CHAPTER 5
THEORETICAL FRAMEWORK FOR ICT INTEGRATION

5.1: Introduction

Mastering ICT skills and utilizing ICT towards creating an improved teaching and learning environment is of utmost importance to teachers in creating a new learning culture. Many teachers lack the knowledge and skills to effectively use ICT tools in facilitating learning in increasingly ICT-pervasive learning environments. Some teacher-training programmes have over-emphasized computer literacy while not enabling teachers to integrate technology with pedagogy and facilitate ICT-assisted interactive teaching-learning at classroom level to promote English Language teaching and learning. This chapter presents the concepts and approaches in the development of a theoretical framework for ICT integration. A theoretical framework is a conceptual model of how one theorizes or makes logical sense of the relationship among the several factors that have been identified as important to the problem (Sekaran, 2003). Nachmias and Nachmias (1996) defined theoretical framework as representation of reality; it delineates those aspects (variables) of the real world the scientist considers to be relevant to the problem investigated and makes explicit the significant relationship among those variables. Apart from the literature reviews, information from the questionnaire data, teacher and pupil interviews, teacher observation and a critical look at previous frameworks contributed to the development of this theoretical framework. Hence, this chapter discusses the relevant literature upon which the research framework is built.

5.2: Existing Models of Framework on ICT Integration

As depicted in Figure 5.1, a generic framework for ICT in Teacher Education is composed of four clusters of competencies encircled by four supportive themes.
This holistic framework which applies to all subjects defines areas of ICT competency organized in four groups namely content and pedagogy, collaboration and networking, social issues and technical issues.

(a) **Content and Pedagogy** focus on instructional practices of teachers and their knowledge of the curriculum. It requires that teachers apply ICT in their respective disciplines to support and extend teaching and learning.

(b) **Collaboration and networking** showcase the communicative potential of ICT to extend learning beyond the classroom and necessitate the development of new knowledge and skills. The real power of ICT comes from new ways of communicating beyond the four walls of the classroom and by locating information from worldwide sources wherever these may be located. The implication for teachers as they assist their students in collaborating with other learning groups and using networks to research assignment topics is that they cease to be the main source of knowledge in the classroom. Instead, teachers’ roles change from being “a sage on the stage” to becoming “a guide on the side”. Through collaboration and networking, professional teachers promote democratic learning within the classroom and draw upon expertise both locally and globally (Resta, 2002).
(c) **Social issues**, which imply that teachers can acquire an understanding of social issues, including the recognition and understanding of legal and moral codes such as copyright and intellectual property rights; participation in debates on the impact of ICT on society; and the use of ICT in the promotion of a healthy society. Awareness of such issues will lead to suitable application of ICT in pedagogy and development.

(d) **Technical issues** include technical proficiency and the provision of both technical infrastructure and technical support for ICT integration throughout the curriculum.

These core competencies can be seen as ‘cluster objectives that are critical for the successful use of ICT as a tool for learning’ (Resta, 2002). They can be developed and utilized in technology-pedagogy integration in four supportive themes. This includes ‘context and culture’, ‘Leadership and Vision’, ‘Life Long Learning’ and ‘Planning and Management of Change’. This framework is a general framework and it has certain shortcomings. Teaching and learning ‘involve a process of engaging minds and opening up awareness for exploration and discovery’, through such acts as providing information, demonstrating processes, giving examples, asking questions, giving feedback, exchanging ideas and performing tasks (Wright, 2000). Fundamental and most central to this process are talking and communication through languages. Technologies augment this teaching-learning process in various ways. Human communication, or teacher-pupil interaction, is central to the process of learning. The use of Instant Messaging tools which include e-mail exchanges, audio and video conferencing could facilitate information exchange, giving feedback and provide opportunities for asking questions (Lamy, 2004; Stepp-Greany, 2002; Sotillo, 2005). Some of these issues have not been addressed in the given framework above. The most crucial factor in integrating ICT into teaching and learning depends on the extent to which various guiding principles of the integration are formulated and applied. While
using ICT for creating a new learning culture, one has to take into consideration the current social and economic conditions, existing telecommunication infrastructure and cultural and linguistic factors. Furthermore, ICT tools have to be infused into pedagogy in such a way that its uses improve learning. In this context, an overarching framework (Kozalka, 2005) demonstrating the levels of activities within the classroom that relate to ICT integration was proposed and this is depicted in Figure 5.2.

