oral classes some students’ use the computer and the digital projector to run a general knowledge contest between two teams of students and distribute rewards to the winning team at the end of the competition (Kareem Field Notes 2). The adoption of computer technology in ESP instruction is fundamental to Kareem for specific reasons: “We have to cope up with the latest developments and to make our job easier and to improve our way of teaching and performance” (Kareem Interview 2).

Kareem’s philosophy of the use of computer technology in ESP teaching

Computer technology to Kareem should be used to stimulate students’ active learning in the classroom. Kareem believes that languages are “learned [but] not taught” (Kareem Interview 1); and therefore computer technology is more effective when used by the students to learn the language than when it is used by the teacher to teach: “I believe that English is, or languages in general are, learned not taught and are acquired not taught” (Kareem Interview 1). As a result, Kareem provides his students with ample chances to use the computer, the Internet and the digital projector in the classroom: “They [the students] are always asked to use the computer, the Internet, [and] the Internet connections” (Kareem Interview 1). Kareem believes that this encourages the students to learn more: “... they [the students] enjoy activities related to technology which is very important in the learning process; if they [the students] enjoy what they learn, mostly their performance will be better” (Kareem Interview 2). The field notes captured an engaging way that the students in Kareem’s Oral class delivered their slide presentations, using various websites to view images, photos and video/audio files (Kareem Field Notes 1). Kareem also thinks that computer technology is a facilitator that provides students with assistance in their learning tasks: “... in my oral class for example whenever a student uses a PowerPoint presentation and the Internet, their job is much easier and more beautiful and more perfect, rather than just talking, sometimes in a very boring environment of context” (Kareem Interview 1). By allowing more opportunities for students to use computer technology for learning language, Kareem presumes that this will help the students vary their learning techniques and will therefore make it more interesting and effective for them: “They [the students] always, by using technology, they see and they hear. There is more learning and they move and they communicate. These are more learning strategies which really improve their learning” (Kareem Interview 2).

Another important reason for Kareem to have his students use computer technology in their language learning is related to the students' reserved nature and the advantages that computers can bring about with this type of student: "The students here in this area [Saudi Arabia] actually they tend to be shy. Sometimes they know something but they don't want to participate" (Kareem Interview 1). Therefore, Kareem thinks that using computer technology breaks the ice and motivates the students to learn and try, even when making mistakes: "I always encourage them [the students] that they should make mistakes for two reasons: first of all you [they] should prove that you [they] are human being[s] and not an angel or a machine to be accurate, and second to learn from these mistakes" (Kareem Interview 1).

The most significant purpose for learning a language is considered by Kareem to be communication: "Students must always interact and communicate and use the language they learn through communication which is the main purpose of language, communication" (Kareem Interview 1). Hence, Kareem organizes his oral classes to be communicative and student-centred where the students use the technology available in the classroom to orally deliver their presentations. For example, student presenters in Kareem's Oral classes used the Internet to answer questions asked by their classmates in the discussion that followed the presentation (Kareem Field Notes 1).

Another reason for using computer technology in ESP teaching, according to Kareem, is the teacher's image: "You know it's nowadays kind of [a] competition [between] teachers who use technology and teachers who don't use technology. So you need to be updated all the time, you need to improve your skills all the time [and] you need to use new technologies all the time" (Kareem Interview 1).

As previously mentioned Kareem's use of technology is intensive. He described himself as 'technology-dependent' (Kareem Interview 1). Kareem's total dependence on technology made him feel that he was unable to manage without computer technology: "We [the teachers] have a kind of confusion whenever the Internet is down or the data show projector does not work or [when] we have problems with our personal account[s] in the PCs. We always feel that an important part of the teaching and learning processes [is] lost" (Kareem Interview 1).

Kareem's philosophy in regard to the integration of computer technology in teaching ESP courses is not always easy to implement. Based on the interview with Kareem and observations of some of his classes, his teaching performance can be affected by different factors, such as the type of technology used; the various rules that govern the interactions between Kareem and other individuals in his setting; and the roles each of these individuals perform. In the following section the various contradictions that Kareem encounters as both a teacher and a coordinator will be discussed separately, informed by the Activity Theory.

Kareem's activity systems

Kareem has two official positions in the ELC: ESL teacher and coordinator of Computer Assisted Language Learning (CALL) labs. As a teacher he has to deliver various graded EGP/ESP course (preparatory, elementary, intermediate and advanced). As CALL coordinator his duties are: to orient newly enrolled teachers on the technology available in the classrooms and the computer labs; to familiarize them in how to log on to the organization's server and use the digital teaching materials provided there in teaching; to prepare a syllabus that links the software program directly to the textbooks; to increase the implementation of the instructional technology through his membership in the ESP Curriculum Development Committee; and to keep backup copies of all the digital teaching materials available in the organization's server.

Kareem's activity system as ESL teacher

As ESL teacher Kareem is the Subject of the activity system. Based on the interview with him, his activity system can be described as being directed toward delivering effective technology-based ESP lessons, the Object of the activity. The Tools of this activity comprise: computer hardware, software, the Internet and Kareem's teaching skills and philosophy, any of which are available and could be incorporated by the teachers into their lessons, and by the students into their learning. The Rules include the following elements. Firstly, institutional rules which are related to the organizational rules that govern the teaching and learning processes. Secondly, pedagogical rules which are related to Kareem's competence in ESP teaching methods. Thirdly, technological rules which are related to Kareem's skills in the use of computer technology. Fourthly, cultural rules which are related to Kareem's familiarity with the cultural and social norms of the environment of the ELC. Lastly, personal rules which are related to Kareem's academic background, his teaching experience, his personality and interests. These different types of rules directly and/or indirectly influence the interactions of Kareem with the other Components of his activity system. Kareem's Community for this activity includes first of all the students in the classroom but also ESP teachers, ELC administrator, and IT technicians all of whom have interrelationships with one another. Finally, the Division of labour involves the divisions of tasks and responsibilities that Kareem shares with the members of the Community such as teaching, learning, technology maintenance and administrative support. This also includes the division of power and status. The Outcome of Kareem's activity system, which is the intended result of the transformation process of the activity system, is expected to be, according to Kareem, successful ESP technology-based teaching (Kareem Interview 2). The components of Kareem's activity system as ESL teacher are illustrated in Figure 1.