This framework demonstrates a linkage between teachers moving towards ICT integration and ultimately higher quality education, mediated and supported by the tools available (ICT, curriculum, guidelines, training, people support, policy etc.,) and the surrounding community (peers, administrators, parents, learners etc.). This framework once again is a general framework and it has certain shortcomings. It does not mention anything about how ICT integration would be carried out. Another drawback is the non-reference to how ICT tools can be used to enhance English Language teaching and learning.
A Framework for ICT Competency

A nationwide study undertaken by Norizan and Mohamed Amin (2004) proposed a framework for ICT competency which could act as a benchmark on educational computing standards for English Language teachers in Malaysia. This framework which is summarized in a matrix format in Table 5.1 incorporates three levels of competency namely beginners, intermediate and advanced. These levels provide the teachers with options to ensure that the professional development meets their educational computing needs. This framework includes the following four components:

Basic Computer Knowledge and Operational Skills

There are two sections in this component. The first is the Basic Computer Knowledge that constitutes the foundation for other computer skills. Knowledge included in the framework is related to computer characteristics and terminology, applications of network communications and the effects of computer-based instruction in education and society.

Operational Skills

This section includes skills to run the operating systems, install computer programmes, print documents and use applications software e.g. word processor, spreadsheet and presentation program and database. The skills in the second component are those related to the ability to use and integrate applications software and instructional programs in the teaching and learning process and the ability to use Internet facilities and search engines for searching and delivering web-based teaching and learning materials.
### Table 5.1: IT Competency Framework for Language Educators at Secondary Level

<table>
<thead>
<tr>
<th>Component</th>
<th>Beginners</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Computer Knowledge and Operational Skills</td>
<td>Computer characteristics and terminology</td>
<td>Applications of networked communication</td>
<td>Computer assisted instruction in education, research and society</td>
</tr>
<tr>
<td></td>
<td>Computer assisted instruction theory and uses</td>
<td>Use of application programmes</td>
<td>Instructional design</td>
</tr>
<tr>
<td></td>
<td>Operational skills – log on, run program and print</td>
<td>Use of search engine and communication tool</td>
<td>Use of Multi-user domain</td>
</tr>
<tr>
<td>Teaching and Learning Skills</td>
<td>Integrate application programmes like word processor in teaching and learning</td>
<td>Utilize language learning and teaching materials from LAN and WAN</td>
<td>Guide and conduct consultation online with students, teachers and parents</td>
</tr>
<tr>
<td></td>
<td>Integrate instructional programs to support teaching and learning</td>
<td>Guide students to use instructional programmes - software based and Internet based</td>
<td>Support collaborative teaching and learning</td>
</tr>
<tr>
<td></td>
<td>Use of Internet facilities, search engine, communication tool to support teaching and learning</td>
<td>Facilitate uses of communication tool in language activities</td>
<td>Build, publish and maintain language websites</td>
</tr>
<tr>
<td>Planning and Managing Computer Based Environment</td>
<td>Use computer to support classroom management</td>
<td>Plan computer assisted instruction in language classrooms</td>
<td>Plan and structure lab and computer system</td>
</tr>
<tr>
<td></td>
<td>Monitoring students use of computer</td>
<td>Integrate computer assisted instruction into language curriculum</td>
<td>Manage computer facilities</td>
</tr>
<tr>
<td>Assessment and Evaluation</td>
<td>Software evaluation – technical</td>
<td>Software evaluation – pedagogic consideration that include students needs, language skills and activities</td>
<td>Evaluate students’ achievement with the applications of computer assisted instruction</td>
</tr>
<tr>
<td></td>
<td>Software evaluation – content</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluate reliability of online material</td>
<td>Construct, administer and assess language test online</td>
<td>Assess computer technology plans and systems for schools</td>
</tr>
</tbody>
</table>

(Source: Norizan Abdul Razak and Mohamed Amin Embi, 2004).

**Teaching and Learning Skills**

The skills in the second component are those related to the ability to use and integrate applications software and instructional programs in the teaching and learning process, and the ability to use Internet facilities and search engines for searching and delivering web based teaching and learning materials. Other important skills are guiding students to use Internet facilities and facilitating online activities and communication.
Planning and Managing Computer Based Environment Skills

The skills in this component are related to the educators’ ability to support an effective computer-based environment. Educators should be able to plan and integrate computer-assisted instruction into the language curriculum, manage students’ data online and monitor students’ use of computers for self-access work.

Assessment and Evaluation

The skills under this component are the ability to evaluate software/shareware, web-based materials and online information for their suitability in classroom applications. Educators should also be able to gauge the students’ needs and achievements with the applications of computer-based instruction. Another skill is the ability to handle computerized testing.

Though the IT competency framework for language educators in the form of a matrix appears to be generally good it has some weaknesses. What is fundamentally lacking is the non-emphasis on the development of techno-pedagogical skills of the teachers. The components that develop techno-pedagogically skilled teachers and the critical reflection phase after an ICT integration lesson has not been touched on (Beaudin and Hadden, 2004). Furthermore, no mention is made in the matrix about the attitudes of teachers in integrating ICT tools in their lessons. ICT tools used in promoting oral communication skills are totally missing. Other elements that need to be incorporated in the theoretical framework on ICT integration would include the following:

E-learning

E-learning and online education is a process whereby teachers and students are linked up in an electronic media/computer network. There are a number of benefits to e-learning. These
include any time learning, anywhere learning, asynchronous interaction and group collaboration (Majumdar and Park, 2002). E-learning lessons and tutorials can give additional practice in developing communication skills. The definition and benefits of e-learning have been discussed at length in Section 1.4 of Chapter 1.

**Pedagogical Content Knowledge (PCK)**

Pedagogy cannot exist in isolation to contents. In fact, there is a new beginning to appreciate that the two intertwined into what is described as Pedagogical Content Knowledge (PCK) and is an essential tenet in the current thinking about ICT integration. Shulman (1987) had observed, “the key to distinguishing the knowledge base of teaching lies at the intersection of content and pedagogy”. The term content refers to far more than factual information. It encompasses all aspects of a subject: concept, principles, relationships, methods of inquiry and outstanding issues (NSTA, 1998). The basic principles of PCK are to make teaching and learning: (a) engaging and motivating; (b) interactive; (c) contextual; (d) reducing cognitive load; (e) scaffolding; and (f) collaborative (Ng, 2005). All instructional designers agree on the need for effective planning of the design and development process of an ICT integrated lesson. The success of the process largely depends on the preparation of a document, often called a lesson plan with essential elements such as clear indications of what will be done, how it will be done, when it will be done and, more importantly, how technology is going to be used (Ng, 2005). A lesson plan which gives a simple example of pedagogical content knowledge with high ICT integrated approach is described diagrammatically in Figure 5.3. It illustrates a higher degree of embedding ICT in the teaching-learning process. Such an ICT-enabled environment creates well-integrated teaching and learning with ICT that fulfils good pedagogic principles.
Technological Pedagogical Content Knowledge (TPCK)

A new model on technology integration called the Technological Pedagogical Content Knowledge (TPCK) was formulated by Mishra & Koehler (2003) and it had been discussed at length in the literature review in Section 2.6.7. This model of technology integration in teaching and learning argues that developing good content requires a thoughtful interweaving all three key sources of knowledge - technology, pedagogy and content. TPCK is a framework to understand and describe the kinds of knowledge needed by a teacher for effective technology integration.