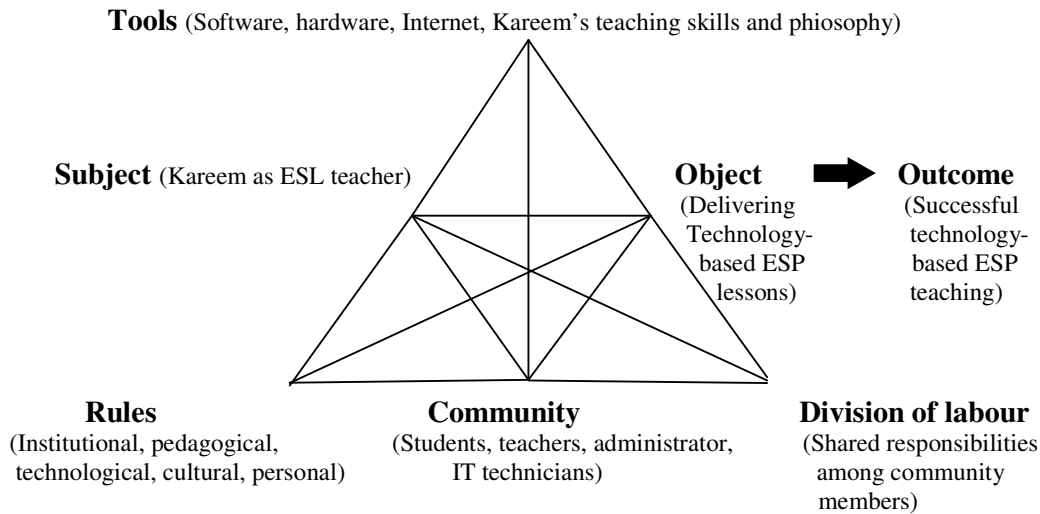


Figure 1: The activity system of Kareem as ESL teacher.

Contradictions and systemic tensions in the activity system of Kareem as ESL teacher

Kareem pointed out some obstacles that hindered the use and integration of computer technology into his teaching. First, there appears to be a Community versus Tools contradiction in Kareem's activity system, which arises as a result of some members of the Community (students) being inexperienced in using the Tools (computer technology). This creates a tension between Kareem, the Subject, and the Object of his activity, delivering a technology-based ESP lesson. This necessitated that Kareem, like other teachers, does additional work spending extra time training his students to use the computer instead of spending the allocated time practising the software programs (Kareem Interview 1), which shifts the focus of the activity from its initial Object. This tension between two elements of Kareem's activity system, Community (students) and Tools (computer technology), as shown in Figure 2-1, resulted in diminished ESP technology-based teaching (Outcome).

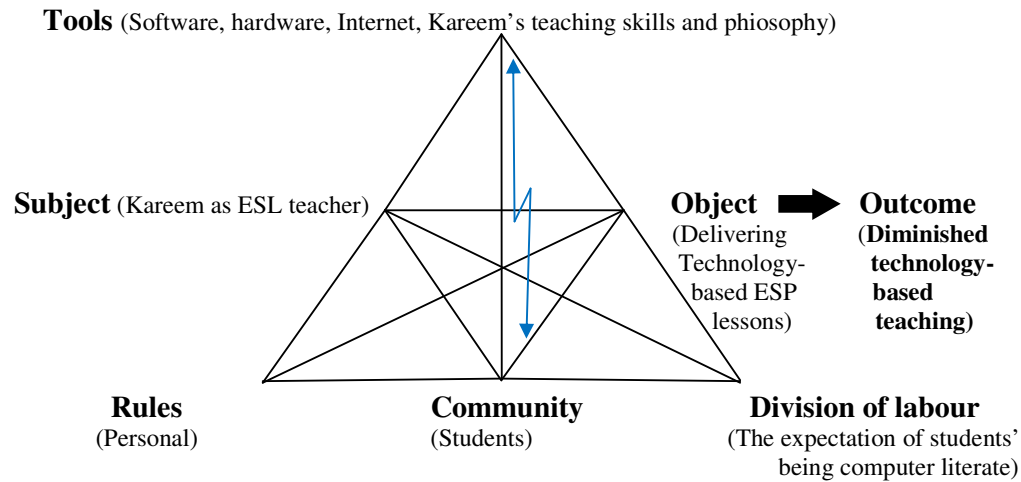


Figure 2-1: Community-Tools contradiction in the activity system of Kareem as ESL teacher.

Another Community versus Tools contradiction in Kareem's activity system is caused by the Community's (students) misuse of the Tools (computer hardware and software). Kareem reported that some students deliberately tamper with the computers and some students delete some software installed in the computers at the laboratory: "Some students even misuse the machines themselves; sometimes they cut the mouse wire [and] sometimes the headphones" (Kareem Interview 3). Field observation taken during the computer lab tutorial sessions revealed that some students persist in misusing the available technology in spite of the instructions which they received and which forbade such behaviours (Kareem Field Notes 3). This contradiction between the Community (the students) and the Tools (the hardware and software) is shown in Figure 2-2.

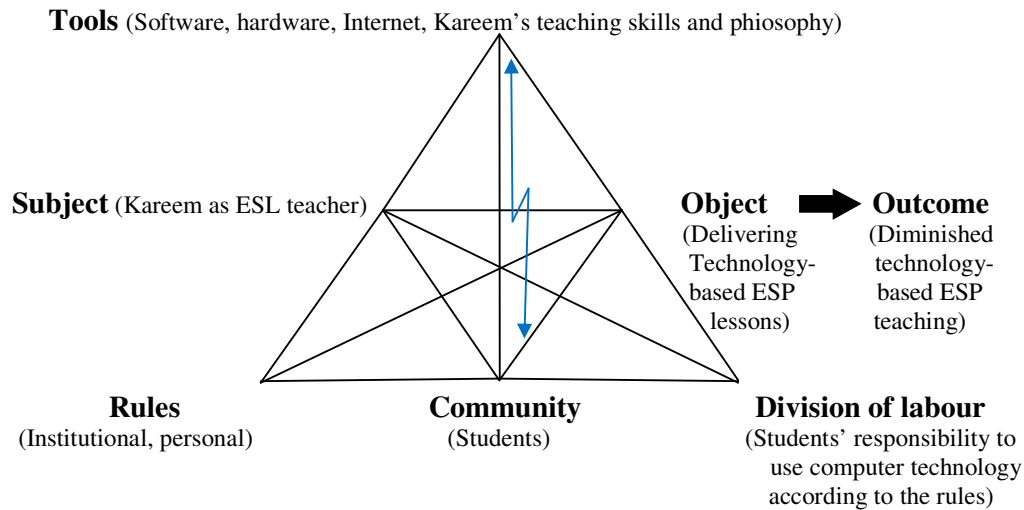


Figure 2-2: Community-Tools contradiction in the activity system of Kareem as ESL teacher.

The second contradiction in Kareem's activity system, Tools versus Object, emerges from the incompatibility of the Tools (software programs) with the Object of the activity system (delivering effective technology-based ESP lessons). Kareem felt that the software programs supplied by the administration do not relate to the content of the ESP instruction (Kareem Interview 1). Kareem declared that although some parts of the software can be associated with ESP teaching, most of it related to English for General Purposes (EGP): "There is one part [of the software] of Business English actually but not all the ESP students can benefit from it, they are all about terminology that they [the students] are not looking for" (Kareem Interview 1). Kareem mentioned that the ESP course is still in need of additional software programs "We need more software in Speaking, in Writing of course, more in general Reading and other ESP Reading and Writing courses" (Kareem Interview 2). Kareem affirmed that the provision of appropriate software programs is the ELC administrator's duty (Kareem Interview 3). The contradiction between the Tools and the Object in Kareem's activity system is shown in Figure 3.