Development of Techno-pedagogically Skilled Teachers

The development of techno-pedagogical skills in teachers has been discussed in detail in the literature review under Section 2.6.7. Beaudin and Hadden (2004) explain that critical reflection on the use of ICT tools in teaching and learning would help the teachers to improve their pedagogical skills.
5.3 Proposed Framework

The proposed framework for ICT integration to enhance English Language communication skills is depicted in Figure 5.4 and it consists of eight elements. It shows how ICT integration will support the existing school curriculum and enhance English Language communication skills through meaningful learning. It will answer who-, when-, where-, why- and how- type questions related to achieving the vision of integrating ICT in teaching and learning of English Language so as to enhance communication skills. The justification for each of these elements is discussed in the next section. Though the researcher has divided the framework into eight distinct elements, many of the elements do overlap with one another and it is unavoidable to touch an area which has close connection with another.

5.4 Justification of the Proposed Framework

Pedagogical Skills

It is important to acquire the pedagogical skills of using ICT for improvement of the teaching and learning process rather than merely concentrating on technical skills of teachers. ICT skills and pedagogical skills of integrating ICT tools in the teaching and learning of English Language are totally two different things. The Pedagogical Content Knowledge (PCK) and Technological Pedagogical Content Knowledge (TPCK) models must be referred to in developing appropriate content where there is interweaving of all three key sources of knowledge - technology, pedagogy and content. The resulting interactive lessons ought to take into consideration the principles of the constructivist learning theory.
Figure 5.4: Framework for ICT Integration to Enhance English Language Communication Skills

1 Pedagogical
- Pedagogical Content Knowledge
- TPCK
- Techno-pedagogical skill (Aural-oral skills)
- Teacher professional development (Pre-service and In-service English Language teachers)
- Knowledge of when, when not and how to integrate ICT tools
- Computer efficacy

2 ICT Tools
- Video clips
- Audio clips
- Blackboard 5
- Electronic whiteboard
- Interactive lessons on CD-ROMs
- Real-Time Pitch program (Kay Elemetrics Computerized Speech Lab)
- Word, Spreadsheet and Presentation software

3 ICT competency
- 4 stages of ICT competencies

4 E-learning
- Anytime-anywhere learning
- Self-directed learning
- Asynchronous interaction
- Group collaboration
- Interactive lessons from Internet
- VELT lessons

5 Instant Messaging Tools
- E-mail
- Audio conferencing
- Video conferencing
- Collaboration and networking

6 Multi-Support & Positive Attitude
- Support from School principal/headmaster
- Positive attitude of teachers
- Support from computer personnel
- Support from home

7 Infrastructure Support
- Availability of broadband
- Sufficient Computer Labs
- Availability of headsets and web cameras
- Stable PCs

8 Evaluation
- Assessment of learners
Constructivism frames learning less as the product of passive transmission than a process of active construction whereby the learners construct their own knowledge based upon prior knowledge (Duffy et al., 1993; Piaget, 1971; Steffe & Gale, 1995). Constructivist learning requires learners to demonstrate their skills by constructing their own knowledge when solving real-world problems. The constructivist model calls for learner-centered instruction because learners are assumed to learn better when they are forced to explore and discover things themselves. Pupil/learner/student-centeredness is another essential pedagogical approach whereby students are given more control over their own learning (Chandra-Handa, 2001; Haughey, 2002; Smeets & Mooij, 2001). Student control facilitates student-centeredness. Technology should be employed in ways that pedagogical strategies that are learner-centred develop in classrooms (Haughey, 2002). Teachers are responsible for this development. In the technological revolution and the information age, using technology in teaching English Language becomes “a fact of life” (Chapelle, 2001, p. 1).