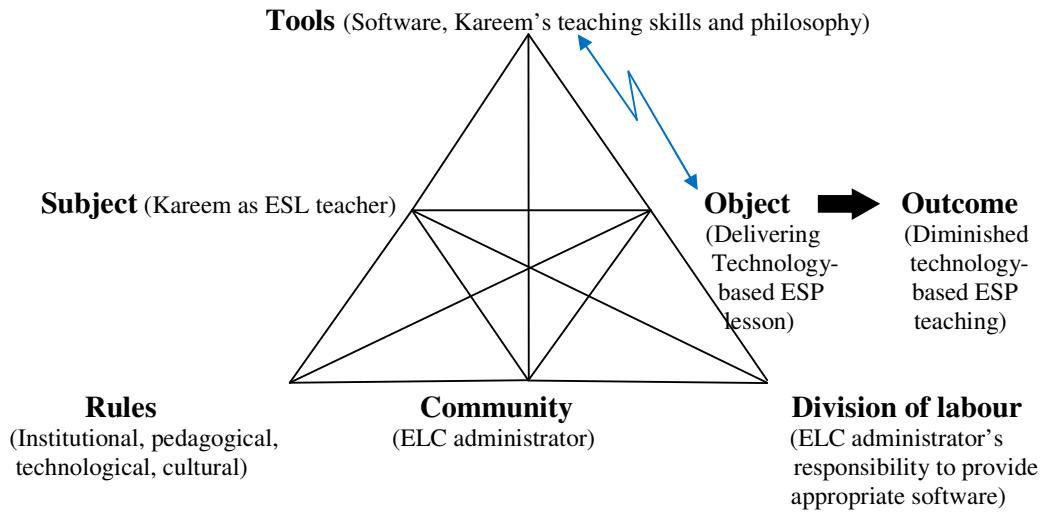


Figure 3: Tools-Object contradiction in the activity system of Kareem as ESL teacher.

The third contradiction in Kareem's activity system, Division of labour versus Tools, emerges from the ELC administration not renewing the rights of use (Division of labour) of the Tools (software program) regularly. Kareem explained that due to the high cost of renewing the software program's licence with the providing company, the ELC administration did not renew the contract (Kareem Interview 1). This led to a lack of supervision by the providing company, from which the software was bought, resulting in multiple malfunctions. Consequently, the Object (delivering effective technology-based ESP lessons) was negatively affected. The contradiction between the Division of labour and the Tools in Kareem's activity system is shown in Figure 4.

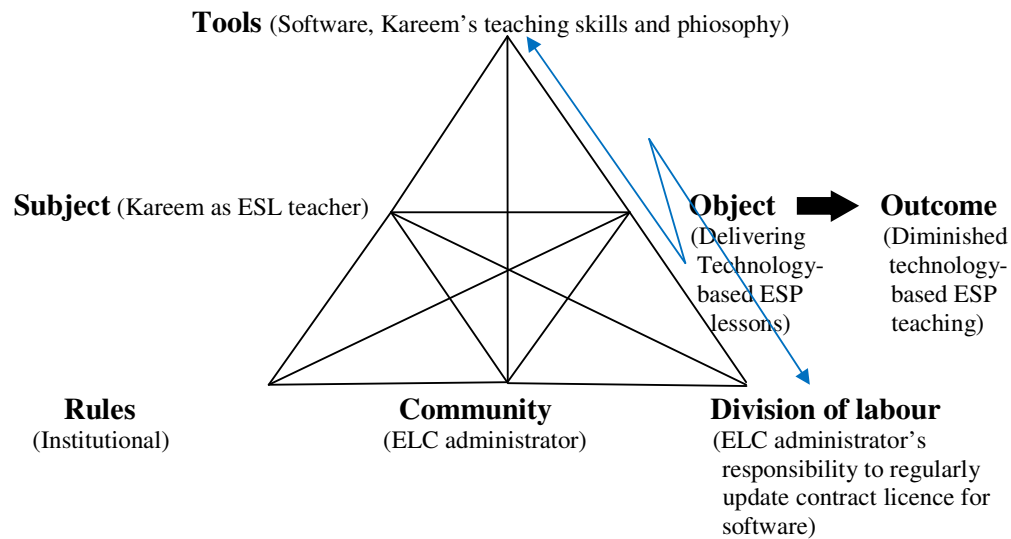


Figure 4: Division of labour-Tools contradiction in the activity system of Kareem as ESL teacher.

The fourth contradiction in Kareem's activity system, Rules versus Object, is a result of the absence of institutional rules (an evaluation system) that could be used by the teachers to assess their students' performance in using the Tools (software programs). The absence of an evaluation system affected Kareem's Object (delivering effective technology-based ESP lessons). It also resulted in his students not taking the computer lab classes as seriously as they should have, because they know they are not going to be assessed: "So far we don't have a kind of assessment or evaluation which usually motivate[s] students to use these CALL labs more [effectively]" (Kareem Interview 2). This contradiction between the Rules and the Object in Kareem's activity system is illustrated in Figure 5.

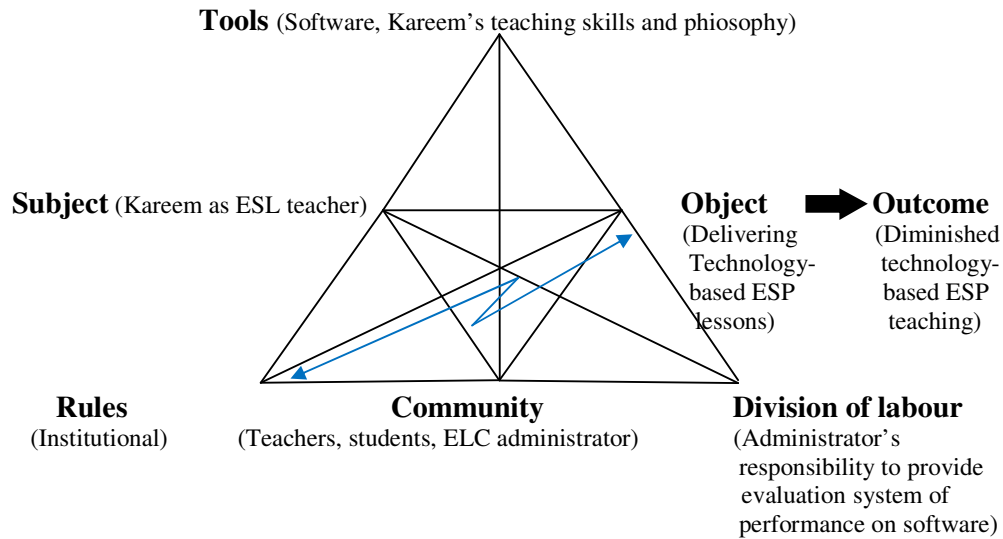


Figure 5: Rules-Object contradiction in the activity system of Kareem as ESL teacher.

The fifth contradiction in Kareem's activity system, Community versus Rules, emerges from the nonexistence of institutional rules that regulate communication between the teachers and the ELC administrator. The absence of such rules makes it hard for Kareem, as well as the other teachers, to voice his requests to the administrator in regard to the implementation of computer technology. Kareem mentioned that teachers' requests concerning technology integration were not considered by the ELC administration as seriously as they should be: "If we as the staff sometimes really initiate something, our needs are not met on the spot, but if the administration initiates something, they never mind about any cost or any price, they do it on the spot in no time, but to us sometimes we face some procedures and [it] takes us a long time whenever we suggest using a new technology" (Kareem Interview 2). The contradiction between Community (teachers) and the Rules (institutional) in Kareem's activity system is illustrated in Figure 6.

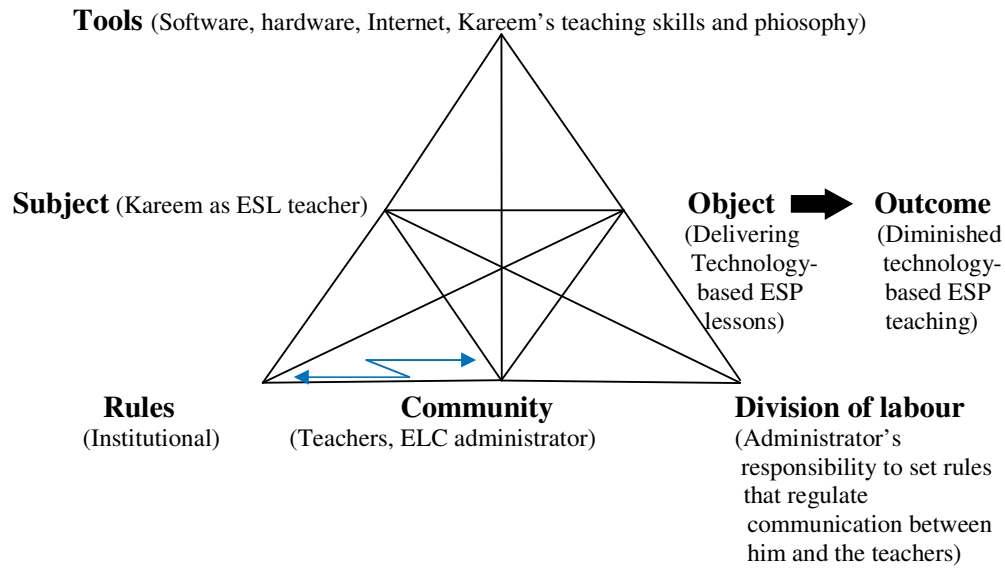


Figure 6: Community-Rules contradiction in the activity system of Kareem as ESL teacher.

The sixth contradiction in Kareem's activity system, Community versus Division of Labour, is caused by the Community's (ESL teachers) lack of sufficient technology training provided by the administrator (Division of Labour). This insufficient training resulted in some teachers not being able to employ forms of technology such as the "Smart Board" and the digital video library in their teaching. Kareem pointed out that some teachers of the ELC "don't have enough orientation or training" (Kareem Interview 3). The contradiction between Community and Division of Labour in Kareem's activity system is illustrated in Figure 7.

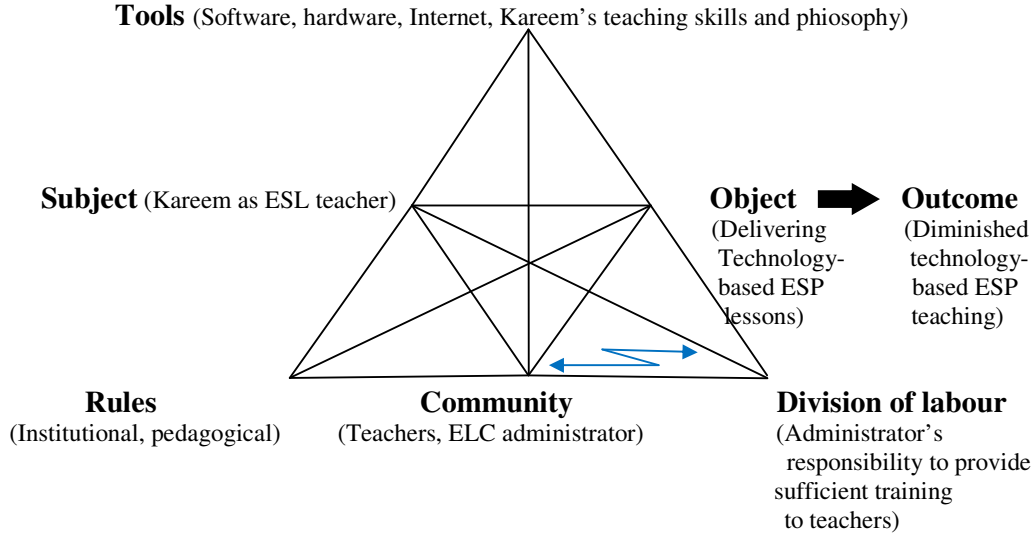


Figure 7: Community-Division of labour contradiction in the activity system of Kareem as ESL teacher.

The seventh contradiction in Kareem's activity system, Rules versus Tools, emerges from the incompatibility between the Rules (cultural and social norms) and the Tools (the software programs). Kareem pointed out that the software programs used in the computer lab are not acceptable to the conservative moral climate where there is a separation between genders: "You know that our students have their own specialty and they have their own culture. In fact, it is international multimedia software used worldwide and it is not very suitable in terms of culture" (Kareem Interview 2). Kareem continued his explanation of the conflict between the culture in question and the software by saying "The students are not familiar with ladies' photos and video conversations between ladies and gents etc, and the best part of the multimedia we are using is this part [of] the video interactions, and most, if not all, of the video interactions are called out between ladies and gentlemen" (Kareem Interview 2). The same cultural norms were also a reason for not providing the students with access to the Internet in the computer lab. When Kareem was asked in the interview about the reason for denying the students' access to the Internet, he elaborated at length by explaining that it was for the same "cultural reasons" (Kareem Interview 2). The contradiction between the Rules (cultural and social norms) and the Tools (the software program) is shown in Figure 8.