ICT integration illustrates a higher degree of embedding ICT tools in the teaching-learning process. For example, audio and video clips could be used to demonstrate correct pronunciation of vowel and consonant sounds to students who are facing difficulty in correct pronunciation. Similarly, students could listen to a short story or a brief narration about places of tourist interest. They could then be asked to retell the story or narrate an event while the teacher records the narration. Students could replay the recordings to find out their mistakes. Students could further use CD-ROMs containing pronunciation exercises at home. Dialogue simulations and role play exercises should be increasingly used by the teacher to promote communication skills. ICT tools should not be used for every listening and speaking activity but rather during the planning and design stage of a lesson the teacher should give due consideration of when, when not and how to integrate
ICT tools in the teaching and learning process (Becta, 2001a). ICT tools ought to be integrated only when it enhances learning. Beaudin and Hadden (2004) as discussed in the literature review have pointed out that it is essential to develop techno-pedagogically skilled teachers because it allows them to develop a holistic understanding of the process of teaching with technology. Computer-efficacy is another area that should be overlooked. Teachers should feel efficacious in ICT integration (Bandura, 1986; Office of Technology Assessment, 1995).

On the ability to integrate ICT tools in teaching and learning, the results of the survey analysis revealed that 1.8% of the respondents have very poor skills, 12.8% have poor skills and 54.1% have moderate skills. One can infer then that the majority of the respondents did not have any formal training in appropriate ways of ICT integration. They simply lack pedagogical skills. The in-depth interviews of ten English Language department heads confirmed that generally the teachers have poor pedagogical skills in relation to ICT integration. They acknowledged that very often teachers concentrate on teaching reading and comprehension rather than oral communication skills. A summary of the analysis on the observation of ten English option teachers in ten different training centres as tabulated in Table 4.23 in Chapter 4 glaring showed that almost all the ten teachers observed did not know how to integrate ICT tools in the teaching and learning of English. One teacher was teaching ICT skills instead of English Language skills. Research studies made by Johnson et al. (2006) and Zhao (2003) emphasise the point that pedagogical skills of the teachers are becoming increasingly important. Appropriate pedagogical skills on ICT integration ought to be taught to the teachers. Hence the justification of incorporating teacher pedagogical skills in the framework and this component is vital to be included.
The teaching and learning of English Language using appropriate pedagogy however is easily said than done. There is a need for teachers to develop and maintain a “Teaching through Technology Portfolio” as a means to document and reflect on their own learning and to provide evidence of success. These portfolios could be used to regularly share sessions with the fellow teachers. Through regular information sharing and “Teaching through Technology Portfolios,” teachers will work collaboratively with their peers, using evaluation information to develop, guide, and implement ICT infusions (Barnhart, 2000). The sharing sessions provide an opportunity for open and on-going discussion on the degree to which teachers are engaging in activities that enable them to bring technology into effective use in their own classrooms. By sharing information and knowledge, teachers will have the opportunity to continuously develop their pedagogical skills (Majumdar, 2005).

The Ability to Use ICT Tools

ICT tools have come to play a crucial role in the teaching and learning of English Language. ICT tools encourage interactions, development of collaborative culture, utilisation of active learning and introduction of feedback in proper context. The ICT tools can bring abstract concept to life by bringing into the teaching and learning the real world experiences through simulating, modeling, capturing and analyzing real event (Warschauer, 2004; Crystal, 2004; Kramsch & Thorne, 2002; Godwin-Jones, 2005; Greenfield, 2003). Several prominent theories such as constructivism, socio-cultural concept, situated cognition, multiple intelligences, distributed cognition, problem-based learning etc., play an important role in designing learner-centred environment. Each of these theories is based on the same underlying assumptions that learners are active agents purposefully seeking and contributing collaborative knowledge within a meaningful context. ICT offers various tools
to implement the above theories to create rich and engaging learning environments (Witfelt, 2000). The survey findings glaringly reveal that ‘ICT skills’ is the area that the Ministry of Education should focus on. 22.9% of the respondents say that they are incompetent in using MS PowerPoint, 26.6% lack spreadsheet skills, 29.4% just don’t know how to use an e-mail. 45.9% do not have the basic ability to carry out a chat with their friends and the list goes on. In fact, these basic ICT skills are the ones which enable teachers to integrate ICT tools in English language teaching and learning. Other ICT tools that the teachers could use to improve communication skills include audio clips, video clips, Blackboard 5, electronic whiteboard, CD-ROMs and real-time pitch programmes. The ability to use these ICT tools is therefore an important component of the ICT integration framework. Besides the ability to use the basic ICT tools, the teachers should be intrinsically motivated to use ICT tools in classroom teaching and learning as the ICT tools enhance learning.

Development of Professional Competencies

The development of teachers’ professional competencies in technology-pedagogy integration usually experiences four stages: Emerging, Applying, Infusing, and Transforming (Anderson and van Weert, 2002). Figure 5.5 depicts the four stages of ICT development as a continuum or series of steps. Emerging stages mean that teachers are beginning to become aware of the potential of ICT. In this stage, the focus is on the basic technical functions and uses of ICT. It involves teachers’ competencies in word processing, spreadsheet, database, presentation software and uses of Internet and e-mail. Applying stages imply that teachers may be learning how to use ICT for teaching & learning. The focus here is on improving English Language teaching methodology focusing on how to teach with a range of ICT tools. Infusing stages mean that a variety of ICT tools are being appropriately selected and effectively used for teaching and learning. Transforming stages
involve new and innovative ways of approaching teaching and learning situations with specialized ICT tools for exploring a variety of real-world problems. The emphasis changes from teacher-centred to learner-centred. Teachers, together with their students, expect a continuously changing teaching methodology designed to meet individual learning objectives. The discussion of the four stages are intended to illustrate the steps towards growing ICT confidence and competence that many teachers go through, before beginning to transform teaching practice and the learning of their students. At the end of the fourth and final stage, teachers are considered as competent in the use of ICT tools to create an innovative learning environment. Teachers need to be aware of the four stages of development and hence its inclusion in the ICT integration framework.

Figure 5.5: Stages of ICT development (Adapted)
(Source: Anderson and van Weert, 2002).

E-learning

E-learning has produced ‘cutting-edge lessons’ that are both interactive and engaging. E-learning lessons have been primarily found to be suitable not only in colleges and universities but in secondary and primary schools too. In fact, there is ubiquity in e-learning
in contrast to traditional learning. A student can again and again refer to the lesson or a part of it whenever time permits. This means a lesson can be replayed again and again. In a traditional classroom situation, lessons are conducted according to schedule. The student usually cannot get the teacher to repeat the lesson. In an e-learning situation, if a student has a problem, he or she can e-mail the problem to the teacher or post the problem in a discussion board for the teacher or other learners to respond on ways of overcoming it. In addition to this, the interactive environment of web sites used in e-learning create enthusiasm for learning which in turn leads to students becoming active participants in the learning process. In one summary of e-learning studies, Meyer (2003) identified critical thinking and writing as specific skills that are enhanced in the online environment because “online students were more likely to make important statements and link ideas” and the “opportunity for reflection is especially suited to asynchronous learning environments”. In a nutshell, e-learning is utilizing technology to increase the effectiveness and accessibility of learning.

Much of the communication practice has to take place outside the classroom and it is here that e-learning becomes relevant to the e-learner. Listening and speaking exercises like listening to a description on giving directions can be done again and again until the student is able to describe like the model he or she has listened to. An e-learner can do the interactive English Language exercises embedded in VELT or other interactive exercises in the World Wide Web. There are hundreds of free websites that have been created to assist students to improve their communication skills. The inclusion of e-learning in this ICT integration framework cannot be overemphasized.
Instant Messaging Tools

Oral communication skills can be enhanced by using a synchronous environment i.e. oral conversation online. The benefits and the manner in which online conversation ought to be done had been discussed in detail in Section 2.7 of the literature review. Teachers can in fact assist their students in collaborating with other students or learning groups. If teachers could carry out audio conferencing with their students after school time, then students would obtain the necessary language practice and this would lead to better oral communication skills. What is necessary here is the firm commitment and moral obligation of school teachers to their students. Instant messaging tools can be considered to be the core of this framework.