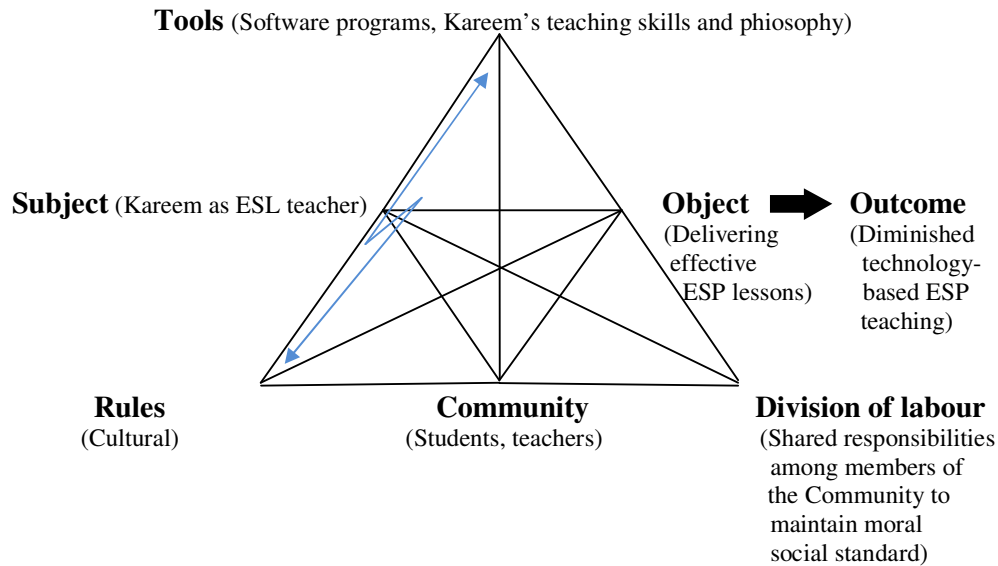


Figure 8: Rules-Tools contradiction in the activity system of Kareem as ESL teacher.

An overview of the contradictions in the activity system of Kareem as ESL teacher

The activity system of Kareem as ESL teacher contains various contradictions and systemic tensions as a result of the interactions between the components of his activity system. An overview of the contradictions in Kareem's activity system as ESL teacher is illustrated in Figure 9.

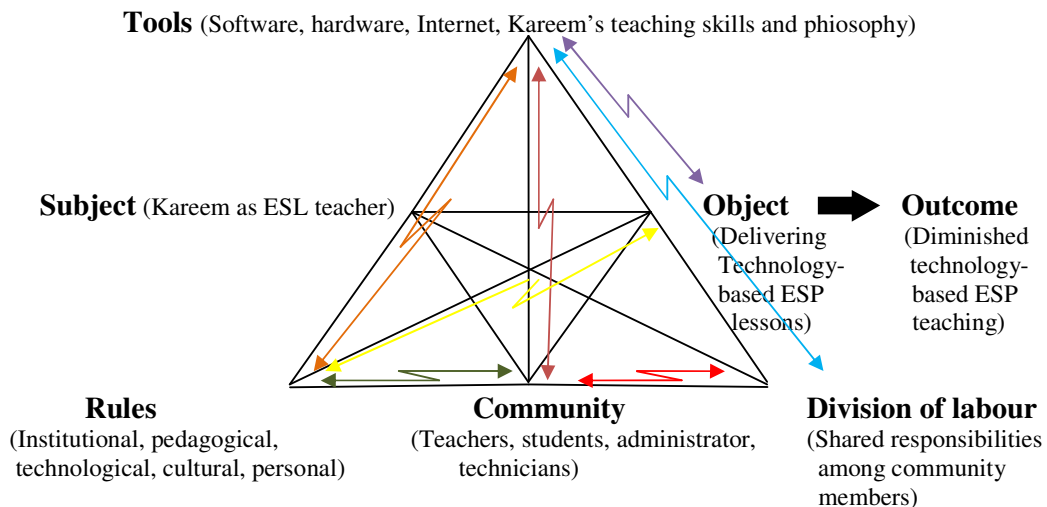


Figure 9: An overview of the contradictions in the activity system of Kareem as ESL teacher.

Kareem's activity system as a CALL coordinator

In his second role at the ELC, as CALL coordinator, Kareem is again the Subject of the activity system. Based on the data of the interview with him, his activity system can be described as being directed toward supervising technology effectively, the Object of Kareem's activity system. Similarly to his activity system as ESL teacher, Kareem's activity system as CALL lab coordinator experienced several contradictions. These contradictions arise from the interrelations of the components within Kareem's activity system. The Components of Kareem's activity system as CALL coordinator include: Tools, Rules, Community, and Division of labour. The main Tools used by Kareem in his second role, however, are Kareem's technological expertise which differs from the tools of his first role as ESL teacher, i.e. his teaching skills. Along with his technological expertise, Kareem uses the computer software, hardware and the Internet (other Tools) to provide orientation and support to other teachers in the ELC.

The Rules as CALL coordinator are the same types as his first role but the institutional Rules in his second role have to do with his duty to coordinate the implementation of technology in the ELC rather than, as a teacher, having to do with the characteristics of the software programs and the Internet websites. The pedagogical Rules are slightly different in Kareem's second role because the emphasis is on Kareem's educational background and familiarity with the teaching issues related to the use of technology rather than, as a teacher, with his competence in conventional teaching methods. The technological Rules are concerned with Kareem's skills in the use of computer technology and are the same in both roles. The cultural Rules are also the same in both roles, i.e. familiarity with the cultural and social norms in the environment of the ELC. The personal Rules as a CALL coordinator have a narrower application within set instructional routines whereas when teaching, his role allows him to use a wider set of rules including his academic background, his teaching experience, his personality and interests. Kareem's Community includes: ESP teachers, ELC administrator, and IT technicians all of whom have various interrelationships with one another. Finally, the Division of labour involves the responsibilities that Kareem shares with the members of the Community such as teaching, learning, technology maintenance and administrative support. The Outcome of Kareem's activity system as a CALL coordinator is expected to be, according to Kareem, the quality of technology integration (Kareem Interview 1). The components of Kareem's activity system as CALL coordinator are illustrated in Figure 10.

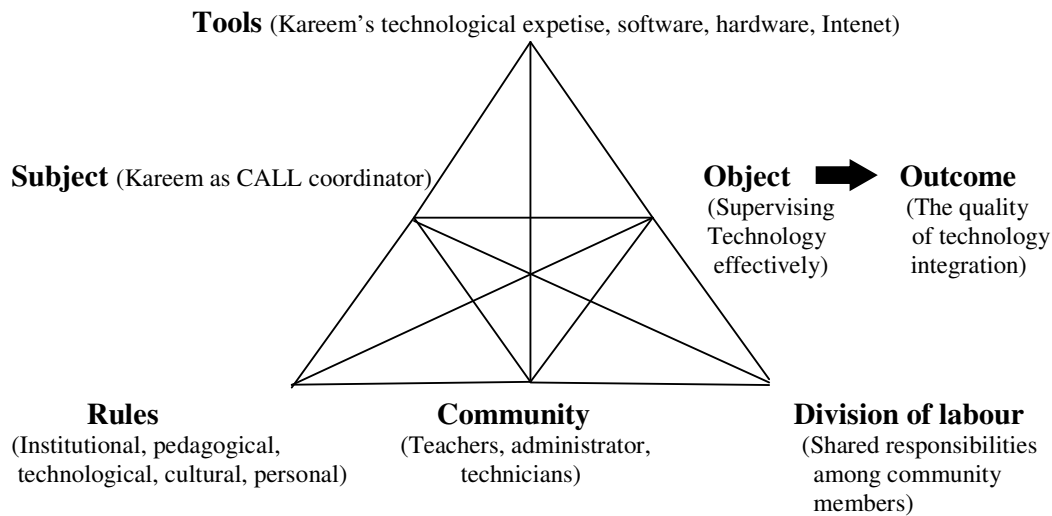


Figure 10: The activity system of Kareem as CALL coordinator.