Multi-Support and Positive Attitude

School and family partnerships need to be established so that parents can give greater support to their children in home-based learning activities (Epstein, 1995; Shartrand et al., 1997). Essential parental support can boost the attainment level in terms of language proficiency. Parents ought to provide the necessary infrastructure facilities at home. ICT support given by parents helps to improve English proficiency (Becta, 2002). Administrative support is again necessary for greater ICT integration. The interest shown by the school principal or headmaster is vital in promoting ICT integrated activities in the school.

The survey findings reveal that 50.4% of the respondents agree by saying that the teachers’ attitude towards ICT integration in the teaching and learning of English Language is not supportive. The findings from the teacher observation too show that teacher attitudes towards ICT integration have been generally poor and many of them refuse to change their
methods of teaching. Clearly, schools are slow adapters to change (Hayes, 2007; Krumsvik, 2006). School teachers are often reluctant to abandon their existing pedagogy (Hennessy et al., 2005) and as a result, they could inhibit or even hinder the implementation of pedagogical novelty that teacher students try to implement. According to Nordkvelle and Olsen (2005), changing school teachers’ attitudes to pedagogical innovations, requires discussing the nature of the difficulties they face with ICT and how they can deal with them and enhance practice. Clearly, they must be convinced that ICT is an educationally valuable tool. Hence, a factor of success is the consideration of school teachers’ concerns and values when introducing new teaching methods (Hadjerrouit, 2008). A paradigm shift in the mindsets among English option teachers is often necessary. Besides possessing IT knowledge and skills, teachers should also have the right attitude towards IT (Wong, 2002). Cabanatan (2003) too has emphasized the importance of a positive attitude towards ICT and a clear understanding of the potential of ICT in education.

Infrastructure Support

Infrastructure facilities such as computer laboratories, servers and the availability of broadband service are vital in supporting ICT integration in the teaching and learning of English Language. On infrastructure facilities, the majority of the schools in the surveyed area have at least a computer laboratory and 64.2% of the respondents say that the computers in the laboratories are networked to a server. Another interesting point is on the allocation of computers for teachers. The survey analysis revealed that 48.6% of the respondents had been allocated computers for professional development and 56% say pupils have printing facilities. During the Eighth Malaysia Plan period, a total of RM5.2 billion was allocated for ICT-related programmes but during the Ninth Malaysian Plan, the allocation for ICT-related programmes increased to 12.9 billion (Malaysia. Prime
Minister’s Department, 2006). Thus, good infrastructure facilities are in fact a prerequisite for the integration of ICT tools in the teaching and learning of English Language. Therefore, it is essential to include infrastructure facilities in the framework.

Evaluation

The main objective of the evaluation component is evaluation for programme improvement. Evaluation information is for both formative and summative decision-making. The interactive VELT lessons have been appropriately integrated with ICT tools and slanted towards improving the communication skills of students. Furthermore, the design of the English Language lessons is pedagogically sound. Students who followed the VELT lessons were encouraged to do the hyperlinked activities in the Internet followed by online one-to-one tutorials using Instant Messaging tools. Three case studies have been undertaken by the researcher in three different locations to find out if there is any improvement in their attainment levels and oral communication skills. The positive results of the three case studies are encouraging and the Ministry of Education should seriously consider using this framework to improve English Language proficiency in particular oral communication skills of students in Malaysia.

5.5 Summary

Three existing frameworks, the emergence of new elements, learning theories and the findings from the survey analysis, interviews and observations were referred to in creating a new framework for ICT integration that would lead to better oral communication among the students. Next, each of the eight elements were described and justified for their inclusion in this framework. This framework would have tremendous impact on the teaching and learning methodologies used in enhancing oral communication skills.