Contradictions and systemic tensions in the activity system of Kareem as CALL coordinator

Identifying the activity system of Kareem as CALL coordinator, it was found that the first contradiction is Community versus Tools contradiction which emerges from the resistance that some ESL Community members (teachers) showed toward the use of the Tools (computer-related technology) in their teaching. Kareem pointed out the fact that some teachers were hesitant to use the computer in their teaching and some of those had resigned from the ELC due to their reluctance to work in a predominantly technological environment:

“In our institution many teachers left the institution and resigned because they used to be very hesitant to the use of technology because most of them were illiterate and didn't know how to use the computer, the Internet and New Dynamic English [and] some of them unfortunately resigned because of that” (Kareem Interview 2).

Kareem also added that the highest degree of resistance to the use of computer in teaching was from “old teachers” who received their training in traditional teaching methods (Kareem Interview 3). This situation led to low quality technology integration in Kareem' activity system as CALL coordinator. The contradiction between the Community (teachers) and the Tools (the hardware/software and the Internet) is shown in Figure 11.

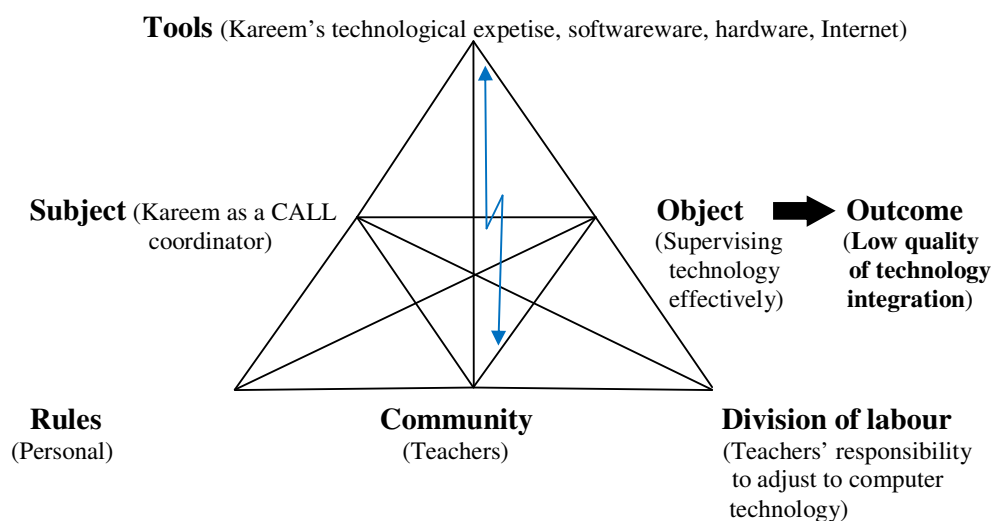


Figure 11: Community-Tools contradiction in the activity system of Kareem as CALL coordinator.

The second contradiction in Kareem's activity system as CALL coordinator is Community versus Object which emerges from the fact that some members of the Community (teachers) are not convinced about the validity of the Object (successful technology integration). These teachers, according to Kareem "... don't even use the CALL lab at all" (Kareem Interview 2). Whenever these teachers meet with their students at the computer lab, as designated in their timetables, they use conventional, non-technological methods in delivering their lessons and "... they conduct regular classroom but inside the computer lab" (Kareem Interview 2). The contradiction between Community and Object in Kareem's activity system is illustrated in Figure 12.

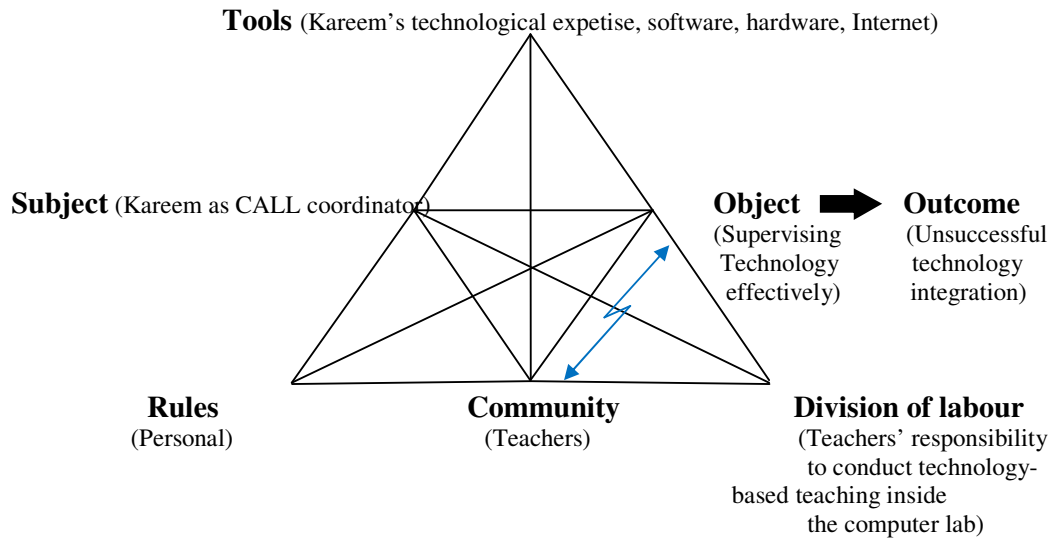


Figure 12: Community-Object contradiction in the activity system of Kareem as CALL coordinator.

The third contradiction in Kareem's activity system as CALL coordinator is Rules versus Object, caused by the absence of regular institutional audit (Rules). According to Kareem, such Rules can be used to regulate the available and needed technology in the ELC (Kareem Interview 3). This lack of Rules (routine evaluating of technological resources) contradicts the Object of the activity system (successful technology integration). Kareem emphasized this fact when he answered a question about the existence of an audit system to test the functionality of the computer technology in the ELC by saying: "In fact we are very busy in other things that we don't do it [assessing computer technology periodically] though we [should] have to actually" (Kareem Interview 3). On his initiative, not as response to administrative orders, Kareem feels that this audit is a responsibility of the administrator (Kareem Interview 3). This contradiction between the Rules and the Object in Kareem's activity system is illustrated in Figure 13.

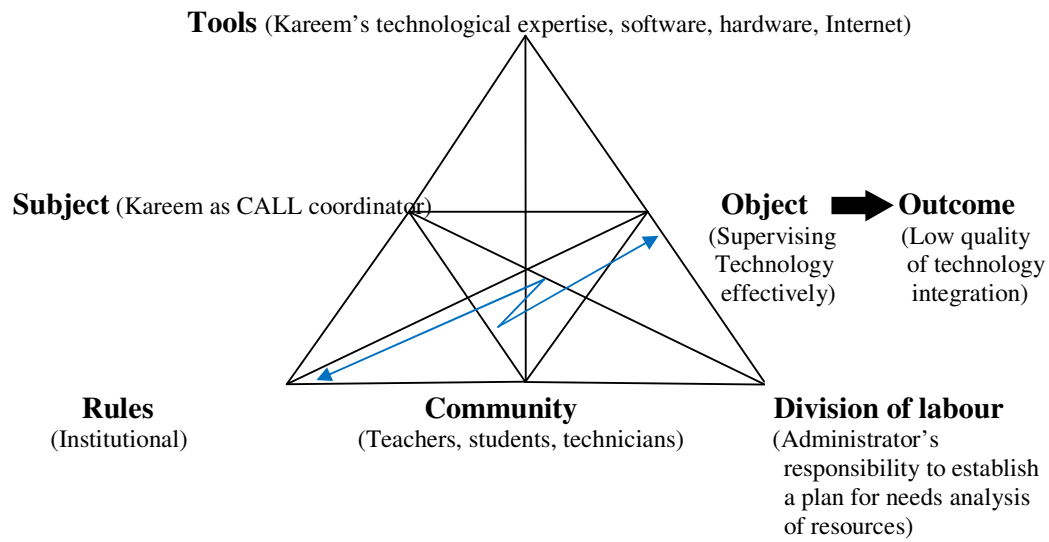


Figure 13: Rules-Object contradiction in the activity system of Kareem as CALL coordinator.

An overview of the contradictions in the activity system of Kareem as CALL coordinator

The activity system of Kareem as CALL coordinator contains various contradictions and systemic tensions as a result of the interactions between the components of his activity system. An overview of the contradictions in Kareem's activity system as CALL coordinator is illustrated in Figure 14.

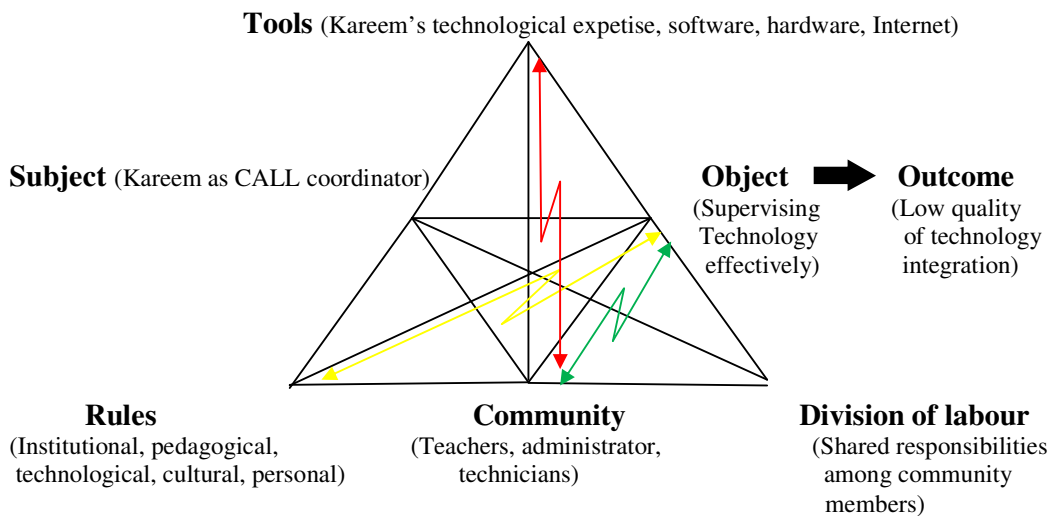


Figure 14: Activity system of Kareem as CALL coordinator.

Resolving the contradictions in Kareem's activity systems

The contradictions within and across activity systems are a source of potential change, improvement and transformation within the activity systems (Osuna, 2003). In this particular case, through his attempt to achieve the Object of his activity systems, as ESL teacher and as CALL coordinator, Kareem is working toward easing the tensions within his activity systems and resolving the various contradictions. Therefore, Kareem suggested a number of actions be taken which will be outlined in detail. First, Kareem's suggestions regarding the contradictions in his activity system as ESL teacher will be presented, and later his suggestions regarding the contradictions in his activity system as CALL coordinator.

To resolve the Community-Tools contradiction, Kareem suggested that the students be taught how to use the computer even before they learn how to practise on the multimedia software program because the software assumes knowledge of computer skills. Kareem regrets that: "Sometimes we [have to] teach students how to use technology". (Kareem Interview 2). Kareem also thinks that a computer lab class is a good chance for computer students to develop their technological skills: "...most of the students who are illiterate in using technology usually improve their computer skills and Internet skills inside our classrooms" (Kareem Interview 2).

As for the other Community versus Tools contradiction which is related to students' computer misuse, Kareem suggested that teachers should monitor the students well while practicing on the computers in the laboratory to eliminate such behaviour: "We expect some students to misuse this technology, though we can easily monitor them" (Kareem Interview 3). Also Kareem worked with the ICT department to eradicate students' computer misuse by developing safe-guards within the computer, i.e. allowing the students to access the tutorial software only:

"Nowadays [in] the computer stations in the CALL lab we have only our software which is the New Dynamic English, Clarity [and] Tense Buster, and students only have access to Word documents only, nowadays students can do nothing; they can't even copy, delete, cancel [or] add anything" (Kareem Interview 3).

Another suggestion by Kareem to repair the contradictions is his idea about resolving the Tools-Object tension. Kareem mentioned that although the ELC administrator has been looking for software that satisfies the teaching/learning needs, he could not find the necessary requirements so far "We don't have the integrated software which we have been looking for, for a long time" (Kareem Interview 3). Still, Kareem thought that it is the responsibility of the ELC administrator to look for updates for the existing software and to keep looking for new "Supplementary multimedia

software which focuses more on speaking and writing and reading” (Kareem Interview 3).

Kareem made further suggestions about resolving the, Division of labour-Tools contradiction which is connected to the ELC’s inability to renew the software maintenance contract with the providing company. According to Kareem, this type of contradiction could not be resolved easily because the ELC does not have its own budget. Kareem stated that “Whenever we have to renew the contract with the company concerned, the workplace has to pay a lot every year and that is expensive” (Kareem Interview 1). Therefore Kareem thought if the ELC owns its own financial resources would enable it cover the expenses required to keep the software functioning well and to renew the maintenance contract with the providing company for better supervision. However, according to Kareem, technology financing is done through the Finance Department and not by the ELC itself: “You know we unfortunately don’t have our own budget, this is something which I always request; to have our own budget, but so far we don’t have our own budget” (Kareem Interview 3).

Kareem continued to deal with the other contradictions in his activity system and suggested that the Rules-Object contradiction which is related to the absence of an evaluation system which assists students’ performance on the software can be resolved through establishing such a system. Kareem stated that at a certain stage he tried to assess his students’ performance in the computer lab and found assessment had positive effects on the students’ performance:

“Once, I have tried in my class for example to assign one quiz on students’ performance in the CALL lab. They used to be motivated, they used to ask for extra time [and] they used to ask for a permission to come [to the computer lab] in the early morning, in the breaks [and] in the afternoon in order to work more. But when I stopped this kind of assessment things actually deteriorated” (Kareem Interview 3).

Kareem also mentioned that some teachers tried to invent evaluation methods of their own: “Sometimes each teacher uses his own discretion either count some marks in the participation or a short quiz for the CALL lab, but the majority do not do this” (Kareem Interview 3). However, Kareem implied that because these evaluation methods were not implemented by the organization, they were discontinued especially since these evaluation procedures required additional efforts by the teachers (Kareem Interview 3).

Kareem made other suggestions that could resolve the Community-Rules contradiction. He advised that the ELC administrator is expected to provide a continuous upgrading of the technology in the ELC. Kareem believed the administrator should first develop a set of rules to regulate communication between the teachers and himself. Second, the administrator should listen to the teachers’ requests and respond promptly to their demands in regard to technology implementation. Not only should that occur but the administrator, according to

Kareem, should involve the teachers in the technology planning process (Kareem Interview 3).

Another important suggestion by Kareem that could be used toward resolving Division of labour-Community contradiction is the administrator's responsibility in developing the teachers' technological performance. Kareem claimed that the ELC administrator is in charge of upgrading the teachers' skills in technology use: "Actually the administration can do a lot of things; first of all they can provide us with more training, with more orientation" (Kareem Interview 3). Also Kareem thought that it is the administrator's responsibility to "provide all forms of technology [and that] they should look at updates and [make sure that the teachers] know how to use the technology and make use of it [in teaching]" (Kareem Interview 3).

The final suggestion Kareem made toward resolving the contradictions in his activity system as ESL teacher had to do with Rules-Tools contradiction. Kareem suggested that in order to resolve this type of contradiction between the Rules 'cultural and societal norms' and the Tools (the software programs) the ELC administration has to find suitable software that corresponds with the students' cultural rules although it is, as Kareem confessed, not easy to find "In fact so far, we couldn't find our own requirements in a software" (Kareem Interview 3).

As for resolving the contradictions in his activity system as CALL coordinator, Kareem proposed that Community-Tools contradiction, and in particular those related to teachers' reluctance to the use of computer technology, eventually resign because of their lack of confidence in technology use. This can be resolved, according to Kareem, through recruiting technology-literate teachers who favour the use of technology in their teaching: "Whenever we recruit teachers, we ask a lot of questions related to using multimedia technology, Internet, computers, data show projectors. So this is to us one criterion which we should focus on" (Kareem Interview 3).

As for Community-Object which is associated with teachers being unconvinced about the Object of the activity system, Kareem hinted that this type of contradiction is unresolved. This contradiction seemed to Kareem difficult to resolve because teachers who "resist" the use of computer technology in their English language teaching tend not to stay long in their teaching jobs in the ELC (Kareem Interview 3). Kareem added that because most of these "resistant" teachers were unwilling to cope with the modern teaching innovations applied in the ELC, they decided to quit and leave the institution "some teachers even left the institution because the use of technology" (Kareem Interview 3).

Kareem's last suggestion to remedy the contradictions in his activity system as CALL coordinator is connected to Rules-Object contradictions, especially those related to the lack of technology periodic assessment plan. Kareem declared that such assessment plan is an essential procedure that should be adopted by the ELC administrator. Kareem confirmed the importance of the technology periodic

assessment plan in the ELC by saying: “We are supposed to have that” (Kareem Interview 3).

Summary

Kareem considers the computer to be an effective teaching as well as learning tool. As for teaching, Kareem depends heavily on computer technology. The use of computer technology in Kareem’s classes including the Internet and the digital projector is fundamental. Kareem described himself as “technology-dependent” (Kareem Interview 1) and described the circumstance of technology malfunction and reversion to conventional teaching as “Stone Age” (Kareem Interview 1). As a learning tool, Kareem strongly encourages the maximum use of computer technology by his students in his classroom lessons. For instance, Kareem advocates the use of the digital projector by his students: to deliver their slide show presentations using the Internet and audio/video files; and to display their essays written by Word Processing on the screen/white board in order to discuss them with their classmates.

Kareem encountered some obstacles (contradictions) that hindered him from effectively integrating computer technology into his teaching. Kareem proposed a number of suggestions to eliminate these tensions between the components of his activity system which include: providing pre-course computer-literacy for the students prior to their enrolment in the English language course; observing the students carefully while in the computer laboratory to eliminate possible misuse of computers; recruiting technology-literate teachers who favour the use of computer technology in their teaching to reduce the high rate of staff turn over; looking for the existing software updates and new appropriate software programs; allocating a budget for technology resources to cover the expenses of software maintenance by the providing company; establishing a student testing system which teachers can use to assess students’ progress on the software programs; adopting a periodic assessment plan for technology needs; organizing a protocol for regulating communication between the teachers and the ELC administrator; providing the teachers with sufficient training and orientation in using computer technology in teaching; and finally considering the cultural factor when selecting the software programs.

In spite of the obstacles that Kareem daily experiences in his teaching environment, he is positive about the future of computer technology in the ELC. Kareem thinks that the future of the computer technology implementation in the ELC is bright. He hopes that in the near future all the classrooms in the ELC will be ‘integrated CALL classes’: “In the long run we are planning to have all the regular classrooms as CALL labs” (Kareem Interview 2). Kareem explained that this means that each student will have his own laptop and it also means that all the courses will be online. Moreover, Kareem hopes that in the near future the ELC would have a “Multimedia Room” where students can watch English language videos and TV channels (Kareem Interview 3).

Kareem emphasized significant issues related to the use and integration of computer technology in the ELC and also highlighted beneficial resolutions to overcome these

issues. However, Kareem tended to speak highly about the technology implementation in the ELC and avoided listing some aspects mentioned by other interviewed teachers of the ELC. The difference between Kareem's attitude and his fellow teachers' could be related to the fact that Kareem is the CALL lab coordinator who is responsible for orientation and updating teachers in regard to technology.